Free Papers

F01
Almost 20% of defunctioning stomas are never reversed after colo-anal anastomosis for low rectal cancer: Experience from the MERCURY II low rectal cancer study
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Aim: Low rectal cancer, within 6 cm of the anal verge commonly requires a permanent stoma but in selected patients a colo-anal anastomosis, with a defunctioning stoma is feasible. A restorative procedure is not complete until the defunctioning stoma is reversed. We report the reversal rate in 124 patients who had colo-anal anastomosis for low rectal cancer.

Method: Two-hundred and seventy-two patients with low rectal cancer underwent surgery in the multicentre Low Rectal Cancer MERCURY II study: 96 females (35%); median age 65 years (range 23–89). Patient demographics, tumour stage, neoadjuvant treatment, stoma type, time to stoma closure and reason for non-reversal were recorded.

Results: Low Anterior Resection was performed in 125/272 (46%) and each had a defunctioning ileostomy. In 101/125 (81%) the stoma was reversed at a median time of 166 (range 16–588) days. In 23/125 (18%) the stoma was not reversed due to death (n = 2), metastasis (n = 2), local recurrence (n = 2), sepsis (n = 2), anastomotic leak (n = 3), anastomotic stenosis (n = 1), patient declined (n = 2), awaiting reversal (n = 1), conversion to colostomy (n = 2), other (n = 6).

Conclusion: In a series of 272 patients with low rectal cancer, 125 had colo-anal anastomoses. In 18% the defunctioning stoma was not reversed. Restorative procedures for low rectal cancer have a high failure rate, this is a significant finding.

F02
Does complete mesocolic excision (CME) improve survival among patients with right sided colon cancer?
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Aim: Complete Mesocolic Excision (CME) has been introduced as an optimized surgical technique at surgery for colon cancer. The purpose of this study was to evaluate the impact of an educational project, regarding surgery for colon cancer, on survival in patients with right sided colon cancer in the Stockholm area.

Method: Patients diagnosed with right sided colon cancer between 2001 and 2003 (period 1) were compared with those diagnosed between 2006 and 2008 (period 2).

Results: At end of follow up, overall survival were 59.1% in period 1 and 68.5% in period 2 (P < 0.001). HR for 3y-DFS were 0.83 (P = 0.039), period 2 superior to period 1. After adjustment for emergency surgery and disease stage, DFS was still better in period 2, however not statistically significant.

Conclusion: Total survival for patients with right sided colon cancer in Stockholm has improved after the educational project. Improved survival after surgery is probably explained by more patients with distant metastases were not operated and by less patients having emergency surgery. After adjustment for these two factors there was a non-significant improved survival in period 2, among operated patients. Improved survival related to CME cannot be confirmed or rejected by this study.

F03
Consensus statement on the management of patients with primary rectal cancer beyond total mesorectal excision planes and recurrent rectal cancer
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Aim: The management of primary rectal cancer beyond total mesorectal excision planes (PRC-bTME) and recurrent rectal cancer (RrC) is challenging with wide variation in standards. The aim of the ‘Beyond TME Group’ was to achieve consensus on the definitions, principles of management and to identify areas of research priority.

Method: Delphi methodology was used to achieve consensus. The Group consisted of invited experts from surgery, radiology, oncology and pathology. The process included two international dedicated discussion conferences, formal feedback, three rounds of editing and two rounds of anonymous web-based voting. Consensus was achieved with > 80% agreement; < 80% agreement indicated low consensus.

Results: The final consensus document included 51 voted statements, making recommendations on 10 key areas of PRC-bTME and RrC. Consensus agreement was achieved on the recommendations of 49 statements, with 34 achieving a consensus in over 95%. The lowest level of consensus obtained was 75%. There was clear identification of the need for referral to a specialist MDT for diagnosis, assessment and further management.

Conclusion: The consensus process has provided guidance for the management of patients with PRC-bTME or RrC, taking into account global variations in surgical techniques and technology. It has further identified areas of research priority.

F04
The impact of enhanced recovery protocol compliance on outcome following elective colorectal cancer resection
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Aim: To evaluate the individual impact of specific patient factors and peri-operative enhanced recovery (ERAS) protocol compliance on postoperative outcome following elective primary colorectal cancer resection.

