1 Colorectal surgery

Cancer in patients with familial adenomatous polyposis – a nationwide Danish cohort study with matched controls

J.G. Karstensen[1,2], S. Bülow[1], H. Højen[1], A.M. Jelsig[3], N. Jespersen[1], K.K. Andersen[4], M.D. Wewer[5,1], J. Burisch[1,5], H.C. Pommergaard[2,6]
[1]Copenhagen University Hospital - Amager and Hvidovre, Danish Polyposis Register, Gastro Unit, Hvidovre, Denmark, [2]University of Copenhagen, Department of Clinical Medicine, Copenhagen, Denmark, [3]Copenhagen University Hospital - Rigshospitalet, Department of Clinical Genetics, Copenhagen, Denmark, [4]Omicron ApS, Omicron ApS, Copenhagen, Denmark, [5]Copenhagen University Hospital - Amager and Hvidovre, Gastrounit, Medical Division, Hvidovre, Denmark, [6]Copenhagen University Hospital - Rigshospitalet, Department of Surgery and Transplantation, Copenhagen, Denmark

Background: Familial adenomatous polyposis (FAP) is a hereditary disorder that predisposes patients to colorectal cancer (CRC). Prophylactic colectomy has greatly reduced the risk of CRC. However, new associations between FAP and the risk of other cancers have subsequently emerged. In this study, we aimed to assess the risk of specific primary and secondary cancers among FAP patients in comparison with matched controls.
Method: All known FAP patients up until April 2021 were identified in the nationwide Danish Polyposis Register and paired with four unique controls matched by birth year, sex, and zip code. Risk of overall cancers, specific cancer types, and risk of a second primary cancer were assessed and compared with controls.
Results: The analysis included 565 FAP patients and 1,890 controls. The overall risk of cancer was significantly higher for FAP patients than controls (hazard ratio (HR): 4.12, CI 95%, 3.28-5.17, p<0.001). The increased risk was mainly due to CRC (HR: 4.61, CI 95% 2.58-8.22, p<0.001), pancreatic cancer (HR: 6.45, CI 95% 2.02-20.64, p=0.002), and duodenal/small bowel cancer (HR: 14.49, CI 95% 1.76-119.47, p=0.013), while no significant difference was observed for gastric cancer (HR: 3.29, CI 95% 0.53-20.23, p=0.20). Furthermore, the risk of a second primary cancer was significantly higher for FAP patients (HR: 1.89, CI 95% 1.02-3.50, p=0.042). Between 1980 and 2020, the risk of cancer among FAP patients decreased by approximately 50%.
Conclusion: Despite an absolute reduction in the risk of developing cancer among FAP patients, the risk remained significantly higher than for the background population due to colorectal, pancreatic, and duodenal/small bowel cancers.

Robotic versus laparoscopic approach for left-sided colonic cancer: A nationwide cohort study

L.K. Larsen Rein[1], N. Dohrn[1,2], I. Gögenur[2], M.F. Klein[1]
[1]Københavns Universitetshospital, Gastroenheden, kirurgisk, Herlev, Denmark, [2]Sjællands Universitetshospital, Mave-tarm-kirurgisk, Køge, Denmark

Background: Robot-assisted surgery for left-sided colonic cancer is increasing in Denmark, however it is yet to be established if the robotic approach results in improved clinical outcomes compared with the corresponding laparoscopic approach. The aim of this study was to compare the intraoperative and short-term postoperative outcomes of robot-assisted surgery with laparoscopic surgery for left-sided colonic cancer on a national level.
Method: The study was a nationwide database study based on data from the Danish Colorectal Cancer Group database. Patients from all colorectal centers in Denmark treated with a curative intended surgery in an elective setting with either robotic or laparoscopic left colectomy or sigmoidectomy in the period of 2014-2019 were included. To adjust for confounding propensity score matching (PSM) was performed, and the groups were compared on age, sex, BMI, ASA-classification, performance score, year of diagnosis, neoadjuvant chemotherapy, left colectomy or sigmoidectomy, tumor localization, use of stoma or stenting and pathological T (pT)-category.
Results: 5,532 patients were available for analysis and after propensity score matching in ratio 2:1, 1,392 laparoscopic and 696 robotic cases were identified. After matching we found a lower conversion rate and a higher lymph node yield in the robotic group compared with the laparoscopic group; 5.8% vs 11%, P <0.001 and 27 vs 24, P <0.001, respectively. Further, we found a higher proportion of patients with a lymph node yield of 12 or more in the robotic group (97% vs 94.8%, P 0.02). Plane of dissection, radicality and pathological disease stages did not differ between the

two groups. We found no difference in either overall surgical (13% vs. 11.1%, P = 0.23) or medical (5.6% vs 6.5%, P = 0.49) postoperative complications and no difference in 30 day (P = 0.369) or 90 day mortality (P = 0.08).
Conclusion: Robot-assisted surgery for left-sided colonic cancer was associated with a significant lower conversion rate and a significant higher lymph node yield compared to the laparoscopic approach. Postoperative morbidity and mortality were similar in the two groups.

Langtidsresultater efter transanal total mesorektal excision for rektal cancer i Danmark: Et prospektivt multicenter studie fra den sene implementeringsfase

L. Rehné Jensen[1], N. Dohrn[1], M. Seiersen[2], O. Bulut[3], F. Bech-Knudsen[4], J.E. Jansen[5], I. Gögenur[6,7], M. Falk Klein[1,7]
[1]Københavns Universitetshospital – Herlev og Gentofte Hospital, Afdeling for Mave-, Tarm- og Leversygdomme, Herlev, Denmark, [2]Sjællands Universitetshospital, Kirurgisk Afdeling, Køge, Denmark, [3]Københavns Universitetshospital – Hvidovre Hospital, Kirurgisk Afdeling, Hvidovre, Denmark, [4]Syddansk Universitetshospital – Sygehus Lillebælt, Organ- og Plastikkirurgisk Afdeling, Syddansk Colorectal Cancer Center, Vejle, Denmark, [5]Københavns Universitetshospital – Nordsjællands Hospital, Kirurgisk Afdeling, Hillerød, Denmark, [6]Sjællands Universitetshospital, Kirurgisk Afdeling, Center for Surgical Science, Køge, Denmark, [7]DCCG, Danish Colorectal Cancer Group (DCCG.dk), København, Denmark

Background: Formålet med studiet var at evaluere kirurgiske og onkologiske langtidsresultater efter transanal total mesorektal excision (TaTME) for rektalcancer under implementeringsfasen på nationalt niveau.
Method: Studiet er en retrospektiv gennemgang af prospektivt indsamlet data. Dataindsamlingen blev initieret af Danish Colorectal Cancer Group for at vurdere kvaliteten af behandlingen under implementeringsfasen af TaTME i Danmark. Data fra fire centre blev samlet til simultan analyse. Data for korttidsresultater var tilgængelige fra et tidligere studie, og langtidsdata om recidiv, kemoterapi og mortalitet blev indsamlet.
Results: Fra august 2016 til april 2019 blev der registreret 115 TaTME-procedurer. Patienterne var overvejende mænd (*n* = 85, 74%) med midt-rektale (*n* = 88, 77%) tumorer. Den samlede lokalrecidiv-rate var 7.8% (*n* = 9), hvor af seks patienter havde også systemiske recidiver. Gennemsnitstid for follow-up var 59.4 måneder, og mediantid til lokalrecidiv var 24.9 måneder. Lokalrecidiver forekom primært hos patienter fra den tidlige implementering. Femårsoverlevelsen var 86%.
Conclusion: Vi fandt acceptable onkologiske langtidsresultater efter TaTME under implementeringsfasen i Danmark. Der var en akkumulation af lokale recidiver i den tidlige fase af studiet, hvilket understreger vigtigheden af grundig træning og supervisering, når nye procedurer implementeres.

Psychiatric and educational aspects of familial adenomatous polyposis - a nationwide Danish cohort study with matched controls

J.G. Karstensen[1,2], L. Wullum[3], K.K. Andersen[3], S.H. Beck[1], S. Bülow[1], H. Højen[1], A.M. Jelsig[4], N. Jespersen[1], M.D. Wewer[1,5], H.C. Pommergaard[6,2], J. Burisch[1,5]
[1]Copenhagen University Hospital - Amager and Hvidovre, Danish Polyposis Register, Gastro Unit, Hvidovre, Denmark, [2]University of Copenhagen, Department of Clinical Medicine, Copenhagen, Denmark, [3]Omicron ApS, Omicron ApS, Copenhagen, Denmark, [4]Copenhagen University Hospital - Rigshospitalet, Department of Clinical Genetics, Copenhagen, Denmark, [5]Copenhagen University Hospital - Amager and Hvidovre, Gastrounit, Medical Division, Hvidovre, Denmark, [6]Copenhagen University Hospital - Rigshospitalet, Department of Surgery and Transplantation, Copenhagen, Denmark

Background: Familial adenomatous polyposis (FAP) is an autosomal, dominantly inherited disorder that predisposes to colorectal cancer. An increased risk of cancer may affect mental health, but the magnitude of this effect remains unknown. We assessed the psychosocial functioning, including the educational level attained and risk of psychiatric comorbidity, of FAP patients by comparing them with matched controls.
Method: All Danish FAP patients diagnosed before April 2021 were identified in the Danish Polyposis Register and paired with four matched controls. Educational history, psychiatric contacts

or diagnoses (ICD-10), and treatment with antidepressants, anxiolytics, or antipsychotics were compared between FAP patients and controls.
Results: The analysis included 445 FAP patients and 1,538 controls. The highest educational level reached was significantly lower for FAP patients (p<0.001). When comparing FAP patients and controls and adjusting for a cancer diagnosis, an increased risk was observed for a psychiatric contact (1.69, CI 95%, 1.25-2.29, p<0.001), any psychiatric prescription (1.39, CI 95%, 1.17-1.66, p<0.001), a psychiatric diagnosis (1.64, CI 95%, 1.19-2.26, p=0.002), and experiencing any psychiatric event (HR 1.42, CI 95%, 1.20-1.68, p<0.001). An increased risk was specifically seen for mood (affective) disorders (1.76, CI 95%, 1.09-2.83, p=0.02) and behavioural and emotional disorders (2.01, CI 95%, 1.10-3.69, p=0.02), as well as the need for antidepressants (1.59, CI 95%, 1.24-2.03, p<0.001) and antipsychotics (1.85, CI 95%, 1.26-2.70, p=0.002).
Conclusion: Compared to controls, FAP patients had significantly less education and an increased risk of developing mood and behavioural disorders, with an increased likelihood of needing antidepressants and antipsychotics.

Impact of colonic diverticulosis on daily life. The DIVIPACT study

H.R Dalby[1,2], R. Erichsen[1,3], K.A. Gotschalck[4], K.J. Emmertsen[1,2]
[1]Randers Regional Hospital, Department of Surgery, Randers, Denmark, [2]Aarhus University Hospital, Department of Clinical Medicine, Aarhus N, Denmark, [3]Aarhus University Hospital, Department of Clinical Epidemiology, Aarhus N, Denmark, [4]Horsens Regional Hospital, Department of Surgery, Horsens, Denmark

Background: Subjects with colonic diverticulosis may have several hospital contacts including ambulatory endoscopies and hospitalizations due to flare-ups and surgery. We aimed to establish a cohort of subjects with colonic diverticulosis to characterize subjects with and without symptoms, to investigate the impact of diverticulosis on daily life, and to identify potential risk factors for hospitalizations and surgery due to diverticular disease.
Method: Subjects with contact (ambulatory or admission) to a hospital in The Central Denmark Region with a diagnosis of colonic diverticulosis (K572-9) at least one time in the period from 2010 to 2022 were received a comprehensive online survey in their Digital Post during April and May 2023. We excluded deceased subjects as well as subjects with a diagnosis of colorectal cancer and dementia in the period. The survey was comprised of questions regarding background information and daily life as well as several validated questionnaires concerning quality of life, bowel function, urinary function and sexual function. Additionally, subjects were asked to accepts review of their medical records to further investigate their hospital contacts.
Results: We identified 29,624 eligible subjects of whom 21,932 (74%) responded to the survey and 20,135 (68%) consented to medical record review. Responders had a median age of 70 years (IQR 62-76) and males constituted 48%. Of those who consented to medical record review 79% (n = 15,837) had diverticulosis with only ambulatory contact and no admission, 19% (n = 3,947) had been hospitalized with no surgery performed, and 2% (n = 351) had been hospitalized and had surgery performed due to their diverticula. Surgery was most often performed at first admission (65% of all surgery performed).
Conclusion: 21,932 subjects diagnosed with diverticulosis have answered a comprehensive survey regarding daily life, symptoms, and burden of disease. Based on this, we will further investigate symptom burden and quality of life in subjects with diverticulosis. Additionally, we have obtained consent to further review medical records of 20,143 of the subjects.

Incidence of VTE after curative surgery for colon cancer within an ERAS programme

N.N. Baastrup[1], A.K. Buch[1], A.K. Gundestrup[1], A.S.F. Olsen[1], J. Kleif[1,2], I. Al-Najami[3,4], U. Deding[3,4], C.A. Bertelsen[1,2]
[1]Copenhagen University Hospital – North Zealand, Department of Surgery, Hillerød, Denmark, [2]Faculty of Health and Medical Sciences, University of Copenhagen, Department of Clinical Medicine, Copenhagen, Denmark, [3]Odense University Hospital, Department of Surgery, Odense, Denmark, [4]University of Southern Denmark, Department of Clinical Research, Odense, Denmark

Background: The National Institute for Health and Care Excellence (NICE) and other national guidelines recommend that individuals who undergo elective surgery for colon cancer should receive prolonged thromboprophylaxis for a period of 28 days. These recommendations are based

on findings from three randomized controlled trials. However, none of these studies specifically examined the risk of venous thromboembolism (VTE) in the context of Enhanced Recovery After Surgery (ERAS). Newer studies indicated that prolonged VTE prophylaxis might not be necessary within an ERAS setting.
Method: Retrospective study of 2,141 patients who underwent elective surgery for colon cancer stage I-III within an ERAS programme in the Capital Region of Denmark from 2014 to 2017. We excluded patients who were discharged on postoperative day 28 or later, those who died during admission, underwent concomitant rectum resection, or were discharged with vitamin K antagonists, direct-oral anticoagulants, or low molecular weight heparin (LMWH). The endpoint was symptomatic VTE diagnosed within 60 days postoperatively. All patients received low dose LMWH as prophylaxis against VTE during their admission.
Results: Out of the included population of 1,806 patients, only three experienced a symptomatic VTE, all being non-fatal. Two had pulmonary embolism secondary to pneumonia, while one patient was diagnosed with deep venous thromboembolism at postoperative day 15 after an uncomplicated course with discharge at postoperative day 2.
Conclusion: The risk of symptomatic VTE after elective surgery for colon cancer with ERAS seems negligible even if without prolonged VTE prophylaxis. This study supports reconsideration of the present guidelines.

Surgical treatment of Pilonidal sinus disease. A systematic review

I.-M.M. Wiinblad[1,2], J. Ulrichsen[2], B. Brandstrup[1,2]
[1]Holbæk Hospital, part of Copenhagen University Hospitals, Department of Surgery, Holbæk, Denmark, [2]University of Copenhagen, Institute for Clinical Medicine, Faculty of Health, Copenhagen N, Denmark

Background: The surgical management of chronic pilonidal sinus disease is the subject of much controversy. As such, this systematic review aims to compare different surgical wound closure techniques by reviewing randomized clinical trials and to assess whether the existing literature supports the use of the Bascom cleft-lift operation.
Method: Fifty-nine trials were identified through an advanced search in the databases: PubMed, Embase, and Cochrane Library. Data concerning demographics, study design, and results were extracted and analyzed. The analysis primarily focuses on recurrence rate, and secondarily on healing time, length of stay, and infection rates. Moreover, the quality of the trials was analyzed.
Results: In terms of recurrence rate and healing, the flap techniques were found to be superior to primary closures in the midline and healing by secondary intension.
The Limberg flap was generally superior to the Karydakis flap due to fewer postoperative complications.
No trend was found in relation to infection.
Most of the studies included a small number of patients and had a short follow-up period. The studies were generally of low quality, illustrated by the lack of well-defined primary outcomes and power calculations.
Conclusion: The most well-researched method is the Limberg flap, while the Bascom cleft-lift operation has not been tested in many randomized clinical trials. This raises doubts about the superiority of this method. Based on current evidence, the choice of surgical closure techniques should be decided by the surgeon's expertise concerning either Limberg-, Karydakis- or Bascom methods.
Systematic review registration: PROSPERO CRD42023399039

Korttidsresultater efter complete mesocolic excision for højresidig colon cancer: resultater fra et regionalt population-baseret kohortestudie.

C.A. Bertelsen[1,2], A.K. Gundestrup[3,4], A.S.F. Olsen[1], J. Kleif[1,2], COMES group & DCCG
[1]Nordsjællands Hospital - Hillerød, Kirurgisk afdeling K, Hillerød, Denmark, [2]Det Sundhedsvidenskabelige Fakultet, Københavns Universitet, Institut for Klinisk Medicin, København N, Denmark, [3]Nordsjællands Hospital, Kirurgisk afdeling K, Hillerød, Denmark, [4]Bispebjerg Hospital, Abdominalcenter K, København NV, Denmark

Background: Complete mesocolic excision (CME) for højresidig coloncancer reducerer risikoen for recidiv og død. Risikoen for komplikationer og korttidsmortaliteten er dog ikke velundersøgt i uselekterede populationer eller større danske undersøgelser.

Method: COMES-databasen er baseret på journalgennemgang af alle patienter rapporteret i DCCG databasen. Data for patienter, der gennemgik højresidig kurativt-intenderet elektiv resektion af stadium I-III colon adenokarcinom i RegionH i perioden 2014–2017 blev brugt i dette studie. CME blev foretaget som standard i Hillerød (CME-gruppen), mens operationerne på de øvrige tre hospitaler ikke var standardiserede og kun i få tilfælde blev foretaget efter CME principperne (kontrolgruppen). Det primære endepunkt var 90-dages mortaliteten, sekundære resultater var 30-dages mortaliteten, alvorlige postoperative komplikationer (Clavien-Dindo score 3b-5) inden for 60 dage, samt læsion af organer og kar. Data blev justeret for bias og confoundere med multivariabel logistisk regression, samt inverse probability treatment weighting (IPTW).
Results: 966 patienter blev inkluderet, 204 i CME-gruppen og 762 i kontrolgruppen. Fire patienter (2.0%; 95% CI: 0.6–5.3%) i CME-gruppen døde inden for 90 dage mod 22 (2.9%; 95% CI: 1.9–4.4%) i kontrolgruppen. Absolutte risikoforskel var 0.9% (95% CI: −1.6–3.5; p=0.629), og efter IPTW 0.2% (95% CI: −5.3–8.9%; p=0.624). Odds ratioen (OR) for død efter CME var 0.67 (95% CI: 0.23-1.97; p=0.471) og forblev uændret i multivariable analyser. Tilsvarende var den højere 30-dages mortalitet i kontrolgruppen ikke signifikant.
Der var ingen signifikant forskel i hyppigheden af postoperative komplikationer generelt eller specificeret inden for 60 dage. Peroperativ læsion af vena mesenterica superior centralt for indløbet af vena ileocolica hændte hos 2 (1.0%) i CME-gruppen mod 3 (0.4%) i kontrolgruppen (p=0.287). Risikoen for læsion af andre organer var ligeledes ikke-signifikant forskellig.
Conclusion: CME for højresidig colon cancer synes ikke associeret med øget 30- eller 90-dages dødelighed eller alvorlige komplikationer.

The burden of flare-ups in patients admitted with diverticular disease

H. Dalby[1,2], R. Erichsen[1,3], K.A. Gotschalck[4], K.J. Emmertsen[1,2]
[1]Randers Regional Hospital, Department of Surgery, Randers, Denmark, [2]Aarhus University Hospital, Department of Clinical Medicine, Aarhus N, Denmark, [3]Aarhus University Hospital, Department of Clinical Epidemiology, Aarhus N, Denmark, [4]Horsens Regional Hospital, Department of Surgery, Horsens, Denmark

Background: Diverticular disease is known to have a negative impact on quality of life due to recurrent disease with flare-ups, chronic inflammation and/or complications including colonic stenosis or fistula. We aimed to investigate the burden of flare-ups in patients admitted to hospital at least one time due to diverticular disease.
Method: This study is part of the DIVIPACT study, a population-based cohort study of subjects with diverticulosis aimed to investigate the impact of diverticulosis on daily life. In this study, we included patients that had been admitted to a hospital in The Central Denmark Region with a diagnosis of colonic diverticular disease (K57.2-9) at least one time in the period from 2010 to 2022. We excluded deceased patients as well as patients with a diagnosis of colorectal cancer or dementia in the period. Patients received a comprehensive online survey in their Digital Post during April and May 2023. The survey was comprised of questions regarding background information and daily life as well as several validated questionnaires concerning quality of life, bowel function, urinary function and sexual function.
Results: Of 20,135 responders who consented to medical record review, 4,298 (21%) had been admitted to hospital at least one time due to diverticular disease. Median age was 65 years (IQR 57-74) and males constituted 39%. 1,420 (33%) had seen their general practitioner at least one time due to flare-ups, and 79% of them (n = 1,127) had been treated with antibiotics. 621 (14%) reported that flare-ups had hindered them doing their usual daily activities at least one day during the last 4 weeks, and of these, 48% (n = 298) had been hindered at least 3 days. When asked how they felt about the information they had been given on their condition, 41% reported that they had not sought any information, 19% found the information level to be deficient, 13% didn't know and only 27% found the information level to be acceptable or comprehensive.
Conclusion: Patients admitted with diverticular disease have several additional contacts to their general practitioner due to flare-ups, which indicates a noteworthy impact on everyday life. Additionally, only 27% of patients that have been admitted due to diverticular disease finds the information given on the condition to be acceptable or comprehensive.

Coatings for permanent meshes used to enhance healing in abdominal hernia repair: a scoping review

J.J. Baker[1], J. Rosenberg[1]
[1]Center for Perioperative Optimization, Department of surgery, Herlev Hospital, Herlev, Denmark

Background: **Introduction**: Hernia meshes are widely used to reduce recurrence and postoperative pain. Recurrences could potentially be further reduced with a biochemical coating of the mesh to enhance ingrowth of tissue into the scaffold. The purpose of this scoping review is to provide an overview of mesh coatings used to promote healing in abdominal hernia repair and to report the beneficial and unbeneficial effects.
Method: **Methods**: Studies involving humans or animals with abdominal hernias repaired using non-commercially coated meshes were included. Only studies that used coatings to improve healing was included in a non-contaminated field. We searched Pubmed, Embase, Cochrane Central, LILACS, and CNKI without language constraints.
Results: **Results**: Of 2933 identified studies, 59 were included: six with a total of 408 humans and 53 with 2,757 animals. The median follow-up was 12 months (range 1-156), and 95% of the hernias were incisional. In total there was 47 different types of coatings, and they included platelet-rich plasma, mesenchymal stem cells, growth factors, vitamin E, collagen-derived products, various polysaccharides, silk proteins, chitosan, gentamycin, doxycycline, nitrofurantoin, titanium, diamond-like carbon, and copaiba oil. Several studies investigated more than one coating. Mesenchymal stem cells and platelet-rich plasma were most researched. Mesenchymal stem cells notably decreased inflammation and foreign body reactions but did not impact other healing metrics. In contrast, platelet-rich plasma positively influenced tissue ingrowth, collagen deposition, and neovascularization and had varying effects on inflammation and foreign body reaction.
Conclusion: **Conclusion**: We identified 47 different non-commercial mesh coatings used the enhance healing in abdominal hernia repair and the coatings showed varying results. Mesenchymal stem cells and platelet-rich plasma emerged as the most researched coatings and they affected the biochemical response in promising ways. Further investigation is needed to ascertain their definitive use in human hernia repairs and to see which of these different biochemical responses provides the best long-term results.

High Frequencies of Depressive Symptoms After Treatment for Colorectal Cancer: a Systematic Review and Meta-analysis

F. Qays Ismail[1], S. Öberg[1], I. Hagemann[2], J. Rosenberg[1]
[1]Center for Perioperative Optimization, Department of Surgery, Herlev, Denmark, [2]Capital Region of Denmark, Mental Health Services, Copenhagen, Denmark

Background: The mortality rate for patients with colorectal cancer has decreased since 1975 [1], and the five-year survival rate is now 64% [1]. This increased survival rate combined with the fact that colorectal cancer is the third most common cancer worldwide [2] results in many patients living with late effects. Two of the known late effects are depressive symptoms and depression [3–5], and depressive symptoms among patients with cancer exceed what is observed in the general population [6].The aim of this study was to clarify the frequency of depressive symptoms and depression within a year after treatment for colorectal and anal cancer.
Method: Systematic searches were conducted in Cochrane CENTRAL, PubMed, and Embase on 17 January 2022. Eligible studies included adult patients with colorectal or anal cancer and with minimum 50 participants. Bias was assessed using the National Institutes of Health quality assessment tool for cross-sectional studies, the Newcastle-Ottawa scale for cohort studies, and the Cochrane risk of bias tool-1 for randomized controlled trials. The outcome was the number of patients with depressive symptoms and depression from each study presented as pooled frequencies using one-group metaanalysis.
The meta-analyses were performed using a binary random effects DerSimonian-Laird model.
Results: In total, 36 studies and 9,236 patients with colorectal cancer were included. The pooled frequencies of depressive symptoms were 23% before treatment, 29% 0–≤3 months after the treatment started, 27% after >3–≤6 months, and 21% after >6–≤12 months. Depressive symptoms were assessed in all 36 studies. Depression was assessed in 13 studies and included 5,832 patients. The pooled frequencies of depression were 24% before treatment, 27% 0–≤3 months after the treatment started,
39% after >3–≤6 months, and 25% after >6–≤12 months. There were almost no data available on patients with anal cancer.
Conclusion: Depressive symptoms and depression are common within the first year after treatment initiation of colorectal cancer. The reported frequency of depressive symptoms and depression were high and varied widely between studies.

Real-time adenoma detection rate in artificial intelligence-assisted colonoscopy - A cluster-randomized controlled multicentre trial

R.M.B. Lagström[1], K.B. Bräuner[2,1], J. Bielik[3], A.-R. Diac[4], J.G. Crone[5], I. Gögenur[1], M. Bulut[1]
[1]Zealand University Hospital, Department of Surgery, Køge, Denmark, [2]Slagelse Hospital, Department of Surgery, Slagelse, Denmark, [3]Holbæk Hospital, Department of Surgery, Holbæk, Denmark, [4]Nykøbing Falster Hospital, Department of Medicine, Nykøbing Falster, Denmark, [5]Næstved Hospital, Department of Surgery, Næstved, Denmark

Background: The adenoma detection rate (ADR) is widely accepted as the key indicator for each endoscopist. With each 1.0 % increase in the ADR there is a 3.0 % decrease in the risk of developing colorectal cancer (CRC). Adenomas are often missed, and the ADR varies among different endoscopists. The quality shifts throughout the day; ADR decreases with approximately 7% by the end of the day. Artificial intelligence (AI) can reduce the performance variability, and compensate for perceptual errors. AI-assistance in colonoscopy may increase the ADR. Few studies have investigated the impact of AI when used by less experienced endoscopists, and the results are inconsistent. More large trials are required to understand the actual impact of AI in the clinical setting. We evaluated the impact of AI on ADR when used by endoscopists with different levels of experience, to see if AI can reduce the performance variability and increase ADR.
Method: We performed a prospective, non-blinded cluster-randomized, controlled multicentre trial. Patients were 18 years or older, referred for screening, surveillance, or diagnostic colonoscopy at four centres in Region Zealand, Denmark. Patients were randomly assigned to an AI-assisted colonoscopy with a computer-aided detection (CADe) system or a conventional colonoscopy. We included expert endoscopists (> 1000 colonoscopies) and non-experts (≤ 1000 colonoscopies). Removed adenomas were histologically confirmed. The primary outcome was the ADR in the CADe and the control group. We did sub analyses on ADR in the two endoscopist populations, and ADR before and after noon.
Results: We included 795 patients in the final analysis: 400 in the CADe group and 395 in the control group. 646 colonoscopies were performed by experts, and 149 by non-experts. Compared with the control group, the CADe group had a significant increase in ADR (46,6% vs 59,3%, p<0,0004), which was replicated in the expert-group (p<0,0009). No significant increase was shown in the non-expert group. No significant increase in ADR was shown before noon (p=0.167), but the use of CADe increased the ADR significantly after noon (44,7 vs 59,4%, p<0.0007).
Conclusion: CADe increased the ADR significantly with 12,7%, also in the expert group. No significant increase was shown in the non-expert group, likely due to a small sample size. CADe may compensate for the decrease in colonoscopy quality that happens throughout the day.

Training of radiology specialists in local staging of primary rectal cancer on MRI: a prospective intervention study exploring the impact of various educational elements on the interpretive performance

S. Bregendahl[1], P. Bondeven[2], T.K. Grønborg[3], G. Brown[4], S. Laurberg[5], B.G. Pedersen[1]
[1]Aarhus University Hospital, Department of Radiology, Aarhus N, Denmark, [2]Regional Hospital Randers, Department of Surgery, Randers, Denmark, [3]Aarhus University, Department of Public Health, Aarhus, Denmark, [4]Royal Marsden NHS Foundation Trust, Department of Radiology, London, United Kingdom, [5]Aarhus University Hospital, Department of Surgery, Aarhus, Denmark

Background:
MRI interpretation and accurate radiological staging are crucial to the important treatment decisions and a consequent successful patient outcome in rectal
cancer. We aim to investigate the effect of intensive training on rectal cancer MRI staging performance of radiologists and the impact of different course elements on learning outcomes.
Method:
In this prospective intervention study, 17 radiology specialists and 1 radiology registrar participated in a training programme including a 6-hour imaging workshop, a 3-hour session of individual feedback and independent MRI readings of primary rectal cancer cases. Their rectal MRI interpretive performance was evaluated through repeated readings of 30 training cases before and after each course element and a time interval with no educational intervention. A proforma template for MRI staging of primary rectal cancer was used and the results were compared with a

reference standard of an expert panel. Participants repeatedly reported on confidence scores and self-assessed learning outcome. Outcomes were analysed using mixed-effects models.
Results:
At baseline the quality of rectal MRI assessment varied significantly, with a higher interpretive performance among participants with shorter radiological experience (10.2 years vs 19.9 years, p=0.02). The ability to perform correct treatment allocation improved from 72% to 82% (adjusted OR=2.36, 95% CI 1.64 to 3.39). The improvement was largely driven by the participants with lower performance at baseline and by prevention of overstaging. Individual feedback had a significant impact on the improved interpretive performance (adjusted OR=1.82, 95% CI 1.27 to 2.63), whereas no significant change was seen after workshop or case readings only. Confidence scores increased significantly during training.
Conclusion:
Targeted and individualised training improves the rectal cancer MRI interpretive performance essential to successful patient treatment, especially among radiology specialists with lower performance at baseline. This should be basis for a certification programme similar to colorectal surgeons.

Gastrointestinal stimulation as a treatment of postoperative ileus following cytoreductive surgery (STIMULATE) - A clinical feasibility study

A.K. Martensen[1,2], M. Møller Sørensen[1], A. Bodilsen[1], L. Hjerrild Iversen[1,2], J. Amstrup Funder[1,2]
[1]Aarhus University Hospital, Department of Surgery, Aarhus N, Denmark, [2]Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark

Background: Postoperative ileus (POI) is a frequent complication following cytoreductive surgery (CRS) and heated intraperitoneal chemotherapy (HIPEC). It represents a major clinical challenge as no efficient treatment exists. Recent pre-clinical studies have shown a beneficial effect on the length of POI by electrical stimulation of the gastrointestinal tract.
The aim of the study is to evaluate the safety and feasibility of electrical stimulation of the stomach, in patients undergoing CRS +/- HIPEC.
Method: Patients undergoing CRS +/- HIPEC due to pseudomyxoma peritonei, colorectal or appendiceal cancer are eligible for participation.
At the end of surgery, before the abdomen is closed, a pace wire is attached to the stomach, exteriorized through the abdominal wall and connected to an external pacemaker (Enterra II, Medtronic). Thereafter, a 1:1 randomization is performed: In the intervention group the pacemaker is turned on, and in the control group, the pacemaker is turned off.
Once a day during admission, patients are asked to fill out a patient diary on gastrointestinal function (e.g., stool, vomiting, food-intake) When gastrointestinal function is restored, the pace wire is removed.
Results: Since April 2023, 27 patients were eligible, and 12 patients accepted participation (44%). Three were excluded peroperatively. Nine patients have completed the study, 5 in the intervention group and 4 in the control group.
The pace wires were easily removed in all patients. Patients tolerated the treatment well. In both groups (3 in the intervention group and 1 in the control group) patients reported short intervals of intraabdominal muscle spasm. In the intervention group, one patient experienced postoperative atrial fibrillation and one patient had fascia dehiscence. In the control group, one patient had an anastomotic leakage. All events happened after the planned pacemaker removal. Two patients asked for removal of the pacemaker one day earlier than planned.
Median number of days till first stool was 3,5 (range: 2-5) in the intervention group and 5 (range: 4-5) in the control group.
Conclusion: We found that it is feasible and safe to mount a pace wire on the stomach and connect it to an external pacemaker. The intervention was well tolerated. The most common adverse event was abdominal muscle spasms. No complications were considered related to the pacing procedure. This study forms the basis for further clinical studies of electrical stimulation as a treatment of POI.

Cost-utility analysis of personalized perioperative treatment bundles

A. Rosen[1], M. Gögenur[1], I. Gögenur[1,2], T. Kjær[3]
[1]Zealand University Hospital, Center for Surgical Science, Dept. of Surgery, Køge, Denmark,

[2]University of Copenhagen, Department of Clinical Medicine, Copenhagen N, Denmark, [3]University of Southern Denmark, Danish Centre for Health Economics, Odense C, Denmark

Background: Interventions in the perioperative windows can be used to reduce the rate of complications for patients undergoing surgery for colorectal cancer, while prediction models can be used to risk-stratify patients. This study aims to investigate the cost-effectiveness of implementing personalized perioperative care based on risk-stratified perioperative treatment bundles as an alternative to the existing non-stratified standard of care.
Method: A machine learning algorithm was used to create a prediction model for decision support of risk stratification. A hybrid decision-tree Markov model was developed to simulate patients undergoing curative intended surgery for colorectal cancer in an elective setting, either treated with standard of care or personalized perioperative treatment bundles. The analysis used a healthcare sector perspective with a time horizon of 365 days after surgery. Health effect was measured as quality-adjusted life years (QALY). Estimates for population risk, complication rate, intervention costs, health care costs, and health-states utility were obtained from various sources including analysis of data from national registers, data from a quality assurance project, literature review, and expert opinions. The primary outcome was cost (2023 DKK) per quality-adjusted life years (QALY) gained. Cost (2023 DKK) per QALY gained was obtained using probabilistic sensitivity analysis with 10,000 simulations using input parameters randomly drawn from probability density functions.
Results: The implementation of personalized perioperative treatment bundles was associated with savings of 11,152 DKK (95% CI: 11422 – 10888 DKK) while gaining 0.00485 QALYs (95% CI: 0.0048 – 0.0049). The result was mainly driven by a mean reduction of complications among high-risk patients. With willingness-to-pay thresholds of 0 DKK, 200 000 DKK, and 300 000 DKK per QALY gained, personalized perioperative treatment bundles were cost-effective in 81.4%, 84.4%, and 86.2% of the simulations.
Conclusion: On the basis of the simulated projections, introducing personalized perioperative care bundles compared to only the current standard of care, is likely to be cost-effective compared with the current standard of care. However, these results rely on the assumptions in the hybrid decision tree Markov model and the parameters used in them. While the results are promising, further research is needed to validate our findings such as clinical trials.

Inflammatory bowel disease and mortality among colorectal cancer patients with infections

S.A.-M. Dahl[1], V. Ehrenstein[1], L. Pedersen[1], H. T. Sørensen[1], R. Erichsen[1,2]
[1]Aarhus University, Department of Clinical Epidemiology, Aarhus N, Denmark, [2]Randers Regional Hopsital, Department of Surgery, Randers, Denmark

Background: Inflammatory bowel disease (IBD) is a predictor of mortality among colorectal cancer (CRC) patients. Limited evidence suggests that CRC patients with IBD are at an increased risk of infections compared to CRC patients without IBD. However, it is unknown whether IBD is also associated with increased mortality after infections in CRC patients. We investigated whether the presence of IBD is a predictor for short-term and long-term mortality among CRC patients with infections.
Method: Using nationwide medical databases (1995-2023), we conducted a cohort study of all Danish CRC patients with hospital-treated infections. We followed CRC patients from the date of the first treated hospital- or community-treated infections after CRC diagnosis until death, emigration, or end of study. We used the first dispensing of antibiotics as a proxy for community-treated infections. We compared mortality among patients with and without a history of at least two IBD diagnoses. Using the Kaplan-Meier method, we computed 30-day, 1-year, and 5-year mortality among infected CRC patients with and without IBD. Furthermore, we used Cox regression analysis to calculate hazard ratios (HRs) with 95% confidence intervals (CIs) as a measure of relative mortality ratios comparing infected CRC patients with IBD to those without IBD. We adjusted for age, sex, comorbidities, stage of CRC, diagnosis year of CRC, and CRC location.
Results: We identified 69,015 patients with CRC of whom 635 (1%) had IBD. The 30-day, 1-year, and 5-year all-cause mortality were 5%, 26%, and 49% for IBD patients, and 5%, 24%, and 51% for patients without IBD corresponding to 30-day, 1-year, and 5-year adjusted mortality HRs of 1.11 (95% CI 0.77-1.57), 1.28 (95% CI 1.10-1.50), and 1.17 (95% CI 1.04-1.32), respectively.
Conclusion: IBD appears to be a clinical predictor for increased short-term and long-term mortality following infections among CRC patients.