Method: The international, multicentre ERAS registry, collected between 11/2008–03/2013, was reviewed. Patient demographics, disease characteristics and peri-operative ERAS protocol compliance were assessed. Linear regression was undertaken for primary admission duration and logistic regression for the development of any postoperative complications (Clavien-Dindo defined).

Results: Thousand five hundred and nine colonic and 843 rectal resections were undertaken in sixteen centres. Median length of stay for colorectal resections was 6 days, with readmissions in 216 (9.2%) and complications in 948/2352 (40%). Shorter hospital stay was associated with preoperative carbohydrate drinks (OR:0.89, P = 0.001), laparoscopic surgery (OR:0.83, P < 0.001), and totally intravenous anaesthesia (OR:0.86, P < 0.001); longer stay was associated with intraoperative epidural anaesthesia (OR:1.07, P = 0.019). Reduced postoperative complications were associated with restrictive perioperative intravenous fluids (OR:0.35, P < 0.001). Less complications were also noted when overall compliance was high (OR:0.60, P = 0.005), but no independent impact on length of stay was observed.

Conclusion: From a unique, international ERAS registry, preoperative carbohydrate loading, laparoscopic surgery and intravenous anaesthesia...
were associated with a reduction in stay while restricted perioperative intravenous fluids and overall improved compliance were associated with reduced complications.

**F05**

The impact of bowel dysfunction on quality of life after sphincter-preserving resection for rectal cancer. A prospective multicentre study

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**Aim:** Bowel dysfunction after sphincter-preserving surgery for rectal cancer is a common problem with major impact on quality of life (QoL). The aim of this study was to examine the extent of bowel dysfunction and impact on QoL after curative sphincter-preserving resection for rectal cancer.

**Method:** Two-hundred and sixty patients were included. Questionnaires regarding QoL and bowel function including the Low Anterior Resection Syndrome score (LARS score) were answered at the time of the diagnosis and at 3 and 12 months postoperatively.

**Results:** At 3 months, 58% of patients had Major LARS declining to 46% at 12 months (P < 0.001). The risk of Major LARS was significantly increased in patients treated with neoadjuvant therapy (OR=2.41; 95% CI: 1.00–5.83) and in TME versus PME patients (OR=2.81; 95% CI: 1.35–5.88). QoL was closely associated to LARS, with significant differences in QoL between groups of No and Major LARS.

**Conclusion:** Bowel dysfunction is a frequent problem with major impact on QoL. The risk of Major LARS is significantly increased after neoadjuvant therapy and in TME patients. All LAR patients should routinely be screened for LARS at follow up using the LARS score, and patients should be offered treatment in order to improve their QoL.

**F06**

Synchronous pulmonary metastases in colorectal cancer: a nationwide cohort study

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**Aim:** To investigate the prevalence of synchronous pulmonary colorectal cancer metastases (SPCM), risk factors and their impact on survival.

**Method:** This was a nationwide cohort study of 26290 patients whose data were prospectively entered into the Danish Colorectal Cancer Group’s database between 2001 and 2012. The recorded data were merged with data from the Danish Pathology Registry and the National Patient Registry. Multivariable logistic- and extended Cox-regression analyses were used to adjust for confounders.

**Results:** Thousand nine hundred and seventy-six patients (7.5%) had SPCM. A recent year of diagnosis, advanced age and a rectal index cancer were significant factors associated with SPCM. Adjustment for excess use of thoracic CT scans in rectal cancer patients did not alter the latter association [adjusted Odds Ratio (OR) = 1.72, 95% confidence interval (CI):1.50–1.98, P < 0.001]. SPCM were associated with an impaired 30-day survival [adjusted Hazard Rate (HR) = 1.70, 95% CI: 1.61–1.80] and long-term survival (HR = 3.01, 95% CI: 1.89–4.81). Survival was significantly improved in the few patients (1.9%), who underwent pulmonary surgery compared with those who did not [adjusted HR = 0.33, 95% CI: 0.18–0.61; P < 0.001].