Psychological intervention for patients with biopsychosocial late effects following surgery for colorectal cancer with peritoneal metastases - A feasibility study

R. Balachandran[1,2,3], H.V. Thaysen[1,2], P. Christensen[1,2,3], E.R. Nissen[4,5], M.S. O'Toole[4,6], S.M. Knutzen[4,6], C.D.R. Buskbjerg[4,5,6], L.M. Wu[4,5], N. Tauber[4,6], A. Amidi[4,6], J.T.T. Danielsen[4,6], R. Zachariae[2,3,4,5,6,7], L.H. Iversen[1,2]
[1]Aarhus University Hospital, Department of Surgery, Aarhus, Denmark, [2]Aarhus University, Department of Clinical Medicine, Aarhus, Denmark, [3]Aarhus University Hospital, Danish Cancer Society Centre for Research on Survivorship and Late Adverse Effects after Cancer in the Pelvic Organs, Aarhus, Denmark, [4]Aarhus University, Unit for Psychooncology and Health Psychology, Aarhus, Denmark, [5]Aarhus University Hospital, Department of Oncology, Aarhus, Denmark, [6]Aarhus University, Department of Psychology and Behavioral Sciences, Aarhus, Denmark, [7]Aarhus University Hospital, Danish Center for Breast Cancer Late effects (DCCL), Aarhus, Denmark

Background: Up to 80% of patients with peritoneal metastases (PM) from colorectal cancer (CRC) report having biopsychosocial late effects (LEs) one year after curatively intended surgery. We tested the feasibility, patient acceptability and efficacy of a treatment strategy to address LEs.
Method: In January 2021-May 2023, patients who had undergone curatively intended surgery for CRC with PM in Denmark were screened for biopsychosocial LEs (anxiety, depression, fear of cancer recurrence, insomnia, cognitive impairment, pain, and fatigue). Patients scoring above clinical cut-off levels were referred to a multi-disciplinary team (MDT) conference. The patient, surgeon(s), nurse(s) and psychologists participated in the MDT, with the aim of identifying key concerns and proposing a personalized intervention, which subsequently was delivered by the psychologists. Preintervention, 1 month- and 6 months postintervention, patients completed "Measure Yourself Concerns and Wellbeing" (MYCaW), rating the two most debilitating LEs (primary and secondary) and general wellbeing on a 7-point Likert scale (larger scores indicating severity). The mean pre-post change scores of MYCaW, as well as the associated 95% confidence intervals were calculated, and differences in scores from pre- to post-intervention were analyzed with parametric paired t-tests. A p-value ≤ 0.05 was significant. Further, effect size was estimated with Hedges's g. A value of 0.2 indicated a small effect, value of 0.5 indicated a medium effect and values ≥ 0.8 indicated a large effect of the offered intervention.
Results: Of 28 eligible patients, 13 (mean age 59 years, 85% women) accepted referral to the MDT, participated in the MDT and were offered a personalized intervention. The intervention was completed by 11 patients. Improvement in MYCaW score was observed 1 month postintervention for all three items: 1) the primary LE ($p = 0.003$, Hedges's g 1.54), 2) the secondary LE ($p < 0.001$, Hedges's g 1.65) and for 3) general wellbeing ($p = 0.005$, Hedges's g 1.09). This improvement was sustained 6 months postintervention for all three items. The 15 non-participants were in general older (mean age 66 years) and primarily men (73%).
Conclusion: Screening for LEs and conducting an MDT conference can provide a personalized intervention plan, which patients are able to complete and may benefit from. Testing this approach in a larger patient population and for different tumor origins is relevant.

Recidiv og mortalitet efter complete mesocolic excision for højresidig colon cancer: resultater fra et regional population-baseret kohortestudie

C.A. Bertelsen[1,2], A.S.F. Olsen[1], A.K. Gundestrup[1,3], J. Kleif[1,2], COMES group & DCCG
[1]Nordsjællands Hospital - Hillerød, Kirurgisk afdeling K, Hillerød, Denmark, [2]Det Sundhedsvidenskabelige Fakultet, Københavns Universitet, Institut for Klinisk Medicin, København N, Denmark, [3]Bispebjerg Hospital, Abdominalcenter K, København NV, Denmark

Background: Vi har tidligere påvist en kausal behandlingseffekt af CME for højresidig colon cancer på risikoen for recidiv og samlet overlevelse indenfor 5 år efter operationen. Formålet med Studiet er at undersøge om dise fund kan reproduceres i en større kohorte dækkende 2010-17.
Method: Regional database baseret på journalgennemgang af alle patienter rapporteret i DCCG databasen. Patienter, der gennemgik højresidig kurativt-intenderet elektiv resektion af stadium I-III colonadenokarcinom i RegionH i perioden 2010–2017 er inkluderet. CME blev foretaget som standard i Hillerød (CME-gruppen), mens operationerne på de øvrige tre hospitaler ikke var standardiserede og kun i få tilfælde blev foretaget efter CME principperne (kontrolgruppen). Det primære endepunkt var den kumulative risiko for recidiv inden for 5,2 år med død som *competing risk*. Sekundære endepunkter var lokal- og fjernrecidiv, samt samlet 5 års mortalitet. Inverse probability treatment weighting (IPTW) blev foretaget med følgende variable: alder, køn,

neoadjuverende og adjuverende kemoterapi, tumor-lokalisation og morfologi, UICC-stadium, samt perineural og serosa-invasion.
Results: 1.753 patienter blev inkluderet, 384 i CME-gruppen og 1369 i kontrolgruppen. Kun to patienter blev censureret inden for 5 år efter operationen. Den observerede kumulative incidens af recidiv over 5,2 år var 9,6% (95% CI 6,7–12,6) i CME-gruppen sammenlignet med 17,2% (15,2–19,2) i kontrolgruppen. Den absolutte risikoreduktion ved CME efter 5·2 år var 7,5% (4,0–11,1; p=0,000035). Efter IPTW var den kumulative incidens af recidiv 11,3% (8,2–14,4) i CME-gruppen sammenlignet med 17,0% (15,0–18,9) i kontrolgruppen med en absolut risikoreduktion ved CME på 5,9% (2,1–12,2; p=0,0017).
Conclusion: Studiet påviser en kausal behandlingseffekt af CME for højresidig colon cancer på risikoen for recidiv og samlet overlevelse i perioden 2010-17 efter operation i RegionH.

Days Alive and Out of Hospital at 90 days as a composite outcome measure in patients undergoing elective surgery for colorectal cancer in Denmark – a nationwide, retrospective register study

K. Bendix Bräuner[1], M. Mashkoor[1], R. Vogelsang[1], R. Bojesen[1], A.W. Rosen[1], I. Gögenur[1]
[1]Sjællands Universitetshospital, Kirurgisk Afdeling, Køge, Denmark

Background: Treatment for colorectal cancer has continued to improve over the past decades, with a decline in 30-day mortality from 7.6 % in 2001 to 1.7 % in 2021[1–3]. Therefore, there is an increasing interest in composite and patient-centered outcomes for research in colorectal cancer, such as Days Alive and Out of Hospital (DAOH)[4–6]. The aim of this study was to investigate DAOH-90 in a cohort of Danish, electively operated patients with colorectal cancer and explore its relationship with other postoperative outcomes.
Method: Data on a cohort of patients operated electively with curative intent from April 2014 to April 2019 were collected from the Danish Colorectal Cancer Group database[7,8] and enriched by information on admission length, readmission, and mortality from the Danish National Patient Register[9]. Data were compared using simple and multivariable logistic regression to identify factors associated with DAOH-90 under the lower 25th percentile.
Results: A total of 17,977 patients with colorectal cancer were included in the study. The median DAOH-90 was 85 and the lower 25th percentile was 80 days. Mortality in the entire population within 90 days after surgery was 2.1 %. There was a statistically significant association between DAOH-90 and mortality between 91 and 365 days after surgery ($p < 0.001$) and between 1 and 5 years after surgery ($p < 0.001$).
The multivariable logistic regression showed a statistically significant association between DAOH-90 and age in one-year increments, male sex, American Society of Anaesthesiology Score (OR for ASA4 =, 3.34 95 % CI 2.366 – 4.676), Performance status[10] (OR from PS3 = 3.01, 95 % CI 2.293 – 3.924), Charlson's Comorbidity Index grouped as either 0, 1 or 2+[11], procedure, and especially severe surgical complications[12] (OR for Clavien Dindo 3b,= 16.37, 95 % CI 14.42 – 18.61)
Conclusion: DAOH-90 was associated with several demographic and comorbidity-related variables, including severe surgical complications. Further, we found that DAOH-90 is an effective, individualized composite outcome, which is feasible to calculate based on current register data.

Systematic Review: Risk of Postpolypectomy Bleeding on Uninterrupted Clopidogrel Therapy

A. Munk Tersbøl[1], A. Thyø[1]
[1]Randers Regional Hospital, Department of Surgery, Randers, Denmark

Background: Antithrombotic therapy such as Clopidogrel is often interrupted prior to surgical interventions. Regarding polypectomy, the current recommendation is to interrupt Clopidogrel for 5-7 days. These guidelines are based on limited evidence. Clopidogrel is not routinely interrupted prior to screening colonoscopy, thus demanding reintervention if polyps are found. This is of inconvenience for both the endoscopic units and the patient who must undergo another bowel preparation and procedure. Furthermore, it is demanding abundant resources. This paper aims to assess the risk of postpolypectomy bleeding on uninterrupted Clopidogrel therapy.
Method: A systematic search was conducted on PubMed April 2023, and seven studies were included. Criteria for inclusion comprise original articles investigating patients on uninterrupted Clopidogrel therapy, comparing cases to patients on interrupted therapy, likewise, it was

demanded that the article reports postpolypectomy bleeding as one of its main outcomes. Furthermore, only articles in English were included.
Results: The risk of delayed postpolypectomy bleeding varies from 0%-18.2% and immediate bleeding from 2.1%-18.6%. Three studies found significant increased risk of delayed bleeding if Clopidogrel was uninterrupted, while the remaining four studies did not. The studies evaluated different resection techniques. If only biopsy and snare techniques, cold or hot, are considered the risk of delayed postpolypectomy bleeding varies from 0%-3.8% and the risk of immediate bleeding varies from 2.1%-8.5%. The results are primarily reflecting polypectomy of polyps <10 mm.
Conclusion: There are conflicting results regarding the risk of postpolypectomy bleeding. The acceptance of polypectomy of small polyps on uninterrupted Clopidogrel therapy remains uncertain, thus it depends on multiple factors, such as the resection technique. The resection technique is of great influence on the risk of bleeding. Polypectomy of small polyps suitable for cold snare polypectomy may be acceptable, but more studies are needed for confirmation.

Erectile dysfunction is common after rectal cancer surgery: a cohort study

S. Borgund Hansen[1], B. Thing Oggesen[1], S. Fonnes[2], J. Rosenberg[2]
[1]University of Copenhagen, The Late-Complication Clinic, Department of Surgery, Herlev and Gentofte Hospital, Herlev, Denmark, [2]University of Copenhagen, Center for Perioperative Optimization, Department of Surgery, Herlev and Gentofte Hospital, Herlev, Denmark

Background: Erectile dysfunction is a known late-complication following surgery for rectal cancer. We aimed to determine the prevalence of erectile dysfunction after rectal cancer surgery and characterize it.
Method: This was a prospective observational cohort study. Data from men after surgery for rectal cancer were collected between October 2019 and April 2023. The primary outcome was the prevalence of erectile dysfunction following surgery based on the International Index of Erectile Function questionnaires, IIEF-5 and 15. Secondary outcomes were prevalence in subgroups and the self-perceived erectile function.
Results: In total, 101 patients agreed to participate, while 67 patients (67%) responded after median six months follow-up after surgery. Based on IIEF-15, 84% of the patients had erectile dysfunction. For subgroups, 74% of patients who underwent robot-assisted surgery had erectile dysfunction whereas all patients who underwent either laparoscopic or open surgery had erectile dysfunction (p=0.031). Furthermore, half of the patients rated their self-perceived ability to get and keep an erection as very low.
Conclusion: In conclusions, in our cohort, erectile dysfunction was common after rectal cancer surgery and half of the patients were unconfident that they could get and keep an erection. Information regarding this finding should be given, so that patients feel comfortable discussing therapeutic solutions if needed.

Nerve identification during open inguinal hernia repair: a systematic review and meta-analyses

V. Bay Moseholm[1], J.J. Baker[1], J. Rosenberg[1]
[1]Herlev Hospital, Københavns Universitet, Afdeling for Mave-, Tarm- og Leversygdomme, Herlev, Denmark

Background: Inguinal hernia repair is one of the most common operations worldwide. Nevertheless, the incidence of chronic postoperative pain remains high. The optimal nerve handling strategy is controversial and the rate at which nerves are identified remains uncertain. This study aimed to determine the identification rates of the ilioinguinal-, iliohypogastric-, and genitofemoral nerves as well as nerve handling strategies.
Method: This review was registered on PROSPERO (CRD 42023416576). PubMed, Embase, and Cochrane Central were systematically searched. Studies with more than 10 patients were included if they reported identification rates for at least one of the nerves during elective open inguinal hernia repair in adults. Studies specifically requiring nerve identification in their study design were excluded. Bias was assessed with the JBI critical appraisal tool and Cochrane's RoB-2 tool. The overall estimate of the prevalence was analysed with prevalence meta-analyses.
Results: A total of 23 studies were included. The meta-analyses included 18 studies, which showed a pooled identification rate of 82% (95% CI 76–87%) for the ilioinguinal nerve, 62% (95%

CI 54–71%) for the iliohypogastric nerve, and 41% (95% CI 27–55%) for the genitofemoral nerve. Nerves were spared in 82% of all repairs.
Conclusion: The ilioinguinal-, iliohypogastric-, and genitofemoral nerves were identified in 82%, 62%, and 41% of surgeries, respectively. Most studies used a nerve-preserving strategy. The role of nerve identification in the development of chronic pain remains uncertain, as well as the optimal nerve handling strategy.

Risk of incisional hernia at extraction site after laparoscopic right hemicolectomy

E.Z.T. Riahi[1], T.A. Bjerre[2], R. Erichsen[3], P. Bondeven[3]
[1]Regional Hospital Gødstrup, Department of Surgery, Herning, Denmark, [2]Regional Hospital Randers, Department of Radiology, Randers, Denmark, [3]Regional Hospital Randers, Department of Surgery, Randers, Denmark

Background: Colorectal cancer, diagnosed in over a million individuals annually, necessitates surgery as a curative treatment. Advances in its management have improved survival rates, focusing attention on survivorship issues such as bowel dysfunction, pain, body image alterations and incisional hernia. Incisional hernia, a common complication after colonic resection, occurs in up to one-third of cases and can significantly impact patients' quality of life.
Method: This study examined consecutive patients undergoing laparoscopic right-side hemicolectomy at Regional Hospital Randers from 2016 to 2021. Post-operative CT scans assessed incisional hernia presence. Radiological assessments were blinded to all clinical data except preoperative CT findings and the type of surgery. Data on surgery date, age, BMI, gender, tumor stage, and post-operative chemotherapy were obtained. Comorbidities (cardiac, pulmonary, diabetes and thromboembolic), smoking status and surgical procedure data were collected. Outpatient visits and surgical interventions for ventral hernias following colon resection served as proxies for patient discomfort.
Results: Among 410 evaluated CT scans, ventral hernias were found in 62 cases (15%). Patients with hernias had a higher mean BMI (27.9 vs. 25.6 [$p<0.0001$]). We found no significant differences between groups regarding cardiac disease, pulmonary disease, thromboembolic disease and smoking. However we observed a trend regarding post-operative chemotherapy. In the ventral hernia group, only 14.5% received post-operative chemotherapy, compared to 26.9% (p-value <0.053) in the group without ventral hernias. Of the 62 patients with ventral hernias, 14 (22.6%) had outpatient visits due to hernia related discomfort. A total of five patients (8%) underwent ventral hernia surgery. Among the patients with ventral hernia, we found no differences between the patients who were seen at the outpatient clinic, or opted for surgery, compared to the patients with no contact due to their ventralhernia.
Conclusion: This study underscores the importance of recognizing incisional hernias as potential complications following colon cancer surgery. Patients who develop ventral hernias may have distinct profiles but appear to seek medical attention or opt for surgical repair unrelated to demographics or comorbidities. Vigilant monitoring and management of post-operative hernias are essential for colon cancer survivors.

Parenteral fosfomycin in gastrointestinal surgery: a systematic review

S. Fonnes[1], M.K. Fonnes[1], B.J. Holzknecht[2], J. Rosenberg[1]
[1]Herlev Hospital, Afdeling for Mave-, Tarm- og Leversygdomme, Center for Perioperativ Optimering, Herlev, Denmark, [2]Herlev Hospital, Klinisk Mikrobiologisk Afdeling, Herlev, Denmark

Background: To investigate if perioperative parenteral administration of fosfomycin given before or during gastrointestinal surgery could protect against postoperative infectious complications and characterise the administration of fosfomycin and its harms.
Method: This systematic review included original studies on gastrointestinal surgery where parental administration of fosfomycin was given before or during surgery to ≥5 patients. We searched three databases on March 24, 2023 and registered the protocol before data extraction (CRD42020201268). Risk of bias was assessed with Cochrane Handbook risk of bias assessment tool or the Newcastle-Ottawa Scale. A narrative description was undertaken. For infectious complications, results from emergency and elective surgery were presented separately.
Results: We included 15 unique studies, reporting on 1,029 patients that received fosfomycin before or during gastrointestinal surgery. Almost half of the studies were conducted in the 1980s to

early 1990s, and typically a dose of 4 g fosfomycin was given before surgery co-administered with metronidazole and often repeated postoperatively. The risk of bias across studies was moderate to high. The rates of infectious complications were low after fosfomycin; the surgical site infection rate was 0–1% in emergency surgery and 0–10% in elective surgery. If reported, harms were few and mild and typically related to the gastrointestinal system.
Conclusion: There were few postoperative infectious complications after perioperative parenteral administration of one or more doses of 4 g fosfomycin supplemented with metronidazole in various gastrointestinal procedures. Fosfomycin was associated with few and mild harms.

Heterogenitet mellem primærtumor og lymfeknudemetastaser hos patienter opereret for koloncancer

A.L.B. Bennedsen[1], C. Qvortrup[2], L. Cai[1], A.A. Özcan[1], K.B. Mohamed[1], J.O. Eriksen[3], S. Eiholm[3], M. Bzorek[3], A.-M.K. Fiehn[3], T.V.F Hviid[4], I. Gögenur[1]
[1]Zealand University Hospital, Surgical Department, Køge, Denmark, [2]Rigshospitalet, Oncology Department, Copenhagen, Denmark, [3]Zealand University Hospital, Pathology Department, Roskilde, Denmark, [4]Zealand University Hosptial, Clinical Biochemistry Department, Roskilde, Denmark

Background: Den indledende håndtering af koloncancer baseres på histologien og molekylærbiologiske undersøgelser af biopsier taget fra primærtumor (PT) under index-koloskopien. Studier har rapporteret varierende grad af intra- og intertumoral heterogenitet, hvilket komplicerer implikationerne af de molekylærbiologiske undersøgelser af biopsier. Formålet med dette studie er at undersøge graden af heterogenitet mellem PT og parret lymfeknudemetastase (LNM) ud fra den genetiske profil hos patienter med koloncancer, om der er forskel på dette hos patienter med proficient og deficient mismatch-repair (pMMR og dMMR) protein-status og om det har betydning for overlevelse.
Method: Vi inkluderede patienter med pT3 og pT4 koloncancer med LNM reseceret i 2011 og 2012, så der var en ligelig fordeling af pMMR og dMMR proteinstatus. Væv fra PT og LNM blev DNA sekventeret med anvendelse af panel rettet mod hotspots i 22 gener. Vi foretog immunhistokemiske farvninger for immunmarkører i PT (CD8, CD3, PD-L1) og aflæste areal af positive celler i forhold til vævsarealer ved en algoritme. CD8 og CD3 blev aflæst i to kompartments, invasionsfronten og tumorcentrum. Graden af overensstemmelse (konkordans) mellem mutationer i PT og LNM blev undersøgt, og vi beregnede hazard ratioer (HR) for overall survival (OS).
Results: 14 patienter med pMMR og 14 patienter med dMMR blev inkluderet. Den generelle konkordansrate af mutationer mellem PT og LNM var 69 % og 59 % for patienter med hhv. pMMR og dMMR, den PT-specifikke diskordansrate var 22 % og 20 % ved hhv. pMMR og dMMR, og den LNM-specifikke diskordansrate var 9 % og 21 %, hvilket var en signifikant forskel mellem patienter med pMMR og dMMR. Vi fandt lav konkordans signifikant associeret med længere OS i en regressionsmodel med alle 28 patienter (HR=0,3 & p=0,048) og i en regressionsmodel med de 14 patienter med dMMR (HR=0,1 & p=0,032). Patienter med dMMR og lav konkordans havde signifikant højere CD8/CD3 ratio i invasionsfronten af PT (0,8 vs. 0,5; p=0,020) og PD-L1 % end hos patienter med høj konkordans (4,7 % vs. 0,98 %; p=0,020).
Conclusion: Patienter med koloncancer og en høj grad af heterogenitet mellem PT og LNM havde signifikant længere OS. Dette er primært drevet af patienter med dMMR, hvor patienter med høj heterogenitet havde en højere CD8/CD3 ratio i invasionsfronten af tumor. Heterogenitet har muligvis betydning for prognosen for patienter med koloncancer, og bør undersøges i større studier.

Implementering og kvalitetssikring af Nurse administered propofol sedation (NAPS) ved endoskopi på Regionshospitalet Randers. (forskningstræningsprojekt)

J. Grønlund[1], R. Erichsen[1]
[1]Regionshospitalet Randers, Kirurgi, Randers, Denmark

Background: Smerter og ubehag er en hyppig årsag til, at endoskopi ikke kan udføres i standard sedation (rapifen + midazolam). Endoskopi i NAPS er siden 2009 blevet tiltagende hyppigt anvendt internationalt som alternativ til undersøgelse i general anæstesi. Videnskabelig litteratur finder sedationsformen effektiv og uden øget risiko for kardiopulmonale komplikationer, men møder

stadig modstand og skepsis specielt fra anæstesiologisk personale. Monitorering af komplikationer og tilfredshed er således vigtigt.
Method: I forbindelse med implementeringen af NAPS i Randers i 2020 blev komplikationer registreret systematisk for de første 100 patienter (koloskopier). Fra 2021 til 2022 er komplikationer registreret ved journalgennemgang for yderligere 100 patienter (95 koloskopier, 3 gastroskopier og 2 sigmoideoskopier), som i tillæg har fået tilsendt et spørgeskema i forhold til tilfredshed med NAPS
Results: Ud af de i alt 200 patienter der er endoskoperet ved anvendelse af NAPS, som denne undersøgelse inkluderer, måtte kun 1 undersøgelse i NAPS afbrydes, og det var grundet smerter. Mindre komplikationer i form af kortvarig hypotension og bradykardi registreredes i 3 tilfældene (1,5%). Kun en af disse førte til en afbrudt undersøgelse. Der var ingen alvorlige komplikationer. I spørgeskemaundersøgelsen angav alle patienter at være komplet smertefrie. 73 ud af 79 patienter, der havde prøvet endoskopi før, angav at det var bedre end tidligere, og 6 angav at det var uændret. 16 % oplevede ubehag i perioden efter undersøgelsen i form af træthed (7%), svimmelhed (4%) og smerter (7%).
Conclusion: Implementering af NAPS er forløbet uproblematisk, der er høj patienttilfredshed, få komplikationer og ingen alvorlige komplikationer.

Fecal immunochemical testing for selecting patients with symptoms of colorectal cancer referred for fast-track colonoscopy: A multicenter prospective cohort study of 1615 Danish patients

M.S.E. Mansvelders[1], J. Kleif[1,2,3], M.R. Andersen[4], J. Vilandt[3], J.B. Seidelin[5], L.N. Jørgensen[2,6], M. Rasmussen[2,6], C. Therkildsen[1]
[1]Hvidovre Hospital, Gastro Unit, Hvidovre, Denmark, [2]University of Copenhagen, Institute for Clinical Medicine, Copenhagen, Denmark, [3]Nordsjællands Hospital, Department of Surgery, Hillerød, Denmark, [4]Gentofte-Herlev Hospital, Clinical Biochemical Department, Gentofte, Denmark, [5]Herlev Hospital, Gastro Unit, Section for Gastroenterology, Herlev, Denmark, [6]Bispebjerg Hospital, Digestive Disease Center, Copenhagen, Denmark

Background: The use of fecal immunochemical test (FIT) in screening for colorectal cancer (CRC) has become common practice in most Western countries. In Denmark, individuals with symptoms of CRC are referred to fast-track colonoscopy within 9 days. These fast-track patients together with the screening population create a demand for colonoscopies that exceeds the current capacity. There is a desire to use the FIT for selection of individuals with symptoms of CRC that are referred to fast-track colonoscopy in order to reduce the colonoscopy burden. We aimed to evaluate the FIT in a cohort of patients symptomatic of CRC referred for fast track colonoscopy and especially if a FIT cut-off of above 35 ng Hb/ml could be used to select patients for colonoscopy without missing any cancers.
Method: Patients with symptoms of CRC referred for fast-track colonoscopy in four hospitals in the Capital Region were included and provided a FIT prior to bowel cleansing and colonoscopy. After which followed the normal diagnostic workup for patients referred to fast-track colonoscopy. Results of colonoscopy and work-up were recorded. The primary outcome was CRC. Secondary outcomes were high and medium risk adenomas, inflammatory bowel disease, and extra-colonic cancers. For both outcomes Brier scores and Area Under the Curves (AUC) were calculated for the FIT. Sensitivity (SE), specificity (SP), positive predictive value (PPV) and negative predictive value (NPV) were calculated for a FIT cut-off value >35 ng Hb/ml.
Results: By means of colonoscopy, pathology or imaging CRC was found in 84 of the 1615 participants. No adenomas were found in 1279 participants, while in 72 high risk adenomas and in 56 medium risk adenomas were diagnosed. Inflammatory bowel disease was diagnosed in 30 patients and in 21 extra-colonic cancer was detected.
Univariable analyses showed that FIT had an AUC of 0.88 [0.84-0.92] for CRC detection and 0.76 [0.72-0.80] for CRC and advanced adenoma detection. An AUC of 0.79 [0.75-0.82] was calculated for the detection of CRC, advanced adenoma and Inflammatory Bowel Disease.
At a FIT cut-off value >35 ng Hb/ml a total of 9 out of 84 CRC were missed resulting in a SE, SP, PPV and NPV of 0.89 [0.81-0.95], 0.77 [0.75-0.79], 0.18 [0.14-0.22] and 0.99 [0.99-1.00] respectively.
Conclusion: The FIT has a high AUC for detecting CRC. Despite a low cut-off value (>35 ng Hb/ml), FIT was not able to rule out CRC in patients with symptoms of CRC referred to fast-track colonoscopy.

Forløb og prognose efter operation for akut divertikulitis

T.S. Laursen[1], H.R. Dalby[1], K.J. Emmertsen[1], R. Erichsen[1]
[1]Regionshospitalet Randers, Mave- og Tarmkirurgisk afdeling, Randers, Denmark

Background: Antallet af årlige indlæggelser for akut divertikulitis stiger, særligt for yngre mennesker. Ved akut kompliceret divertikulitis med perforation er der ofte indikation for akut operation, som kan være diagnostisk laparoskopi med eventuel peritoneal lavage eller i mere alvorlige tilfælde resektion og/eller stomianlæggelse (Hartmanns operation eller aflastende stomi oralt for perforationsstedet). På trods af den hyppige forekomst af sådanne patientforløb på kirurgiske afdelinger i Region Midtjylland, har vi kun sparsom viden om det per- og postoperative forløb. Vi mangler ligeledes opgørelser over forløbet ved tilbagelægning af stomier anlagt i den akutte fase ved akut kompliceret divertikulitis.
I dette studie undersøger vi derfor forløbet for patienter, som har undergået akut operation grundet kompliceret divertikulitis inklusive en eventuel efterfølgende elektiv stomi-tilbagelægning. Dette for at få øget viden om risikofaktorer, morbiditet og mortalitet i disse forløb og deraf bedre kvaliteten af behandlingen i fremtiden.
Method: Igennem Region Midtjyllands Business Intelligence (BI)-portal identificerede vi alle patienter med en akut indlæggelse på Regionshospitalet Randers i perioden 2019-2023 med aktionsdiagnosen divertikulitis (DK572, DK573, DK574, DK575, DK578, DK579) og en akut abdominal operation (procedurekoderne KJA, KJF og KJG) under samme indlæggelse. Vi vil foretage journalgennemgang, herunder notater, skanninger og relevant paraklinik.
Results: Vi identificerede 40 patienter, heraf 23 (57%) kvinder og 17 (43%) mænd med medianalder 63 (IQR=53;77) ved indlæggelsen. Yderligere gennemgang og analyse pågår og vil kunne præsenteres til årsmødet 2023.
Conclusion: Den detaljerede journalgennemgang vil gøre os i stand til i detaljer at beskrive det per- og postoperative forløb for disse patienter og identificere risikofaktorer for et kompliceret forløb. Over 5 år er kun 40 patienter blevet opereret akut for diverticulitis på Regionshospitalet Randers. Studiet vil derfor ikke kunne give præcise estimater over morbiditet og mortalitet generelt, men lægger op til en større undersøgelse på tværs af hospitaler. Der skal derudover laves en validering af, om de korrekte patienter er identificeret og om der er patienter som fejlagtigt ikke identificeres via søgealgoritmen.

Interpoc™, an absorbent intestinal tampon in adults with ileostomy is safe and tolerable

M. Tahliil[1], A.A. Olsen[1], T.B. Piper[1], J.T.F. Osterkamp[1], C.K.L. Egeland[1], M.P. Achiam[1]
[1]Rigshospitalet, Copenhagen University Hospital, Department of Surgery and Transplantation, Kobenhavn, Denmark

Background: Around 1 million people worldwide live with an ileostomy. Stoma bags have been the primary solution for these patients since the 1950s. Stoma bag design has seen limited progress, unlike colostomy care, which offers plug-like solutions such as the Conseal plug. Ileostomy patients using conventional stoma bags often face complications like leakage, odor, discomfort, body image issues, and skin irritation, diminishing their quality of life. To address these challenges, InterPoc™, an absorbent intestinal tampon designed to capture liquid stool and absorb fluids within the intestinal tract, has been developed. Yet untested in humans, InterPoc™'s safety must be assessed. This study aims to evaluate the safety and tolerability of InterPoc™ in adult patients with ileostomies.
Method: A prospective first-in-man pilot study from April to August 2023 assessed InterPoc™'s safety and feasibility. A total of 16 participants, divided into two groups consisting of eight fasting and eight non-fasting patients, were included. InterPoc™ was inserted into the stoma and sealed with a clear bag to monitor leakage. Vital signs, pain, and discomfort were monitored hourly. The primary outcome was to assess InterPoc™'s safety and feasibility, while the secondary outcome was pain, discomfort, vital signs, leakage occurrence, mucosal lesions, absorbed material weight, and insertion/removal time and difficulty.
InterPoc™ is a tampon-like product, which initially measures 1.4 cm in diameter and 8 cm in length before expanding to 3 cm in diameter and 25 cm in length, with a maximal absorbance of 150 ml.
Results: This pilot study demonstrated InterPoc™'s safety and tolerance in 16 adult ileostomy patients as no complications occurred during the trial, nor in the next 24 hours after the trial. InterPoc™ had a median weight of 58.5 grams in the fasting group, and a median weight of 77.5 grams in the non-fasting group at the time of removal. Median insertion durations differed slightly

between fasting (3 hours) and non-fasting (3.35 hours) groups. The insertion/removal was identified to be painless, no mucosal lesions, and no complications arose during the trial. InterPoc™ prevented leakage around the stoma bag, ensuring complete fecal containment and eliminating leakage, odor, and skin irritation.
Conclusion: The study demonstrated that InterPoc™ was safe and well-tolerated during the trial and the next 24 hours after the trial.

Reduction in incidence of recurrence and time to recurrence in stage I-III colorectal cancer through 2004 to 2019 - a nationwide Danish cohort study

J. Nors[1,2], L.H. Iversen[2,3], R. Erichsen[2,4,5], K.A. Gotschalck[2,6], C.L. Andersen[1,2]
[1]Aarhus Universitetshospital, Molekylær Medicinsk Afdeling, Aarhus N, Denmark, [2]Aarhus Universitetshospital, Department of Clinical Medicine, Aarhus N, Denmark, [3]Aarhus Universitetshospital, Mave- of Tarmkirurgi, Aarhus N, Denmark, [4]Aarhus Universitetshospital, Klinisk Epidemiologisk Afdeling, Aarhus N, Denmark, [5]Regionshospitalet Randers, Kirurgisk Fællesafdeling, Randers NØ, Denmark, [6]Regionshospitalet Horsens, Kirurgisk Afdeling, Horsens, Denmark

Background: The management of colorectal cancer has been updated continuously through the last two decades. While the combined impact of these initiatives has been documented to be positive on survival, the impact on rates of recurrence remains unexplored. Here we determine rates of recurrence and describe time to recurrence within 5 years from surgery for stage I-III primary colorectal cancer.
Method: In this nationwide cohort study, we included all patients undergoing surgery for UICC TNM stages I-III primary CRC in Denmark during 2004-2019. Patients were identified from the Danish Colorectal Cancer Group database. Through individual-level linkage of data from nationwide health registries, recurrence status was determined using a validated algorithm. Patients were followed from surgery until recurrence (event), death (competing event), diagnosis of second cancer (competing event), 5 years postoperative or January 1st, 2023, whatever came first. Stage-specific 5-year cumulative incidence function (CIF) of recurrence were reported for colon and rectal cancer by calendar periods (2004-2008, 2009-2013, and 2014-2019) and stratified by pathological UICC stage (I, II and III). An accelerated failure time (AFT) model was constructed to compare time to recurrence (TTR) between stage I, II, and III disease.
Results: Of the 34,166 patients, 7,027 developed recurrence 5 years after surgery. The 5-year CIF decreased from 16% to 6.8% (95% CI: 5.9%-7.8%), from 22% to 12% (11%-13%) and from 35% to 25% (23%-26%) in pathological UICC stage I, II and III colon cancer, respectively, and from 20% to 9.5% (95% CI: 8.2%-11%), from 26% to 18% (16%-21%) and from 39% to 29% (27%-31%) in stage I, II and III rectal cancers, respectively. Patients with stage III disease had shorter TTR compared to stage I (time ratio = 0.30, 95% CI: 0.28-0.32, AFT model).
Cancers detected through screening (2014-2019) were associated with lower stage-adjusted risk of recurrence, when adjusting for sex, comorbidities, tumor site, and T-category. The reduction in rates of recurrence from 2009-2013 to 2014-2019 was also observed when restricting the cohort to non-screening detected cancers.
Conclusion: The risk of recurrence decreased in stage I-III CRC patients through the last two decades and has become so low in selected patient groups that the future calls for studies exploring risk-stratified surveillance protocols.

Transanal Endoskopisk Operation: Evaluering af komplikationer og recidiv over en 3-årig periode

C. Kure Pleth Nielsen[1], C. Jaensch[1]
[1]Regionshospitalet Gødstrup, Mave- og Tarmkirurgisk afdeling, Herning, Denmark

Background: Transanal endoskopisk operation (TEO) kan anvendes til fjernelse af større polypper i rektum, recidivpolypper, samt tidlige stadier af rektum cancer. TEO kan bruges som alternativ til mere invasive operationer. Operationen har både lav mortalitet og morbiditet. Dette studie har til formål at evaluere postoperative komplikationer og recidivrater i forbindelse med TEO og sammenligne dem med internationale data.
Method: Patienterne i studiet er blevet identificeret ud fra procedurekoden KJGA75 i perioden fra 1/6-2019 til 31/05-2022 på regionshospital Herning/Gødstrup. Patientjournalerne er blevet

gennemgået for demografiske parametre samt det postoperative forløb og det efterfølgende kontrolprogram.
Results: Hundrede- og toogfyrre patienter blev identificeret, hvoraf 6 patienter (6%) havde recidiv i form af en benign polyp. Ved halvdelen af disse var primær resektionen ikke mikroradikal. Ud af de 142 opererede patienter var der 33 (23.2%) med cancer i operationspræparatet, 15 indgik i et intensiveret kontrolforløb uden tarmresektion. Der var 18 patienter (12.7%) med postoperative komplikationer, heraf 15 med tidlige; blødning (7), smerter (3), feber (2), perforation (3) og 3 med sene komplikationer i form af inkontinens for luft/afføring. Den planlagte kontrol lå i gennemsnit efter 156 dage.
Conclusion: Komplikationsraten (12.7%) og recidivrisikoen (6%) er lav og resultaterne er fuldt sammenlignelige med internationale studier, hvilket bekræfter procedurens sikkerhed og effektivitet som en behandlingsmetode for større rektale polypper. I særlige tilfælde kan operationen gennemføres som lokal behandling af rektal cancer og er dermed et alternativ til APE.

Dobbelt caecum volvulus - en sjælden form af tarmobstruktion

M. Rincic Antulov[1], A. Allah Alnabhan[1], S. Andos[1], J. Krzak[1], P. Helligsø[1]
[1]Sygehus Sønderjylland, Mave tarm kirurgi, Aabenraa, Denmark

Background: Caecum volvulus er en kirurgisk tilstand, hvor colon ascendens og den terminale del af ileum er snoet rundt omkring den mesenteriske pedikel.
Vi rapporterer hermed en case af en patient, som har fået foretaget en akut eksplorativ laparotomi grundet CT-verificeret dobbelt caecum volvulus.
Method: En 85-årig kvinde indlægges i FAM pga. akutte smerter i abdomen og flere opkastninger. Patienten er kendt med atrieflimmer og hypertension, aldrig tidligere blevet opereret i abdomen. Patient var afebril, hypotensiv på 91/56 mmHg med puls på 79 og saturation på 96%.
Objektivt havde hun blød og ikke-udspillet abdomen, med smerter på højre side ved palpation.
Biokemien var upåfaldende bortset fra lidt påvirket nyretal med kreatinin på 110 og eGFR på 40.
Urinanalyse var positiv på blod og derfor fik hun CT urografi.
CT-skanning, påviste tegn på dobbelt caecum volvulus.
Results: Der foretages en akut eksplorativ laparotomi, hvor man finder en helt løs og mobil højre colon og fleksur med dobbelt caecum volvulus . Caecum var roteret rundt omkring sig selv, men også omkring colon transversum. Der er derudover observeret tydelig nekrose i væggen af højre fleksur og højre del af colon transversum, dog uden tegn på perforation. Terminal ileum findes dilateret, men resterende del af tyndtarm er sammenklappet og upåfaldende.
Der foretages en ukompliceret højresidig hemikolektomi med primær anastomose ad modum Davos.
Patienten suppleres postoperativt med intravenøse antibiotika i 3 dage, og udskrives til genoptræning på 5. postoperative dag.
Conclusion: Caecum volvulus er en relativ sjælden årsag til tarmobstruktion med en incidens på 2,8-7,1 pr. 1.000.000 mennesker om året. Klinikken er meget varierende. Tilstanden kan føre til svære komplikationer bl.a. tarmnekrose og -perforation. Tidlig diagnose og behandling kan derfor forhindre komplikationer og reducere mortalitet.

Factors affecting non-adherence to diagnostic colonoscopy after positive Immunochemical faecal occult blood test (iFOBT)

C. Flindt Nielsen[1], A. Al-Noori[1], N. Mundbjerg Nielsen[1], M. Gaarden[1], K. Holte[1]
[1]Regionshospital Nordjylland, Kirurgisk Afdeling, Hjørring, Denmark

Background: Every year 3400 new cases of colorectal cancer (CRC) are diagnosed in Denmark. The Danish Colorectal Screening Programme (CRCS) using immunochemical faecal occult blood test (iFOBT) has been a part of the public healthcare system since 2014. Adherence to diagnostic colonoscopy after a positive iFOBT remains around 88-90%. The purpose of this study is to explore the factors for nonadherence to a colonoscopy after a positive iFOBT in Northern Jutland. Of all the positive iFOBTs in 2020 we identified 278 who did not undergo a diagnostic colonoscopy.
Method: This study consists of two sections: A journal audit and a questionnaire. In the journal audit we collected data on comorbidity using Chalson Comorbidity Index (CCI), inflammatory bowel disease (IBD), hospital admissions and previous colonoscopies. The questionnaire was sent the electronic postal system e-boks. Of the initial 278 subjects 22 subjects had since died and of the remaining 256, 169 responded on the questionnaire yielding in a response rate of 66%.

Results: In the journal audit we identified 25% of the patients with ASA score ≥ 3. 10 % of the subjects was already diagnosed with IBD. Furthermore, we found that 65% had CCI score of 2. In the questionnaire 29 subjects reported a recent colonoscopy, 30 thought they had haemorrhoids and 20 received a subsequent colonoscopy. Interestingly we also found that 10 subjects thought colonoscopy to be so unpleasant that they did not want to undergo one, 19 subjects also couldn't classify why they did not have the colonoscopy.
Conclusion: This study highlights some areas of potential improvement within CRCS. Those already in a control programme for IBD perhaps may not be recommended to participate in the CRSC (though it already now is recommended they only participate after consultation with their practitioner), as it may result in unnecessary colonoscopies and the risks accompanied with a colonoscopy. A significant proportion of the patients, 20%, lacked a medical explanation for non-adherence, citing causes as feeling healthy, not knowing, feeling uncomfortable, thus indicating a lack of knowledge of the CRSC. In the future we suggest that patients with (recent colonoscopies (< 1-2 years)), may perhaps not be recommended to participate in CRSC to avoid unnecessary colonoscopies. In addition, patient education around the screening programme could be improved to improve the adherence.

Recurrence and survival following cytoreductive surgery and hyperthermic intraperitoneal chemotherapy for peritoneal metastases of colorectal origin

S. Ravn[1], M.F. Nielsen[1], M.M. Sørensen[1], J.A. Funder[1,2], L.H. Iversen[1,2]
[1]Aarhus University Hospital, Department of Surgery, Aarhus, Denmark, [2]Aarhus University, Department of Clinical Medicine, Aarhus, Denmark

Background: Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) have improved 5-year survival for patients with for peritoneal metastases (PM) of colorectal (CRC) origin. However, the recurrence rate remains high and little is known about differences in recurrence patterns for patients with synchronous (S) versus metachronous (M) PM. The aim was to describe recurrence patterns and overall survival in patients with synchronous (S) and metachronous (M) PM-CRC following complete CRS+HIPEC.
Method: The study was carried out as a prospective cohort study, including all patients with colorectal PM undergoing CRS+HIPEC at a single national treatment centre between June 2006 and December 2020. Patients were followed from the date of CRS+HIPEC until June 2022. In case of recurrence, follow-up was terminated, and only vital status (alive/death) was available after termination. Overall survival was calculated by the Kaplan-Meier method using the date of CRS+HIPEC until death or end of follow-up, whichever came first, and stratified by S-PM versus M-PM, respectively.
Recurrence patterns were categorized according to location: the peritoneum, multifocal (peritoneum + liver/lung metastases), isolated liver or isolated lung metastases and other.
Results: In total, 317 patients underwent CRS+HIPEC, among whom 188 patients (59.3%) had S-PM and 129 (40.7%) had M-PM.
During a median follow-up of 10.3 months (range: 0.2-93.6 months), 250 patients (78.9%) developed recurrent disease, of whom 81 (32%) patients had isolated peritoneal recurrence, 57 (23%) patients had multifocal recurrence, 45 (18%) patients had liver metastasis, 25 (10%) patients had lung metastasis and 42 (17%) patients had recurrent disease at other anatomic locations. The location of recurrence did not differ between patients with S-PM and M-PM.
Median overall survival did not differ between patients with S-PM vs. M-PM (S-PM 38.4 months (95% CI: 31.2, 46.8) vs. M-PM 40.8 months (95% CI: 28.8, 46.8).
Conclusion: In patients undergoing CRS+HIPEC for PM of CRC origin, recurrence is frequent but overall long-term survival is achievable. Overall, recurrence patterns and overall survival are similar between patients with synchronous and metachronous disease.

Perioperative metformin treatment to reduce postoperative hyperglycemia after colon cancer surgery - a randomized clinical trial

E. Palmgren Colov[1,2], R. Bojesen[1,2,3], C. Grube[1,2], R. Miedzianogora[1,2], F. Buzquurz[1,2], T. Fransgaard[2,3], F. Krag Knop[4,5], I. Gögenur[2,3]
[1]Slagelse Hospital, Kirurgisk Afdeling, Slagelse, Denmark, [2]Sjællands Universiteteshospital, Center for Surgical Science, Køge, Denmark, [3]Sjællands Universitetshospital, Kirurgisk Afdeling, Køge, Denmark, [4]Gentofte Hospital, Center for Clinical Metabolic Research, Hellerup, Denmark, [5]Herlev Hospital, Steno Diabetes Center, Herlev, Denmark

Background: Kirurgi udløser et stressrespons som fører til insulinresistens og risiko for postoperativ hyperglykæmi. Postoperativ hyperglykæmi er associeret med øget forekomst af komplikationer, længere indlæggelsestid og højere mortalitet. Associationen er særligt udtalt hos patienter uden diabetes. I dette studie undersøgte vi om metformin kunne nedsætte risikoen for postoperativ hyperglykæmi hos patienter uden diabetes efter elektiv koloncancerkirurgi.
Method: Studiet var et dobbeltblindet randomiseret studie hvor 48 patienter blev randomiseret til at få 500mg metformin eller placebo 3 gange dagligt i 20 dage op til deres elektive koloncanceroperation og 10 dage efter. Blodsukker blev målt flere gange dagligt efter operationen indtil slutningen af anden postoperative dag. Det primære outcome var andelen af patienter som havde mindst én blodsukkermåling over henholdsvis 7,7 mmol/l og 10,0 mmol/l. Komplikationer indenfor 30 dage efter operationen blev ligeledes rapporteret, og patienterne udfyldte Quality of recovery- 15 spørgeskemaer 5 gange i løbet af forsøgsperioden.
Results: Det mediane antal blodsukkermålinger pr patient var 9 i både metformin og placebogruppen. Ud af de 48 inkluderede patienter havde 21 (84,0%) i placebogruppen og 18 (78,3%) i metformingruppen mindst én blodsukkermåling over 7,7 mmol/l (p=0,72), og 13 (52,0%) havde en blodsukkermåling over 10,0 mmol/l i placebogruppen sammenlignet med 5 (21,7%) i metformingruppen (p=0.04). Der var ingen forskel på forekomsten af komplikationer eller i Quality of recovery-15 score imellem de to grupper.
Conclusion: Metformin nedsatte forekomsten af postoperativ hyperglykæmi over 10,0 mmol/l efter elektiv koloncancerkirurgi hos patienter uden diabetes.

The impact of socioeconomic factors on the risk of colorectal cancer recurrence: A national register-based study

S. Ravn[1], K. Fonager[2], O. Thorlacius-Ussing[1]
[1]Aalborg University Hospital, Department of Surgery, Aalborg, Denmark, [2]Aalborg University Hospital, Department of Social Science, Aalborg, Denmark

Background: Despite improved survival among patients with colorectal cancer (CRC), recurrence is still prevalent following curatively intended surgery. Higher socioeconomic status is associated with CRC survival, yet the effect of socioeconomic factors on the risk of CRC recurrence remains unknown.
Method: The study was a register-based national Danish cohort study including all CRC patients with stage III disease and no previous cancer, who underwent surgery from 2001-2017. Patients were followed until the end of 2018, and recurrence was identified in the Danish National registries using a validated algorithm. Socioeconomic factors were defined by 4 variables: Education level (short, medium, long), cohabitation (living alone, living with a partner), household income (1^{st} quintile, 2^{nd} quintile, 3^{rd} quintile, 4^{th} quintile) and place of residence (outer, rural, intermediate, city). The effect of socioeconomic factors on CRC recurrence was estimated by multivariate cox regression analyses treating all-cause mortality and other cancer as competing risks. All-cause mortality was categorized according to the leading cause of death (cancer-related/not cancer-related)
Results: In total, 35.873 patients were eligible. A higher education level was associated with increased risk of CRC recurrence (*hazard ratio (HR): medium vs. short 1.07 (1.03; 1.23) and long vs. short: 1.08 (1.02; 1.15)).* Recurrence was not associated with cohabitation, household income or place of residence.
Notable, as a competing risk, socioeconomic factors including low education level, cohabitation and low household income were associated with increased all-cause mortality risk ($p<0.05$ for all comparisons). The cancer-specific mortality was higher among patients living alone compared to patients living with a partner ($p<0.05$), whereas differences in education level, household income and place of residence did not influence cancer-specific mortality risk.
Conclusion: Our results indicate a potential paradox social inequality in CRC recurrence risk. Socioeconomic factors associate to increased all-cause mortality risk. Initiatives must be sought to improve survival in patients with low socioeconomic status.

The Impact of Crohn's Disease in Patients with Colorectal Cancer: A Danish Nationwide Cohort Study with propensity score matched analysis, 2009-2019

M. Pollen Johansen[1], M. Damsgaard Wewer[2], J. Burisch[2], P.-M. Krarup[1], A. Nordholm-Carstensen[1]
[1]Bispebjerg Hospital, Abdominalcenter K, Surgical Division, Copenhagen, Denmark, [2]Amager og Hvidovre Hospital, Gastrounit, Medical Division, Copenhagen, Denmark

Background: To investigate the impact of Crohn's Disease (CD) on all-cause mortality, patient- and cancer characteristics in patients with colorectal cancer (CRC) in a propensity score matched subgroup analysis.
Method: A nationwide cohort study of patients diagnosed with CRC in Denmark from January 1st 2009 to December 31st 2019 was conducted. Characteristics of cancer were retrieved from the Danish Colorectal Cancer Group registry and merged with the national Inflammatory Bowel Disease registry. The main outcome was all-cause mortality in CRC patients and CRC patients with CD. Cox regression analysis adjusted for age at CRC diagnosis and sex to estimate hazard ratios (HR). A propensity score matched analysis was applied to reduce the risk of bias, matching CD patients with rectal- and colon cancer 1:2 with CRC patients from the DCCGs registry. Patients were matched for age, sex, Charlson comorbidity index and UICC stage, in order to compare long term survival in a smaller cohort.
Results: In total, 38 077 CRC patients were included of whom 245 (0.6%) had CD. The median age at cancer diagnosis was 69 (60-76) for CD-CRC and 71 (64-78) for non-CD CRC, p<0.001. Tumors in the right colon were more frequent in the CD-CRC group and most common histological diagnosis was adenocarcinoma. CD-CRC patients had a lower rate of metastatic disease 37 (19%), compared with non-CD CRC patients 7610 (28%) p<0.019. In the survival analysis, CD was not associated with increased mortality. In rectal cancer, CD was significantly associated with higher mortality in the multivariate analysis, HR 1.79 (1.23, 2.59) p=0.002. After propensity score matching, 191 CD patients with colon cancer and 52 CD patients with rectal cancer were compared with 382 and 104 patients with colon and rectal cancer without CD. In the survival analysis, presence of CD was not associated with increased mortality in colon cancer (HR 1.06 (0.82,1.36) p=0.7) or rectal cancer (HR 1.25 (0.79,1.98) p=0.3).
Conclusion: In this national retrospective cohort study, we found a higher mortality for CD patients with rectal cancer overall, rectal cancer with perianal involvement and colon cancer with UICC stage III. In the propensity score matched analysis, we did not find an increased long-term mortality for CD patients with colon- and rectal cancer.

Outcomes of different antibiotic treatment regimens on post-operative complications and readmission in patients with gangrenous appendicitis

C. Ozen[1], M.C. Eberhard[2], A.G. Soerensen[2], P.C. Leutscher[3,4]
[1]Aalborg University, Department of Surgery, Aalborg, Denmark, [2]Aalborg University, School of Medicine and Health, Aalborg, Denmark, [3]North Denmark Regional Hospital, Centre for Clinical Research, Hjoerring, Denmark, [4]Aalborg University, Department of Medicine, Aalborg, Denmark

Background: The use of antibiotics in relation to acute gangrenous appendicitis varies from peri-operative single dose antibiotic treatment to three-day post-operative antibiotic treatment. However, it remains uncertain whether the latter regimen is superior to the former. The aim of this study was to investigate the outcomes of different types of antibiotic regimen in relation to occurrence of post-operative complications and hospital readmission.
Method: This study comprises all patients histopathological confirmed diagnosed with acute gangrenous appendicitis in the period March 2018 to December 2021 at the North Denmark Regional Hospital. The data collection included antibiotic treatment, length of stay, post-operative complications, and hospital readmission.
Results: There were 260 patients included in the study, the clinically evaluated perioperative distribution of appendicitis patients was as follows; phlegmonous (46%), gangrenous (31%), perforated/abscess (23%). The duration of antibiotic use of all patients was divided into single dose regimen (66%) and three-days regimen (34%).
Overall, 10% of patients had postoperative complications. In relation to all patients histopathological confirmed diagnosed acute gangrenous appendicitis patients, no significant difference between the two antibiotic regimens was seen in post-operative complications (p=0.085), however, perioperatively evaluated clinically the rate of postoperative complications in patients with perforated/abscess appendicitis (24%) is statistically higher than in patients with phlegmonous appendicitis (3%) (p<0.001).
Hospital readmission occurred in 5% of all patients. Similarly, patients with perforated/abscess appendicitis had statistically the highest rate of readmission (12%) (p=0.008), although no significant difference between the two antibiotic regimens was seen in hospital readmission (p=0.14)
There was no statistically significant difference in the need for re-operation among the groups (p=0.181).

Conclusion: Our study suggests that acute gangrenous appendicitis can be safely treated with peri- operative single dose antibiotic, without an increase in post-operative complications or hospital readmission.

Patient-led follow-up with the use of an advanced digital care guide to increase self management in rectal cancer patients

M.I. Drejer[1], I. Hovdenak[1], G.K. Sørensen[1], P. Christensen[1], T. Juul[1], H.V. Thaysen[1]
[1]Aarhus University Hospital, Dep. of Surgery, Aarhus N, Denmark

Background: Recent studies concerning patient-led follow-up have shown positive effect on rectal cancer patients' management of symptoms and timely reporting of clinical symptoms.
The aim of this project was to develop, test and implement an advanced digital care guide which will guide rectal cancer patients through their follow up pathway.
This project's main task is to transfer each of the steps in the patient's follow-up pathway into a digital care guide, which, via an app, will provide the patients with an overview of the complete follow-up pathway. The digital care guide will in addition contain important educational material regarding common late sequelae and signs of cancer recurrence, instructions on how to manage and react adequately to these symptoms. In addition, a systematic screening for late sequelae via ePROMs will facilitate early identification and treatment of late sequelae.
Method: First, each step of the follow-up pathway for rectal cancer patients was transferred into an advanced digital care guide, provided by Emento. Next, the educational content regarding common long-term sequelae and signs of cancer recurrence was meticulously developed, based on educational material previously developed for analogue use in a Danish multicenter RCT. Also, a digital symptom guide was developed to provide information on how to self-manage symptoms, and where to take contact if needed.
All content of the advanced digital care guide will be available for the patient throughout the complete three years follow-up pathway.
Relevant stakeholders were involved in developing the advanced digital care guide, including patients, doctors, nurses and secretaries.
Results: The development of the advanced digital care guide was initiated in May 2022 and is now ready for implementation. In a feasibility study, we will measure participation rate, quantity and patterns of digital activities, patient experienced barriers and facilitators, self-management, fear of recurrence and health literacy in 50 rectal cancer patients.
Conclusion: By increasing patients' self–management and improving patient-satisfaction we expect the advanced digital care guide to be advantageous to both the rectal cancer patients and the society.

Kollagenase-producerende bakterier findes hyppigt ved anastomoselækage efter kolorektal kirurgi

A.B. Jørgensen[1], I. Jonsson[1], L. Friis-Hansen[2], B. Brandstrup[1]
[1]Holbæk Sygehus, Kirurgisk Afdeling, Holbæk, Denmark, [2]Bispebjerg og Frederiksberg Hospital, Klinisk Biokemisk Afdeling, København, Denmark

Background: Nogle tarmbakterier kan danne enzymet kollagenase, som kan nedbryde de kollagene fibre i tarmvæggen. Dette kan være et led i patofysiologien bag anastomoselækage (AL). Formålet med dette systematiske review var at undersøge om disse bakterier er tilstede ved AL efter kolorektal kirurgi.
Method: Dette systematiske review er udført og rapporteret i henhold til PRISMA og AMSTAR guidelines. En studieprotokol blev registreret ved PROSPERO (CRD42022363454) forud for litteratursøgningen. Litteratursøgning blev foretaget i PubMed, EMBASE, Google Scholar og Cochrane CENTRAL den 9. april 2023 efter randomiserede og observationelle humane studier af AL efter kolorektal kirurgi. Det primære outcome var fund af bakterier med potentiale til at danne kollagenase. Risikoen for bias i studierne blev vurderet med Newcastle-Ottawa skalaen, eftersom alle de fundne studier var observationelle.
Results: Vi inkluderede 15 studier, med samlet set 52.945 patienter hvoraf 1.747 havde AL, og hvor bakteriologisk information fra enten afføring, slimhinde, resektat eller drænvæske var tilgængeligt. I 10 ud af 15 studies fandtes én eller flere bakterie arter som kan danne collagenase. Der var stor forskel i typen af prøvemateriale, analytisk metode og tidspunkt for prøveopsamling.

Studier som anvendte DNA-sekventering som analysemetode rapporterede ikke om fund af kollagenase-producerende bakterier.
Conclusion: Kollagenase-producerende bakterier findess hyppigt ved AL efter kolorektal kirurgi, men det er ikke muligt at fastslå patogeniciteten af bakterierne ud fra de tilgængelige studier.

Tarmens mikrobiom i præoperative screenings afføringsprøver er forskellige fra patienter med eller uden anastomoselækage efter kolorektal kirurgi

A.B. Jørgensen[1], L. Almer[2], J.A.S. Castruita[3], M.S. Pedersen[4], A. Alfaro-Núñez[5], E.A. Jensen[5], N. Kirkby[4], L. Friis-Hansen[2], B. Brandstrup[1]
[1]Holbæk Sygehus, Kirurgisk Afdeling, Holbæk, Denmark, [2]Bispebjerg og Frederiksberg Hospital, Klinisk Biokemisk Afdeling, København, Denmark, [3]Hvidovre Hospital, Klinisk Mikrobiologisk Afdeling, Hvidovre, Denmark, [4]Rigshospitalet, Afdeling for Klinisk Mikrobiologi, København, Denmark, [5]Næstved Sygehus, Klinisk Biokemisk Afdeling, Sekretariatet for Tarmkræftscreening, Næstved, Denmark

Background: Anastomoselækage (AL) er en alvorlig komplikation til kolorektal kirurgi, og incidensen afhænger blandt andet af hvor i tarmen anastomosen er konstrueret (1-2% for ileokoloske anastomoser, og omkring 10% for anastomoser på rektum). AL fører til forlænget indlæggelsestid, nedsat livskvalitet, øget risiko for recidiv af cancer samt øget mortalitet. I Danmark får alle borgere mellem 50-74 år tilbud om at deltage i screeningsprogrammet for kolorektal tarmkræft, og det er muligt at ekstrahere bakteriel DNA fra denne afføringsprøve, som kan bruges til at karakterisere tarmens mikrobiom.
Formålet med studiet var at anvende DNA sekventering til at analysere screenings afføringsprøver fra en kohorte af patienter med kolorektal cancer, til at karakterisere og sammenligne tarmens mikrobiom mellem patienter med eller uden AL.
Method: Der blev anvendt afføringsprøver som var indsendt til Sekretariatet for Tarmkræftscreening i Region Sjælland i perioden 2016-2018. Ved hjælp af data fra Danish Colorectal Cancer Group (DCCG), kunne vi identificere 18 patienter som var blev opereret for kræft i tyk- eller endetarmen i den periode, og som postoperativt havde AL (AL-gruppe), og hvor afføringsprøverne var tilgængelige. Disse patienter blev matchet i forholdet 1:2 med 36 lignende patienter (alder, køn, type af resektion, ryger status, ASA klassifikation) uden AL (Kontrolgruppe). Vi analyserede indholdet af bakteriel ribosom 16S RNA i screenings afføringsprøverne med tredje generations sekventering, for at identificere de bakterier, som var tilstede i afføringsprøverne.
Results: Mikrobiom sammensætningen var signifikant forskellig i de to grupper, vurderet ved principal coordinate analysis (PERMANOVA, $p = 0,01$). Kontrolgruppen havde et større indhold af *Bacteroidota* ($p < 0,05$), *Campylobacterales*, *Bacteroidales* ($p < 0,001$) samt *Campylobacteraceae* ($p < 0,001$), mens AL-gruppen havde et større indhold af *Burkholderiaceae* ($p < 0,001$). På slægtsniveau havde AL-gruppen et større indhold af *Ralstonia* and *Burkholderia* ($p < 0,001$), imens Kontrolgruppen havde et forøget indhold af *Campylobacter* and *Oridobacter* ($p < 0,001$).
Conclusion: Sammensætningen af tarmens mikrobiom forud for kolorektal cancer kirurgi og efterfølgende AL var signifikant forskellig fra en kontrolgruppe uden AL. Det kunne tyde på at bakterier fra slægterne *Campylobacter* og *Oridobacter* havde en beskyttende effekt over for udviklingen af AL, mens tilstedeværelse af bakterier fra slægterne *Ralstonia* og *Burkholderia* syntes at fremme AL.

Treatment strategies for pT1 rectal cancer: a retrospective analysis of the Danish Colorectal Cancer Group registry

H. Smith[1], P.-M. Krarup[1], N. Schlesinger[1], A. Nordholm-Carstensen[1]
[1]Bispebjerg Hospital, Abdominalcenter K, Copenhagen, Denmark

Background: Organ preservation strategies for patients with rectal cancer are increasingly common. In appropriately selected patients, local excision (LE) of pT1 cancers can reduce morbidity without compromising cancer-related outcomes. However, determining the need for completion surgery after LE can be challenging and it is unknown if prior LE compromises subsequent total mesorectal excision (TME). This study describes the current management of patients with pT1 rectal cancers.
Method: A retrospective national cohort study of the Danish Colorectal Cancer Group database, including patients with newly diagnosed pT1 cancers between 2016-2020. Patients were stratified

according to treatment into LE alone, completion TME after LE or upfront TME. The primary outcome was the proportion of patients undergoing initial LE
Results: 1056 patients were included. Initial LE was performed in 715 patients (67.7%), of whom 194 underwent completion TME (27.1%). The remaining 341 patients underwent upfront TME (32.3%). Patients undergoing LE alone were more likely to be male with low rectal cancers and greater comorbidities. The quality of LE specimens was higher in patients undergoing transanal LE when compared with endoscopic LE, with lower rates of R1 resection (28.7% versus 33.8%, $p < 0.001$) and lower rates of patients with missing/unassessable risk factors (26.1% versus 49.2%, $p < 0.001$). No differences in final specimen quality or peri-operative outcomes were noted between patients undergoing completion versus upfront TME. 85 patients (15.9%) had lymph node metastases (LNM). Pathological risk factors poorly discriminated between patients with and without LNM, with similar rates seen in patients with 0 (14.1%), 1 (12.0%) or 2 (14.4%) risk factors.
Conclusion: LE is a key component of the treatment of pT1 rectal cancer and does not appear to affect the outcomes of completion TME. Patient selection for completion TME remains a major challenge, with current stratification methods appearing inadequate.

Akut venøs trombektomi ved tyndtarmsiskæmi

A.M. Abdul Ghani[1], H. Schou Andersen[1], P. Fink[1], J. Tolstrup[2], J. Krzak[1], P. Helligsø[1]
[1]Sygehus Sønderjylland, Kirurgi, Aabenraa, Denmark, [2]Rigshospitalet, Kirurgi, København, Denmark

Background: Akut tarmiskæmi er en alvorlig tilstand, der skyldes utilstrækkelig blodtilførsel til tarmene. Venøse tromber i vena mesenterica superior eller vena porta er blandt de mere sjældne årsager til iskæmi. Ved længerevarende okklusion af disse opstår irreversibel iskæmi, hvor omfattende tarmresektion bliver nødvendig og i visse tilfælde resulterer i korttarmssyndrom eller død. I den akutte fase kan revaskularisering med trombektomi og stentbehandling (TIPS) være nødvendig for at bevare mest muligt af tarmen og bedre patientens prognose.
Method: Vi præsenterer en case, som beskriver en kombineret tilgang med minimal tarmresektion og akut trombektomi og TIPS mhp. at undgå korttarmssyndrom.
Results: 69-årig kvinde indlægges med diffuse mavesmerter, opkastninger og blodig diarré gennem 3 døgn. Biokemisk inficeret og let forhøjede levertal. Arteriepunktur viser laktatværdi på 3,4 stigende til 6,1. Akut CT-skanning viser suboptimal opladning af vena porta, vena mesenterica superior og v. lienalis med periportalt ødem, foreneligt med trombose i vena porta og ledsagende venøs stase i tyndtarmen med truende iskæmi. Ved akut eksplorativ laparotomi reseceres 40 cm nekrotisk tyndtarm ud af i alt ca. 250 cm. Der efterlades 120 cm ødematøst, hyperæmisk tarm samt 90 cm fuldstændig vital tarm. Patienten overflyttes akut til Rigshospitalet mhp. akut trombektomi og TIPS. Det lykkedes at få flow i vena porta og én af sidegrene til vena mesenterica superior. Ved 2. og 3. look findes 70 cm påvirket tyndtarm, dog med ICG-opladning, hvorfor man afstår fra resektion. Ved 4. look er 130 cm ud af ca. 290 cm resterende tyndtarm kun delvist vital, og bliver derfor reseceret. Der bevares i alt 160 cm sikkert vital tyndtarm og hele tyktarmen.
Conclusion: På baggrund af en minimal primær tarmresektion og hurtig overflytning til trombektomi og TIPS på højtspecialiseret enhed lykkedes det at genetablere flow i vena porta og én af sidegrenene til vena mesenterica superior inden irreversibel iskæmi af hele tyndtarmen. I alt 170 cm tyndtarm blev reseceret, men den kombinerede skånsomme tarmresektion, trombektomi og TIPS resulterede slutteligt i, at 160 cm vital tyndtarm og hele tyktarmen blev bevaret med forventning om, at patienten ikke udvikler korttarmssyndrom.

Comparison of the effect of electrical stimulation of the stomach or the sigmoid colon, in animals undergoing surgery and heated intraperitoneal chemotherapy

A.K. Martensen[1,2], C. Harlev[3,2], E.K. Petersen[3,2], M.M. Sørensen[1], L.H. Iversen[1,2], J.A. Funder[1,2]
[1]Aarhus University Hospital, Department of Surgery, Aarhus N, Denmark, [2]Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark, [3]Aarhus University Hospital, Department of Orthopedic Surgery, Aarhus N, Denmark

Background: Major abdominal surgery entails a large risk of developing prolonged postoperative ileus (POI). POI severely effects patients, as they experience nausea, vomiting and stomach pain. Currently, no efficient treatment exists. Recent studies indicate that gastrointestinal electrical stimulation may be beneficial as a treatment of POI. The aim of the present study is to investigate

the effect of gastrointestinal electrical stimulation of either the stomach or the sigmoid colon on the length of POI in animals undergoing surgery and heated intraperitoneal chemotherapy (HIPEC).
Method: Ten pigs underwent surgery according to a previously developed POI model, which results in 3-5 days without gastrointestinal function. Furthermore, a 90 min HIPEC regimen with Mitomycin C (37,8mg/m^2) was administered. Intraoperatively, animals were randomized to having a pacemaker attached to either the stomach or to the sigmoid colon. Subsequently, the abdomen was closed, and the animals observed at the animal housing facility. Daily observation regarding vomit, food intake and stool was made. When normal gastrointestinal function was restored, the animals were terminated.
Results: All 10 animals passed stool on the 1. or 2. postoperative day. There was no statistically significant difference between stomach or sigmoid pacing in time till passage of first stool (p=0,60), number of episodes with vomiting (p=0,81) or number of days till food intake (p=0,90).
Conclusion: In this randomized animal trial, we found no difference in clinical gastrointestinal function between the two groups receiving gastrointestinal pacing of either the stomach or the sigmoid colon. The study supports the idea of electrical stimulation as a potential treatment of POI in patients undergoing major abdominal surgery.

Systematic Screening for Sexual Dysfunction in Males Surgically treated for Rectal Cancer

T. Juul[1], P. Christensen[1], M. Krogsgaard[2], M.B. Lauritzen[3], B.S. Laursen[4], A.H. Mikkelsen[4], A. Thyø[5], The Danish Cancer Society Centre for Research on survivorship and Late Adverse Effects
[1]Aarhus University Hospital, Dep. of Surgery, Aarhus N, Denmark, [2]Zealand University Hospital, Dep. of Surgery, Køge, Denmark, [3]Aalborg University Hospital, Dep. of Surgery, Aalborg, Denmark, [4]Aalborg University Hospital, Sexological Center, Aalborg, Denmark, [5]Randers Regional Hospital, Dep. of Surgery, Randers, Denmark

Background: The prevalence of late sequelae after colorectal cancer treatment is high. Systematic screening for common late sequelae using electronic PROMs as part of the CRC follow up programme is currently being tested in six Danish surgical units. This study investigates the prevalence of sexual dysfunction among male rectal cancer patients, the patients' need for treatment, and associations between sexual dysfunction and clinical factors.
Method: PROMs completed by male patients 12 months after rectal cancer surgery were analysed. The five-item International Index of Erectile Function (IIEF) score was used to measure sexual function in sexually active patients. *Ad hoc* items were used to explore sexual activity level, causes of disrupted sexual life and self-rated sexual function. Clinical data were obtained from the Danish Colorectal Cancer Group database.
Results: From June 2020 until April 2023, 241 male rectal cancer patients completed the screening-survey 12 months after surgery. Only 14 (6%) declined to answer any questions about sexual function, leaving 227 patients available for analyses.
A total of 96 (42 %) patients were not sexually active prior to their diagnosis, while 60 (26%) reported to have resigned from sexual activity after their rectal cancer diagnosis. Among the remaining 71 (31%) who were still sexually active 12 months after surgery, the IIEF score could be calculated in 64 patients. Thirteen (20%) of those had severe/moderate and 22 (34 %) had moderate/mild erectile dysfunction. A permanent stoma and radiotherapy were associated with self-reported bad sexual functioning with OR 5.3 (2.4-12.0) and OR 2.7 (1.2-6.3), respectively. Thirty (23%) of those who were sexually active prior to their cancer diagnosis requested referral to "Clinic for Treatment of Sexual Dysfunction after Pelvic Organ Cancer" at Aalborg and Aarhus University Hospitals, which is independently run by nurses with a master's degree in clinical sexology.
Conclusion: Sexual dysfunction is common following rectal cancer treatment. Many males become sexual inactive after their rectal cancer diagnosis. Sexual dysfunction is associated with having a stoma and treatment with radiotherapy.
Systematic screening for sexual dysfunction enables early identification of all patients with sexual dysfunction and a need for professional help. Close to one in four of those who were sexually active at the time of diagnosis requested referral to professional sexual counselling.

En simpel skabelon til evaluering af hæmoridesygdom og resultatet af en operation i overensstemmelse med det Europæiske Kolorektale selskabs retningslinjer

A.H. Campos[1], H. D. Rørvik[2], B. Brandstrup[3], G. Olaison[1]
[1]Holbaek Sygehus, Surgery, Holbæk, Denmark, [2]Haukeland University Hospital Bergen, Acute and Digestive Surgery, Bergen, Norway, [3]University of Copenhagen, Faculty of Health and Medical Sciences, Copenhagen, Denmark

Background: Operation for hæmoridesygdom er en af de hyppigst udførte procedurer i Danmark med ca. 5000 operationer årligt. I et nyligt systematisk review af 34 studier af hæmorideoperationer fandt man 59 foskellige effektmål [1] Antallet af- og heterogeniciteten i disse effektmål afspejler manglende enighed og evidens for valget af den bedste behandling i en given situation. Det afspejler også, at hæmoridesygdom har forskellige sværhedsgrader, og at alle sværhedsgrader ikke skal behandles ens.Derfor er det vigtigt, at sværhedsgraden klassificeres korrekt. Det Europæiske Kolorektale selskab arbejder på at definere fælles måleinstrumenter et såkaldt ”core outcome set"(COS) ved behandlingen af hæmoridesygdom, som skal være validerede. Ifølge det Europæiske Kolorektale selskab, skal et COS for kirurgi indeholde vurdering af symptomer og sygedomens påvirkning af dagligt liv som hovedvariable, og som sekundære variable patientens tilfredshed. Disse parametre bør vurderes med ”patient reported outcome measures” (PROM). Desuden anbefales efter en eventuel operation rapportering vedrørende, patientens tilfredshed med operationen, tilbagefald og komplikationer.
Method: Ved at følge Cosmin-guidelines (Consensus-Based Standards for the Selection of Health Measurement Instruments) validerede vi hhv et spørgeskema for hæmoridesygdom - baseret på de 5 kardinale symptomer ved hæmoridesygdom - samt et spørgeskema til vurdering af hæmoridesygdommens påvirkning af livskvaliteten.
Results: Vores gruppe har for nylig præsenteret det første validerede instrument til vurdering af symptomer og livskvalitet for hæmorroidesygdom: ”Haemorrhoidal Disease Symptom Score” (HDSS), samt ”Short Health Scale for Haemorrhoidal Disease” (SHS_{HD})
Conclusion: HDSS og SHS_{HD} til vurdering af sygdomsspecifikke symptomer og helbreds relateret livskvalitet er enkle skabeloner, som er lette at bruge i klinisk praksis. De kan benyttes både til vurdering af hæmoridesygdommens sværhedsgrad og til vurdering af operationsresultatet. Skemaerne er valideret og i overensstemmelse med det Europæiske Kolorektale selskabs COS for hæmorider

Time trend in incidence of pilonidal disease

I.K. Faurschou[1,2,3], R. Erichsen[1,2], S. Haas[2,3]
[1]Aarhus University and Aarhus University Hospital, Department of Clinical Epidemiology, Aarhus, Denmark, [2]Randers Regional hospital, Pilonidal Disease Center, Department of Surgery, Randers, Denmark, [3]Aarhus University Hospital and Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark

Background: Pilonidal disease (PD) is a condition commonly encountered in clinical settings. Studies indicate a surge in occurrence over the past decades. However, current knowledge is based on small studies with few patients, selected age groups, or primarily men. The aim of the present study is to assess time trends in incidence and age distribution in a nationwide Danish setting.
Method: Using nationwide data from the Danish National Patient Registry and the Civil Registration System (1996-2019), we identified a cohort of 41,031 patients recorded with diagnostic or surgical procedure codes representing PD. We computed the incidence rate, incidence rate ratio (IRR) and, median age in 5-year intervals.
Results: The overall incidence of PD has increased from 27.3 (95% CI: 26.7-27.9) /100,000 PY in 1996-2000 to 39.8 (95%CI: 38.9-40.7) /100,000 PY in 2015-2019. For men, the incidence has increased from 38.2(95%CI: 37.1 – 39.2) to 57.1 (95%CI: 55.5 – 58.7) /100,000 PY and for women the incidence has increased from 16.7(95% CI: 16.0 – 17.4) to 22.6 (95% CI: 21.6 – 23.7) /100,000 PY. Comparing men to women, the IRR increased from 2.3(95%CI: 2.2 – 2.4) in 1996-2000 to 2.5(95%CI: 2.4 – 2.7) in 2015-2019. The median age at first contact has decreased at the same time-period from 27 to 25 years in men and from 25 to 23 years in women.
Conclusion: Since 1996, the PD incidence has increased significantly, notably affecting males the most and widening the gender gap. Simultaneously, median age at first contact has decreased. The increased burden of disease and surgery is not reflected within the literature and more studies are warranted to further develop our understanding of this condition.