**Conclusion:** The prevalence of SPCM was higher than previously reported and had severe impact on survival. This study may serve as a reliable un-biased reference for future evaluations on detection strategies and potential therapeutic interventions.

**F07**

Swedish patients operated with extralevator APE (ELAPE)

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**Aim:** Extralevator APE was introduced to decrease the risk of local recurrence following surgery for distal rectal cancer. By creating a cylindrical specimen and increase the resection margin to the tumor, the risk of intraoperative bowel perforation and non-radical surgery would decrease.

**Method:** All Swedish patients operated with any kind of APE 2007–2009 and registered in the Swedish Rectal Cancer Registry was included. Data were collected from the registry, operative notes were collected on each patient and analyzed regarding the perineal part of the operation. Short term data was analyzed emphasizing the pathology report and short-term complications.

**Results:** Data on 1397 patients were collected, 1320 of these (96%) were analyzed regarding the perineal part of the operation. About 519 (39%) were operated with ELAPE, 209 (16%) with standard APE and in 592 patients (45%) it was not defined how the perineal part was performed. ELAPE had significantly lower tumors. There was no difference in intraoperative bowel perforations or non-radical surgery. Overall complications were the same, postoperative wound infections were more common with ELAPE.

**Conclusion:** Short-term data does not indicate superior outcome following ELAPE as compared to standard APE in Swedish patients operated 2007–2009. Three-years local recurrence data will follow.

**F08**

The ‘Fast-Track’ referral system for patients with suspected colorectal cancer: has it affected outcomes?

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**Aim:** The ‘Fast-Track’ referral system was introduced in the UK to reduce delays in investigation and treatment of patients with cancer. The aim of this study was to determine whether this has affected outcomes in patients with colorectal cancer.

**Method:** All patients diagnosed with colorectal cancer under the care of two consultant colorectal surgeons between April 2006 and December 2012 were identified from prospective databases. Route of presentation (‘FT’, ‘non-FT’ or ‘acute’) was recorded, plus the following outcome variables: resection with curative intent, Dukes’ stage, and overall and disease-free 2-year survival.

**Results:** A total of 558 patients were identified: 197 (35.3%) were FT referrals, 253 (45.3%) were non-FT, and 108 (19.4%) were acute. There was no significant difference between FT and non-FT patients in terms of resection with curative intent (70.6% vs 74.3%, P = 0.376), Dukes’ A or B/node-negative disease (48.2% vs 51.4%, P = 0.506), overall 2-year survival (74.6% vs 74.9%, P = 0.911) or disease-free 2-year survival (60.3% vs 62.4%, P = 0.708). The outcomes for patients undergoing emergency surgery were predictably all significantly worse: potentially curative resection 50.9% (P < 0.001), node-negative disease 27.8% (P < 0.001), overall 2-year survival 34.9% (P < 0.001) and disease-free 2-year survival 24.1% (P < 0.001).

**Conclusion:** Patients with colorectal cancer referred via the ‘Fast-Track’ referral system do no better than patients referred via the non-FT route.
F09 Tailoring the surgical strategy of distal rectal cancer with synchronous liver metastases remains difficult. An intervention to treat analysis
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Aim: In rectal cancer, the incidence of synchronous liver metastases (SLM) ranges between 14% and 30%. The treatment of SLM combines neo-adjuvant treatment with surgical resection (rectum resection first, simultaneous resection or liver resection first). The aim of this study was to evaluate the success of each of these strategies in achieving complete (R0) resection.

Method: From January 2005 to December 2010, we included retrospectively all patients with distal rectal cancer (MLRC) and SLM operated on with curative intent. The endpoints were the proportion of R0 at both sites, the postoperative morbidity rate, the long-term outcome and risk factors for incomplete resection.

Results: Of the 49 included patients, 49% had undergone a rectum-first treatment strategy, 30.6% underwent a simultaneous resection strategy and 20.4% underwent a liver-first strategy. There were no differences in the incidence of R0 at both sites ($P = 0.6$). There was no difference in the overall complication rate after rectal resection ($P = 0.1$) or liver resection ($P = 0.8$). There were no differences in overall ($P = 0.4$) and disease-free survival ($P = 0.1$). Emergency surgery was the only risk factor for treatment failure.

Conclusion: None of the oncological strategies were associated with a low complete resection rate or a poor long-term outcome.

F10 Regression of extramural venous invasion after neoadjuvant chemoradiotherapy improves disease-free survival in rectal cancer
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Aim: Preoperative identification of extramural venous invasion (EMVI) may influence treatment decisions. The poor prognostic effect of MRI-detected EMVI (mrEMVI) is known but the effect of chemoradiotherapy on the morphology and clinical outcomes are unknown. This study aimed to classify the degree of improvement in mrEMVI following chemoradiotherapy and relate this to disease-free survival.

Method: A retrospective review of patients with primary rectal cancer was carried out. mrEMVI, pre- and post-chemoradiotherapy, was examined and graded on a scale of 1–5 depending on the degree of fibrosis seen in the affected vein. The eTRG scale was measured against 3-year disease-free survival.

Results: Sixty-two patients with EMVI were included. Thirty-five patients showed more than 50% EMVI regression following chemoradiotherapy – eTRG scale 1–3. In this group, only three patients (9%) developed recurrence and 3-year DFS was 87.8%. In the 26 patients with less than 50% fibrosis, 12 patients (44%) developed recurrence and 3-year DFS was 45.8%. Using a log-rank test to compare the survival curves showed a significant difference ($P = 0.013$).

Conclusion: EMVI is known to confer poor prognosis in rectal cancer. This study shows that patients who have shown more than 50% regression of EMVI following chemoradiotherapy have improved disease-free survival.

F11 Results of partial mesorectal resection: a series of 172 upper third rectal cancers
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Aim: Several publications have shown that partial mesorectal excision (PME) may be a reasonable approach for proximal tumors although some authors still routinely perform a total mesorectal excision. The aim of this study was to assess the results of PME.

Method: All patients who underwent a PME between 2000 and 2011 were retrospectively included. Quality of life was assessed using EORTC QLQ-C30 and QLQ-CR29 questionnaires.

Results: One-hundred and seventy-two patients (98 males, 57%) with a mean age of 62.6 ± 12.6 years were included. Post-operative mortality and severe morbidity (Dindo III–IV) were 1.2% ($P = 2$) and 10.5% ($n = 18$, including 13 (7.6%) anastomotic leakages). ASA Score ≥ 3 ($P = 0.0015$) and low anastomosis ($P = 0.0326$) were independent predictors of grade III–V complications. All R1 resection ($n = 9$, 5.2%) were due to a circumferential margin < 1 mm. Median follow-up was 51 months. The permanent stoma rate was 2.9% ($n = 5$). Five-year overall and disease-free survival were 91% and 80%. Five-year local recurrence rate was 5.3%. The questionnaires response rate was 60%. The global quality of life score was 76/100 with a median number of stools of 2 during the day.

Conclusion: PME is associated with low morbidity, gives good long-term oncologic results while maintaining a good quality of life for patients with rectal cancer.

F12 Sphincter saving resections for rectal cancer in the UK and USA – a population based study
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Previously published in the British Journal of Surgery.

F13 Can apparent diffusion coefficient (ADC) on diffusion weighted MRI predict tumour aggressiveness in rectal cancer?
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Aim: To assess the value of tumoral apparent diffusion coefficient (ADC) measured on diffusion-weighted MR imaging (DWI) as a potential non-invasive marker of tumour aggressiveness in patients with rectal adenocarcinoma.

Method: Rectal cancer patients who underwent pre-treatment DW MRI and pre-operative histological confirmation and subsequent resection were identified. Demographics, pre-treatment staging and pre and post resection histology data was retrieved from colorectal cancer database and NBOCAP. ADC using ROI method calculated. Correlation between mean tumour ADC values with pre-treatment CEA, pre-treatment conventional MRI staging parameters (CRM, T-stage, and N-stage) and tumour differentiation grade on pre-treatment and post-resection histology was determined using Pearson correlation coefficient.