Characteristics of abscess-forming pilonidal disease compared to non-abscess forming pilonidal disease

I.K. Faurschou[1,2], M.J. Sørensen[1], A. Thyø[1], D. Volden[1], H.T. Hougaard[1], S. Haas[1,2]
[1]Randers Regional hospital, Pilonidal Disease Center, Department of Surgery, Randers, Denmark, [2]Aarhus University Hospital and Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark

Background: Pilonidal disease (PD) may present varyingly as asymptomatic disease, abscess forming disease (acute inflammation, retention, and pits/sinuses) or non-abscess forming disease (no acute retention, but intermittent or chronic draining of pus and pits/sinuses). Little is known about the etiology, and it remains unclear why some patients form abscesses and others do not. The aim of this study was to investigate differences between abscess-forming pilonidal disease and non-abscess forming pilonidal disease.
Method: Our study included consecutive patients referred for elective treatment for PD. All participants completed a series of questions including demographic data, PD history including previous surgery, family history of PD, occupation, smoking, BMI, and symptoms. The examining physician registered clinical data including pits (number), defects (size, number), secondary sinuses, involvement below the coccyx, pilosity (Ferriman-Gallwey Scale), and screening for hidradenitis supporativa.
Results: From October 2022 to September 2023, 319 patients were treated at our clinic. Non-abscess forming PD was registered in 194 cases (61%) and abscess-forming PD in 125 cases (39%). Chronic elements in abscess-forming PD presented with fewer pits (p=0.056) and fewer defects (p<0.001) and less involvement of the crena (3,5 cm (IQR 2-7) vs. 4 cm (IQR 3-7), p=0.11) compared to the chronic elements in non-abscess forming disease. There were significantly more female patients (38% vs. 13%, p< 0.001) among abscess-forming PD. Patients with abscess-forming PD were older upon clinical visit (27 years (IQR 22;32) vs. 23 years (IRQ 19;30) (p< 0.001)), but with a longer duration of symptoms (29 (IQR 12;60) month vs. 18 (IQR 8;43) months)). They also have a higher BMI (p=0.008) and were less hirsute on the lower back/ buttocks (p=0.023).
Conclusion: Distinguishing abscess vs. non-abscess pilonidal disease reveals clinical and patient differences. Sub-categorizing PD can address varied risk factors and prognosis. Further studies needed.

Hidradenitis suppurativa in patients with pilonidal disease

I.K. Faurschou[1,2], M.J. Sørensen[1], A. Thyø[1], D. Volden[1], H.T. Hougaard[1], S. Haas[1,2]
[1]Randers Regional hospital, Pilonidal Disease Center, Department of Surgery, Randers, Denmark, [2]Aarhus University Hospital and Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark

Background: Pilonidal disease (PD) is a chronic inflammatory disease involving inverse recurrent suppuration, much like hidradenitis suppurativa (HS). The pathology of both conditions has been described as the follicular occlusion tetrade and share various common histological and immunohistochemical characteristics. The prevalence of HS in the general population is 2.10%. Studies using diverse cohorts provide estimates of PD in 4.6–30% of patients with HS. We aimed to find the prevalence of HS amongst patients with PD at our clinic.
Method: Using validated screening questions, we systematically screened all patients for HS when presenting with chronic PD in our clinic. HS patients were identified based on outbreaks of 'boils' during the last 6 months in predefined areas and further graded with a minimum of two boils giving a sensitivity of 90%, a specificity of 97% a positive predictive value of 96%.
Results: A total of 191 patients (male 152) with pilonidal disease were screened. Of these 15 patients (7.8% [95% CI 4.6-12.3]) were found positive for HS (10 male). The lesions most frequently affected the groin (66.6% [95% CI 40.7-86.6]), the genitalia (53.3% [95% CI 28.6-76.8]) and the armpits (46% [95% CI 23.2-71.3]). Patient categories of PD and PD+HS were comparable in terms of gender distribution (p=0.19), BMI (p=0.18), smoking status (p=0.21) and degree of pilosity (p=0.58). PD+HS patients were, however, significantly older (28 years vs. 24, p=0.016) than patients with PD alone, but with similar disease duration (36 months vs. 18 months, p=0.11).
Conclusion: We found a higher prevalence of hidradenitis suppurativa in patients with pilonidal disease compared to the general population. Patients with PD+HS present later than the average pilonidal patient. Longitudinal studies are warranted.

Association of protective loop transverse ostomy vs. loop ileostomy on clinical outcomes in patients undergoing minimal invasive TME for rectal cancer in a contemporary ERAS care pathway

R. Peuliche Vogelsang[1], R. Dahlin Bojesen[1], I. Gögenur[1,2], J. Ravn Eriksen[1]
[1]Zealand University Hospital, Department of Surgery, Køge, Denmark, [2]University of Copenhagen, Department of Clinical Medicine, Copenhagen, Denmark

Background: Total mesorectal excision (TME) with primary anastomosis and a temporary diverting stoma is the primary surgical approach for curatively intended treatment for mid and low rectal cancer. The most common method for fecal diversion is creating a loop ileostomy or loop transverse ostomy.
This study aimed to estimate the association between temporary loop transverse ostomy vs. loop ileostomy on clinical outcomes in patients undergoing minimally invasive TME for rectal cancer in an ERAS-compliant clinical care pathway.
Method: The study was conducted as an observational, single-center, uncontrolled before and after study, including data on patients undergoing TME with a diverting stoma between March 2016 and January 2023. All patients were treated in an identical ERAS clinical care pathway. Patients operated before March 2020 were subjected to diversion by a loop ileostomy, while all patients operated on after the intervention were diverted by loop transverse ostomy. The primary stoma function outcome was defined as a composite of high stoma output or additional IV fluid supplementation during index admission. The secondary outcomes were postoperative stoma complications, surgical complications, 30-day readmission, and length of index hospital stay (LOS). The association between exposure and the primary outcome was modeled using multivariate logistic regression.
Results: Overall, 160 patients were included. The median age was 64 (IQR 55-73) years, 117 (73%) patients were male sex, and the median BMI was 26 (IQR 24-29). Patients undergoing surgery with fecal diversion by loop transverse ostomy had better stoma function outcome (7.5% vs. 47.5%, $p<0.001$; OR_{ADJ} 0.06, 95% CI; 0.02-0.16 $p<0.001$). The operation time (174 mins vs. 210 mins, $p=0.001$), the postoperative surgical complication rate (33.8% vs. 51.3%, $p=0.037$), LOS (3 days vs. 5 days, $p<0.001$), readmission rates (13.8% vs. 28.8%, $p=0.033$), and the incidence of postoperative stoma complications (61.3% vs. 82.5%, $p=0.005$) were reduced in the loop transverse ostomy vs. loop ileostomy group. There were no differences in reoperation rates (13.6% vs. 6.6%, $p=0.1864$) among the groups.
Conclusion: Temporary loop transverse ostomy in patients undergoing TME for rectal cancer in an ERAS setting was associated with improved clinical outcomes following index surgery. Further investigations of protective fecal diversion in ERAS-compliant rectal cancer surgery settings are warranted.

Preoperative prediction of lymph node status in patients with colorectal cancer. Developing a predictive model using machine learning

M. Hartwig[1], K. Bräuner[1], R. Vogelsang[1], I. Gögenur[1]
[1]University of Copenhagen, Department of Surgery, Koege, Denmark

Background: For patients with an increased risk of adverse postoperative outcomes related to standard surgical treatment of colon cancer, it is of high value to preoperatively predict the risk of LNM, since more gentle surgical treatment approaches are available for patients without LNM. Our aim was to develop a prediction model to determine the probability of no lymph node metastasis (pN0) in patients with colorectal cancer preoperative.
Method: We used data from four Danish health databases on patients with colorectal cancer diagnosed between 2001 and 2019. The registries were harmonized into one common data model (CDM). Patients with clinical T4 tumors, undergoing palliative or acute surgery, and patients undergoing neoadjuvant therapy, were excluded. Preoperative data was used to train the model. A postoperative model including tumor specific variables potentially available after local tumor resection was also developed. Additionally, both models were compared with a model based on age, sex and clinical N stage to resemble current standards. A Least Absolute Shrinkage and Selection Operator (LASSO) logistic regression analysis for prediction was used.
Results: In total, 35.812 patients with 16.802 variables were identified in the CDM, and 194 variables affected the probability of pN0 preoperative. The area under the receiver operating characteristic curve (AUROC) was 0.64 (95% CI 0.63 – 0.66), and area under the precision recall curve (AUPRC) was 0.75 (95% CI 0.74-0.76). Mean predicted risk was 0.649, observed risk was

0.650 and calibration-in-large was 0.998. Adding histopathological data from the tumor improved the model slightly by increasing AUROC to 0.69. In comparison, the AUROC of current standard clinical staging model was 0.57.
Conclusion: Using Danish national patient registry data in a machine learning based predictive model showed acceptable results and outperforms current tools for clinical staging in predicting pN0 status in patients scheduled for CRC surgery.

Langsomt skærende, løs setonligatur efterfølgt av senare fistulotomi, effekt på heling af idiopatisk perianal fistel og indflydelse på anal kontinens

G. Olaison[1], L. Schrader[1], B. Brandstrup[1,2]
[1]Holbæk Sygehus, Department of Surgery, Holbæk, Denmark, [2]University of Copenhagen, Institute of Clinical Medicine, Copenhagen, Denmark

Background: Der er observationer, at selv uden stramning vil en seton-ligatur med tiden migrere mod huden og bevæge fistelkanalen distalt for at blive mere overfladisk og at fistelen derefter kan spaltes uden indflydelse på den anale inkontinens.
Studiets formål: At undersøge evnen til at helbrede perianale fistler ved hjælp af en "langsomt skærende, løs setonligatur og trinvis fistulotomi ", tiden nødvendig med setonligatur, recidiver, indflydelsen på anal kontinens, helbredsrelateret livskvalitet (HRQoL) og patienttilfredshed.
Method: Enkelt center observationsundersøgelse. Vi gennemgik journalerne for alle patienter med primære operationer fra den 1. januar 2009 til den 31. december 2018. Patienterne besvarede en spørgeskema før og efter operationen om anal kontinens (St. Mark's inkontinensscore) og HRQoL helbredsreatert livskvalitet SHS (The Short Health Scale) og efter operation og patientilfredshed. Ved høje fistler kunne vi identificere forlöbet ved en ekskision af gangen i den fibrøse skede, der omgav gangen.Ved lave fistler kunne vi identificere den indre åbning efter sondering, sommetider hjulpet af injektion af brintperoxid.
Vi sigtede mod at have en 3-4 cm lang fistelgang og placere ligaturen inden for balderanden, så patienterne ikke sad på ligaturen, der giver smerter..
Results: Fyrre-tre patienter (37 mænd, 6 kvinder) blev inkluderet. I begyndelsen blev 41 ud af 43 helbredt (95%). Tre patienter (7%) havde et recidiv, to blev helbredt efter genbehandling. Medianopfølgningen var 55 måneder (IQR, 4). Fireog-tredive patienter (79%) besvarede spørgeskemaet. Ved opfølgningstidspunktet var tre og halvfems (93%) patienter helbredt. Den gennemsnitlige tid behandlet med setonligeringsprocessen hos de helbredte patienter var 13 måneder (IQR, 14). St. Mark's inkontinensscore før operationen var median 2 (IQR, 9), og efter operationen var den median 1 (IQR, 4) (score er graderet fra 0-24, hvor 0 er ingen symptomer) . The Short Health Scale forbedrede sig fra median 20 (IQR, 5) før operationen til 5 (IQR, 5) efter operationen, $p < 0,001$ (score er graderet fra 0-20, hvor 5 er bedst muligt) . Patienttilfredshed var median 1 (= meget tilfreds) (IQR, 1).
Conclusion: En "langsomt skærende, løs seton-ligatur efterfulgt af senare fistulotomi", helbreder langt de fleste perianale fistler med mindre eller ingen indflydelse på kontinens og få gentagelser. Patientrapporteret HRQoL forbedres meget, og patienttilfredsheden er høj.
Teknikken har sandsynligvis de laveste omkostninger ved behandling af fistler.

Metformin induced changes in gene expression in non-diabetic patients before and after elective colon cancer surgery – a randomized trial

E. Palmgren Colov[1,2], L. Balsevicius[2], R.D. Bojesen[2,1,3], C. Grube[1,2], R. Miedzianogora[1,2], F. Buzquurz[1,2], T. Fransgaard[2,3], F.K. Knop[4,5], T. Litman[6], I. Gögenur[2,3]
[1]Slagelse Hospital, Kirurgisk Afdeling, Slagelse, Denmark, [2]Sjællands Universiteteshospital, Center for Surgical Science, Køge, Denmark, [3]Sjællands Universitetshospital, Kirurgisk Afdeling, Køge, Denmark, [4]Gentofte Hospital, Center for Clinical Metabolic Research, Hellerup, Denmark, [5]Herlev Hospital, Steno Diabetes Center, Herlev, Denmark, [6]Københavns Universitet, Department of Immunology and Microbiology, København, Denmark

Background: Kirurgi udløser et stressrespons med metaboliske og immunologiske forandringer. Insulinresistens med risiko for postoperativ hyperglykæmi er en del af dette respons. Postoperativ hyperglykæmi, særligt hos patienter uden diabetes, er associeret med øget forekomst af komplikationer, højere mortalitet og længere indlæggelsestid. De fleste studier som har undersøgt hvordan man kan mindske postoperativ hyperglykæmi har behandlet med insulin. Insulin er effektivt men medfører en øget risiko for hypoglykæmi. Metformin er det mest udbredte

medikament til behandling af type 2 diabetes, men på trods af at stoffet har været kendt i mange år finder man til stadighed nye virkningsmekanismer. I dette studie undersøgte vi genekspression ved metformin- og placebobehandling før og efter koloncancerkirurgi hos patienter uden diabetes.
Method: Studiet var et dobbeltblindet randomiseret studie hvor patienter uden diabetes blev randomiseret til 500 mg metformin eller placebo 3 gange dagligt 20 dage inden og 10 dage efter elektiv koloncancerkirurgi. Der blev taget blodprøver ved inklusion, inden operationen, dagen efter operationen samt ti dage efter operationen. Genekspression blev undersøgt med Nanostrings Metabolic Pathways Panel. Kun patienter med blodprøver svarende til alle fire tidspunkter blev inkluderet i genekspressionsanalysen.
Results: 48 patienter blev randomiseret og opereret. Ud af disse var der 34 tilbage efter eksklusion af patienter med en manglende blodprøve eller hvor normalisering og kvalitetskontrol af data viste lav prøvekvalitet eller ekstreme outliers. Analyse af interaktionen mellem behandlingsgruppe og tidspunkt for blodprøvetagning viste at metformin inducerede ændret genekspression af 10 gener hen over forløbet af studiet sammenlignet med placebo med en log2 fold change der var større end 0,5 og en FDR justeret *p* værdi over 0,05. Sammenligning af genekspression mellem metformin og placebogruppen til hvert enkelt tidspunkt viste forskellig ekspression af 3 gener ved inklusion, 10 gener inden operationen, 7 gener dagen efter operation og 5 gener ti dage efter. Inden operationen var gener relateret til det innate immunrespons og inflammation nedregulerede i metformingruppen, mens man dagen efter så nedregulering af gener involveret i metabolisme, immunfunktion og inflammation.
Conclusion: Perioperativ metforminbehandling ved elektiv koloncancerkirurgi medførte ændret genekspression både før og efter operationen hos patienter uden diabetes.

The association between postoperative hyperglycemia and complications after elective colorectal cancer surgery in patients without diabetes – a propensity score matched study

E.P. Colov[1,2], A.W. Rosen[2,3], J.S.R. Clausen[2,4], I. Gögenur[2,3]
[1]Slagelse Hospital, Kirurgisk Afdeling, Slagelse, Denmark, [2]Sjællands Universiteteshospital, Center for Surgical Science, Køge, Denmark, [3]Sjællands Universitetshospital, Kirurgisk Afdeling, Køge, Denmark, [4]Hvidovre Hospital, Gastroenheden, Hvidovre, Denmark

Background: Kirurgi udløser et stressrespons med metaboliske og immunologiske forandringer. Disse forandringer indbefatter insulinresistens som kan føre til postoperativ hyperglykæmi. Postoperativ hyperglykæmi er associeret med øget risiko for komplikationer og højere mortalitet. Hovedparten af de studier der har undersøgt området har fokuseret på kardiovaskulær kirurgi eller en blanding af flere forskellige typer af kirurgi. I dette studie undersøgte vi associationen mellem postoperativ hyperglykæmi efter elektiv kolorektalcancerkirurgi og forekomsten af komplikationer samt mortalitet hos patienter uden diabetes.
Method: Studiet var et retrospektivt propensity score matchet kohortestudie baseret på data fra Danish Colorectal Cancer Group (DCCG) kombineret med data fra Landspatientregisteret, Laboratoriedatabasen og Lægemiddelstatistikregisteret. Patienter med en glukosemåling over 10,0 mmol/l første eller anden postoperative dag blev matchet 1:1 med patienter uden en måling over 10,0 mmol/l. Associationen mellem postoperativ hyperglykæmi og komplikationer indenfor 30 dage, infektiøse komplikationer samt 30-dages og 1-års mortalitet blev undersøgt.
Results: Fra DCCGs database blev der fra 1. januar 2014 til 31. december 2019 fundet 14463 patienter uden diabetes som fik foretaget elektiv operation for kolorektalcancer med kurativt sigte. Af dem havde 762 patienter mindst én blodsukkermåling første eller anden postoperative dag, og 127 af dem havde en måling over 10,0 mmol/l. Det var muligt at propensity score matche 113 af de 127 patienter med patienter som også havde en blodsukkermåling men ingen værdi over 10,0 mmol/l. I gruppen med hyperglykæmi havde 52,2% af patienterne en komplikation sammenlignet med 40,7% i gruppen uden hyperglykæmi (OR 1.59, 95% (CI) 0.94-2.73, p=0.08). Signifikant flere patienter i gruppen med hyperglykæmi (15,9%) havde en infektiøs komplikation sammenlignet med 7,1% i gruppen uden hyperglykæmi (OR 2.51, 95% CI 1.07-6.37, p= 0.04). Der var ingen forskel på mortaliteten i de to grupper.
Conclusion: Der sås ikke signifikant forskel på den overordnede forekomst af komplikationer indenfor 30 dage, men hyperglykæmi over 10,0 mmol/l var associeret med øget forekomst af infektiøse komplikationer.

Clinical outcomes after Bascoms cleft lift surgery a prospective study

N. Pedersen[1], I.K. Faurschou[2,3], M.J. Sørensen[2], M.L. Friis[4], A.G. Pedersen[2], S. Haas[2,3]
[1]Aalborg University Hospital, Department of Surgery, Aalborg, Denmark, [2]Randers Regional hospital, Pilonidal Disease Center, Department of Surgery, Randers, Denmark, [3]Aarhus University Hospital and Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark, [4]Aalborg University Hospital, Nordsim, Aalborg, Denmark

Background: Pilonidal disease (PD) is a common condition particularly affecting the young population. PD is known to cause significant morbidity and is associated with substantial healthcare costs. The disease is poorly understood, and optimal treatment is still debated, however, off midline closure techniques have become the standard of care in more advanced cases. In this study, we evaluate the surgical outcomes following Bascoms Cleft Lift (BCL) on a large Danish cohort from a high-volume center.
Method: The study is based on a prospective database established in 2016 at Randers Regional Hospital. All patients undergoing BCL surgery from June 2016 to October 2022 were registered. Indications for BCL surgery were primary extensive manifestation, non-healing wounds following previous elective surgery, or recurrence.
Results: 560 patients underwent BCL surgery from June 2016 to October 2022. 190 (34 %) patients were operated due to primary extensive manifestation, 192 (34 %) due to non-healing wounds and 178 (32%) due to recurrence.
Patients had a mean age at time of surgery of 22.7 ± 9 years though patients in the recurrence group were significantly older ($p<0.001$). The three groups were comparable in terms of BMI (overall mean was 27± 4.7, $p=0.3$), but differed in age at disease debut, non-healing wound patients being significantly younger ($p=0.01$), and there were significantly more smokers and previous smokers in the recurrence group ($p<0.001$). Further, gender distribution differed with significantly less women in the group of primary extensive disease ($p< 0.001$) compared to a more recognizable gender distribution in the two other groups (ratio 1:5).
Overall, 418 (74.6%) healed uneventfully with no difference between groups ($p=0.5$). Among the patients with persisting closure defects median time to healing was 7 months (range 5;34). 40 (7.1%) patients presented with recurrence over a median follow up time of 49 months (range 2;101).
Conclusion: Treatment of advanced pilonidal disease remains challenging with a high rate of wound complications and recurrences stressing the need for dedicated care. Differences in demography based on indication for surgery call for further studies.

Immunonutrition in the elective colorectal cancer surgery setting – a retrospective clinical study

H. al Fartoussi[1], K. Bendix[1], L. Walker[1], M. Nielsen[1], M. Madsen[1]
[1]Slagelse Sygehus, Kirurgisk, Slagelse, Denmark

Background: Immunonutrition (IN) er et kosttilskud med optimal aminosyreprofil og omega-3 sammensætning, der kan hjælpe til hurtig ernæringsoptimering inden kirurgi som en del af præ-hablitering. En metaanalyse fra 2021 viste, at der var signifikant reduktion i infektiøse komplikationer og sårinfektioner hos patienter, der modtog IN, hvilket var årsagen til, at dette blev implementeret som en del af klinisk praksis på Kirurgisk Afdeling, Slagelse pr. 1/3/22. Dog har størrelsen på de undersøgte populationer i tidligere randomiserede studier været relativt små. Dette studie har til formål at undersøge effekten af præoperativ IN på infektiøse komplikationer, sårinfektioner, generelle komplikationer samt indlæggelsesvarighed hos patienter, der opereres elektivt for colon – eller rektumcancer.
Method: Retrospektiv klinisk undersøgelse, hvor der via elektroniske patientjournaler blev indsamlet data på det præ – og postoperative forløb fra 1/3-21 til 1/3-23. Data blev opsamlet via Sundhedsplatformen, indtastet i RedCap og analyseret i R v.4.2.0. Infektiøse komplikationer blev defineret ved opstart af antibiotika, feber over 38.5 grader efter andet postoperative døgn (POD2) og CRP over 200 efter POD2. Komplikationer blev graderet med Clavien-Dindo skalaen .
Results: Resultaterne repræsenterer præliminære data fra 122 ud af 366 patienter. Af de 122 patienter havde 50 modtaget præ- og postoperativ Oral Impact og 72 havde ikke. Vi fandt non-signifikante forskelle i infektiøse komplikationer ($p = 0.965$), indlæggelsesvarighed ($p = 0.156$) og Clavien-Dindo graderinger af postoperative komplikationer ($p = 0.567$).
Conclusion: Denne præliminære analyse viste ingen fordele ved perioperativ administreret IN målt på infektiøse komplikationer, generelle komplikationer eller indlæggelsesvarighed. Vi afventer de resterende data før en endelig konklusion, men opfordrer til flere større randomiserede studier til at undersøge fordelene ved immunonutrition til den kolorektale patientgruppe.

Optimizing preoperative nutrition and physical function in colon cancer patients

M. Stadelhofer[1], A. V. Thyø[1], H. R. Dalby[1], K. J. Emmertsen[1]
[1]Randers Regional hospital, Surgical Department, Randers NØ, Denmark

Background: Low body mass index and recent weight loss can have a negative impact on post-operative course with increased risk of complications and mortality following colon cancer resection. Prehabilitation with optimisation of nutrition and physical function positively utilizes the period before surgery to improve postoperative recovery. This study aims to assess the feasibility of a prehabilitation programme for patients with colon cancer undergoing curatively intended resection.
Method: The study is a feasibility study including patients with colon cancer undergoing elective surgery at Randers Regional Hospital from September 2022 to June 2023. The intervention consisted of 20 minutes of daily physical activity as well as a nutritional supplement of 3 nutrition drinks daily from the day of diagnostic colonoscopy until surgery. Patients included in the non-intervention group received standard advice regarding exercise and nutrition. Compliance with the intervention and subjective feeling of inclusion in own course of disease as well as pre-, peri- and post-operative course were evaluated using questionnaires and medical records review.
Results: We initially included 95 patients (70,9% inclusion rate), of which 32 was excluded since no resection was preformed (due to disseminated disease, patient choice, or severe frailty). 32 patients were included in the intervention group, and 31 in the non-intervention group. There was no difference in age or gender in the two groups. Data analyses identified that 69% of participants had a compliance-score above 75% with the nutritional intervention and 88% had a compliance-score above 75% with the physical activity intervention. There was no significant difference in subjective feeling of inclusion in own course of disease between the intervention and non-intervention group, although we observed a trend towards a higher feeling of inclusion in the intervention group.
Conclusion: In a prehabilitation programme for patients with colon cancer undergoing resection, we found a satisfying compliance with our prehabilitation intervention, indicating that patients are willing and able to participate. The study emphasizes the importance for future studies to investigate the effects of prehabilitation on recovery and quality of life.

2.1 Hepatopancreaticobilliary (HPB)

A phase II-study of electroporation potentiated immunotherapy in liver metastatic pancreatic cancer (EPIC-1)

R.V. Flak[1], S. Christensen[2], M.T. Stender[1], N.D. Sølvsten[1], G. Naujokaite[3], O. Tcacenco[3], S. Detlefsen[4], R. Agger[5], E. Kofod-Olsen[5], L.Ø. Poulsen[2], S. Shim[2], O. Thorlacius-Ussing[1], M. Ladekarl[2]
[1]Aalborg Universitetshospital, Mave og tarmkirurgisk afdeling, Aalborg, Denmark, [2]Aalborg Universitetshospital, Onkologisk afdeling, Aalborg, Denmark, [3]Aalborg Universitetshospital, Radiologisk afdeling, Aalborg, Denmark, [4]Odense Universitetshospital, Afdeling for klinisk patologi, Odense, Denmark, [5]Aalborg Universitet, Department of Health Science and Technology, Aalborg, Denmark

Background: Pancreascancer (PC) er den fjerde hyppigste årsag til kræftdød i verden. Dette skyldes sen diagnose, aggressiv tumorbiologi og resistens overfor kemoterapi. Immune-checkpoint-inhibitorer (ICI) har haft imponerende resultater i adskillige kræftformer, men har ingen effekt på PC. Flere dyreforsøg vist at ablation med irreversibel elektroporation (IRE) kan gøre PC følsom overfor ICI og andre typer kræft. I dette studie var målet at undersøge effekten og sikkerheden af kombineret IRE og ICI hos patienter med levermetastatisk PC.
Method: Patienter i god performance status med progression under eller intolerance overfor første-linje kemoterapi blev inkluderet i et ikke-kontrolleret prospektivt studie. Inkluderede patienter blev behandlet med pembrolizumab (400mg hver 6. uge) og IRE imod en enkelt levermetastase på tiendedagen efter første behandling. CT-skanninger blev udført ved baseline, 14 dage efter IRE og hver anden måned efterfølgende. Blod- og vævsprøver blev indsamlet ved baseline, dagen før IRE og på første postablative døgn.
Results: Inklusionen blev stoppet ved interim analyse efter otte behandlede patienter grundet tidlig progression hos alle patienter. Ingen alvorlige bivirkninger til medicinen eller kirurgiske komplikationer blev registreret. Longitudinelle tumorvolumenbestemmelser viste eksponentiel

tumorvækst før, under og efter behandlingen. Flowcytometriske analyser viste en stigning i cirkulerende monocytiske myeloid-deriverede suppressor celler umiddelbart efter IRE og et fald i plasmacytiske dendritiske celler efter ICI. I de øvrige analyserede immuncellelinjer blev der ikke fundet nogen forandringer. Longitudinelle RNA-ekspressionsanalyser af tumorvæv er i gang.
Conclusion: Kombineret IRE og pembrolizumab har ingen relevant klinisk effekt på tidligere behandlet metastatisk PC.

Novel powered endoscopic debridement catheter for endoscopic transmural necrosectomy of pancreatic walled-off necrosis

G.A. Olsen[1], P.N. Schmidt[1], S. Novovic[1,2], E.F. Hansen[1], J.G. Karstensen[1,2]
[1]Copenhagen University Hospital Hvidovre, Pancreatitis Centre East, Gastro Unit, Hvidovre, Denmark, [2]University of Copenhagen, Dept. of Clinical Medicine, Copenhagen, Denmark

Background: The need for endoscopic necrosectomy (EN) has increased dramatically as endoscopic EUS-guided drainage has become gold standard for treatment of pancreatic walled-off-necrosis (WON). Recently, an innovative powered endoscopic debridement system (EndoRotor, Interscope Inc., Northbridge, MA, USA) designed to excise and remove necrotic tissue within the WON was introduced specifically for EN with promising results. Whereas the first-generation EndoRotor catheter had an outer diameter of only 3.0 mm, a larger catheter with a diameter of 5.0 mm has now been introduced. This study evaluates the novel EndoRotor catheter, NecroMax 6.0, for EN in patients with WON.
Method: This single-center retrospective study was performed using prospectively collected data from consecutive patients treated for WON with the NecroMax 6.0 catheter. Ability to perform EN, malfunction of the device, clinical resolution, and safety were evaluated.
Results: Twenty patients underwent a total of 30 EN procedures with the NecroMax 6.0 catheter. The median age of the patients was 52.0 years [IQR 35.3] and 14 (70.0%) were male. The median size of the WON was 24.5 cm [IQR 8.5]. The median computed tomography severity index (CTSI) was 8.5 [IQR 3.3] and the median modified CTSI (mCTSI) was 8.0 [IQR 2.0].
In addition to procedures with the NecroMax 6.0, all patients had EN procedures performed with snares. Further, five patients (25.0%) had necrosectomy performed with the 3.2 catheter in addition to the 6.0 catheter and snares. The median duration of necrosectomy with the 6.0 catheter was 60.0 minutes [IQR 52.5] per procedure.
In one procedure (3.3%), necrosectomy was impaired due to excessive bending of the endoscope. In six procedures (20.0%), necrosectomy had to be terminated prematurely due to catheter malfunction (n=3), console failure (n=1), and clogging of the catheter with solid debris (n=2). Clinical resolution was observed in 18 of 20 patients (90.0%). Two patients (10.0%) died from multi-organ failure before resolution of the WON.
One patient (3.3%) developed symptoms of peritoneal reaction following necrosectomy with the 6.0 catheter, possibly caused by perforation of the WON into the peritoneal cavity. The patient was treated with laparoscopic peritoneal lavage and drainage and recovered without further interventions. No further procedure-related adverse events were identified.
Conclusion: Endoscopic necrosectomy with the NecroMax 6.0 catheter seems technically feasible with a low rate of adverse events.

EUS-guided drainage of large, walled-off pancreatic necroses using plastic double pigtail stents vs. lumen-apposing metal stent (PLAMS): a single-centre, open-label, randomized, controlled, superiority trial

J.G. Karstensen[1,2], S. Novovic[1,2], E.F. Hansen[1], A.B. Jensen[3], H.L. Jørgensen[4,2], M.L. Lauritsen[1,2], M. Werge[1], P.N. Schmidt[1]
[1]Copenhagen University Hospital - Amager and Hvidovre, Pancreatis Centre East, Gastro Unit, Hvidovre, Denmark, [2]University of Copenhagen, Department of Clinical Medicine, Copenhagen, Denmark, [3]Copenhagen University Hospital - Amager and Hvidovre, Dept of Radiology, Hvidovre, Denmark, [4]Copenhagen University Hospital - Amager and Hvidovre, Department of Clinical Biochemistry, Hvidovre, Denmark

Background: In treating pancreatic walled-off necrosis (WON), lumen-apposing metal stents (LAMS) have not proven superior to the traditional, double pigtail technique (DPT). Among patients with large WON (>15 cm) and their associated, substantial risk of treatment failure, the increased

drainage capacity of a novel 20 mm LAMS might improve clinical outcomes. Hence, we conducted a study comparing the DPT and 20 mm LAMS in patients with large WON.
Method: A single-centre, open-label, randomized, controlled superiority trial using an endoscopic step-up approach in patients with WON exceeding 15 cm in diameter. The primary endpoint was the number of necrosectomies needed for clinical success, while the secondary endpoints included technical success, adverse events, length of stay (LOS), and mortality.
Results: Twenty-two patients were included in the DPT group and 20 in the LAMS group, with no significant differences in patient characteristics. The median size of WON was 24.1 cm (P25-P75: 19.6-31.1). The technical success rates were 100% for DPT and 95% for LAMS (p=0.48), while clinical success rates were 95.5% and 94.7%, respectively (p=1.0). The mean number of necrosectomies was 2.2 for DPT and 3.2 for LAMS (p=0.42). Five patients (12%) developed procedure-related serious adverse events (DPT=4, LAMS=1, p=0.35). The median LOS was 43 (P25-P75:40-67) and 58 days (P25-P75:40-86) in the DPT and LAMS groups (p=0.71), respectively, with an overall mortality of 4.8%.
Conclusion: In this randomized control trial comparing DPT and LAMS for transgastric drainage of large pancreatic WON, we found that LAMS are not superior to DPT, as both result in comparable numbers of necrosectomy, risk of adverse events, LOS, and mortality.

Effect of postoperative complications on long-term outcomes following resection for pancreatic and periampullary cancers

S. Kollbeck[1,2], C. Palnæs Hansen[1], J.H. Storkholm[1,3], M. Sillesen[1,2]
[1]Rigshospitalet, Department of Organ Surgery and Transplantation, Copenhagen, Denmark, [2]Copenhagen University Hospital, Rigshospitalet, Center for Surgical Translation and Artificial Intelligence Research (CSTAR), Copenhagen, Denmark, [3]Imperial College NHS trust, Hammersmith Hospital, Department of Surgery, London, United Kingdom

Background:

Postoperative complications following pancreaticoduodenectomy affect up to 40% of cases (Hartwig et al 2013). However, our understanding of the long-term impact of postoperative complications on patient outcomes, particularly overall survival, remains limited.

Method: In this retrospective cohort analysis, we explored the association between postoperative complications and overall survival (OS) in patients who underwent pancreaticoduodenectomy for localized pancreatic and periampullary cancers at Rigshospitalet in Copenhagen between 2008 and 2022. Patients who underwent exploratory laparotomies and histologies other than adenocarcinoma were excluded. The primary outcome was defined as overall survival. Secondary outcome was the completion of intended adjuvant chemotherapy. Registreret postoperative complications, defined as Clavien Dindo Grade >IIIa, included leakage of the biliary, pancreatic or gastroenteric anastomosis, wound rupture, and the development of intraabdominal abscess. We employed Cox regression to analyse OS in a multivariate approach, accounting for relevant confounders (age, gender, TNM stage, ASA Score).
Results:

Our analysis included a total of 931 patients. We observed 231(24.8%) complications with Clavien Dindo Grade > IIIa. Patients who developed intraabdominal abscesses following pancreaticoduodenectomy exhibited a significantly lower completion rate of adjuvant chemotherapy (95.2% vs. 65%; p = 0.009) and had a shorter overall survival compared to patients without this complication in multivariate analysis (HR 2.38, p = 0.05). Interestingly, both biliary and pancreatic anastomotic leakage significantly influenced the completion rate of chemotherapy (49.4% vs. 67.9%; p = 0.001 and 48.8% vs. 67.1%; p = 0.02, respectively). However, we did not observe a significant impact on overall survival in these groups (p > 0.05).

Conclusion: Postoperative complications, especially intraabdominal abscess, can affect long term outcomes. Further in-depth analysis is necessary to gain a better understanding of these results.

Piperacillin/tazobactam concentrations in the liver and biliary system - evaluation of the current perioperative prophylaxis regimen

L.L. Pontoppidan[1], P.E. Hanberg[2], K.C. Houlind[3], A.R. Knudsen[4], J.B. Pedersen[5], M.B. Knudsen[6], M.A. Hvistendahl[7], M. Bue[8]
[1]University of Southern Denmark - Department of Regional Health Research, Department of Surgery, Lillebaelt Hospital, Kolding, Denmark, [2]Aarhus University Hospital, Department of Otorhinolaryngology, Head and Neck Surgery, Aarhus, Denmark, [3]University of Southern Denmark, Department of Regional Health Research, Department of Vascular Surgery, Lillebaelt Hospital, Kolding, Kolding, Denmark, [4]Aarhus University, Department of Surgery, Aarhus University Hospital, Aarhus, Denmark, [5]Aalborg University, Department of Surgery, Aalborg University Hospital, Aalborg, Denmark, [6]Viborg Regional Hospital, Department of Orthopedic Surgery,, Viborg, Denmark, [7]Aarhus University Hospital, Aarhus Denmark Microdialysis Research Group (ADMIRE), Aarhus, Denmark, [8]Aarhus University, Department of Orthopedic Surgery, Aarhus University Hospital, Aarhus, Denmark

Background: Surgical procedures involving the liver and biliary system possess a high risk of surgical site infections (SSI) of up to 25%. Perioperative prophylaxis plays a key role in lowering the risk. Knowing the specific target tissue concentrations, when to administer as well as when to re-administer may be pivotal for definition of the optimal prophylactic regimens.
Compared to a standard regimen of cephalosporin, piperacillin/tazobactam has proven to reduce the incidence of postoperative SSI after procedures involving the liver and biliary system.
The efficacy of piperacillin is best correlated with the time with concentrations above the minimal inhibitory concentration of the causative bacteria (T>MIC). The most common bacteria found in relation to SSI in the liver and biliary system (*Escherichia coli, Klebsiella* spp., *Pseudomonas* spp., *Enterococcus* spp.) present with clinical breakpoint MIC-values of 8 and 16 µg/ml.
This porcine study aimed to apply microdialysis for the assessment of target site piperacillin T>MIC 8 µg/ml (low target) and 16 µg/ml (high target) in the liver and biliary system.
Method: In 8 healthy pigs, five microdialysis catheters were placed for sampling of piperacillin concentrations in the liver, in the wall of the gallbladder, in the lumen of the gallbladder, in the wall of the common bile duct and in the lumen of the common bile duct. A bolus of piperacillin/tazobactam 4/0.5 g was administered intravenously, and microdialysates were collected during an 8-h period. Venous blood samples were taken as reference.
Results: The mean T>MIC (percent of the dosing interval) for the low target (8 µg/ml) ranged from 5.8-7.4 h (77-99%) and for the high target (16 µg/ml) from 4.4-7.4 h (58-99%) across all investigated compartments. The high target was reached within a mean time of 20 min for all sites, except in the bile in the gallbladder (mean 58 min).
Conclusion: Piperacillin displayed >58% T>MIC following a single bolus administration, irrespective of the target evaluated. To maintain and reach piperacillin concentrations above the high target in all investigated compartments, re-administration should be considered after 4.4 h and dosing should be performed approximately 1 h before the surgical incision.

Impact of Transient Steatosis on Liver Regeneration and Post-Hepatectomy Liver Failure in Rats

A. Lund[1], M. Thomsen[2,3], A.R. Knudsen[1], J. Kirkegård[1], K.J. Andersen[1], M. Meier[1], J.R. Nyengaard[2,3], F.V. Mortensen[1]
[1]Aarhus University Hospital, Department of Surgery, Aarhus, Denmark, [2]Aarhus University, Core Center for Molecular Morphology, Section for Stereology and Microscopy, Aarhus N, Denmark, [3]Aarhus University Hospital, Department of Pathology, Aarhus N, Denmark

Background: Transient steatosis becomes evident shortly after partial hepatectomy (PH) in rodents. This study aimed to elucidate the influence of hepatic lipid accumulation on the processes of liver regeneration and the development of post-hepatectomy liver failure (PHLF).
Method: Rats were randomly assigned to one of the three groups: 90% PH, sham operation with midline laparotomy, or no surgery. We compared rats with fatal PHLF with rats without PHLF (recovering rats) at 24 hours after PH, as fatal PHLF was evident at this point. Proteomics and Western blotting were utilized to assess variations in protein expressions among rats with fatal PHLF and recovering rats, while stereological methods were applied to quantify the hepatic lipid content.
Results: The lipid metabolism was significantly up-regulated in rat suffering from PHLF compared to recovering rats ($p<0.001$). All rats undergoing 90% PH had an increase in hepatic lipid content relative to sham- and non-operated rats. The accumulated hepatic lipid proportion was twice as high in recovering rats (61% of the hepatocyte volume, 95% CI: 49-73%) compared to rats with fatal PHLF (29% of the hepatocyte volume, 95% CI: 19-40%). The mean lipid volume in recovering

rats was measured at 2715 μm^3 (95% CI: 2267-3162), whereas rats with fatal PHLF exhibited a mean lipid volume of 1611 μm^3 (95% CI: 1049-2172).
Conclusion: Transient hepatic steatosis appears to serve as a promising prognostic marker for regeneration and prevention of PHLF.

Pancreatic Cancer in Southern Denmark between 2019 - 2022: A Descriptive analysis of patients not reported in the Danish Pancreas Cancer Database registry

C.M. Bhuller[1], C.W. Fristrup[1], M.B. Mortensen[1]
[1]Odense University Hospital, Division of Hepato-Pancreatico-Biliary surgery, Department of Surgery, Odense, Denmark

Background:
On average, 1050 patients are diagnosed with Pancreatic Cancer (PC) in Denmark annually. The Danish Pancreatic Cancer Database (DPCD) reports solely on patients with pancreatic ductal adenocarcinomas (PDAC), duodenal and ampulla of Vater cancers. Pancreatic neuroendocrine tumours (pNET) are excluded. Due to the aggressive nature of PC, it is expected that some patients are never fully investigated at an HPB centre. The aim of this study was to investigate whether patients registered with PC diagnosis but no ongoing affiliation with the HPB centre represented true cases of PC or were incorrectly reported.
Method:
This was a retrospective, descriptive analysis of patients registered with diagnosis codes of DC 25.0 – 25.9, DC 24.1 or DC 17.0 between 2019 – 2022 in the Region of Southern Denmark without inclusion in the DPCD.
Results:
We identified 155 patients in DPCD with no affiliation with an HPB centre. Average age at diagnosis was 73 years (range: 24 – 100). Sixty-two patients (40%) represented true cases of PDAC. Seventy-four patients (48%) had pNET. Twelve patients (8%) had a different cancer diagnosis altogether. Diagnosis could not be inferred in 5 patients and 2 patients had pancreatitis. Of the 62 true cases, 32 were females and 30 males. Both groups had the same average age at diagnosis, 82 years (range: 66 – 93). Median overall survival from diagnosis to death was 33,5 days (range: 3 – 484) for males and 40,5 days (range: 1 – 617) for females. Only 7 patients (11%) had a histology verified diagnosis of PC. Thirty-three patients (53%) had been discussed at HPB MDT, whereas 29 patients (47%) had never been referred. Twenty-five (40%) were deemed unfit for any active treatment by referring hospital, whereas 19 patients (31%) had opted out of further treatment. Thirteen patients (21%) were deemed unfit for surgical or oncological treatment at the HPB MDT.
Conclusion:
Forty per cent of the total study population had PC but no affiliation with an HPB centre. Out of these, forty-seven per cent had never been referred for assessment at HPB MDT, probably due to old age, poor performance status and comorbidities.

Cutaneous Sensory Block Area of the Ultrasound-Guided Subcostal Transversus Abdominis Plane Block: An Observational Study

C.B. Salmonsen[1,2], K.H.W. Lange[3,4], C. Rothe[3,4], J. Kleif[1,4], C.A. Bertelsen[1,4]
[1]Copenhagen University Hospital - North Zealand, Department of Surgery, Hillerød, Denmark, [2]University of Copenhagen, Graduate School, Faculty of Health and Medical Sciences, København, Denmark, [3]Copenhagen University Hospital - North Zealand, Department of Anaesthesiology, Hillerød, Denmark, [4]University of Copenhagen, Department of Clinical Medicine, Health and Medical Sciences, København, Denmark

Background: The transversus abdominis plane block (TAP) can be applied using different approaches, resulting in varying cutaneous analgesic distributions. This study aimed to assess the cutaneous sensory block area (CSBA) after ultrasound-guided TAP (US-TAP) using the subcostal approach.
Method: Thirty patients undergoing elective laparoscopic cholecystectomy received a subcostal US-TAP with 20 mL 2.5 mg/mL ropivacaine bilaterally. Measurements were performed 150 minutes after block application. The CSBA was mapped using cold sensation and a sterile marker, photo-documented, and transferred to a transparency. The area of the CSBA was calculated from the transparencies.

Results: The median CSBA of the subcostal US-TAP was 174 cm^2 (interquartile range 119–219 cm^2; range 52–398 cm^2). In all patients, the CSBA had a periumbilical distribution. In 42 of the 60 (70%) unilateral blocks, the CSBA had both an epigastric and infra-umbilical component; in 12 of the 60 (20%) unilateral blocks, it covered only the epigastrium; and in 4 of the 60 (7%) unilateral blocks, it had only an infra-umbilical distribution. No CSBA was found in 2 of the 60 (3%) unilateral blocks. In none of the patients did the CSBA cover the abdominal wall lateral to a vertical line through the anterior superior iliac spine.
Conclusion: The subcostal US-TAP results in a heterogenous non-dermatomal CSBA with varying size and distribution across the medial abdominal wall.

Cutaneous sensory block area of the laparoscopic-assisted transversus abdominis plane block: an observational study

C.B. Salmonsen[1,2], K.H.W. Lange[3,4], C. Rothe[3,4], J. Kleif[1,4], C.A. Bertelsen[1,4]
[1]Copenhagen University Hospital - North Zealand, Department of Surgery, Hillerød, Denmark, [2]University of Copenhagen, Graduate School, Faculty of Health and Medical Sciences, København, Denmark, [3]Copenhagen University Hospital - North Zealand, Department of Anaesthesiology, Hillerød, Denmark, [4]University of Copenhagen, Department of Clinical Medicine, Health and Medical Sciences, København, Denmark

Background: Different approaches and techniques are used to apply a transversus abdominis plane block (TAP), but their characteristics are poorly described. Precise injection of local anesthetic is considered crucial to achieving the desired block effect. Laparoscopic-assisted TAP (L-TAP) is a blind technique and should be less reliable than ultrasound-guided techniques. This study assessed the cutaneous sensory block area (CSBA) after an L-TAP with a subcostal dual block approach.
Method: Thirty elective laparoscopic cholecystectomy patients received an L-TAP with 20 mL 2.5 mg/mL ropivacaine bilaterally. Measurements were performed 150 minutes after block application. The CSBA was mapped using cold sensation and a sterile marker, photo-documented, and transferred to a transparency. The area of the CSBA was calculated from the transparencies.
Results: The median CSBA of the subcostal bilateral dual L-TAP was 161 cm^2 (interquartile range 131–217 cm^2; range 67–408 cm^2). In all patients, the CSBA mainly covered the skin over the epigastrium, while 23% also had an infraumbilical component. A solely infraumbilical location of the CSBA was not observed. In none of the patients did the CSBA cover the abdominal wall laterally to a vertical line through the anterior superior iliac spine.
Conclusion: The subcostal bilateral dual L-TAP results in a heterogeneous non-dermatomal CSBA with varying size and distribution across the medial epigastric abdominal wall, similar to the existing literature on the ultrasound-guided subcostal TAP.

”Watchful waiting” strategi af ukompliceret galdesten er ikke uden omkostninger

L. Erritzøe[1], F. Helgstrand[2]
[1]SUH, CSS, kirurgisk afdeling, Køge, Denmark, [2]SUH, Kirurgisk Afdeling, Køge, Denmark

Background: Indikationen for laparoskopisk kolecystektomi (lap. chol.) for symptomatisk ukompliceret galdestenssygdom er dårligt defineret. Det anses som sikkert at afvente operation da risikoen for at udvikle kompliceret galdestenssygdom er lille og derfor tilbydes kirurgi kun til patienter med livsforringende smerter. Vi ønsker at undersøge forløbet for patienter der ikke initialt tilbydes lap.chol.
Method: Spørgeskema undersøgelse af alle patienter med ukompliceret galdestenssygdom og førstegangsbesøg i kirurgisk ambulatorium, SUH mellem 2010-2019, som ikke fik tilbudt operation initialt.
Results: 1389 patienter blev ambulant vurderet for ukompliceret galdesten i perioden 2010-2019 på SUH og har ikke en lap. chol operationskode. Af disse er 272 døde og 291 fejlkodede. 3 er ikke danske statsborgere og 32 er ikke dansk-talende eller har anden kognitiv svækkelse. Således blev 789 patienter med followup fra 42 til 156 mdr. inkluderet.
I alt 533 (68%) patienter har svaret på fremsendte spørgeskema. Ud af disse har 169 (31%) patienter efterfølgende fået foretaget lap. chol. 170 patienter (32%) har fortsat smerter og 134 patienter (25%) ville ønske de var tilbudt operation ved første samtale. 232 patienter (44%) har

anamnestisk tegn til kompliceret galdestenssygdom og 99 patienter (19%) angiver at de på et tidspunkt har fået foretaget ERCP.
Conclusion: Mange patienter der ikke tilbydes operation initialt har fortsat symptomer efter ambulant vurdering af ukompliceret galdestenssygdom. Knap hver anden viser tegn på senere kompliceret galdestenssygdom, hver tredje ender alligevel med en operation og hver fjerde fortryder de ikke blev opereret.

Assessing the value of deep neural networks for postoperartive complication prediction in pancreaticoduodenectomy patients

M. Bonde[1], A. Bonde[1], A. Millarch[1], H. Kaafarani[2], M. Sillesen[1]
[1]Copenhagen University Hospital, Rigshospitalet, Department of Organ Surgery and Transplantation, Copenhagen, Denmark, [2]Massachusetts General Hospital/Harvard Medical School, Dep. of Trauma, Emergency Surgery and Surgical Critical Care, Bostom, United States

Background: Pancreaticoduodenectomy (PD) for patients with pancreatic ductal adenocarcinoma (PDAC) is associated with a high risk of postoperative complications (PoCs) and risk prediction of these is therefore critical for optimal treatment planning. We hypothesize that novel deep learning network approaches through transfer learning may be superior to legacy approaches for PoC risk prediction in the PDAC surgical setting.
Method: Data from the US National Surgical Quality Improvement Program (NSQIP) 2002-2018 was used, with a total of 5,881,881 million patients, including 31,728 PD patients. Modelling approaches comprised of a model trained on a general surgery patient cohort and then tested on a PD specific cohort (general model), a transfer learning model trained on the general surgery patients with subsequent transfer and retraining on a PD-specific patient cohort (transfer learning model), a model trained and tested exclusively on the PD-specific patient cohort (direct model), and a benchmark random forest model trained on the PD patient cohort (RF model). The models were subsequently compared against the American College of Surgeons (ACS) surgical risk calculator (SRC) in terms of predicting mortality and morbidity risk.
Results: Both the general model and transfer learning model outperformed the RF model in 14 and 16 out of 19 prediction tasks, respectively. Additionally, both models outperformed the direct model on 17 out of the 19 tasks. The transfer learning model also outperformed the general model on 11 out of the 19 prediction tasks. The transfer learning model outperformed the ACS-SRC regarding mortality and all the models outperformed the ACS-SRC regarding the morbidity prediction with the general model achieving the highest Receiver Operator Area Under the Curve (ROC AUC) of 0.668 compared to the 0.524 of the ACS SRC.
Conclusion: DNNs deployed using a transfer learning approach may be of value for PoC risk prediction in the PD setting.

Abdominal complications requiring surgical intervention seem not to increase the in-hospital mortality

L. Rasmussen[1], M. Ebrahim[1], M.P. Werge[1], D.F. Schefte[1], M.L. Lauritsen[1,2], S. Novovic[1,2], J.G. Karstensen[1,2]
[1]Hvidovre Hospital, Gastroenheden, Hvidovre, Denmark, [2]Københavns Universitet, Institut for Klinisk Medicin, København, Denmark

Background: Although minimally invasive techniques are the mainstay in the treatment of walled-off pancreatic necrosis (WON), complications may arise during treatment that require surgical intervention. The aim of this study was to evaluate complications necessitating abdominal surgery in patients undergoing endoscopic treatment for symptomatic WON.
Method: In this retrospective study, we reviewed consecutive patients with WON treated endoscopically in our tertiary referral center to identify cases which required acute or subacute abdominal surgical intervention.
Results: Patients had surgery before initiation of endoscopic intervention (33%), while 16 patients had surgery after index endoscopy (66%). The most prevalent complication was intestinal ischemia in 11 cases (46%), severe bleeding in four cases (17%), intestinal perforation in three cases (13%), stenosis in three cases (13%), and fistula in three cases (13%). The in-hospital mortality was 20.8% for patients requiring surgery compared to 13.8% in patients without surgical needs (p=0.392).

Conclusion: Complications requiring abdominal surgery in patients with WON occur in approximately 10% of the patients, intestinal ischemia being the most frequent cause of intervention.

The CIRCPAC Study: Implementing non-invasive circulating tumor DNA and circular DNA analysis in patients with localized pancreatic cancer to optimize pre- and postoperative treatment

M.-B. Worm Ørntoft[1,2], S. Christy Lindgaard[3], C. Demuth[2], B. Regenberg[4], M. Bau Mortensen[5], S. Detlefsen[6], J. Sidenius Johansen[7,3], C. Lindbjerg Andersen[2]
[1]Godstrup Surgical Research Unit, Department of Surgery, Region Hospital Godstrup, Herning, Denmark, [2]Aarhus University Hospital, Department of Molecular Medicine, Aarhus N, Denmark, [3]Copenhagen University Hospital – Herlev and Gentofte, Department of Oncology, Herlev, Denmark, [4]University of Copenhagen, Department of Biology, København N, Denmark, [5]Odense University Hospital, Department of Surgery, Odense, Denmark, [6]Odense University Hospital, Department of Pathology, Odense, Denmark, [7]Copenhagen University Hospital – Herlev and Gentofte, Department of Medicine, København N, Denmark

Background: Patients with pancreatic cancer (PC) have a dismal prognosis with a 5-year overall survival (OS) of 10%. Less than 20% of patients with PC are eligible for curative resection, and ~80% of resected patients experience relapse within the first few years. Circulating tumor DNA (ctDNA) and extrachromosomal circular DNA (eccDNA) in blood are emerging new tools for monitoring disease progression and recurrence. To explore ctDNA/eccDNA as diagnostic, prognostic, and predictive markers in PC, we have initiated CIRCPAC.
Method: CIRCPAC is a national trial consisting of two studies: Study I includes ~700 patients with suspected PC and will retrospectively explore whether ctDNA/eccDNA aberrations in pre-operative blood samples can predict pathological diagnosis and early recurrence. Further, it investigates whether postoperative ctDNA/eccDNA tests are prognostic for OS. From study I, patients with pancreatic ductal adenocarcinoma (PDAC) will be eligible for study II (n=410), a prospective randomized controlled trial (RCT), if they are recurrence-free at 6 months. The RCT randomizes PDAC patients to either standard follow-up (current guidelines) or an intensive follow-up program with longitudinal ctDNA measurements every 3 months to identify patients with high recurrence risk. ctDNA positive patients will be offered EUS/CT imaging every 3 months, whereas ctDNA negative patients will be offered EUS/CT imaging every 6 months. Endpoints will be time to recurrence; OS; quality of life; number of patients in experimental/palliative oncological treatment; and health economic costs compared between groups after three years of follow-up.
Results: We expect to include patients from all four Danish PC centers, enrolling one center at a time. The first center started inclusion in January 2023; the second and third center will start inclusion in the fall 2023. So far, 50 patients have been included and 43 patients underwent surgical treatment. Of those where pathological diagnosis is available, 18 had PDAC, 7 are eligible for the RCT, and 1 patient has been randomized.
Conclusion: We foresee that ctDNA/eccDNA biomarkers will reveal much needed diagnostic, predictive, and prognostic discriminatory abilities, and can be identify high-risk patients suspected of PC in daily clinical practice. Further we hope that an intensive follow-up strategy for patients with PC will lead to better treatment of recurrence, with the potential for improvement of OS and quality of life.

Long-term mortality and intestinal obstruction after open cholecystectomy: a systematic review and meta-analysis

S.A.-M.S. Jensen[1], S. Fonnes[1], A. Gram-Hanssen[1], K. Andresen[1], J. Rosenberg[1]
[1]Copenhagen University Hospital - Herlev, Center for Perioperative Optimization, Department of Surgery, Herlev, Denmark

Background: Long-term outcomes after open cholecystectomy are largely unknown. We aimed to investigate long-term mortality rate and incidence of intestinal obstruction after open cholecystectomy.
Method: Reporting of this systematic review and meta-analysis was according to the PRISMA 2020 guideline. A protocol was registered at PROSPERO (CRD42020178906). We searched the databases PubMed, EMBASE, and Cochrane CENTRAL on February 9, 2022 for studies on long-term complications with n>40 and follow-up ≥ 6 months. Outcomes included mortality and intestinal

obstruction. Meta-analyses were conducted, and results were presented in forest plots. Risk of bias was assessed with the Newcastle-Ottawa Scale and Cochrane risk-of-bias tool 1, respectively.
Results: We included 21 studies published from 1969 to 2021. Mortality after open cholecystectomy was reported in 17 studies (125,222 patients) and ranged from 0–35%. Follow-up ranged from six months to ten years. Meta-analysis estimated a long-term mortality rate of 9.2% (95% CI 6.8–11.6). One study with 90 patients reported on mini-laparotomy and none died during the 12 months follow-up. Three studies reported on intestinal obstruction after open cholecystectomy (66,257 patients) with an incidence ranging from 0.5% to 2.6%. Follow-up ranged from 36 to 67 months. Meta-analysis estimated a long-term rate of intestinal obstruction of 2.0% (95% CI 1.0–3.0).
Conclusion: After a follow-up of at least six months, long-term mortality was 9.2% and long-term incidence of intestinal obstruction was 2% after open cholecystectomy. Only one study reported on mini-laparotomy with no deaths after 12 months and no data regarding intestinal obstruction.

2.2 Oesophagogastric (ECV)

Central ligation or partial preservation of the right gastric artery does not affect conduit or anastomotic perfusion during robot-assisted resection of gastroesophageal junction cancer: A randomized clinical trial

J. Osterkamp[1], N. Nerup[1], M. Svendsen[2], R. Strandby[1], L.-B. Svendsen[1], E. Aasvang[3], H. Vad[4], A. Plamboeck[3], M. Achiam[1]
[1]Rigshospitalet, University Hospital of Copenhagen, Department of Surgery and Transplantation, Centre for Cancer and Organ Diseases, Copenhagen, Denmark, [2]Rigshospitalet, University Hospital of Copenhagen, Copenhagen Academy for Medical Education and Simulation (CAMES), Copenhagen, Denmark, [3]Rigshospitalet, University of Copenhagen, Department of Anesthesiology, Centre for Cancer and Organ Diseases, Copenhagen, Denmark, [4]Rigshospitalet, University Hospital of Copenhagen, Department of Cardiothoracic Surgery, Copenhagen, Denmark

Background: The gastric conduit can be created with partial preservation or a central ligation of the right gastric artery. Central ligation may facilitate complete removal of lymph node (LN) station #3; however, whether this influences conduit and anastomotic perfusion is unknown. Hence this study investigated whether a central ligation of the right gastric artery would affect conduit or anastomotic perfusion compared with partial preservation (local standard) during robot-assisted resection of gastroesophageal junction (GEJ) cancer.
Method: Patients scheduled for robot-assisted resection of GEJ cancer were randomized to either central ligation or partial preservation of the right gastric artery. Perfusion was assessed using quantified indocyanine green angiography: before gastric mobilization, after conduit formation, and after anastomosis. Hemodynamic variables during surgery and surgical outcomes were recorded.
Results: We included 70 patients between June 2020 and October 2021, of whom five were excluded from the final analysis. The two patient groups did not differ in conduit (0.07 [interquartile range (IQR), 0.05–0.08] vs. 0.07 u [IQR, 0.05–0.08], $p = 0.86$) or anastomotic perfusion (0.08 [standard deviation (SD), ±0.02] vs. 0.08 u [SD, ±0.02], $p = 0.21$), nor did they differ in intraoperative blood loss, anastomotic leaks, postoperative complications, or 1-year survival. However, more LNs were resected in the central ligation group (36 [IQR, 30–44] vs. 28 [IQR, 22–43], $p = 0.02$).
Conclusion: Introducing a central ligation of the right gastric artery did not affect conduit or anastomotic perfusion, compared with partial preservation. However, significantly more LNs were resected.

Risk factors for short- and long-term complications following ventral hernia repair using the peritoneal flap technique

K.A Nielsen[1], A. Valsamidis[1], B. Jogvansson[1], S. Petersen[2], A. Pedersen[2], P. Helligsø[1], M.F Nielsen[1]
[1]Sygehus Sønderjylland, Kirurgisk Afdeling, Aabenraa, Denmark, [2]Sygehus Sønderjylland, Klinisk forskningsafdeling, Aabenraa, Denmark

Background: In Denmark, 3,000-4,000 ventral hernias are treated annually. Surgical repair offers relief but poses risks of surgical site infections, seroma, chronic pain, and recurrence. Various

modifiable factors contribute to these postoperative complications. The present study was conducted to determine the correlation between such factors, including BMI, hernia defect size and smoking, and the risk of developing postoperative complications.
Method: An analysis was performed based on a retrospective review of 368 surgical cases (290 operated in the UK between 2010-2014 and 78 in Denmark between 2017-2020). Abdominal wall repair (AWR) was performed using the peritoneal flap technique. In select patients with obesity the procedure was combined with an abdominoplasty.
Results: 327 [170 females (52.0%) and 157 males (48%)] patients were included in the final analysis. The median (IQR) BMI was 30.9 (27.1, 36.4). 45 patients (13.8%) had diabetes, and 76 (23.2%) were active smokers. The longitudinal hernia defect length had a median (IQR) of 8 cm (6, 10.8), and the median (IQR) mesh size was 667.5 cm2 (450, 900). The mean length of hospital stay was 5 days (range 4-7). Median follow-up time was 34.5 months (range 26-41) for Danish patients and 114 months (range 99-127) for UK patients. Superficial wound infections were observed in 43 patients (13.1%), seromas in 34 patients (10.4%), while 17 patients (5.2%) experienced hematoma. Skin necrosis occurred in 4 patients (1.2%). Chronic pain, defined as pain lasting at least 3 months after surgery, was reported in 15 patients (4.6%). 8 patients (2.4%) experienced symptoms suggesting hernia recurrence.
Conclusion: Correlation analyses identified Body Mass Index (BMI) as the primary risk factor associated with complications. Specifically, for each unit increase in BMI, there was a significant 9% increase in the risk of complications (Odds Ratio = 1.09, $p < 0.01$). In contrast, hernia defect size and smoking status were not significantly associated with an increased risk of complications, although they showed a non-significant trend towards such an association. Consequently, this study establishes BMI as a critical determinant for complications following AWR, particularly in patients with a BMI exceeding 35 kg/m^2.

Treatment of intrathoracic anastomotic leakage following esophagectomy for gastroesophageal cancer: a systematic review

A.W. Mucha[1], R.B. Strandby[1], N.A. Nerup[1], M.P. Achiam[1]
[1]Rigshospitalet, Department of Surgery and Transplantation, Copenhagen, Denmark

Background: Anastomotic leakage (AL) is one of the most severe complications following esophagectomy. AL is affecting 8-17% of patients and is associated with increased morbidity, mortality, and hospital stay. To this date, there is no consensus concerning the most optimal treatment. This systematic review aimed to determine the most effective treatment approach.
Method: A systematic search of Medline, Web of Science, Cochrane, Scopus, and Embase databases was conducted. Only studies reporting on the treatment of intrathoracic anastomotic leakage after esophagectomy with gastric conduit reconstruction for cancer were included. Studies investigating other esophageal disorders or failing to report the location of the anastomosis were excluded. The methodological quality and risk of bias were assessed using the Newcastle-Ottawa Scale for cohort studies.
Results: Out of 12,966 initially identified studies, 40 were included for analysis after removing duplicates and screening titles, abstracts, and full texts. Of these, six were found to be of poor methodological quality and 34 were of moderate quality. Endoluminal vacuum therapy (EVT) demonstrated a success rate of 82% and a mortality of 10.7%. Naso-fistula tube drainage (NFTD) had a mortality of 5.3% and a success rate of 93.9%. Stent treatment alone showed a success rate of 74.6% and a mortality of 13.5%.
Conclusion: The NFTD approach demonstrated a higher success rate and lower mortality compared with stents or EVT. However, it required a longer treatment duration. Due to limitations within the included studies, a definitive recommendation regarding the optimal treatment for AL cannot be made.

PERISCOPE II Treatment of peritoneal dissemination in stomach cancerpatients with cytoreductive surgery and hyperthermic intraperitoneal chemotherapy - A multicentre randomised phase III trial –

J.L. Harbjerg[1], D.W. Kjær[2]
[1]Regionshospitalet Gødstrup, Mave- og Tarmkirurgisk afdeling, Herning, Denmark, [2]Aarhus Universitets Hospital, Skejby, Mave- og Tarmkirurgisk afdeling, Aarhus N, Denmark

Background: For gastric cancerpatients with peritoneal carcinomatosis palliative systemic chemotherapy is the standard treatment in the Netherlands and in Denmark. There is no potentially curative treatment. Peritoneal carcinomatosis, in contrast to lymphatic and haematogenous dissemination, should be regarded as locoregional extension of disease. Administering chemotherapeutic drugs directly into the peritoneal cavity has an advantage over systemic chemotherapy since high concentrations of cytotoxic drugs can be delivered with little systemic toxicity. The combination of intraperitoneally administered chemotherapy with cytoreductive surgery and a radical gastrectomy has shown promising results in gastric cancerpatients in Asia. However, results obtained in Asian patients cannot be extrapolated directly to Western patients.
Method: **Study design** | This is an international, multicentre randomised controlled two-armed phase III trial. Patients will be randomised (1:1) between palliative systemic chemotherapy only (standard treatment) and gastrectomy combined with cytoreductive surgery and HIPEC (experimental treatment).
Study population | Patients are eligible for inclusion if (1) the primary cT3-cT4 gastric tumour including regional lymph nodes is considered to be resectable, (2) limited peritoneal carcinomatosis and/ or tumour positive cytology is confirmed by laparoscopy or laparotomy, and (3) systemic chemotherapy (prior to inclusion) was without disease progression. The study sample size, 182 patients is calculated from the hypothesis that the median overall survival of the patients treated according to protocol in the experimental arm is 18 months, as compared to a median overall survival of 10 months in the standard arm.
Results: **Objective** | The aim is to compare overall survival btw. gastric cancerpatients with limited peritoneal carcinomatosis and/ or tumour positive peritoneal cytology treated with gastrectomy, cytoreductive surgery and HIPEC, and those treated with the current standard treatment, i.e. systemic palliative chemotherapy.
Conclusion: **Risks associated with participation**| In the experimental treatment arm patients will be admitted for surgery. Postoperative complications may occur (e.g., bleeding, wound infection, pneumonia, ileus, anastomotic leakage). All patients will be asked to complete quality of life questionnaires at 6 moments in time. All patients will be seen at the outpatient clinic once every 3 months for 1.5 years, and every 6 months thereafter.

3 Paediatric surgery

Endoscopic Injections of Botulinum Toxin Type A in the Piglet Esophagus Is Safe and Feasible but Did Not Result in any Significant Structural Changes 3 Days after Injection

M. Rose[1], P. Clarke[2], A.H. Pike[2], P. Zvara[3], H.D. Schrøder[4], E.K. Hejboel[4], N. Qvist[1], M.B. Ellebæk[1]
[1]Odense University Hospital, Surgical Department, Odense C, Denmark, [2]University of Vermont, Larner College of Medicine, Vermont, United States, [3]University of Southern Denmark, Department of Clinical Research, Odense, Denmark, [4]Odense University Hospital, Department of Clinical Pathology, Odense, Denmark

Background: Treatment for long-gap esophageal atresia (LGEA) aims at achieving primary anastomosis with minimal tension. Previous studies have shown that intramural injections with botulinum toxin type-A (BTX-A) from the adventitial side can increase the elongation of the piglet and rat esophagus before bursting, and that this effect is dose and time dependent. Our aim was to determine if endoscopic injections would be feasible, safe, and with an effect on the mechanical properties of the esophagus.
Method: Twenty-two male piglets (5.15 kg) were randomized into two groups, one receiving 2 units/kg BTX-A, the other equal volume 0.9% NaCl. On day 3, the esophagus was harvested and tested in a stretch-tension machine to evaluate elongation and maximum load, followed by histological examination.
Results: No adverse effects to the procedure were observed. No statistically significant difference in elongation or maximum load before bursting between the treatment and placebo group was found. In histopathological analysis, inflammation and abscess formation were observed with no statistically significant difference between the two groups.
Conclusion: Endoscopic placement of BTX-A injections in the piglet esophagus was safe and feasible but did not result in any difference in the mechanical properties or histology of the esophagus.

Clinical outcomes after cleft lift surgery in a prospective series of pediatric patients

J.L. Ankersen[1,2], I.K. Faurschou[1,2], M.J. Sørensen[1], M.L. Friis[3], A.G. Pedersen[1], S. Haas[1,2]
[1]Randers Regional hospital, Pilonidal Disease Center, Department of Surgery, Randers, Denmark, [2]Aarhus University Hospital and Aarhus University, Department of Clinical Medicine, Aarhus N, Denmark, [3]Aalborg University Hospital, Nordsim, Aalborg, Denmark

Background: Pilonidal disease (PD) is a common disorder that occurs in the crena ani with an estimated incidens of 26-48 per 100.000. The disease occurs readily after puberty and patients present with PD as young as 13 years. Only small cohorts of pediatric PD cohorts have been published and the optimal management is still debated as overall complication and recurrence rate remains high.
Method: The study is based on a prospective database established at Randers Regional Hospital in 2016. All patients undergoing Bascoms cleft lift (BCL) surgery from June 2016 until October 2022 were registered. Indications for (BCL) surgery were primary extensive manifestation, non-healing wounds after previous elective surgery or recurrence.
Results: 92 of 560 (16%) PD patients were pediatric (<18 years at time of surgery). Seventy-eight (85%) were boys and mean BMI was 25.9 ± 4.8. The mean age at disease debut was 15.3± 1.2 years and mean age at time of surgery was 16.5 ± 1.2 years. 38 (41%) were operated due to primary extensive manifestation, 34 (37%) due to non-healing wounds, and 20 (22%) due to recurrence. 63 patients (68%) healed uneventfully and were terminated at the 3 months follow up visit. Among the rest, median time to healing was 8 months (range 5;34) – 9 underwent a re- cleft lift. Among patients with primary extensive manifestations 31 (79%) healed uneventfully. Among the 21% that experienced prolonged wound healing, median time to healing was 7 months (range 5;9). Among patients with lack of healing after previous surgery 21 (63%) healed uneventfully and median time to healing among the rest was 9.5 months (range 6;34). Among patients with recurrence 13 (65%) healed uneventfully and median time to healing among the rest was 5 months (range 5;25). There was no difference among groups in terms of overall healing (p=0.80) nor time to healing if prolonged (p=0.27). Overall 8 patients (9%) had recurrent pilonidal disease over a median follow up of 44.5 months (range 4;82) of which 3 (8%) were in the primary extensive manifestation group, 3 (9%) in the non-healing group, and 2 (10%) in the recurrence group (p=0.91).
Conclusion: Surgical treatment of PD remains challenging. Surgical outcomes are relatively poor even in a dedicated setting stressing the need for specialised care. With massive wound complications impacting these youngsters lives, there is a great need for tailored approach and alternative treatment strategies.