Results: Thirty five patients studied (10 excluded due to non-availability of data). M:F 18:7; Age 69 (38–90) years (median + IQR). Statistically significant correlations were found between mean ADC values and pre-treatment N-stage ($P = 0.05$, $r = 0.389$) and pre-treat CEA levels ($P = 0.05$, $r = 0.393$). Medium strength linear correlation was observed between mean ADC values and pre-treatment T-stage ($P = 0.25$, $r = 0.238$), pre-treatment differentiation grade ($P = 0.576$, $r = 0.120$), post-resection differentiation grade ($P = 0.251$, $r = 0.236$) and pre-treatment MRF status ($P = 0.421$, $r = 0.168$).

Conclusion: Lower ADC values reflect a more aggressive tumour profile. ADC has the potential to become an imaging biomarker of tumour aggressiveness profile.
F14
ANACO: Spanish study on ANA stomotic leak after Colon resection for cancer. Results of a multicentric, national, prospective, observational study including 3193 patients M. Frasson1, J. L. Ramos2, B. Flor3, P. Granero1, M. Trallero1 & E. Garcia-Granero1
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Aim: To assess the anastomotic leak rate after colon resection for cancer and to determine independent risk factors correlated with this complication.

Method: Fifty-two hospitals in Spain were enrolled in the study. About 3193 patients operated for colon cancer with primary anastomosis without ostomy were included in a prospective on-line database (September 2012–September 2013). Patients’ demographic and nutritional data, characteristics of the tumor, the surgical procedure and the hospital were included in a multivariate analysis to determine independent risk factors.

Results: Anastomotic leak rate was 8.7% with a great variability between different centers (range 0–21.2%). For the whole group, 78% of anastomosis were mechanical, 41.4% of procedures were laparoscopic and a peri-anastomotic drain was used in 65% of the cases. In patients with anastomotic leak, mortality rate was 15.2%. The following variable resulted to be independent risk factors for anastomotic leak: preoperative total protein (P = 0.02, HR: 0.68/g), obesity (P = 0.005, HR: 2.5), preoperative treatment with oral anticoagulant drugs (P = 0.04, HR: 1.9), hospital number of beds (P = 0.03, HR: 0.95/100 beds) and intraoperative complication (P = 0.03, HR: 2.2).

Conclusion: Anastomotic leak after colon resection for cancer is a frequent and important complication. The patient, the hospital and the surgeon are all important determining AL risk.

F15
Local versus rectal excision in downstaged low rectal cancer after radiochemotherapy: preliminary results of the randomized GRECCAR 2 trial
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Aim: We designed a multicentre phase III trial to compare local excision (LE) and rectal excision (TME) in downstaged low rectal cancer after radiochemotherapy.

Method: Patients with T2T3 low rectal cancer and tumour size ≤ 4 cm received 50 Gy with SFU. Good clinical responders (residual scar ≤ 2 cm) were randomized between LE and TME performed 6–8 weeks after irradiation. In the LE group, good pathologic responders (pT0-pT1) had a follow-up, whereas bad responders (pT2-3) had complementary TME. Preliminary results assessed tumour response and feasibility.

Results: Between 2007 and 2012, 148 patients were randomized in 15 centres: 74 LE and 74 TME. Among 142 patients operated on, there were 57 pT0(40%), 29 pT1(20%), 46 pT2(32%) and 10 pT3(7%). A good pathologic response (60%) was more frequent after uT2 than uT3 tumour, 68% vs 51%, P = 0.036. The rate of positive lymph nodes was 5% in the TME group (3/60) and 15% (4/26) after complementary TME in the LE group. Overall, positive nodes was 0% (0/42) in good pathological responders and 16% (7/44) in bad responders (P = 0.012).

Conclusion: A good pathological response can be achieved after both T2 and T3 rectal cancer after radiochemotherapy. Positive lymph nodes are present only in bad pathological responders, suggesting local excision necessary to support rectal preservation.

F16
Sexual and urinary function after open and laparoscopic rectal cancer surgery in the COLOR II trial
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Aim: Sexual and urinary function is affected after rectal cancer surgery. COLOR II is an international randomized trial comparing laparoscopic and open surgery for rectal cancer that includes 1100 patients. The aim of this study was explore the effects of open and laparoscopic surgery on sexual and urinary function.

Method: Three-hundred and eighty-four patients were included in the HRQoL study from COLOR II, EORTC C30 and CR38 were analysed regarding function/symptom scales for sexual and urinary function preoperatively, 4 weeks, 6 months and 12 months postoperatively.

Results: Both male and female sexual function was reduced to a very low level after 4 weeks, but was restored to preoperative levels after 12 months, women reported a lower sexual function at all points. There was no difference between the two surgical techniques. Significant factors in multivariate analysis were function at baseline, age and conversion from laparoscopic to open surgery. Urinary function was reduced, but less than sexual function, and was affected by function at baseline as well as age.

Conclusion: It is apparent that rectal cancer affects sexual and urinary function during the first year postoperatively, but our study could not clearly identify surgical technique as a factor for sexual function.

F17
Examining the impact of using 90-day rather than 30-day mortality rates for identifying poor performing surgical providers in colorectal surgery: a population-based cohort study
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Aim: Surgical outcomes are increasingly reported in the public domain. This study examines how 90-day rather than 30-day institutional mortality outlier status compares with 30-day status and later periods up to one year after colorectal surgery.

Method: Adult patients undergoing colorectal resection between April 2001 and February 2007 in English NHS Trusts were identified from administrative data. Funnel plots of postoperative case-mix adjusted institutional mortality rate against caseload were created for 30, 90, 180, and 365 days. Mortality outlier status (outside third standard deviation control limits) was examined across time periods.

Results: About 171 688 patients were included. At 90 days eight institutions had 30–90% and later periods up to one year after colorectal surgery.

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F18
RT-PCR of Escherichia coli in drain fluid: the first screening test for symptomatic colorectal anastomotic leakage
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Aim: Current diagnostic methods allow symptomatic colorectal anastomotic leakage (CAL) only to be detected approximately a week after operation. The aim of this study is to determine whether Real-Time-Polymerase Chain Reaction (RT-PCR) for detection of E. coli and E. faecalis in drain fluid can serve as a screening test for CAL.

Method: All patients included in this multicenter prospective observational study underwent left-sided colorectal resection for both malignant and benign diseases with construction of an anastomosis. An intra-abdominal study underwent left-sided colorectal resection for both malignant operation. The aim of this study is to determine whether Real-Time-PCR for detection of E. coli and E. faecalis in drain fluid only to be detected approximately one week after surgery.

Results: In total 243 patients were included of whom 19 (7.8%) developed symptomatic CAL. RT-PCR for E. coli and E. faecalis was more often positive in patients with CAL in the first 4 postoperative days (P ≤ 0.028). In significantly more patients an increased concentration of E. faecalis was detected between day one and three in case of CAL (P ≤ 0.001), with high sensitivity (86.7%) and Diagnostic Odds Ratio (15.8).

Conclusion: Quantitative RT-PCR for E. faecalis performed on drain fluid may be a useful screening tool for symptomatic colorectal anastomotic leakage in the early postoperative phase.

F19
Sacral neuromodulation: the effect of stimulation frequency on inputs to the somatosensory cortex in a rat model
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Aim: Sacral neuromodulation (SNM) is a treatment for faecal incontinence. This study aimed to discover the optimal SNM frequency and intensity for potentiation of cortical anal canal evoked potentials (EPs).

Method: In 42 female Wistar rats a craniotomy was performed under urethane anaesthesia and anal EPs recorded for 70 min using a 32-channel microelectrode array. SNM was applied to the first sacral nerve root for 3 min at 0 (sham), 0.1, 1, 10, 25 and 100 Hz (n = 6 per group). The optimal frequency was then tested at voltages 1, 0.75, 0.5 and 0.25 times motor threshold (n = 4 per group). All experiments were licensed and ethically approved.

Results: The EPs’ amplitudes showed a 100%–increase for 1 Hz and 10 Hz; 50% for 0.1 Hz and 25 Hz; 0% for 100 Hz and sham. Frequency was highly significant (P < 0.0001, two-way repeated-measured ANOVA). The relationship between log frequency and %–increase was parabolic with a maximum at 1.91 Hz ± 0.05 Hz. About 2 Hz stimulation at 0.5–1 times motor threshold yielded 110.7% ± 2.62% increase, which was not significantly different from the calculated 120% (P = 0.43 ± 0.14, one-sample t-test), while 0.25 motor threshold was ineffective.