4.1 Hernia

Højere reoperationsrater for vævspenetrerende fiksationsmetoder og Lichtenstens procedure ved operation for lyskenære hernier - Opdaterede resultater

A. Mortensen[1], A. Bodilsen Bruun[2], H. Friis-Andersen[1]
[1]Regionshospitalet Horsens, Kirurgisk Afdeling, Horsens, Denmark, [2]Aarhus University Hospital, Mave- og Tarmkirurgi, Aarhus, Denmark

Background: Eksperimentelle studier viser at meshtyper reagerer forskelligt på implantation ved operation for lyskenære hernier, og at ens meshtyper reagerer forskelligt på diverse implantationsmetoder. Kliniske studier understøtter, at valg af mesh og fiksationsmetoder har betydning for reoperationsraterne (REOP). I Danmark anvendes hyppigst tackerfiksation på polypropelenemesh. Men er det rationelt?
Method: En retrospektivt analyseret kohorte blev etableret ved udtræk fra Den Danske Herniedatabase på alle patienter opereret for primære, elektive lyskenære hernier i Danmark fra 1/1-2010 til 30/11-2022. Cox regressionsanalyser blev anvendt til at udregne hazard ratio (HR), og ved multivariat analyse blev korrigeret for signifikante confounders.
Results: 82,767 hernier blev analyseret med en samlet follow-up tid (FU) på 470.118,42 år. Lichtenstein var den mest anvendte operationsmetode (33,738 patienter sv.t. 229,872 års FU), efterfulgt af laparoskopisk transabdominal preperitoneal procedure (TAPP) med tackers (23,285

patienter, 141,644 år) og lim (9,181 patienter, 42,626 år). Den mest anvendte mesh var Ultrapro (20,389 patienter, 167,674 år), efterfulgt af Parietene (8,887 patienter, 38,514 år) og Parietex (4,402 patienter, 31,709 år).
Den samlede 5 års reoperationsrate var 4.61%. Lim ved TAPP havde 5 års REOP på 1.81%, signifikant lavere end Lichtenstein (4.88%, HR på 1.84, p=0.000), ingen fiksation (4.01%, HR på 2.01, p=0.000), og fiksation med clips (4.10%, HR på 3.19, p=0.000), sutur (5.20%, HR på 264, p=0.009) og tackers (5.25%, HR på 3.88, p=0.000). De selvfikserende meshtyper havde lav 5 års REOP på 1.25%, men begrænset FU og dermed svækket analyserbarhed. Den mest anvendte kombination af fiksationsmetode og mesh var Lichtensteins procedure med Ultrapro (104,792 års FU) med 5 års REOP på 5.42% og HR på 1.70 sammenlignet med Ultrapro med lim ved TAPP (p=0.011, 5 års REOP på 2.72%). Blandt kombinationerne med mere end 10,000 års FU, havde Parietene mesh med lim-fiksation ved TAPP den laveste 5 års REOP på 1.52%.
Conclusion: Der er behov for genovervejelse af praksis. Dette gennemgående studie viser at fiksation med lim ved TAPP er samtlige af de vævspenetrerende fiksationsmetoder overlegent, herunder Lichtenstein. Valg af meshtype er mindre betydningsfuldt end valg af fiksationsmetode; der er dog alligevel behov for at gøre overvejelser iht. valg af mesh, idet mange af de i analysen mest anvendte meshtyper havde signifikant dårligere outcomes.

Open vs Laparoscopic vs Robot-assisted inguinal hernia repair: A case series

A. Alnabhan[1], A. Valsamidis[1], K.A. Nielsen[1], A.K. Pedersen[1], P. Helligsø[1], M.F. Nielsen[1]
[1]University Hospital of Southern Denmark, Department of Surgery, Aabenraa, Denmark

Background: Minimally invasive inguinal hernia repair is thought to be associated with fewer complications. To address this hypothesis, we compared short- and long-term complications in patients undergoing elective open (Lichtenstein), laparoscopic (TAPP) and robot-assisted inguinal hernia repair (rTAPP).
Method: Patients undergoing either, Lichtenstein, TAPP or rTAPP at our institution between January 1st 2017 and December 30th 2019 were retrospectively identified. Short (haematoma, seroma, surgical-site infections) and long-term complications (chronic pain, recurrence) were recorded and compared between groups.
Results: 636 patients were included in the study. 370 were treated with Lichtenstein, 125 TAPP and 141 with rTAPP. There was a significant overweight of men in all groups ($p < 0,001$). Among the rTAPP group, the overall rate of complications was reduced (open: 10.0%; laparoscopic: 8.8%; robot-assisted 5.7%) while the presence of chronic pain was slightly more prevalent (Lichtenstein: 1.6%; TAPP: 1.6%; rTAPP: 2.1%). The rate of recurrence was lower following rTAPP (Lichtenstein: 3.8%; TAPP: 2.4%; rTAPP: 1.4%). Same day discharged was more likely following the open technique (open: 88.9%; laparoscopic: 78.4%; robot-assisted 78.7%). Nevertheless, these results were not statistically significant ($p>0.05$).
Conclusion: The present case series demonstrates a comparable rate of short and long-term complications following open and minimally invasive inguinal hernia repair. The trend towards a lower overall complications rate and recurrence rate, though not statistically significant, implies that minimally invasive surgery might be associated with a lower complication and recurrence rate. However, a larger prospective study design with a longer follow-up is needed to test this hypothesis.

Lightweight mesh causes better biomechanical response compared with heavyweight mesh in animal models: a systematic review

C.B. Sørensen[1], J. Rosenberg[1], J.J. Baker[1]
[1]Herlev Hospital, Center for Perioperativ Optimering, Afdeling for Mave-, Tarm- og Leversygdomme, Herlev, Denmark

Background: Open repair with mesh implantation is a common treatment for ventral hernias. With recurrence rates of 20-25%, rates of chronic pain up to 27%, the ideal mesh is still to be found. In inguinal hernias, lightweight and heavyweight meshes have provided different outcomes, but it is unclear, if mesh density matters in ventral hernias. Inflammation, foreign body reaction, cell-ingrowth, and tensile strength are associated with these outcomes. The aim of this study was to compare the biomechanical differences between light- and heavyweight meshes in animal models.
Method: A systematic search was conducted in Pubmed and Embase in August 2023 for studies comparing light- and heavyweight meshes implanted in animal abdominal walls. We included

studies reporting on polypropylene or polyester meshes with an onlay placement. The study was reported according to PRISMA guideline and risk of bias was assessed using the Systematic Review Centre for Laboratory Animal Experimentation bias assessment tool.
Results: Our search yielded 4050 results, and after title and abstract screening 93 went for full text screening, including a total of 25 studies for analysis. Heavyweight meshes caused more inflammation, increased foreign body reaction, and decreased cell-ingrowth compared with lightweight meshes. While the heavyweight meshes have a higher tensile strength preimplantation, there was no difference compared with lightweight meshes after 60 days.
Conclusion: Lightweight meshes provide better outcomes for inflammation, cell-ingrowth and foreign body reaction, than heavyweight meshes. The reduced tensile strength preimplantation diminishes within 60 days, indicating that they might be the superior choice for ventral hernias.

4.2 Acute care surgery

The association between frailty and differentiated postoperative complications in patients undergoing major emergency abdominal surgery

C. Snitkjær[1], EMERGE-Cph
[1]Herlev og Gentofte Hospitaler, Gastroenheden, kirurgisk sektion, Herlev, Denmark

Background: **Background:** Major emergency abdominal surgery (MEAS) presents considerable challenges with high morbidity and short- and long-term mortality risks. Given the aging and increasingly frail population understanding the impact of frailty on surgical outcomes is crucial. This study aims to evaluate the association between clinical frailty and differentiated postoperative complications following MEAS.
Method: **Methods:** Prospective cohort study including all patients undergoing MEAS at Copenhagen University Hospital Herlev Hospital, Denmark, from October 1st 2020, to August 1st 2022. Patient data were collected continuously and recorded in our RedCap database. The primary hypothesis was that frail patients would experience significantly more postoperative complications compared with non-frail patients.
Results: **Results:** A total of 520 patients were included in the study. Based on clinical frailty scale (CFS) measurements, patients were categorized into three groups. Pulmonary complications increased with each frailty group (11.5 per cent, 39 per cent and 52 per cent, p<0.0001), and pneumonia was the most frequent pulmonary complication (6 per cent vs. 13 per cent and 18 per cent, p<0.0001). Cerebral complications were frequent (5 per cent vs. 16.5 per cent and 21.5 per cent p<0.0001), and delirium was the most likely cerebral complication to occur (2.5 per cent vs. 12.5 per cent and 18.5 per cent, p<0.0001). Cardiac complications (7 per cent vs. 20.5 per cent and 21.5 per cent p<0.0001) and renal complications (5.5 per cent vs. 18.5 per cent and 12.5 per cent p<0.0001) also increased in the frail groups where arrythmia (3.5 per cent vs. 9 per cent and 6.5 per cent, p<0.0001) and acute renal failure (3.5 per cent vs. 11 per cent and 10.5 per cent, p<0.0001) were the most frequent.
No overall difference was found between surgical complications in CFS 1-3 and CFS 4-6 (32 per cent vs. 41 per cent, p = 0.06), but severe frail patients had more surgical complications compared with non-frail patients (66.5 per cent vs. 32 per cent, p = 0.001). A 30-day mortality of 3.5 % (CFS 1-3), 18.5 % (CFS 4-6) and 32.5 % (CFS 7-9) was recorded (p<0.0001).
Conclusion: **Conclusion:** This study demonstrates that patients with any degree of frailty experienced significantly more organ-specific complications following MEAS. Frail patients had increased mortality rates within all measured time frames. These findings underline the importance of addressing frailty in the context of MEAS to improve postoperative care.

The treatment and outcomes of malignant small bowel obstruction in Denmark

N. Hupfeld[1], J. Burcharth[2], T.K. Jensen[2], I. Lolle[3], L.B.J. Nielsen[4], M.A. Tolver[5], A.P. Skovsen[1], H.G. Smith[4,6]
[1]Nordsjællands Hospital, Department of Surgery, Hillerød, Denmark, [2]Herlev Hospital, Department of Surgery, Herlev, Denmark, [3]Hvidovre Hospital, Department of Surgery, Hvidovre, Denmark, [4]Bispebjerg and Frederiksberg Hospital, Digestive Disease Center, Copenhagen, Denmark, [5]Sjælland University Hospital, Department of Surgery, Køge, Denmark, [6]Slagelse Hospital, Department of Surgery, Slagelse, Denmark

Background: Small bowel obstruction (SBO) is a surgical emergency, accounting for 20% of all acute surgical admissions. A common cause of obstruction is malignancy, whereby the bowel is obstructed by either a primary tumour or by intra-abdominal metastases. However, little is known regarding the current treatment or outcomes of patients with malignant SBO. This study aimed to characterise the treatment of malignant SBO in Denmark and identify areas for potential improvement.
Method: The DASBO (Danish Audit of Small Bowel Obstruction) was a multicentre prospective study of patients admitted with SBO due to any cause at 6 Danish hospitals during a 4-month period. Details regarding the diagnosis, treatment, and outcomes of these patients up to 1-year after admission were recorded. Comparisons were made between patients with malignant and non-malignant SBO.
Results: 316 patients were included in the DASBO study, of whom 33 (10.4%) had malignant SBO (23 intra-abdominal metastases, 10 primary tumour). Patients with malignant SBO had poorer performance status, were at higher risk of malnutrition, and were less likely to be initially managed with an acute care bundle than patients with non-malignant SBO. The majority of patients with malignant SBO were treated with palliative intent (60.6%), although only a minority were seen by a palliative team during admission (35.0%). Nutritional assessments were performed in 36.4% and 33.3% received parenteral nutrition. Most patients underwent surgery (66.7%), most often with a gastrointestinal bypass (40.9%) or the formation of a defunctioning stoma (36.3%). Patients with malignant SBO had a significantly longer length of hospital stay and significantly higher rates of 90-day mortality compared to the patients admitted with non-malignant SBO. The median survival from admission was 114 days and no difference was seen in survival between patients treated with palliative or curative intent.
Conclusion: Malignant SBO is a common surgical emergency and is associated with poor outcomes. Further work is needed to define the optimal treatment strategy in this complex patient group.

Trans arterial embolization of non-variceal upper gastrointestinal bleeding: a Danish single center study of safety and efficacy

C. Ozen[1], M. Al-Hashimi[2], A.C. Larsen[1], M. Tornby Stender[1], O.-T. Ussing[1]
[1]Aalborg University, Department of Surgery, Aalborg, Denmark, [2]Aalborg University, Department of Radiology, Aalborg, Denmark

Background: Trans arterial embolization (TAE) has been widely adapted as a minimally invasive alternative to surgery after failed endoscopic hemostasis in patients with non-variceal upper gastrointestinal bleeding (NVUGIB), as well as a prophylactic adjunct to endoscopic hemostasis, especially among elderly high-risk patients. The safety and efficacy of TAE in this setting remains, however, unknown. The aim of this study was to investigate the safety and efficacy of TAE in NVUGIB in our institution.
Method: This retrospective cohort study was conducted from January the 1st 2010 to June the 30th 2022 at the Department of Gastrointestinal Surgery and the Department of Radiology, Aalborg University Hospital, Denmark. All patients who underwent TAE were identified in the Patient Administration System (PAS) using the ICD-10 codes UXAD40 and UXAD45. Patient data were retrieved by reviewing medical records regarding demographics, medication history, hemodynamics, laboratory tests, endoscopic features (including the description of the type of the lesion and the method of endoscopic hemostasis performed), Rockall score, technical aspects of TAE, length of hospitalization, associated comorbidities, potential risk factors associated with rebleeding, and vital status 30 days post-TAE. The primary outcome was the re-bleeding rate after TAE. Secondary outcomes were complication rate and severity according to the Clavien-Dindo classification, and 30-day mortality rate.
Results: 87 patients were included in the study. All patients had peptic ulcer bleeding with most bleeding sites in the duodenum (97%) (vs. 3% in the stomach.) Re-bleeding after TAE was observed in 13 of 87 patients (15%). The use of more than 13 coils per TAE significantly lowered the risk of rebleeding (OR: 9.06, 95% CI: 1.09 – 75.2). No statistically significant risk factors of re-bleeding were identified. Minor complications were observed in 14 of 87 patients (16%) and severe complications were observed in 6 of 87patients (7%). The 30-day post-TAE mortality rate was 19/87 (22%). Although not statistically significant, a trend towards higher mortality was observed among patients with duodenal ulcers (OR 3.99 95% CI: 0.96 – 16.54), and with a Charlson comorbidity index score above 8 (OR: 2.04 95% CI: 0.89 – 4.65). The median survival rate was 21 months (95% CI: 9.8 – 31).
Conclusion: TAE in patients with NVUGIB is safe and efficient but is associated with surprisingly low median survival.

Morbidity in routine laparoscopic appendectomy – a regional cohort study

K. Folmann Finne[1], A. Bang-Nielsen[1,2], A.A.N. Abdulrahman[3], T. Malik[4], L. Dyrved[1], P.C.H. Jakobsen[1], L.N. Jørgensen[3,5], J. Kleif[1,5], C.A. Bertelsen[1,5]
[1]Nordsjællands Hospital - Hillerød, Kirurgisk afdeling K, Hillerød, Denmark, [2]Hvidovre Hospital, Gastroenheden, Hvidovre, Denmark, [3]Bispebjerg Hospital, Abdominalcenter K, København NV, Denmark, [4]Herlev Hospital, Gastroenheden, Herlev, Denmark, [5]Det Sundhedsvidenskabelige Fakultet, Københavns Universitet, Institut for Klinisk Medicin, København N, Denmark

Background: En normal appendix har traditionelt været efterladt in situ ved laparoskopi på mistanke om akut appendicitis, men aktuelle internationale retningslinjer anbefaler rutinemæssig appendektomi. Studier tyder dog på øgede omkostninger, indlæggelsestid og morbiditet efter appendektomi af normal appendix. Dette studie søger at afklare morbiditet efter rutinemæssig laparoskopisk appendektomi (LapApp) sammenholdt med diagnostisk laparoskopi (DL).
Method: Retrospektiv kohortestudie på Region H's fire akutkirurgiske afdelinger. Patienter, der fik foretaget akut laparoskopi på mistanke om akut appendicitis i perioden 17-3-2017–1-4-2021, blev registreret. Studiegruppen fik foretaget LapApp trods normale intraoperative fund, eller hvis appendix var histopatologisk normal. Kontrolgruppen fik kun foretaget (DL). Mesenteriel lymfadenitis blev ikke betragtet som patologi.
Primære endepunkt var risiko for laparoskopi eller laparotomi indenfor 3 år efter indeksoperationen, og sekundære var indlæggelsestid samt absolut risikoforskel for reoperation og postoperative komplikationer indenfor 30 dage.
Results: Præliminære resultater for 9.904 ud af estimeret 10.500 patientforløb. 664 (6,7%) er inkluderet i LapApp-gruppen og 726 (7,3%) i DL-gruppen. Medianopfølgning er indtil videre 3,3 (IQR: 2,8-4,1 år).
Atten (2,6%) patienter i DL-gruppen fik efterfølgende foretaget laparoskopi på mistanke om appendicitis. 17 af disse 726 blev senere appendektomeret, men kun 4 (0.6%) havde histologisk akut appendicitis. De resterende 13's appendix var uden patologi.
Én patient i DL-gruppen døde indenfor 30 dage som følge af overset tyndtarmslæsion. Ingen døde i APP-gruppen. Ingen blev reopereret inden for 30 dage i DL-gruppen, mens 6 (0,9%) i LapApp-gruppen blev reopereret i universel anæstesi (Clavien-Dindo grad 3b). Ingen yderligere alvorlige komplikationer forekom (Clavien-Dindo grad 3b+). Henholdsvis 17,5% i LapApp-gruppen mod 13,1% i DL-gruppen blev genindlagt (absolutte forskel 4,4% (95% CI 0,5–8,3%; p<0.00001). Resultater for hyppigheden af andre intraabdominale indgreb efter indeksoperationen foreligger endnu ikke.
Conclusion: Rutinemæssig laparoskopisk appendektomi var associeret med højere kirurgisk komplikationsrate, risiko for reoperation samt hyppigere genindlæggelse. Der synes ikke at være betydende risiko for akut appendicit inden for 3 år, når appendix lades in situ ved diagnostisk laparoskopi uden fund af patologi.

Objectively quantified sleep and quality of recovery in patient undergoing major abdominal emergency surgery: a prospective cohort study in the in- and outpatient setting

M.T. Madsen[1], J. Clausen[2], I. Gögenur[2]
[1]University of Copenhagen, Department of Surgery, Slagelse, Denmark, [2]University of Copenhagen, Department of Surgery, Center for Surgical Science, Køge, Denmark

Background: It is well established that patients undergoing major abdominal emergency surgery suffer from considerable morbidity and mortality, which negatively effects postoperative reconvalesence. Furthermore, perioperative sleep and circadian rhythm is markedly effected by the imbalanced homeostasis and from the surgical trauma itself. The major abdominal emergency surgery patients represents a high-risk population for poor reconvalesence compared to almost all other surgical populations. The aim of the current study was to provide a detailed description of in- and out of hospital, reconvalesence measured both objectively and subjectively.
Method: A prospective cohort study of 40 consecutive major abdominal emergency surgery patient was undertaken at a tertiary university hospital in Denmark. Patients were included immediately postoperatively and followed until postoperative day 30 whether in or out of hospital. Participants were measured continuously with an Actigraph yielding a sleep-wake assessment

throughout the study period. Patients quality of recovery were assessed daily during hospital stay via QOR-15 and on postoperative days 10, 20 and 30.
Results: Forty patients were included; however, one was lost to follow-up due to malfunction of the Actigraph. The mean age was 63.5 years, 41% were male, 71% ASA ≤2 and 97% PS≤1. 71% were operated for mechanical bowel obstruction and 21% of cases were laparoscopically.
First postoperative night had 346.6 min. total sleep time; 78.9% sleep efficiency; 90.6 min. wake after sleep onset; 21 min. sleep latency and five awakenings. First postoperative day period had 696 min. wake; 271 min. sleep, and 11 naps. QOR-15 on postoperative day 1 was 90.9, with average increase at discharge 24.2 and 45.9 on POD30.
Repeated measure analysis showed no significant changes in nighttime or daytime sleep-wake outcomes until day 30. Female gender and young age was associated with more total sleep time, higher sleep efficiency, less wake after sleep onset and fewer awakenings. Furthermore, female gender, young age and high baseline QOR-15 score was associated with better daytime sleep-wake rhythm.
Conclusion: The current study describes, in detail, recovery of major abdominal emergency surgery patients. Sleep immediately postoperatively quantitatively represent poor sleep and no improvement was shown. Male gender, old age and low baseline quality of recovery were all associated with a worse sleep-wake rhythm. Future studies should explore the clinical implications.

Are surgical trainees ready to perform surgery independently? The supervisors' perspectives: a scoping review

K.B. Hesseldal[1], T. Haug[1], R. Dall Jensen[2], C. Paltved[2], A. Husted Madsen[3]
[1]Gødstrup Hospital, Goedstrup Surgical Research Unit, Herning, Denmark, [2]Koncern HR, MidtSim, Aarhus N, Denmark, [3]Gødstrup Hospital, Department of Surgery, Herning, Denmark

Background: Entrustable professional activities (EPAs) are widely used in the postgraduate assessment of young doctors in training and is a cornerstone in competency-based medical education. Tensions between receiving efficient workplace-based education in surgery and providing high-quality patient care is often highlighted in educational literature. Hence, an immense amount of literature aims to enhance surgical learning outside the operating room. However, trainees must be entrusted with decisions and operative procedures to achieve proficiency. While structured assessment tools and frameworks exist for the trainee to achieve both technical and non-technical feedback, little is known about the thoughts, behavior and challenges the supervisors are facing when residents are trusted with independent surgical procedures. The aim of this scoping review was to comprehensively identify studies describing the supervisors' thoughts and their methods on how to identify surgical independency among their trainees in the OR.
Method: Since the phenomena, surgical independency, extends over several research methodologies and the literature is scattered and heterogonous we conducted a scoping review in order to capture an overview of both quantitative and qualitative literature. A systematic scoping review methodology was applied with a search string built around the terms "Resident", "Autonomy" and "Surgery" and applied in five different databases. All empirical peer-reviewed publications of quantitative, qualitative and mixed-methods methodologies were included in order to consider different aspects of the phenomenon.
Results: In total, 2727 publications remained after duplicates were removed. After title and abstract screening, 165 were assessed for full-text screening, from which 125 publications were eligible for review. The vast majority of the included studies were from North-America and within general surgery. From the results, 21 different assessment tools were identified, all aiming to evaluate the independency of a residents, but with very different approaches. Resulting in a wide range from objective ratio of supervisor interaction, combined summative evaluation of independency to supervisor gut feelings.
Conclusion: A great diversity can be seen in methods for assessing operative trust in the supervisor trainee relationship. To achieve proficiency, trainees need to gain trust from their supervisors to operate independently.

Assessing the Utility of Natural Language Processing for Detecting Postoperative Complications from Free Medical Text

E.E. Dencker[1,2], A. Bonde[1,2,3], M.H. Sillesen[1,2]
[1]Rigshospitalet, Center for Surgical Translational and artificial intelligence Research (CSTAR),

Copenhagen University Hospital, Rigshospitalet, København Ø, Denmark, [2]Rigshospitalet, Dep. Of Organ Surgery and Transplantation, Copenhagen University Hospital, Rigshospitalet, København Ø, Denmark, [3]Aiomic, Aiomic APS, København Ø, Denmark

Background: Across surgical specialties, upwards of 15% of patients experience postoperative complications (PCs). In a time of increasing healthcare costs and limited resources, quality improvement in surgery has never been more crucial. Most surgical outcome data are currently obtained through administrative data, which may fail to capture upwards of 80% of PCs. Until recently, the alternative has been manual curation and even though effective, this method is time-consuming, costly, and temporally delayed. The objective of this study was to assess the value of a new approach for detecting four specific PCs, including Urinary Tract Infection (UTI), Pneumonia, Sepsis and Septic Shock, using deep learning natural language processing of medical free text chart notes. The DL NLP approach was compared to existing methods of outcome detection.
Method: DL NLP models were trained on 17,486 surgical cases including 11 specialties from 18 somatic hospitals in the Capital and Zeeland region of Denmark. All surgical cases were performed between May 2016 and November 2021. Models were trained on 5,352 cases, validated on 8,329 cases, and lastly tested on 3,805 cases. Model performances were compared to administrative data (ICD-10 complication codes registered in the Electronic Health Record system and manual curation. Manual curation was performed by two independent medical reviewers, with a third reviewer curating cases where consensus was not reached. PCs were defined in accordance with the US National Surgical Quality Improvement Program (NSQIP) 2018 standards.
Results: The models had a test area under the receiver operating characteristic curves (ROC AUC) of 0. 988 for UTI, 0.993 for pneumonia, 0.992 for sepsis, and 0.998 for septic shock.
Conclusion: We developed DL NLP models for the detection of four postoperative complications. The performance of the models for each complication was superior to administrative data. In addition, the model performance approached that of manual curation and may thus present a promising approach for future surgical quality management.

Diagnostic tools for appendicitis are not used by surgeons: a survey

N.N.A. Bahta[1], A. Gram-Hanssen[1], I. Jonsson[2], S.M. Petersen[3], J. Rosenberg[1], S. Fonnes[1]
[1]Herlev Hospital, Center for Perioperativ Optimering, Afdeling for Mave-, Tarm- og Leversygdomme, Copenhagen, Denmark, [2]Holbaek Hospital, Department of Surgery, Holbaek, Denmark, [3]Bispebjerg Hospital, Department of Surgery, Copenhagen, Denmark

Background: We aimed to investigate surgeons' knowledge of diagnostic tools for diagnosing appendicitis and their attitudes towards implementing them.
Method: We included surgeons in East Denmark who independently could decide to perform a diagnostic laparoscopy for suspected appendicitis. The survey was developed in Research Electronic Data Capture and face-validated before use. It consisted of three parts: 1) the characteristics of the surgeons, 2) their pre-operative diagnostic approach, and 3) their knowledge and attitude towards introducing diagnostic tools in the clinic. Data were collected in January 2023.
Results: We achieved 83 (90%) responses, and 52% of surgeons believed that appendicitis was difficult to diagnose. Their pre-operative diagnostic approach mostly included symptoms and physical examinations for abdominal pain, and the biochemical marker C-reactive protein. A total of 48% knew of at least one diagnostic tool, and 72% had never used a diagnostic tool. Regarding the necessity of diagnostic tools in clinical practice, surgeons' options were divided into thirds: not needed, neither needed nor not needed, and needed. Surgeons indicated that diagnostic tools needed to be validated and easily applied before they would implement them.
Conclusion: Approximately 3/4 of surgeons had never utilized a diagnostic tool to diagnose appendicitis, and only half of the surgeons knew of their existence. The symptoms and findings incorporated in most diagnostic tools aligned with the surgeons' diagnostic approach. Surgeons were conflicted on if diagnostic tools needed to be implemented in clinical practice

Retrospective outcome audit of surgery for suspected acute appendicitis in children

L. Bøvling Sjælland[1], K. Thaarup Matthesen[1], M.C. Lauridsen[1]
[1]Aarhus Universitets Hospital, Mave- og tarmkirurgisk afdeling, Aarhus N, Denmark

Background: Acute appendicitis is the most common surgical diagnosis in children. This study wishes to investigate the diagnostics, operative management of and complications associated with acute appendicitis in pediatric patients at Aarhus University Hospital, Surgical department. At our institution the diagnostics and surgical indication of acute appendicitis is based on the clinical examination made by the attending surgeon and can be supplemented by bloodwork and/or preoperative imaging.
Method: A retrospective, observational study based on journal material on children who underwent surgery (diagnostic laparoscopy or appendectomy) from January 2018 until the end of December 2022. Data was collected from the electronic medical records (EPJ) and assembled in a RedCap database. Data was assessed using descriptive statistics.
Results: A total of 359 children (mean age 11.01 years, 58.5 % boys) who underwent surgery due to suspected appendicitis were included. Appendectomy was performed in 311 cases (86.6 %), thus in 48 cases appendix was considered not inflamed perioperative and were not removed (13.4%). Appendicitis was histologically confirmed in 287 cases (92.3%). Histologically in 24 cases the appendix was not inflamed, this giving a combined negative appendicitis rate of 20.1 %. Laparoscopic surgery was performed in 355 patients, with one being converted to open surgery. The remaining 4 patients underwent open appendectomy.
The mean time from hospital admissions to initiation of surgical procedure was 10.2 hours (SD 8.65). Mean time of hospitalization in days was 2.41 (1-21 days), shortest mean hospitalization in patients treated for phlegmonous appendicitis (1.17 days) and longest in patients treated for perforated appendicitis (5.03 days).
Post-operative complications (any case diverging from the expected) were detected in 76 patients, with 61 (80,2 %) having a Clavien Dindo (CD) score ≤2, and the highest rated CD score being 3b. Complication rate in the negative appendicitis group was 12.5 %.
Conclusion: In a period of 4 years 359 children suspected of appendicitis underwent surgery, in 311 cases appendectomy was performed, the combined negative appendicitis rate was 20.1 %. This giving a sensitivity of the initial clinical examination for appendicitis of 80 %. Mean time of hospitalization and rate of complications were similar in the two groups.

Diagnostic approach in children with suspected appendicitis

K.T. Matthesen[1], L.B. Sjælland[1], M.C. Lauridsen[1]
[1]Aarhus University Hospital, Department of Abdominal Surgery, Aarhus, Denmark

Background: At Aarhus University Hospital (AUH) the diagnosis and surgical indication of acute appendicitis is solemnly based on the clinical examination made by the attending surgeon and can, by preference, be supplemented by blood samples and/or preoperative imaging. Neither ultrasound (US) nor Pediatric Appendicitis Score (PAS) is used as routine work up.
Using laparoscopy as a diagnostic tool without previously applying available noninvasive methods to reduce the number of negative surgeries is costly in surgical hours, staff recourses and may carry an unnecessary risk to the patient as well as excessive time spent in the hospital.
Method: A retrospective observational study based on electronic medical records of pediatric patients (<18 yeas of age) who underwent surgery on suspicion of appendicitis was conducted. PAS was calculated for all included patients. Data were analyzed using STATA statistical software.
Results: From 2018-2022 359 pediatric patients at AUH underwent surgery for suspected appendicitis. In 13.37% a macroscopic normal appendix was found upon surgery. In 6.69% the appendix was evaluated as inflamed during surgery, hence removed, but was later found normal by histological examination. In summary, 20.05% of the patients undergoing surgery did not suffer from appendicitis.
In 357 cases PAS was evaluated. 262 had a PAS of ≥7 while 97 had a PAS of ≤6. The odds ratio of having appendicitis with a PAS of ≥7 compared to ≤6 was 7.53 (95%CI 4.13 -13.79) (P < 0.001). A significant difference in mean PAS was found in patients undergoing appendectomy versus patients in which appendix was evaluated as normal upon surgery. A PAS of ≥7 showed a sensitivity of 81.88% and a specificity of 62.5% with a positive predictive value of 89.69%
Conclusion: At AUH 20.05% undergoing diagnostic surgery on the suspicion of appendicitis seems to be incorrectly diagnosed. US is not used as a mandatory part of our diagnostic work up. High competence US is a limited resource, hence cannot be used as a routine in all patients. PAS might be able to select the group of patients who can go directly to surgery, and those were an US would be beneficial, thus reducing usage of unnecessary surgery.

Association between troponin I levels and mortality among patients undergoing acute high-risk abdominal surgery – a cohort study

C.T.B. Kanstrup[1,2], C.M. Serup[1,3], K.J. Svarre[1,3], M.C. Rasmussen[1,3], L.H. Lundstrøm[3,4], J. Kleif[1,3], C.A. Bertelsen[1,3]
[1]Copenhagen University Hospital – North Zealand, Department of Surgery, Hillerød, Denmark, [2]University of Copenhagen, Graduate School, Health and Medical Sciences, Copenhagen, Denmark, [3]University of Copenhagen, Department of Clinical Medicine, Health and Medical Sciences, Copenhagen, Denmark, [4]Copenhagen University Hospital – North Zealand, Department of Anaesthesiology, Hillerød, Denmark

Background: Myocardial injury after non-cardiac surgery (MINS) is associated with 30-day mortality in heterogenous surgical populations. However, the incidence of MINS amongst patients undergoing surgery for acute high-risk abdominal surgery is barely described and the importance of dynamic changes known from acute myocardial injury has not previously been investigated. The objectives of the study were to determine the incidence of MINS in this population, the association between short-term mortality and MINS, and whether TnI dynamics has any impact on mortality amongst patients with MINS.
Method: This was a prospective cohort study of 341 patients undergoing acute surgery for gastrointestinal perforation, anastomotic leakage, obstruction, mesenterial ischemia, or necrosis. All patients had plasma troponin I (TnI) concentrations measured daily during the first four postoperative days. MINS was defined as any increased TnI level > 59 ng/l. TnI-dynamic was defined as either two succeeding measurements of TnI > 59 ng/l with an increase/fall of more than 20%, or one measurement of TnI > 59 ng/l with a succeeding measurement of TnI < 59 ng/l and a decrease of more than 50%. Inverse probability of treatment weighting and competing risk analyses were used to calculate adjusted mortality rates.
Results: The incidence of MINS was 23.8% (confidence interval (CI), 19.2–28.3), and dynamic TnI changes occurred in 15.6% (95% CI 11.7%–19.4%) of the patients. The unadjusted 30-day and 1-year mortality were 19.8% (95% CI 11.1%–28.4%) and 35.9% (95% CI 25.4%–46.4%) in patients with MINS compared with 2.7% (95% CI 0.7%–4.7%) and 11.6% (95% CI 7.7%–15.5%) in patients without MINS (p = < 0.001). After adjusting, the differences in 30-day, 90-day, and 1-year risk of mortality remained significant. There was no difference in mortality between patients with or without dynamic changes in TnI level.
Conclusion: MINS occurred in 23.8% within the four days after surgery for acute high-risk abdominal surgery and was associated with an increased 30-day, 90-day, and 1-year mortality. TnI monitoring might help to identify patients with increased risk of mortality and improve care after major general surgery. Further research on preventive measures and treatments is needed.

Artificial Intelligence in Danish Trauma care: Predicting in-hospital mortality

A. Millarch[1], M. Sillesen[1]
[1]Rigshospitalet, Department of Organ Surgery and Transplantation, Copenhagen, Denmark

Background: Accurately predicting patient outcomes is crucial for improving healthcare delivery. Artificial intelligence (AI) based risk prediction models are widely emerging and often outperforming conventional models, such as Trauma and Injury Severity Score (TRISS) for predicting mortality in trauma care.
AI-models generally benefit from high data volume for the training process. The Danish trauma population size may be limiting the performance of AI-based models exclusively trained on local datasets. In such a case, whether to opt for de-novo training of prediction models on local datasets, direct porting of externally trained models, or a transfer learning approach is not well studied, and constitutes the focus of this study.
We hypothesized that a transfer learning approach of models trained on large external datasets would provide optimal prediction results compared to de-novo training on local datasets or directly porting externally trained models, while outperforming TRISS, for the purpose of predicting in-hospital mortality following traumatic injury in Denmark.
Method: Using an external dataset of trauma patients from the US Trauma Quality Improvement Program (TQIP) and a local dataset aggregated from the Danish Trauma Database (DTD) enriched with Electronic Health Record data, we tested a range of model-level approaches focused on predicting in-hospital trauma mortality on DTD data.
Modeling approaches included de-novo training of models on DTD data, direct porting of models trained on TQIP data to the DTD, and a transfer learning approach by training a model on TQIP data with subsequent transfer and retraining on DTD data.
Furthermore, a variety of machine learning methods and data-level approaches, including mixed dataset training were also tested.

Results: Using a neural network trained on a dataset consisting of a subset of TQIP and DTD, with transfer learning (retraining on DTD), we achieved excellent results with a ROC-AUC: 0.988 largely outperforming TRISS with ROC-AUC: 0.853.
Directly porting an AdaBoost model resulted in ROC-AUC: 0.983 and a de-novo neural network model achieved ROC-AUC: 0.974.
Conclusion: All our AI-based models largely outperformed TRISS predicting in-hospital mortality for the Danish Trauma population. Our results indicate that including external datasets in the training process may be beneficial for performance.

Health-related quality of life is a predictor of readmission following emergency laparotomy

L. í Soylu[1], J.B. Hansen[1], M. Kvist[1], J. Burcharth[1], D. Kokotovic[1]
[1]Copenhagen University Hospital – Herlev and Gentofte, Department of Gastrointestinal and Hepatic Diseases; Emergency Surgery Research Group Copenhagen (EMERGE Cph), Copenhagen University Hospital, Herlev, Denmark

Background: Health-related quality of life (HRQoL) is a multi-dimensional concept used to examine the impact of patient-perceived health status on quality of life. Patients' perception of illness affects outcomes in both medical and elective surgical patients; however, no studies have explored the effect of HRQoL in the emergency surgical setting. The aim of this study was to examine if patient reported preoperative HRQoL was a predictor of unplanned readmission after emergency laparotomy.
Method: This study included 215 patients who underwent emergency laparotomy at Copenhagen University Hospital, Herlev, between August 2021 and July 31 2022. Patient-reported HRQoL was assessed with the EuroQol Group EQ-5D index (EQ-5D-5L descriptive system and EQ-VAS). The population was followed from 0 to 180 days after discharge and readmissions and days alive and out of hospital were registered. A Cox proportional hazard model was used to examine HRQoL and risk of readmission within 30 and 180 days.
Results: Within 30 days, 28.4% of patients were readmitted, and within 180 days the number accumulated to 45.1%. Poor self-evaluated HRQoL was a predictor of 180-day readmission, as well as significantly associated with fewer days out of hospital within both 90- and 180 days. Low HRQoL and discharge with rehabilitation were independent risk factors for short- (30-day) and long-term (180-day) emergency readmission.
Conclusion: Patient-perceived quality of life is an independent predictor of 180-day readmission, and number of days out of hospital is furthermore correlated to HRQoL.