Conclusion: SNM potentiates EPs depending on frequency with an optimum of 2 Hz in the rat. Potentiation results at intensities ≥ 0.5 motor threshold and may be an all-or-nothing phenomenon.

F20
Biofeedback – A simple and effective way of managing rectal evacuatory dysfunction secondary to pelvic floor dysrythmia and rectal hypothesinsivity
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Aim: Biofeedback is effective in the management of rectal evacuatory dysfunction (RED), but there is limited data on medium to long-term follow-up. This study evaluated the effectiveness of biofeedback in the medium-term for patients with RED secondary to pelvic floor dysrythmia (PFD) and rectal hypothesinsivity (RH).

Method: Prospective data was collected from 2010–2013 of 81 consecutive patients who underwent verbal biofeedback therapy via rectal sensory re-training or balloon expulsion for PFD or RH. Primary endpoint was patient symptom satisfaction assessed using a visual analogue scale (Likert scale 0–10). Secondary endpoints were complete spontaneous bowel movements (CSBMs)/week, time to defecation, and KESS/SF-36 questionnaire scores. All patients received telephone follow-up.

Results: Eighty-five percent of patients met the primary endpoint, with the Likert score improving significantly [mean baseline 3.2 vs post-biofeedback 7.6, P < 0.001]. Improvements were seen in CSBMs/week [3.0 vs 6.9, P < 0.001] and time to defecation (mins) [18.7 vs 8.7, P < 0.001], with significant improvements in KESS [13.1 vs 4.9, P < 0.001] and SF-36 scores. At a mean follow-up of 19 months, 89% of patients still met the primary endpoint.

Conclusion: Biofeedback has a key role to play in the management of RED secondary to PFD and RH, with improvements being maintained in the medium-term.

F21
Functional quality of the anal sphincter 5 years after intensified radiochemotherapy in patients with locally advanced rectal cancer
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Aim: While the influence on survival is only seen in patients with complete regression after neoadjuvant treatment in locally advanced rectal cancer the functional impairment of the anal sphincter weighs even more for patients with little oncological benefit.

Method: Patients treated with intensified preoperative radio-chemotherapy patients treated only by TME surgery were asked five years after treatment to complete the Wexner and SF-12 quality of life questionnaire.

Results: Twenty-five after neoadjuvant treatment had a median Wexner score of 14 [3–20] after 63 [42–78] months. Histopathological stage or grade of regression did not influence the Wexner score (P = 0.76, respectively. P = 0.9). Twelve percent describe themselves as being permanently continent; 40% are stool incontinent ‘always’ or ‘most of the time’. Sixty-eight percent are always wearing pads.

Twenty-nine patients after TME only showed a median Wexner score of 5 [range 0–17] after 66 months [26–133].

SF-12 showed significantly lower values in physical (P = 0.02) as well as mental summary scales (P = 0.015) in patients after RCTX while patients after radical surgery showed no difference to the norm population.

Conclusion: This study shows that continence is significantly worse five years after neoadjuvant treatment. Moreover, patients after neoadjuvant treatment and surgery have impaired quality of life compared to norm population.

F22
Percutaneous tibial nerve stimulation (PTNS) for faecal incontinence (FI): does it last?
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Aim: The aim of this study was to assess the long-term efficacy of PTNS for FI.
Method: A prospective cohort of FI patients was studied. Incontinence scores were measured using the Cleveland Clinic Florida (CCF)-FI questionnaire at specific time points: before treatment, after completion of a treatment course (12 PTNS sessions) and before the last maintenance (‘top-up’) therapy. ‘Deferment time’ and average number of weekly incontinence episodes were estimated from a prospective bowler diary. Quality of life (QoL) was assessed with the Rockwood FI questionnaire.