Granulomatous inflammation and fibrosis in the porcine gastro-intestinal tract after application of TachoSil and Biodesign patches

E. Budtz[1], N. Marcussen[1], T. Larsen[2], A. Ugianskiene[2], S.O. Einarsdottir[3], A. Valsamidis[4], K.A. Nielsen[4], B. Kjærgaard[5], K. Glavind[2], F. Lauszus[6], P. Helligsø[4], M.F. Nielsen[4]
[1]University Hospital of Southern Denmark, Department of Pathology, Aabenraa, Denmark, [2]Aalborg University Hospital, Department of Gynecology, Aalborg, Denmark, [3]Aalborg University Hospital, Department of Pathology, Aalborg, Denmark, [4]University Hospital of Southern Denmark, Department of Surgery, Aabenraa, Denmark, [5]Aalborg University Hospital, Department of Thorasic Surgery, Aalborg, Denmark, [6]University Hospital of Southern Denmark, Department of Gynecology, Aabenraa, Denmark

Background: Leakage from gastro-intestinal anastomoses is a severe complication associated with increased morbidity and mortality, increased treatment costs, and prolonged hospitalization. The present study was conducted with the aim of examining the potential effects of TachoSil and Biodesign patches on anastomotic tissue healing, by determining the histological features induced by these patches, when they are applied on fascia and on the serosal surface of the intestine.
Method: TachoSil and Biodesign patches were applied on fascia, stomach, duodenum, small bowel, and colon in 8 pigs. The pigs were sacrificed after 3 days and 5 weeks respectively, and relevant tissue samples were retrieved for histopathological examination, including immunohistochemical staining.
Results: Significant histopathological changes were only noted in samples from pigs sacrificed after 5 weeks. Examining these samples revealed granulomatous inflammatory responses in the subserosa with fibrosis, neovascularization, and high concentrations of myofibroblasts. Focally,

destruction of muscularis propria was noted. The inflammatory reactions after applying the two different types of patches did not show any substantial differences.
Conclusion: The histopathological analyses of the present study indicate that TachoSil and Biodesign patches may have the ability to promote connective tissue synthesis when applied to the gastrointestinal tract. This reactive response has the potential to increase the long-term strength of the tissue thereby lowering the risk of anastomotic leakage.

Patient-reported health related quality of life after emergency laparotomy

L. í Soylu[1], M. Kvist[1], J.B. Hansen[1], J. Burcharth[1], D. Kokotovic[1]
[1]Copenhagen University Hospital – Herlev and Gentofte, Department of Gastrointestinal and Hepatic Diseases; Emergency Surgery Research Group Copenhagen (EMERGE Cph), Copenhagen University Hospital, Herlev, Denmark

Background: Patient-reported health-related quality of life (HRQoL) measures the impact of patient perceived overall health on quality of life and is used to measure freedom from disability. Patients undergoing emergency laparotomy are vulnerable, and both anxiety and functional impairment are frequently reported in the immediate postoperative period, adversely affecting patient quality of life and increasing dependency. The aim of this study was to examine patient-perceived HRQoL following emergency laparotomy.
Method: This study included patients who underwent emergency laparotomy at Copenhagen University Hospital, Herlev, between August 2021 and July 31 2022. Patient-reported HRQoL was assessed with the EuroQol Group EQ-5D index, addressing patients experience of everyday challenges in 5 domains: Mobility, self-care, usual activities, pain/discomfort and anxiety/depression, in a 5-level scale. Patients were interviewed at baseline (assessing preoperative HRQoL) and on postoperative day (POD) 30, 90 and 180. The primary study population included 215 patients who completed the EQ-5D index at baseline, of whom some were lost, and some died during follow-up. In a subpopulation of 111 patients, HRQoL was available for all patients at baseline, POD 30 and 180.
Results: Patients reported a lower median HRQoL on postoperative day 30 (median 0.81 interquartile range (IQR) 0.68-0.90) compared to the HRQoL at baseline (median 0.92, IQR 0.84-1.00) and on POD 90 (0.92, IQR 0.65-0.97) and 180 (median 0.94, IQR 0.81-1.00). In the subpopulation, 44% patients reported a decline in HRQoL at POD 30, while 10% reported an improved HRQoL at POD 30. In contrary, 54% reported an improved HRQoL from POD 30 to POD 180 and only 8% reported a decline in the same period. HRQoL was mainly affected due to a decline in mobility, difficulties in participating in usual activities and an increased level of anxiety/depression.
Conclusion: Patient-perceived quality of life is decreased after emergency laparotomy, and on POD 30, 44% of patients are still experiencing limitations and difficulties in their everyday life. For the majority of patients, HRQoL has returned to preoperative levels 180 days after surgery.

Comparison of follow-up strategies after non-operative treatment of traumatic splenic injuries: A systematic review

A. Olsen[1], E. Possfelt-Møller[1], L.R. Jensen[1], M. Taudorf[2], S.S. Rudolph[3], C. Ewertsen[4], J. Cohen[4], L. Preisler[1], L. Penninga[1]
[1]University of Copenhagen, Department of Surgery and Transplantation, København Ø, Denmark, [2]University of Copenhagen, Department of Radiology, Division of Interventional Radiology, København Ø, Denmark, [3]University of Copenhagen, Department of Anaesthesia, København Ø, Denmark, [4]University of Copenhagen, Department of Radiology, København Ø, Denmark

Background: Splenic injury due to blunt trauma is one of the most common traumatic abdominal injuries. Non-operative management (NOM) is currently the preferred treatment in hemodynamically stable patients. After NOM, some patients develop splenic vascular anomalies, including pseudoaneurysms, which can be identified with radiological follow-up. No consensus on radiological follow-up strategies exists. Currently it is unclear in which patients, at what time and with what type of radiological modality, a follow-up scan should be performed. In this systematic review we assess the current evidence for radiological follow-up after NOM of traumatic splenic injuries.
Method: A systematic review was performed following the standard PRISMA-guidelines. MEDLINE, Embase, The Cochrane Library and trial registries were searched systematically from January

2000-March 2023. Studies were included if they described follow-up radiology of blunt splenic injuries.
Results: A total of 17 studies with 3392 patients were included: one randomised controlled trial, four prospective cohort studies and 12 retrospective cohort studies. All studies used radiological follow-up; seven used computed tomography (CT), four used CT and contrast-enhanced ultrasound (CEUS), two used ultrasound (US), one used CT and US, and one used CT, US and angiography. 13 studies found radiological follow-up reasonable to screen for vascular anomalies; seven of these recommended the use of CT, four recommended the use of CEUS and three preferred US. Four studies found the use of radiological follow-up to only be necessary when clinically indicated, based on initial radiological findings or presence of symptoms. Timing of follow-up differed between studies from within the first 24 hours of injury and up to 8 weeks post-injury. Which patients to follow-up, in regard to injury grade, also differed; from studies recommending following all grades of injury to studies recommending follow-up of only higher grades.
Conclusion: Radiological follow-up in traumatic splenic injury is a topic of controversy. Though, there is agreement of the need of follow-up, the modality and timing of follow-up is still uncertain.

Effects of opioid pain medication strategy on postoperative risk of readmission and mortality - a study of 239,582 surgical cases from Denmark

S. Winther[1,2], E. Jimenez-Solem[3], M. Sillesen[1,2]
[1]Copenhagen University Hospital, Rigshospitalet, Dep. Of Organ Surgery and Transplantation, Copenhagen, Denmark, [2]Center for Surgical Translational and artificial intelligence Research (CSTAR), Copenhagen University Hospital, Rigshospitalet, Copenhagen, Denmark, [3]Copenhagen University Hospital. Bispebjerg, DK, Dep. Of Clinical Pharmacology, Copenhagen, Denmark

Background: Systemic treatment with opioids is still a cornerstone of pain medication strategies following surgical procedures. Whether prescription practices have changed over recent years, and whether these practices can be associated with adverse outcomes such as mortality rates and readmission in Denmark, remains unknown.
We hypothesize that opioid prescription remained constant over recent years, and that no difference in mortality and readmission risk can be associated with prescription strategies.
Method: Electronic Health Records of 239,582 patients admitted > 24h after surgery in the Capital and Zealand Regions of Denmark from 2017 to 2021 were analyzed. All opioids administered during admission were converted to oral morphine equivalents and an average daily dose per patient was calculated. The type of opioid prescribed in the highest dosages is considered the primary pain medication strategy for the given patient and surgery.
Trends in usage was analyzed by linear regression, whereas a cox regression model was used to estimate hazard ratios (HRs) for assessing the association of dominant prescription strategies with 90-day mortality and readmission rates while controlling for relevant confounders.
Results: Prescription trends remained consistent during the study period. Compared with morphine as dominant strategy, tramadol and tapentadol had higher risk of readmission (HR 1.28, $p<0.001$), but lower mortality (HR 0,54, $p<0.001$). Oxycodone had comparable readmission risk (HR 1.00, $p=0.21$) but reduced mortality risk (HR 0.56, $p<0.001$)
Conclusion: The postoperative inhospital opioid prescription strategies in the Capital and Zealand regions have not changed significantly from 2017 to 2021. When compared to morphine, tramadol/tapentadol dominant strategies exhibit a higher risk of readmission but lower mortality risk, whereas oxycodone strategies exhibit comparable readmission but reduced mortality risk.

The impact of lock-down periods during the COVID-19 pandemic on surgical residency training in the North Denmark Region

A.J.A. Hamad[1], R.V. Flak[1], K. Holte[1,2]
[1]North Denmark Regional Hospital, Department of Surgery, Hjørring, Denmark, [2]Aalborg University, Department of Clinical Science, Aalborg, Denmark

Background: The COVID-19 pandemic had a significant impact on healthcare systems worldwide. During the lock-down periods most elective surgical procedures were postponed in Denmark. It is currently unknown whether these periods of lock-down caused a substantial decline in the total number of surgeries during the years where periodic lock-down was implemented and how this impacted surgical training during residency in Denmark. It was hypothesized that the lock-down

periods during the COVID-19 pandemic have negatively affected the quality of surgical training of surgical residents.
Method: Data was collected from three specific surgical procedures - herniotomies, cholecystectomies and appendectomies, from January 1st 2019 till December 31st 2021 in the North Denmark Region. Surgical procedures were divided furthermore into "training surgeries" which were performed by a surgical trainee and "non-training surgeries" which were performed by an attending surgeon.
Results: A total of 8,939 procedures was performed during this period in the North Denmark Region. The overall number of procedures decreased during the COVID-19 pandemic from 3,099 in 2019 to 2,861 in 2021. On the other hand, it was found that total number of surgeries performed by surgical trainees increased from 709 in 2019 to 1,280 in 2021.
Conclusion: The total number of the three selected surgeries were declined during COVID-19 pandemic, but the total number of training surgeries which were performed by surgical trainees were inclined, so there was no significant difference during the lock-down period.

The microbiome of the appendix differs in patients with and without appendicitis

S. Fonnes[1], S. Mollerup[2], S.J. Paulsen[2], B.J. Holzknecht[3], H. Westh[2], J. Rosenberg[1]
[1]Herlev Hospital, Afdeling for Mave-, Tarm- og Leversygdomme, Center for Perioperativ Optimering, Herlev, Denmark, [2]Hvidovre Hospital, Klinisk Mikrobiologisk Afdeling, Hvidovre, Denmark, [3]Herlev Hospital, Klinisk Mikrobiologisk Afdeling, Herlev, Denmark

Background: Appendicitis seems to be a disease of infectious origin, but the detailed pathogenesis is unknown. We aimed to investigate the microbiome of the appendix lumen in patients with and without appendicitis, including a comparison of the subgroups complicated vs. uncomplicated appendicitis.
Method: This prospective observational cohort study included adult patients undergoing laparoscopic appendectomy for suspected appendicitis. According to histopathological findings, the investigated groups consisted of patients with and without appendicitis, including subgroups of complicated vs. uncomplicated appendicitis based on the surgical report. A swab of the appendix lumen was analysed with shotgun metagenomics and outcomes included analyses of microbiome diversity and differential abundance of bacteria.
Results: A total of 53 swabs from patients with suspected appendicitis were analysed: 42 with appendicitis (38% complicated), and 11 without appendicitis. When comparing patients with and without appendicitis, they were equally rich in bacteria (alpha diversity), but the microbiome composition was dissimilar between these groups (beta diversity) ($p = 0.002$). No consistent bacterial species were detected in all patients with appendicitis, but a least three genera (*Blautia*, *Faecalibacterium*, and *Fusicatenibacter*) and two species, *Blautia faecis* and *Blautia wexlerae*, were more abundant in patients without appendicitis. For the subgroups complicated vs. uncomplicated appendicitis both measures for microbiome diversity were similar.
Conclusion: The appendix microbiome of adult patients with and without appendicitis differed, but the microbiome was similar for patients with complicated vs. uncomplicated appendicitis.

Similar rectal microbiome in patients with and without appendicitis

S. Fonnes[1], S. Mollerup[2], S.J. Paulsen[2], A.M. Petersen[2,3], B.J. Holzknecht[4], H. Westh[2], J. Rosenberg[1]
[1]Herlev Hospital, Afdeling for Mave-, Tarm- og Leversygdomme, Center for Perioperativ Optimering, Herlev, Denmark, [2]Hvidovre Hospital, Klinisk Mikrobiologisk Afdeling, Hvidovre, Denmark, [3]Hvidovre Hospital, Gastroenheden, Medicinske Sektion, Hvidovre, Denmark, [4]Herlev Hospital, Klinisk Mikrobiologisk Afdeling, Herlev, Denmark

Background: Diagnosing appendicitis and the severity of appendicitis preoperatively is difficult but necessary if different treatment strategies are to be implemented. As an infectious origin for appendicitis has been proposed bacterial differences could potentially be a diagnostic measure. However, the diagnostic measure must be readily available and without exposing the patients to harm. We aimed to investigate the diagnostic properties of the rectal microbiome in patients with suspected appendicitis.
Method: Adult patients undergoing laparoscopic appendectomy for suspected appendicitis were included in a prospective observational cohort study. These patients were grouped as patients with

and without appendicitis according to histopathological findings and as patients with complicated vs. uncomplicated appendicitis based on the surgical report. Rectal swabs were analysed with shotgun metagenomics. The outcomes included several analyses of microbiome diversity and differential abundance of bacteria.
Results: The rectal swabs of 209 patients with suspected appendicitis were analysed. The groups consisted of 163 patients with appendicitis (37% complicated), and 46 patients without appendicitis. Across all groups, patients with suspected appendicitis had similar rectal microbiomes. Thus, the microbiomes were equally rich in bacteria (alpha diversity), and the microbiome composition was similar between groups (beta diversity). The relative abundance of bacterial genera and species was also similar across all groups.
Conclusion: The rectal microbiome in adult patients with suspected appendicitis was similar, and rectal swabs cannot be used to diagnose appendicitis and the severity of appendicitis preoperatively.

Outcomes of temporary abdominal closure versus primary closure following emergency laparotomy in non-trauma patients

J. Gormsen[1], D. Kokotovic[1], J. Burcharth[1], T.K. Jensen[1]
[1]Copenhagen University Hospital Herlev, EMERGE CPH, Department of Gastrointestinal Surgery, Herlev, Denmark

Background: Temporary abdominal closure (TAC) was introduced as a damage control strategy (DCS) in trauma surgery, but has now been adapted to non-trauma surgery. Indications for TAC are heterogeneous and data regarding outcomes are scarce.
The aim of the study was to report the outcomes of TAC after non-trauma emergency laparotomy in a prospective cohort.
Method: Single-center prospective cohort study. Inclusion of all non-trauma patients who underwent emergency laparotomy between January 1, 2021 and December 31, 2022 at Copenhagen University Hospital Herlev in Denmark. All patients were treated according to a bundle of care trajectory for emergency high-risk abdominal surgery. Data regarding demography, patient characteristics, intraoperative strategy and postoperative complications were collected prospectively. Patients were followed for 90 days.
Results: In total, 576 patients underwent emergency laparotomy and were included in the study. TAC at the primary surgery was performed in 57 (10%) patients. Indications for TAC were DCS surgery due do considerable hemodynamic instability (37%), need for reassessment of bowel viability (37%) and loss of domain (25%). Fascial closure was completed after median 2 days. Mesh for traction or permanent mesh was used in 8 (14%) of the patients. Overall, 67 patients underwent re-laparotomy. TAC was performed in 15% of patients undergoing re-laparotomy. Most common indication for TAC after re-laparotomy was loss of domain.
Patients with TAC had a significantly higher risk of postoperative complications, specifically cardiovascular, pulmonary, gastrointestinal, neurological and infectious. The Comprehensive Comorbidity Index was 54 versus 21 in patients with and without TAC, respectively.
There was no significant difference in the risk of burst abdomen, re-laparotomy, 30- and 90-days mortality.
Conclusion: TAC was performed in 10% of patients undergoing non-trauma emergency laparotomy. Most common indications were damage control strategy, need for reassessment of bowel viability and loss of domain. Patients with TAC had a significant 2.5 fold higher risk of postoperative complications. There was no significant difference in the risk of burst abdomen, re-laparotomy, 30- and 90-days mortality.

Resultater og risikofaktorer efter akut operation for ileus

M.L. Lomholt[1], D.R. Axelsen[1], M.C. Lauridsen[1], J.A. Funder[1]
[1]Aarhus Universitets Hospital, Mave-tarmkirurgisk afdeling, Aarhus N, Denmark

Background: Ileus er en hyppig akut kirurgisk tilstand med en høj mortalitet og morbiditet sammenlignet med andre abdominalkirurgiske indgreb. I dette studie har vi opgjort samtlige patienter opereret akut for ileus over en 3 års periode på mave-tarm kirurgisk afdeling, Aarhus Universitetshospital. Man har nationalt i Lærings- og kvalitetsteams (LKT) fastsat mål for kvalitetsparametre som 30- og 90-dages mortalitet, tid til operation, indlæggelsestid etc. Vi

ønskede at vurdere, om vi, i denne specifikke patientgruppe, levede op til behandlingsmålene i LKT'et.
Method: Retrospektiv opgørelse hvor der initielt blev identificeret 219 unikke patientforløb i observationsperioden 2020-2022. Dataindsamling via elektronisk patientjournal (Midt EPJ) af 2 observatører. Efterfølgende beregnet hyppigheder med sammenligning af proportioner og sammenligning af middelværdier ved z-test.
Results: 30- og 90-dages mortalitet efter akut operation for ileus var henholdsvis 5,5% (12 patienter) og 10,0% (22 patienter). Flere risikofaktorer blev identificeret til at øge risiko for død indenfor 30 dage, herunder mandligt køn ($p<0,0001$), ASA 3 og 4 ($p<0,05$; $p<0,002$), kronisk hjerte- eller lungesygdom ($p<0,008$; $p<0,0001$), og tid fra OP til mobilisering ($p<0,0001$). Derudover flere biokemiske markører der var forbundet med højere dødelighed, herunder forhøjet kreatinin, kalium og karbamid, samt lav albumin ($p<0,002$; $p<0,02$; $p<0,03$; $p<0,003$). Patienter med kræft ved indlæggelsen eller som årsag til ileus havde markant højere dødelighed indenfor 90 dage end patienter uden kræft ($p<0,0001$). National Emergency Laparotomy audit (NELA) score system blev anvendt på vores data, og resultatet viste stærk sammenhæng mellem høj NELA-score og mortalitet, $p<0,0001$ for både 30 og 90 dages mortalitet. Den gennemsnitlige indlæggelsestid var 12,7 dage (0,54 - 71,57 dage)
Conclusion: Ileus er en akut livstruende tilstand, som selv med hurtig kirurgisk intervention har en 30-dages mortalitet på over 5% og en 90-dages mortalitet på 10%. Ved at benytte scoringssystemer for mortalitet, eksempelvis NELA-score, vil man kunne identificere højrisikopatienter med henblik på optimering af det postoperative forløb hos disse patienter. Vores resultater ligger indenfor rammerne af de nationale mål.

Perforation af duodenum - en usædvanlig, men alvorlig komplikation ved laparoskopisk kolecystektomi

M. Rincic Antulov[1], A. Allah Alnabhan[1], O.S. Bjerring[2], J. Krzak[1], P. Helligsø[1]
[1]Sygehus Sønderjylland, Mave tarm kirurgi, Aabenraa, Denmark, [2]Odense Universitetshospital, Mave tarm kirurgi, Odense, Denmark

Background: Iatrogen skade af duodenum er en sjælden komplikation ved laparoskopisk kolecystektomi, varierende mellem 0,2-3%.
Method: En 71-årig kvinde indlægges på 1. postoperative dag efter laparoskopisk kolecystektomi. Ved indlæggelsen er patienten afebril med nedsat BT på 83/67 mmHg, forhøjet puls på 116 og respirations frekvens på 16. Abdomen findes hård og diffust palpationsøm. Patient havde klinisk tegn på septisk chok, og hun hurtig fik CT-skanning af abdomen ,DAKIR protokol blev fulgt. Laparoskopisk kolecystektomi var ukompliceret, bortset fra perforation af galdeblæren med minimalt galdespild.
Ved CT-skanning findes fri luft omkring duodenums 3. stykke, som rejser mistanke om perforation.
Results: Patienten flyttes til OUH mhp. eksplorativ laparotomi, hvor man finder diffus peritonitis med purulent væske i abdomen og galdevæske i retroperitoneum. Der findes herudover en helt frisk perforation sv.t. duodenums 3. stykke samt perforation igennem den tildækkende del af tyndtarmskrøset. På denne baggrund konkluderes en iatrogen duodenal perforation under trokar-placering.
Der laves en fuld Kocker-manøvre og fuld mobilisering af højre colon ad modum Cattle-Brasch. Treitz ligament trækkes ned, hvorefter mobiliseres 3. og 4. stykke af duodenum. Defekten lukkes med PDS 4-0 med 5 enkeltknuder. Suturer tjekkes gastroskopisk og der placeres Freka-sonde i jejunum. Abdomen skylles og der lægges et intraabdominalt dræn. Fascien lukkes med loop-PDS x 2 og huden med agraffer.
Patienten indlægges efterfølgende på intensiv med i.v. Piperacillin/ Tazobactam, Metronidazol og Fluconazol.
På 4. postoperative dag opstartes enteral ernæring med 10 ml / time, suppleret med parenteral ernæring.
Abdominal dræn seponeres på 5. postoperative dag og dagen efter Freka-sonden.
Patienten overflyttes til hjemmesygehus på 8. postoperative dag mhp. optimering og genoptræning.

Conclusion: Perforation af duodenum er en sjælden, men forekommende komplikation efter laparoskopisk kolecystektomi. Det kan bl.a. opstå ved termiske skader, penetrerende skader fra Veress nål, skarpe instrumenter, sug eller trokarer.
Mistanken om en duodenal skade efter kolecystektomi bør rejses i tilfælde af galdelækage, peritonitis, intraabdominale eller retroperitoneale ansamlinger samt forhøjet amylase i blodprøver eller i abdominal væske.

Perforation i 3. stykke af duodenum er svært at diagnosticere og behandlingsforsinkelse kan medføre fatale konsekvenser.

Outcomes of a delirium prevention program after major abdominal emergency surgery; A prospective interventional study

K. Folmann Finne[1], T. Thorup[1], A.P. Gerholt Skovsen[1], M.-B. Tolstrup[1]
[1]Nordsjællands hospital, Kirugisk afdeling, Hillerød, Denmark

Background: Postoperative delirium is a frequently occurring complication in patients undergoing emergency surgery, associated with prolonged hospital stay and increased mortality. Pharmacological treatment is largely ineffective, and the clinical approach in surgical departments vary. We aimed to investigate if a structured non-pharmacological intervention could reduce postoperative delirium, complications and mortality in patients undergoing major emergency surgery.
Method: A prospective interventional study was conducted including all patients aged ≥65 years who underwent major abdominal emergency surgery. The intervention was initiated on August 1st 2022 and this study included patients from 01-09-22 to 31-05-23, excluding patients who had "damage control" or palliative surgery, and patients admitted to intensive care unit.
The intervention consisted of staff education, screening high-risk patients and extensive rearrangement of the surgical ward. A trained nurse implemented the strategy and patients at risk of delirium received daily motor and sensory stimulation.
Results were compared to an unmatched historic cohort. [AS1] Data was obtained from medical records, including pre-, intra-, and postoperative data.
Primary outcome was occurrence of postoperative delirium, secondary outcomes were mortality, postoperative complications, length of stay and expenses for additional health care personnel.
Results: 312 patients were included, 81 in the study group and 231 in the control group. Delirium was 6.2% in the interventional group compared to 15.2% in the historic cohort (p=0.038). In a binary regression analysis, the rate of delirium was significantly reduced in the interventional group; 81% 95% CI (0.042-0.814), p = 0.026. The 90-day mortality was not reduced; 14,8% in the interventional group compared to 8.7% in the historic cohort, p 0.116. The rate of overall medical complications was significantly lower in the study group (63% vs. 37% p<0.001). Length of stay was not reduced but the use of additional health care staff to nurse delirious patients in the ward completely ceased following the intervention.
Conclusion: A structured non-pharmacological effort may prevent the occurrence of delirium. The intervention did not decrease mortality or length of stay, but the need for supplementary staff was eliminated.

Changes in the Gut Microbiota in patients admitted to the Intensive Care Unit – a Case-series study

C. Hübner[1], C. Bundgaard-Nielsen[2], K.A. Jensen Damgaard[3], S. Sørensen[2], P.C. Leutscher[2]
[1]North Denmark Regional Hospital, Gastro-intestinal Surgery, Hjørring, Denmark, [2]North Denmark Regional Hospital, Centre for Clinical Research, Hjørring, Denmark, [3]North Denmark regional Hospital, Anesthesia and Intensive Care Treatment, Hjørring, Denmark

Background: Patients admitted to the Intensive Care Unit (ICU) are associated with several interventions, that can possibly lead to disruption of the normal gut microbiota. Dysbiosis has been reported as a result of broad-spectrum antibiotic therapy and is associated with a higher risk of clinical complications and mortality. However, the changes over time among patients admitted to the ICU is still not well known. The aim of this study was therefore to describe changes in the gut microbiota of ICU patients in conjunction with clinical parameters.
Method: Ten ICU patients were included in this case-series study. Patient data, including demographics and clinical characteristics, was extracted from medical records and registered in REDcap data management system. Fecal samples were collected daily and analyzed via sequencing of the 16S rRNA gene.
Results: All patients required mechanical ventilation and received broad-spectrum antibiotics and nutritional therapy. The composition of gut microbiota changed in all patients by a markedly and rapid decrease in bacterial diversity. Two patients (pt) were admitted with perforated diverticulitis (pt 5) and biliary acute pancreatitis (pt 10) respectively. Patient 5 underwent acute high-risk surgery. Both patients developed severe dysbiosis. A high abundance of *Enterococcus* occurred in

both patients, with patient 5 being totally dominated by *Enterococcus* the entire ICU stay. A striking shift in microbiota towards domination with *Enteroccus* was observed in patient 10, with a concurrent and interesting peak in C-reactive protein, despite no change in antibiotic treatment. Extreme F/B-ratios were observed in both patients, being >15,000 (pt 5) and >2,500 (pt 10).
Conclusion: The gut microbiota undergoes dysbiotic changes during ICU admission. *Enterococcus* is a well-known pathogenic specie and is associated with severe dysbiosis. Intestinal dysbiosis might trigger and maintain an inflammatory response. In previous case reports, Fecal Medical Transplantation (FMT) performed in the ICU was associated with a high clinical success. FMT may constitute a future therapeutic tool in selected critically ill patients not responding sufficient to standard ICU-treatment.

Postoperativ paralytisk ileus efter akut operation for ileus

D.R. Axelsen[1], M.L. Lomholt[1], M.C. Lauridsen[1], J.A. Funder[1]
[1]Aarhus Universitetshospital (AUH), Mavetarmkirurgisk afdeling (MTK), Aarhus N, Denmark

Background: Postoperativ paralytisk ileus (POI) er en hyppig tilstand efter mavetarmkirurgiske indgreb. Hvis tilstanden persisterer på 4. postoperative døgn kaldes det forlænget POI (PPOI). Vores patienter, der er opereret akut for ileus, har en gennemsnitsindlæggelsestid på 12,7 døgn (median=9,7 døgn). Vi ønskede at vurdere omfanget af PPOI hos denne gruppe af patienter, samt undersøge hvilke risikofaktorer der har betydning for udvikling af PPOI.
Method: Retrospektiv opgørelse af data fra patientjournaler på 219 patienter opereret akut for ileus i perioden 2019-2022 på MTK, AUH. Data blev samlet i en REDCAP database. Herefter blev der foretaget statistiske beregninger (z-test) på sammenligning af gruppen af patienter der udviklede PPOI og dem der ikke gjorde. PPOI defineres her som mindst 2 af følgende tilstede på 4. postoperative døgn: a) kvalme eller opkast, b) udeblivelse af første flatus, c) tolererer ikke peroralt indtag i 24 timer eller d) radiologisk mistanke om paralytisk ileus.
Results: 101 (46%) af de patienter der blev akut opereret for ileus udviklede PPOI. Tid (døgn) fra operation til første flatus (M=2,0 ; SD=2,0), første afføring (M=3,00 ; SD=2,49), sondeseponering (M=4,15 ; SD=4,44), sidste kvalme/opkast (M=6,04 ; SD=7,81) og til patienten tolererer enteral ernæring (M=4,29 ; SD=4,49). Den gennemsnitlige indlæggelsestid for patienter med PPOI var 17,6 dage mod 8,5 dage for patienter uden PPOI (Diff 9,1 [6,6-11,6], p<0,001). Vi fandt en sammenhæng mellem flere risikofaktorer og udvikling af PPOI herunder adhærenceløsning og cancer (RR=1,55 [1,05-2,27] p<0,03 og RR=0,44 [0,21-0,90] p<0,03), forhøjet kalium (Diff=0,13 [0,01-0,25] p<0,04), forlænget operationstid (Diff 0,29 [0,04-0,54] p<0,03), resektion af tyndtarm (RR 2,64 [1,65-4,23] P<0,001), brug af VAC med henblik på 2nd look (RR=3,12 [1,27-7,67] P<0,02). Vi fandt ikke en sammenhæng ved andre mistænkte risikofaktorer herunder alder, peroperativ blødning, symptomvarighed op til indlæggelse, BMI og konservativ behandling før operation. Der var ingen sammenhæng mellem PPOI og 30 / 90 dages mortalitet.
Conclusion: Næsten halvdelen af alle patienter der blev opereret akut for ileus udviklede PPOI. Det er 1,5-8 gange hyppigere end hvad der rapporteres ved elektiv tarmkirurgi. Patienter med PPOI havde markant længere indlæggelsestid end patienter uden PPOI. Risikofaktorer for udvikling af PPOI var adhærenceløsning, tyndtarmsresektion, VAC-behandling og lang operationstid.

The effects of troponin screening among patients undergoing acute high-risk abdominal surgery

C. Kanstrup[1,2], M.C. Rasmussen[1,3], C.M. Serup[1,3], K.J. Svarre[1,3], L.H. Lundstrøm[3,4], J. Kleif[1,3], C.A. Bertelsen[1,3]
[1]Copenhagen University Hospital – North Zealand, Department of Surgery, Hillerød, Denmark, [2]University of Copenhagen, Graduate School, Health and Medical Sciences, Copenhagen, Denmark, [3]University of Copenhagen, Department of Clinical Medicine, Health and Medical Sciences, Copenhagen, Denmark, [4]Copenhagen University Hospital – North Zealand, Department of Anaesthesiology, Hillerød, Denmark

Background: Acute high-risk abdominal surgery is associated with a high short-term mortality rate, which is partly attributed to myocardial injury after non-cardiac surgery. Myocardial injury after non-cardiac surgery is defined by elevated postoperative troponin levels and since it is often asymptomatic, troponin screening seems to be the best diagnostic method.
We aimed to assess whether implementing troponin screening with subsequent individualized interventions as standard care may reduce mortality after acute high-risk abdominal surgery.

Method: Retrospective cohort of 558 patients undergoing surgery from February 1, 2018, to February 28, 2021. The screening group consisted of patients undergoing surgery after March 1, 2019, when screening with troponin I on postoperative days one to four was implemented. Patients with myocardial injury were assessed, and treatment was individualized after multiple disciplinary consultations. The primary outcome was 30-day mortality risk difference adjusted with inverse probability treatment weighting.
Results: 382 patients were included in the screening group and 176 patients in the control group. In the screening group, fifteen (3.9%) died before the first blood sampling, and in 31 (8.1%) troponin screening was omitted, leaving 336 patients screened. Myocardial injury was diagnosed in 81 (24.1%) with cardiology consultations in 59 (72.8%) of these cases and 67 (82.7%) not having any interventions or treatment alterations due to myocardial injury.
The 30-day mortality was 13.8% (95% confidence interval 8.7%–18.9%) in the control group and 11.1% (95% confidence interval 8.0%–14.3%) in the screening group. The absolute risk difference was -2.7% (95% confidence interval -8.7%–3.3%; p=0.38), which was unchanged after adjustment. The difference remained unchanged after 90 days and one year.
Conclusion: Implementation of postoperative troponin screening did not significantly reduce the mortality after acute high-risk abdominal surgery. Research on the prevention and treatment of myocardial injury after non-cardiac surgery is warranted before the implementation of troponin screening as standard care.

Risikofaktorer for reblødning og mortalitet efter profylaktisk transarteriel embolisering hos patienter med højrisiko peptisk ulcusblødning: Et retrospektivt single center kohortestudie

D. Zetner[1], I. Roost Rasmussen[2], C. Palmquist Frykman[3], L. Rehné Jensen[4], R. Juul Jensen[3], E. Possfelt-Møller[4], M. Taudorf[3,5], L. Penninga[4,5]
[1]Københavns Universitetshospital – Nordsjællands Hospital, Billeddiagnostisk Afdeling, Hillerød, Denmark, [2]Københavns Universitetshospital – Hvidovre Hospital, Gynækologisk-Obstetrisk Afdeling, Hvidovre, Denmark, [3]Københavns Universitetshospital – Rigshospitalet, Afdeling for Røntgen og Skanning, København, Denmark, [4]Københavns Universitetshospital – Rigshospitalet, Afdeling for Organkirurgi og Transplantation, København, Denmark, [5]Københavns Universitet, Institut for Klinisk Medicin, København, Denmark

Background: Formålet med studiet var at undersøge risikofaktorer associeret med reblødning og 30-dages mortalitet efter profylaktisk transarteriel embolisering hos patienter med højrisiko peptisk ulcusblødning.
Method: Studiet var en retrospektiv gennemgang af alle patienter, som fik foretaget profylaktisk embolisering af arteria gastroduodenale på Rigshospitalet efter endoskopiverificeret og -behandlet peptisk ulcusblødning i perioden 2016-2021. Data blev indsamlet fra patientjournaler og og emboliseringsdata blev indsamlet fra RIS/PACS. Vi udførte logistisk regressionsanalyse for begge outcomes og mulige risikofaktorer. Risikofaktorerne inkluderede: aktiv blødning, synlig hæmoclips efter endoskopi, Rockall-score, anatomiske varianter og standard udførsel af emboliseringsproceduren.
Results: Vi inkluderede 176 patienter. Reblødning forekom hos 25% efter profylaktisk embolisering, og 30-dages mortaliteten var 15%. Ikke-standard emboliseringsprocedure øgede sandsynligheden for både reblødning (OR (odds ratio) 3,03, 95% CI (konfidensinterval) [1,39 – 6,58] og 30-dages mortalitet (OR 3,26, 95% CI [1,25 – 8,49]. Høj Rockall-score øgede sandsynligheden for 30-dages mortalitet (OR 2,59, 95% CI [1,24–5,39]). Aktiv blødning, synlig hæmoclips og anatomiske varianter havde ingen effekt på risikoen for reblødning eller 30-dages mortalitet. Årsager til afvigelse fra standard emboliseringsprocedure inkluderede: anatomiske varianter, målrettet behandling uden embolisering af arteria gastroduodenale og tekniske fejl.
Conclusion: Hos patienter med højrisiko ulcusblødning, som fik foretaget profylaktisk transarteriel embolisering, øgede afvigelse fra standard emboliseringsprocedure risikoen for reblødning og 30-dages mortalitet, og høj Rockall-score øgede risikoen for 30-dages mortalitet. Vi foreslår, at patienter med disse risikofaktorer monitoreres tæt efter embolisering, da tidlig erkendelse af reblødning potentielt kan give mulighed for korrekt og tidlig re-intervention.

Acute abdominal CT scans: Are they all justified?

A.M. Koc[1], K. Holte[1,2], M. Gielen[3], I.H. Frederiksen[2], L.O. Grønhøj[2], S.L. Olesen[2], P.D.C. Leutscher[4,2]

[1]North Denmark Regional Hospital, Department of Surgery, Hjoerring, Denmark, [2]Aalborg University, Department of Clinical Medicine, Aalborg, Denmark, [3]North Denmark Regional Hospital, Department of Radiology, Hjoerring, Denmark, [4]North Denmark Regional Hospital, Centre for Clinical Research, Hjoerring, Denmark

Background: The number of CT scans performed worldwide has increased in the past 20 years with abdominal CT scans being among the most frequently performed. The Danish health authorities observed an increase in the number of CT scans in Denmark from 2003 to 2014 by almost 250%. Furthermore, abdominal-, upper abdominal-, and lower abdominal CT scans are among Denmark's five most frequently performed CT scans and show the same increasing tendency. All diagnostic imaging methods have pros and cons, which is why the official guidelines in the North Denmark Region (RN) have recommendations on the best-suited imaging method depending on the tentative diagnosis.
This study aimed to perform a clinical audit of clinical indications for acute abdominal CT scans.
Method: This quality assurance study at the North Denmark Regional Hospital (RHN) was performed by two teams of abdominal surgeons and radiologists as a clinical audit of 100 patient medical records from 2018 and 2022, respectively, to evaluate the clinical justification. The benchmark of the clinical audit was based on best medical practice within the field of surgery and radiology, respectively. Best medical practice was determined by clinical rationale and available radiology guidelines.
Results: This study counted 8107 acute abdominal CT scans throughout a four-year period from 01-02-2018 to 31-01-2022 at RHN which revealed a declining tendency in the number of performed CT scans ($p>0.05$). The audit revealed that one-third of the 200 acute abdominal CT scans were considered unjustified. The teams reached initial consensus in 91% and 98% ($p<0.05$) and later a final consensus in 100% ($p>0.05$).
Conclusion: This study found declining tendency in the number of performed acute abdominal CT scans, and the audit concluded that one-third of the CT scans were clinically unjustified. It is recommended to develop and implement more standardised guidelines addressing clinical indications for acute abdominal CT scans.

One-year outcomes following operative or non-operative management of adhesional small bowel obstruction

M. Mortensen[1], M. Alouda[2], Z. Bond[3], J. Burcharth[2], K.F. Finne[4], T.K. Jensen[2], I. Lolle[3], T. Malik[5], L. Ngo-Stuyt[6], L.B.J. Nielsen[1], M. Olausson[6], A.P. Skovsen[4], M.A. Tolver[6], H. Smith[1]
[1]Bispebjerg Hospital, Abdominalcenter K, Copenhagen, Denmark, [2]Herlev Hospital, Department of Surgery, Copenhagen, Denmark, [3]Hvidovre Hospital, Department of Surgery, Copenhagen, Denmark, [4]Nordsjællands Hospital, Department of Surgery, Hillerød, Denmark, [5]Slagelse Hospital, Department of Surgery, Slagelse, Denmark, [6]Sjælland University Hospital, Department of Surgery, Køge, Denmark

Background: A trial of initial non-operative management is recommended in stable patients with adhesional small bowel obstruction (aSBO). However, recent retrospective studies suggested that early operative management may be of benefit in reducing subsequent recurrences. This study aimed to compare recurrence rates and survival in patients with aSBO treated operatively or non-operatively.
Method: This was a prospective cohort study conducted at 6 acute hospitals in Denmark, including consecutive patients admitted with aSBO over a 4-month period. Patients were stratified into two groups according to their treatment (operative versus non-operative) and followed up for 1 year after their index admission. Primary outcomes were recurrence of SBO and overall survival within 1-year of index admission.
Results: A total of 201 patients were included, 118 (58.7%) of whom were treated operatively during their index admission. Patients undergoing operative treatment had significantly better 1-year recurrence-free survival compared to patients managed non-operatively (operative 92.5% versus non-operative 66.6%, $p < 0.001$). However, when the length of index admission was taken into account, patients treated non-operatively spent significantly less time admitted to hospital in the first year (median 3 days non-operative versus 6 days operative, $p < 0.001$). On multivariable analysis, operative treatment was associated with decreased risks of recurrence (HR 0.22 (95% CI 0.10-0.48), $p < 0.001$) but increased risks of all-cause mortality (HR 2.48 (95% CI 1.13-5.46, $p = 0.024$).
Conclusion: Operative treatment of aSBO is associated with reduced risks of recurrence but increased risks of mortality in the first year after admission.

Patients would accept antibiotics for appendicitis if recommended by their surgeon – a qualitative interview study

S. Rønholdt Henriksen[1], J. Rosenberg[1], S. Fonnes[1]
[1]Herlev and Gentofte Hospital, University of Copenhagen, Centre for Perioperative Optimization, Department of Surgery, Herlev, Denmark

Background: Antibiotics as a treatment for uncomplicated appendicitis have been studied intensely in terms of complications and recurrence of appendicitis to assess if they could replace appendectomy in selected patients. The group of patients that have their healthy appendix removed or left in situ could potentially benefit from a more conservative treatment with antibiotics. However, the patients' perspectives on antibiotics and especially how the surgeon can influence this decision have not been described in depth. We therefore aimed to explore patients' thoughts and opinions on the use of antibiotics for suspected uncomplicated appendicitis instead of appendectomy.
Method: Semi-structured interviews were conducted with patients who were operated for suspected appendicitis and either had a negative appendectomy or a normal diagnostic laparoscopy. Patients were recruited from a large university hospital in the Capital Region of Denmark and gave informed consent. Interviews were analyzed using inductive content analysis.
Results: Rich data were reached after interviewing 15 patients, and three themes were formulated: 1) patients wondered if antibiotics or surgery would be the correct treatment, because of the risks of complications or recurring appendicitis, 2) some patients wanted to avoid surgery for different reasons, e.g., they were scared, and 3) patients relied heavily on recommendations from the surgeon.
Conclusion: Patients have different perspectives when asked about their preference towards surgery and antibiotics. Some preferred surgery because it seemed quick and safe while some preferred antibiotics because they were anxious about surgery or wanted to skip the postoperative recovery period. Patients relied heavily on recommendations from their surgeon, and if antibiotics were to be implemented, it would possibly be best accompanied by guiding and asking the patient about their preferences before deciding on treatment strategy.

Exploring patients' attitudes towards shared decision-making in appendicitis–a qualitative interview study

S. Rønholdt Henriksen[1], H. Konradsen[2], J. Rosenberg[1], S. Fonnes[1]
[1]Herlev and Gentofte Hospital, University of Copenhagen, Centre for Perioperative Optimization, Department of Surgery, Herlev, Denmark, [2]Herlev and Gentofte Hospital, University of Copenhagen, Department of Surgery, Herlev, Denmark

Background: From a surgeon's perspective appendicitis is a disease treated with appendectomy. In some cases, a normal appendix is removed. The aim of this study was to investigate the patients' thoughts and opinions on having surgery when no appendicitis was found and on their involvement in treatment.
Method: This study is reported according to the COREQ guideline. Eligible patients either had a diagnostic laparoscopy with no resection of the appendix or a negative appendectomy confirmed by histopathology. Patients gave informed consent to participate. Interviews were conducted using a semi-structured interview guide. Interviews were transcribed verbatim, and data were analyzed using content analysis.
Results: This study consisted of 15 interviews. Analysis of the interviews resulted in the formulation of four themes: 1) the patients that received a negative appendectomy did not know the results of their histopathology report, 2) patients had opposing views on having a normal appendix removed or left in situ, 3) most patients were not involved in decision-making about surgery and were content with it, and 4) some patients were nervous about having surgery because of general anaesthesia or the risk of a burst appendix.
Conclusion: The amount of information given both before and after operation to the patients was sparse. Patients were not aware of the histopathologic outcome. Patients' opinions on the removal of a normal appendix were diverse; some just wanted to make sure they could not have appendicitis in the future, and others wanted as minimally invasive surgery as possible. Patients were not involved in decision-making and were generally anxious about surgery and the risk of a burst appendix.

5 Breast surgery

Predicting Additional Axillary Metastases in Breast Cancer Patients with Positive Targeted Axillary Dissection Lymph Nodes after Neoadjuvant Treatment

F. Munck[1], M.-B. Jensen[2], I. Vejborg[3], M.K. Gerlach[4], M.V Maraldo[5], N.T Kroman[1], T.HF Tvedskov[1]
[1]Herlev-Gentofte Hospital, Dept of Breast Surgery, Hellerup, Denmark, [2]Rigshospitalet, DBCG, København Ø, Denmark, [3]Herlev-Gentofte Hospital, Dept of Breast Examinations, Hellerup, Denmark, [4]Herlev-Gentofte Hospital, Dept of Pathology, Hellerup, Denmark, [5]Rigshospitalet, Dept of Clinical Oncology, København Ø, Denmark

Background: Axillary pathological complete response (ax-pCR) is frequent in breast cancer patients with $HER2^+$ and ER^- subtypes receiving neoadjuvant chemotherapy (NACT). Axillary lymph node metastases found by axillary staging after NACT generally warrant axillary lymph node dissection (ALND). This opposes the approach in primary surgery. Therefore, we investigated the risk of having additional LN metastases in the axilla when the targeted axillary dissection (TAD) LN harbored metastases after NACT. We aimed to select subgroups of NACT patients suitable for de-escalated axillary treatment.
Method: We extracted DBCG data and pathology files on patients receiving TAD in Denmark between 1.1.2016-31.8.2021. We subsequently cross-checked patients with two previous REDCap databases and pathology files. We analyzed data with univariate test and multivariate- and Firth logistic regression analyses.
Results: In 383 included patients, we found that a low proportion of positive TAD LNs (0-66.6% vs. > 66.6%) (OR = 0.34, 95%CI 0.17-0.62), only isolated tumor cells (ITC) in the TAD LN (OR 0.11, 95%CI <.01-0.82), and breast pCR (OR 0.07, 95%CI <.01-0.56) were associated with a low risk of having >3 positive non-TAD LNs. When analyzing patients with ≤3 positive non-TAD LNs (315 patients), the adjusted analysis showed that a low proportion of positive TAD LNs (33.3-66.6% vs. >66.6%) (OR = 0.45, 95%CI 0.27-0.76), only ITC in the TAD LN (OR = 0.14, 95%CI 0.04-0.54), smaller breast tumor at diagnosis (20-49 mm vs. ≥50 mm) (OR = 0.30, 95%CI 0.15-0.64) and breast pCR (OR = 0.38, 95%CI 0.15-0.96) were associated with no residual metastases in the axilla.
Conclusion: Breast pCR, a low proportion of positive TAD LNs, or only ITC in TAD LNs can reliably rule out >3 non-TAD metastatic LNs. In these patients axillary radiotherapy may possibly substitute ALND. In patients with only ITC in the TAD LN there is also a low risk of having any non-TAD LN metastases after NACT. For this group, no further axillary treatment could be considered.

Specification of Self-Reported Late-Term Impairments 3-7 Years after Primary Breast Cancer Surgery: *A Nationwide Cross-Sectional Study among Danish Breast Cancer Survivors*

K.M. Feder[1,2,3,4], L.M. Stokholm[4,5], H.B. Rahr[2,6], H. Klakk Egebæk[3,7,8], K. Gordon Ingwersen[1,2,4], M. Djernes Lautrup[6,9]
[1]University Hospital of Southern Denmark, Department of Physiotherapy, Vejle, Denmark, [2]University of Southern Denmark, Department of Regional Health Research, Odense, Denmark, [3]University College South Denmark (UC SYD), Department for Applied Research and Development, Esbjerg Ø, Denmark, [4]Odense University Hospital, University of Southern Denmark, Research Unit OPEN, Department of Clinical Research, Odense C, Denmark, [5]University of Southern Denmark, Department of Clinical Research, Odense C, Denmark, [6]University Hospital of Southern Denmark, Department of Surgery, Vejle, Denmark, [7]University of Southern Denmark, Research Unit of Exercise Epidemiology, Institut for Idræt, Odense, Denmark, [8]Bispebjerg and Frederiksberg Hospital, Centre of Clinical Research and Prevention, Frederiksberg, Denmark, [9]Aarhus University Hospital, Department of Plastic and Breast Surgery, Aarhus N, Denmark

Background: In Denmark yearly 5,000 women are diagnosed with breast cancer. 5-year survival has improved to 90% but late-term impairments remain common 6 years after surgery. There are variation in the self-reported late-term effects in Danish women 3-7 years after primary breast cancer surgery. The aim was to investigate the most frequent self-reported late-term impairments in a nationally representative sample of primary breast cancer survivors.
Method: A nationwide population-based sample of 9,934 primary breast cancer survivors 3-7 years post-treatment, aged ≥18 years. This sample was drawn from The Danish Registers. The focus was late-term impairments in four dimensions: lymphedema, shoulder discomfort, sensory

nerve disturbance, and cancer related fatigue. Survey content: Self-administered questionnaire including questions on general demographics, sociodemography, and breast cancer late-sequelae.
Results: Out of the 9,934 invited women, a response was received from 6,047, yielding a response rate of 60.9%. The average age among the responders was 63.2 years. Notably, the majority of respondents had a lower level of formal education (53.5%), married (62.4%), maintained a healthy Body Mass Index within the normal range (40.6%), and reported having no co-morbidities (45.6%). Among the responders, a substantial of 60.7% reported they experienced post-treatment sequelae within the last 3-7 years. The overall self-reported late-term impairments were shoulder discomfort (45.7%), cancer related fatigue (34.5%), sensory nerve disturbance (30.1%) and lymphedema (16.0%). As their primary two most serious late-sequelae the responders reported shoulder discomfort (35.9%), cancer related fatigue (25.2%), sensory nerve disturbance (14.9%), and lymphedema (8.9%). Late-term effects related to breast cancer treatment are rarely shown in the Danish National registers and showed an registration in the Danish secondary care respectively lymphedema (7.2%), shoulder discomfort (0.7%), cancer related fatigue (0.2%), and sensory nerve disturbance (0.1%).
Conclusion: Results showed that primary breast cancer survivors reported late-term impairments 3-7 years after their treatment. On the other hand, the incidence of registered late-term effects in the Danish National Registers was notably low, suggesting a potential underutilisation of specialised treatment in secondary healthcare by women. Further research should focus on late-sequelae and related services, so that women do not need to seek help on their own.

Ten years axillary recurrence and survival after omission of axillary lymph node dissection in breast cancer patients with micrometastases or isolated tumor cells in the sentinel node: A Danish national register study

R. Hawaz-ali[1], N. Kroman[1], T. Filtenborg Tvedskov[1], F. Munck[1]
[1]Gentofte Hospital, Department of Breast Surgery, Hellerup, Denmark

Background: In 2012, national Danish guidelines regarding breast cancer patients with micrometastases (pN1mi) or isolated tumor cells (pN0(i)) in the sentinel node (SN) were changed, resulting in axillary lymph node dissection (ALND) being omitted. ALND is associated with lymphedema, paresthesia, functional impairment and pain. Since 2012, approximately 450 Danish breast cancer patients have been spared ALND each year. Development of axillary recurrence(AR) from minimal metastatic disease left in the axilla may take longer than experienced after macrometastatic disease. Therefore, we aimed to investigate long-term follow-up to evaluate the safety of omitting ALND for patients with pN1mi and pN0(i) in the SN.
Method: In this national register-based study, we included all women with primary breast cancer surgery between 01.01.2008 and 31.12.2021, who had pN1mi and pN0(i) in the SN. The two groups were compared with SN-negative patients (pN0) without ALND. The primary outcome was AR, and secondary outcome was overall survival (OS). Information on surgery, nodal status and recurrence were retrieved from the national Danish breast cancer group (DBCG) database. We analyzed patient- and tumor characteristics with descriptive statistics, $\chi 2$ and Fisher exact test. The cumulative incidence of AR was calculated. OS was estimated using the Kaplan-Meier method and compared with a log-rank test.
Results: 22,790 patients were included in the study. Overall, 14.3% had pN1mi, 8.6% had pN0(i) and 77.1% had pN0. Analyzing patients with pN1mi or pN0(i) with or without ALND, 0.2% and 1.5%, respectively, had an AR. OS after 10 years of follow-up for patients with pN1mi or pN0(i) was 81.5%; 83.7% for patients with and 79.12% for patients without ALND. For pN0 patients without ALND, OS was 82%. The difference between the three groups was statistically significant($p< 0,01$). However, when adjusting for risk factors, there was no statistically significant difference in OS between the patients with pN1mi or pN0(i) with and without ALND ($p=0.6$).
Conclusion: In this large register-based nationwide study we found a slightly higher rate of AR after 10 years of follow-up in breast cancer patients with micrometastases or isolated tumor cells in the SN if ALND was omitted. However, the axillary recurrence rate was low (< 2%), and after adjusting for other risk factors the increased recurrence rate did not affect OS. These results confirm the safety of omitting ALND in these patients.

Klinefelter Syndrom og Brystkræft

H. Holm[1], I. Scheel Andersen[2]
[1]Regionshospitalet Viborg, Brystkirurgisk afdeling, Viborg, Denmark, [2]Regional Hospital Viborg, Breast Surgical Department, Viborg, Denmark

Background: Klinefelters syndrom (KS) skyldes et ekstra X-kromosom. Syndromet påvises primært hos mænd. KS er den hyppigste kønskromosomafvigelse og påvises hos cirka én ud af 600 drenge [1]. Tilstanden er forbundet med øget helbredsproblemer samt øget risiko for en række sygdomme og død [2,3,4,5,7]. Mænd med KS har op til 20-60 gange større risiko for at udvikle brystkræft sammenlignet med mænd i den generelle befolkning [6]. Syndromet er ofte underdiagnosticeret idet 50-75% af mænd med KS aldrig får stillet en diagnose [8,9]. Dette skyldes at kliniske symptomer varierer i omfang og sværhedsgrad, og mange har få eller ingen symptomer. [9,10]. Vores viden om KS er øget betydeligt i de seneste 80 år, og der er blevet rapporteret tilfælde af mandlig brystkræft (MBC) blandt KS-patienter, hvilket har øget interessen for at forstå denne sammenhæng.
Method: På baggrund af en sygdomshistorie blev der i brystklinikken HEM udført retrospektiv journalgennemgang i perioden fra januar 2019 til juli 2023. Formålet var at evaluere forekomsten af KS blandt mandlige brystkræftpatienter og vurdere, om nogle patienter blev henvist til udredning for KS efter klinisk vurdering i brystkirurgisk ambulatorium. Vi analyserede kliniske symptomer og værdier, der kunne indikere mistanke om KS. Derudover blev tumorstadie og tumorbiologisk profil noteret. Litteraturgennemgangen fokuserede på de seneste opdateringer vedrørende KS og risikoen for brystkræft.
Results: I løbet de sidste 5 år blev der diagnosticeret brystkræft hos 33 mænd. Kun én af disse patienter havde KS, og diagnosen var stillet på forhånd i forbindelse med udredning for barnløshed. En ud af de 32 øvrige patienter blev mistænkt for at har KS. Diagnosen blev senere afkræftet. Alle patienter med brystkræft blev tilbudt genetisk udredning. To patienter er BRCA-2 bærere. Gynækomasti blev beskrevet hos 51,5% af patienterne. Biologisk tumorprofil viste overvejende østrogenreceptor-positiv tumor og 5 havde HER2-positiv sygdom. En patient fik konstateret dissemineret sygdom.
Conclusion: Mænd med KS har en højere risiko for at udvikle brystkræft sammenlignet med mænd i baggrundsbefolkningen. Selvom risikoen er øget, er den dog væsentligt lavere end for kvinder. Den kumulative risiko for brystkræft hos mænd med KS i alderen 75 år er kun 1% [2,8]. Forebyggende mastektomi er ikke indiceret [4]. I 2020 blev første Europæiske guidelines vedrørende KS publiceret. Der er behov for yderligere studier til belysning af sygdommen og dens relation til brystkræft [8,9].

Topikal Tranexamsyre ved mastektomier reducerer hæmatom og re-operation

L. Tveskov[1], C. Bille[1]
[1]Odense Universitetshospital, Plastik kirurgi afd. Z, Odense C, Denmark

Background: Tranexamsyre (TXA) er en syntetisk aminosyre, som hæmmer aktiveringen af plasminogen og dermed hæmmer fibrinolysen. Det anvendes til forebyggelse og behandling af blødning og kan administreres intravenøst eller topikalt.
TXA anvendes blandt andet til alloplastik operationer, hjertekirurgi og postpartum blødning.
I Danmark anvendes TXA i plastikkirurgien på privathospitaler for at forebygge udvikling af hæmatom efter mammakirurgi. Der er dog relativt sparsom evidens for, om TXA nedsætter risikoen for hæmatomer efter mastektomi.
En metaanalyse fra 2021 finder ikke, at TXA har en effekt på risikoen for hæmatom efter mammakirurgi [1]. Metaanalysen inkluderede 4 RCT-studier på mastektomi og reduktionsplastik med enten intravenøs eller topikal anvendelse af TXA. Teoretisk må den største effekt af TXA kunne ses ved topikal anvendelse, da det virker lokalt i fuld dosis, hvorimod intravenøs anvendelse mindsker effekten ved at fortynde dosis ud i hele kroppen.
Ser man udelukkende på studier på topikal anvendelse, findes således fem studier [2-6]. Alle studierne finder en signifikant lavere mængde væske i drænet efter kirurgi hos de patienter, der har fået TXA. Ingen af studierne finder en effekt på hæmatom. Dog er der generelt meget få tilfælde af hæmatomer i studierne.
Method: Retrospektivt single center kohortestudie. Indeholdende X antal patienter fra 2020-2023. Interventionsgruppen udgøres af alle mastektomier udført gennem 1,5 år fra 01.04.2022 til 01.10.2023 efter opstart[CB1] [LT2] af TXA til alle mastektomier. Kontrolgruppen: mastektomier udført fra 01.10-2020 til 01.04-2022, hvor TXA endnu ikke blev anvendt på afdelingen.
Alle mastektomier i afdelingen behandles med TXA 1 g. Dette gøres ved at blande TXA 10 ml og NaCl 10 ml, i alt 20 ml væske, som installeres i drænet efter lukning af cikatricen. Drænet åbnes efter 30 min.

Results: Foreløbige resultater er ved at bliver gjort op, men de vil være helt klar til årsmødet. Der er en klar forventning om at TXA har effekt.
Conclusion: I en sammenligning af alle mastektomier uden rekonstruktion igennem 1,5 år med en tilsvarende gruppe det efterfølgende 1,5 år ser det ud som om at 1 g tranexamsyre som topikal behandling reducerer risikoen for hæmatom efter mastektomi.

Bedre smertedækning og kortere indlæggelsestid med supplerende regional anæstesi ved mastektomi med primær rekonstruktion

S.M. Steffensen[1], R.F. Vestergaard[1], M.O. Holm[2], C. Bille[1]
[1]Odense Universitetshospital, Plastikkirurgisk afdeling, Odense C, Denmark, [2]Odense Universitetshospital, Anæstesiologisk Intensiv Afdeling, Odense C, Denmark

Background: Mastektomi med primærrekonstruktion, ensidigt eller bilateralt, kan være forbundet med morfikakrævende smerter og bivirkninger relateret til dette, samt indlæggelse i flere dage. Vi ønskede at optimerer det perioperative forløb for denne patientgruppe, igennem ensartet information og forventningsafstemning, samt bedre smertedækning under og efter operationen.
Method: Vi iværksatte en række ændringer: Til forundersøgelse informeredes alle om at de forventedes udskrevet 1 dag postoperativt. Ved indlæggelsen blev der ligeledes udleveret et program for indlæggelsen inkl. forventet udskrivningstidspunkt dagen efter.
Ud over generel anæstesi fik patienter anlagt Erector Spinae Plane (ESP) blokade præoperativt. Dette bedøver et bælte omkring brystet.
Vi registrerede antal indlæggelses døgn, og total perioperative morfin forbrug.
Samme data blev indsamlet på en tilsvarende gruppe opereret inden denne ændring i regimet.
Results: Størstedelen af patienter på det nye regime blev udskrevet 1. postoperative dag, og havde behov for mindre morfin postoperativt.
Endelig data er endnu ikke optalt på pt. Forventes færdigbearbejdet til præsentation til DKS-årsmøde 2023.
Conclusion: Forventningsafstemning og nerveblok i forbindelse med mastektomi og rekonstruktion reducerede indlæggelsestiden med X dag og mængden af postoperativ morfin igennem det første døgn fra X til X.

Guideline Compliance in Surgical Treatment of Breast Cancer in the Elderly: a Danish, Nationwide, Register-based Study

C.E. Friis[1], L. Langhans[2], M.K. Mejdahl[1], N.T. Kroman[1], F. Munck[1]
[1]Gentofte Hospital, Brystkirurgisk Afdeling, Gentofte, Denmark, [2]Rigshospitalet, Plastikkirurgisk afdeling, København, Denmark

Background: Elderly breast cancer patients often tolerate breast surgery well. However, studies show that elderly breast cancer patients are at a higher risk of receiving undertreatment of their breast cancer compared to their younger counterparts. Evidence suggest that elderly breast cancer patients are more likely to receive inferior solo endocrine treatment instead of breast surgery after histological verification of their breast cancer. This may confer a poorer prognosis with an increased risk of disease progression and higher mortality and the need for salvage surgery may arise. To assess the magnitude of undertreatment in Danish elderly breast cancer patients, we aimed to investigate the extent of surgery postponement caused by upfront treatment with endocrine therapy alone in a Danish cohort of breast cancer patients over 70 years.
Method: This register-based study used data extracted from the DBCG database. All women aged 70 years or older diagnosed with breast cancer between January 1st, 2012, and December 31st, 2019, were included. We retrieved data on the following variables: age, tumor histology, receptor status, tumor size, presence of distant metastases, date of biopsy, and date and type of surgery. Data were validated and manually cross-checked using the Danish Pathology Data Bank to identify patients who received surgery >90 days after initial diagnosis. Patients with delayed breast surgery within the first 90 days were excluded to allow for the postponement on medical indication. Patients with advanced or inoperable disease at the time of diagnosis was excluded as well. Data were reported with descriptive statistics.
Results: A total of 10,758 women were retrieved from the DBCG database. After exclusion, 2558 women were eligible for analysis. The majority had invasive ductal carcinoma and estrogen receptor (ER) positive tumors. 138 (1.3%) had surgery >90 days after their biopsy (delayed surgery). 1738 (16.2%) had only a biopsy performed (no surgery).

Conclusion: Only few had delayed surgery > 90 days – suggesting that undertreatment is a limited issue. Some patients receive a diagnostic biopsy with no subsequent surgery. Reasons for this are likely heterogenous and beyond the scope of this study. These results suggest that the majority of elderly women are treated according to national guidelines in Denmark.

6 Nurses

Postgraduat kursus i evidensbaseret sygepleje til kirurgiske patienter

D. Hjort[1], M.S. Jørgensen[1], K.E. Dengsø[2]
[1]Rigshospitalet, Kirurgiprojektet, Enhed for Kvalitet og Patientsikkerhed, Copenhagen, Denmark, [2]Rigshospitalet, Forskningsenheden CKO 98A52, Copenhagen, Denmark

Background: De sidste 25 år er det multidisciplinære koncept Enhanced Recovery After Surgery (ERAS) blevet implementeret på stort set alle kirurgiske afdelinger i Danmark og efterhånden også internationalt. På trods af de veldokumenterede kliniske fordele ved ERAS programmer, opleves fortsat behov for et konstant fokus på pleje- og behandlingsprincipperne og en opdatering af seneste evidens. For at sikre fortsat høj compliance til ERAS programmerne, etablerede Rigshospitalet for 10 år siden en tværfaglig ERAS enhed (Kirurgiprojektet), som to gange årligt leverer procedurespecifikke data på indlæggelsestider og genindlæggelser, suppleret med kliniske audits ved behov.
Et nyt initiativ er oprettelsen af et postgraduat kursus om evidensbaseret sygepleje til kirurgiske patienter, hvis formål er at sikre, at alle kirurgiske sygeplejersker på Rigshospitalet er oplært i evidensen bag og principperne i ERAS programmerne, som skal være med til at sikre en større compliance.
Method: To ERAS sygeplejespecialister og en postdoc sygeplejespecialist etablerede et fire-dags kursus i evidensbaseret kirurgisk sygepleje med fokus på hele patientens forløb fra det præoperative til tiden efter udskrivelsen. Kurset udbydes to gange årligt til sygeplejersker fra alle kirurgiske specialer.
Program
Dag 1: Præoperativ optimering og forberedelse af patienten
Dag 2: Peroperativ sygepleje
Dag 3: Postoperativ sygepleje og den komplekse patient
Dag 4: Patientens perspektiv og fremtidens kirurgiske sygepleje
Results: Kurset er en blanding af præsentationer, gruppearbejde, diskussioner I plenum og journal clubs. Underviserne er læger, ledere og sygeplejespecialister.
Der er stor efterspørgsel på kurset, som har ventelister til de følgende kurser. Feed-back fra de første kurser viser at kurset har relevante emner og gode undervisere, men der har været efterlyst mere tid til fordybelse og diskussion, hvorfor kurset er ændret fra oprindeligt et tre-dags kursus til et fire-dags kursus. Ved at bruge interne undervisere kan udgifterne holdes på et minimum.
Conclusion: Vi håber på, at fremtidige audits vil vise en større compliance til ERAS programmerne og derved bedre patientforløbene. Vi ser desuden fremtidige perspektiver i at udbyde kurset til sygeplejersker i hele Region Hovedstaden.

Associations between health-related quality of life and subsequent need for specialized palliative care and hospital utilization in patients with gastrointestinal cancer – a prospective single-center cohort study

S. Gerhardt[1], K. Skov Benthien[2,3], S. Herling[4], B. Leerhøy[1,5], L. Jarlbaek[6], P.-M. Krarup[1]
[1]Copenhagen University Hospital - Bispebjerg, Digestive Disease Center, København NV, Denmark, [2]Copenhagen University Hospital - Hvidovre, Palliative Care Unit, Department of Medicine, Hvidovre, Denmark, [3]Copenhagen University Hospital - Frederiksberg, Centre for Clinical Research and Prevention, Frederiksberg, Denmark, [4]University of Copenhagen, The Neuroscience Center, Rigshospitalet, København Ø, Denmark, [5]Copenhagen University Hospital - Bispebjerg, Centre for Translational Research, København NV, Denmark, [6]University of Southern Denmark, REHPA, (Danish Knowledge Centre for Rehabilitation and Palliative Care),, Nyborg, Denmark

Background: We lack knowledge of which factors are associated with the risk of developing complex palliative care needs.

Method: *Design:* This was a prospective single-center cohort study. Data on European Organization of Research and Treatment of Cancer Questionnaire-Core-15-Palliative Care (EORTC QLQ-C15-PAL) were collected at the time of diagnosis. Covariates and hospital utilization outcomes were collected from medical records. Multivariable logistic and Poisson regression were applied in the analyses.
Setting/participants: Participants were newly diagnosed with incurable gastrointestinal cancer affiliated with a palliative care case management intervention established in a gastroenterology department.
Results: Out of 397 patients with incurable gastrointestinal cancer, 170 patients were included in the study. Pain was significantly associated with subsequent referral to SPC (OR 1.015; 95% 1.001,1.029). Patients with lower education levels, (OR 0.210;95% CI 0.056,0.778), a Charlson comorbidity score of 2 or more, (OR 0.173;95% CI 0.041,0.733), and locally advanced cancer (compared to metastatic disease) (OR 0.279;95% CI 0.111,0.696) were less likely to be referred to SPC. Pain (IRR, 1.011; CI95%, 1.005,1.018), constipation (IRR, 1.009;95% CI 1.004,1.015), and impaired health-related quality of life (IRR, 0.991;95% CI 0.983,0.999) were significantly associated with increased risk of hospital admissions.
Conclusion: There is a need for interventions in hospital departments to identify and manage the substantial symptom burden experienced by patients, provide palliative care, and ensure timely referral to specialized palliative care.

RESPONSE: Development of a digital care guide to accompany stage I and II colon cancer patients safely through follow-up

M.-B. Worm Ørntoft[1,2], M. Drejer[3,4], H. Vind Thaysen[3], I. Hovdenak[3], T. Juul[3,4], G. Kjær Sørensen[3,4], C. Lindbjerg Andersen[2,5], O. Thorlacius-Ussing[6], L. Hjerrild Iversen[3,7], P. Christensen[3,4]
[1]Godstrup Surgical Research Unit, Department of Surgery, Region Hospital Godstrup, Herning, Denmark, [2]Aarhus University Hospital, Department of Molecular Medicine, Aarhus N, Denmark, [3]Aarhus University Hospital, Department of Surgery, Aarhus N, Denmark, [4]Danish Cancer Society Centre for Research on Survivorship and Late Adverse Effects after Cancer in the Pelvic Organs, Danish Comprehensive Cancer Centre, Aarhus N, Denmark, [5]The Danish ctDNA Centre, Danish Comprehensive Cancer Centre, Aarhus N, Denmark, [6]Aalborg University Hospital, Department of Gastrointestinal Surgery, Aalborg, Denmark, [7]Danish Research Centre for Cancer Surgery, ACROBATIC, Danish Comprehensive Cancer Centre, Aarhus N, Denmark

Background: The current colorectal cancer (CRC) follow-up program is a "one-size-fits-all", focusing on CRC recurrence. However, the recurrence risk is only 5-10% in stage I-II CRC. Thus, 90-95% does not benefit from this. At the same time 15-30% of *all* CRC survivors require support due to organ-specific late effects and ~13% report persistently low quality of life (QoL); these needs are unmet in the current program. To support CRC survivors, we designed a new follow-up program, RESPONSE, and aim to test it in a national intervention trial, initiated in January 2024. The new program consists of 1) a biomarker, predicting CRC recurrence, 2) longitudinal monitoring of late effects, 3) standardized treatment for late effects, and 4) a digital care guide to accompany the patient through the new program, available as a smart phone app. The digital care guide for rectal cancer patients has already been created in a thorough development process. Here, we describe the development of the digital care guide for colon cancer patients.
Method: To develop the digital colon care guide, clinical staff from all surgical departments in Central and North Denmark Region was invited to contribute. The process was facilitated by Emento, a private company who specializes in digital care guides. The content of the care guide relied upon previous work from the development of a digital care guide for rectal cancer survivors with in-depth patient involvement, and further on local guidelines and paper pamphlets.
Results: The digital care-guide was developed in an intensified process initiated with a two-day workshop. The development group consisted of nine specialized nurses and nine colorectal surgeons from surgical departments in Aarhus, Viborg, Randers, Horsens, Godstrup, and Aalborg. Three consultants from Emento facilitated the workshop. After the workshop, deadlines were set for the conclusion of tasks, involving systematic evaluation of the app among a panel of previous CRC patients. Further, an online meeting was scheduled for the development group, to discuss and approve of the final app for the RESPONSE intervention trial.
Conclusion: The intensified development process proved to be effective, involving a broad spectre of stakeholders. If implemented successfully, we expect the advanced digital care guide to be advantageous to patients following the RESPONSE trial, by delivering necessary information and guidance, thus improving the patients' self–management.

Does the impact of a colostomy on quality of life change with time? - prospective evaluation in rectal cancer patients

H.Ø Kristensen[1], S. Ravn[2], T. Juul[1,3], P. Christensen[1,3], K. Jacobsen[4], M. Krogsgaard[5]
[1]Aarhus Universitetshospital, Mave- og tarmkirurgi, Aarhus N, Denmark, [2]Aalborg Universitetshospital, Mave- og tarmkirurgisk Afdeling, Aalborg, Denmark, [3]Aarhus og Aalborg Univsersitetshospitaler, Danish Cancer Society Centre on Survivorship and Late Adverse Effects After Cancer in the Pelvic Organs, Aarhus, Denmark, [4]Aalborg Universitetshospital, Mave- og tarmkirurgisk Afdeling, Stomiklinikken, Aalborg, Denmark, [5]Sjællands Universitetshospital, Center for Surgical Science, Køge, Denmark

Background: The number of long-term rectal cancer (RC) survivors is increasing. Curatively intended surgery for RC may involve formation of a permanent colostomy and understanding the impact on patient's quality of life (QoL) is important for pre- and postoperative counselling and shared decision-making. We report findings from a national, multicenter prospective follow-up program after RC surgery, to describe stoma function and QoL and how these change during the first years after surgery.
Method: RC patients were included from three centers in a systematic screening program for late sequelae using patient-reported outcome measures (PROMs). Inclusion criteria were surgery for RC including formation of a permanent end colostomy and completion of PROMs at both 3 and 12 months including the Colostomy Impact (CI) Score and the EQ-5D-5L. Clinical data were obtained from the Danish Colorectal Cancer Group national registry. CI Scores at 3, 12, 24 and 36 months were compared using Wilcoxon matched-pairs signed-rank test. EQ-5D data at 3 12, 24 and 36 months were compared using paired t-test.
Results: In total 269 patients (33.5 % females) completed PROMs at 3 and 12 months postoperatively, mean age was 70.6 years (range 21.9-91.5 years). Median CI Score was 8 (IQR 4-14) at 3 months and 9 at 12 months (IQR 5-14) p=0.18. Compared to 3 months postoperatively patients had significantly more problems with smell, leakage, stool consistency and parastomal bulging, but better stoma self-care at 12 months. From 3 months to 12 months 41.7% of the patients stay in the minor CI category. Ten percent experience a worsening from minor to major CI whereas 15.8 improve their stoma function from major to minor CI, and 32.5% have major CI at both 3 and 12 months postoperative. No differences were found for EQ-5D dimensions or EQ-VAS between 3 and 12 months postoperative. Except a slight improvement in EQ-5D mobility from 12 to 36 months both EQ-5D and CI scores were unchanged at 24 and 36 months.
Conclusion: Stoma-related problems change during the first year after surgery, however this is not reflected in CI Score or generic QoL. Stoma-related problems persist beyond 12 months and systematic screening should be considered to offer relevant counselling.