Results: One-hundred and fifty patients were recruited (January 2008–June 2012) with 115 continuing to receive PTNS after a median follow-up of 26 (range, 12–42) months. Baseline CCF-FI score ± SD (12.0 ± 3.9) improved after 12 sessions (9.4 ± 4.6, P < 0.0001) and following ‘top-up’ (10.0 ± 4.3, P < 0.0001). The increase in the CCF-FI score between the end of the 12th session and the last ‘top-up’ therapy was significant (P = 0.04). A similar pattern was seen for the deferment time and the QoL scores. The median time between ‘top-up’ sessions was 12 months (range, 1–40), significantly longer than the recommended interval of six months.

Conclusion: PTNS provides a sustained improvement in FI up to 42 months. Six-monthly treatments are required to maintain the effect.

F25
Bilateral sacral nerve stimulation for idiopathic faecal incontinence – results of a randomized single blind cross-over study
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Aim: This randomized single blind cross-over study aimed to investigate whether bilateral Sacral Nerve Stimulation (SNS) is more efficient than unilateral stimulation for faecal incontinence (FI).

Method: Idiopathic FI-patients who responded during a unilateral PNE-test, with a minimum of 50% improvement, were eligible. Thirty patients were included and bilaterally implanted. Patients were randomized into three periods of four weeks stimulation; unilateral dx, unilateral sx. and bilateral stimulation. Symptoms scores and bowel habit diaries were collected at baseline and in each study-period. Between each period one-week washout was introduced. Univariate repeated measurement analysis of variance and paired t-test was used.

Results: Twenty-seven (26-females) patients were bilaterally implanted in the period from May 2009 to June 2013. Mean age was 59.6 (± 12.8) years. Mean FI-episodes per three weeks significantly decreased from pre-SNS-thrapy 18.4 (±13.1) to 3.6 (±4.7) during stimulation on the right side, 5.7 (±10.5) during stimulation on the left side and to 3.0 (±6.1) during bilateral stimulation. Wexner incontinence score was reduced with mean 7 (±4.6) with right-side stimulation, 6.52 (±4.8) with left-side stimulation and 6.6 (±4.6) points with bilateral stimulation, compared to baseline. The differences between unilateral and bilateral stimulation were non-statistically significant, for FI-episodes (P-value: 0.249) and for Wexner incontinence score (P-value: 0.686).

Conclusion: Bilateral SNS-therapy did not improve treatment outcome compared to unilateral stimulation.

F24
Abnormal glycaemic control and derangement of the renin-angiotensin-aldosterone system after colectomy
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Aim: There is increasing evidence that colon is an active metabolic organ, removal of which leads to sodium and water depletion, chronic activation of renin-angiotensin-aldosterone system (RAAS), hyperaldosteronism and abnormal glucose tolerance. Previous work has studied patients who have undergone colectomy for inflammatory bowel disease. This is the first such study in patients with familial adenomatous polyposis (FAP).

Method: We aimed to determine the prevalence of metabolic disturbance in patients with FAP following colectomy. 30 FAP patients who had undergone either colectomy and ileo-anus reservoir or restorative proctocolectomy were recruited. After fasting, urine and blood samples were collected to measure sodium loss, hydration status and RAAS activation. An oral glucose tolerance test was performed. Health-related quality of life was assessed using SF-36 (Version 2) and FACIT-F (Version 4) questionnaires.

Results: Median time since prophylactic colectomy was 11.5 years. Fourteen patients (47%) demonstrated fasting hyperaldosteronism (>250 pmol/l) leading to higher urinary losses of potassium (P = 0.01) and creatinine (P = 0.002).

Thirty patients (43%) demonstrated abnormal glucose tolerance in the form of hypoglycaemia. Patients with hypoglycaemia had a significantly higher early insulin secretion (P = 0.04) without the expected reduction in tissue insulin sensitivity, resulting in inappropriately low blood glucose levels. Patients exhibiting hypoglycaemia had significantly lower body mass index (P = 0.005), lower energy levels with increased fatigue.

Conclusion: Prophylactic colectomy in FAP patients results in metabolic disturbances leading to a negative impact on the quality of life.

F26
Isosorbide dinitrate ointment versus botulinum toxin A (dysport®) as primary treatment for chronic anal fissure: a randomized multicenter study
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Aim: Nitric oxide donors are considered as first choice agents in the treatment of chronic anal fissures. Injection with botulinum toxin A in the internal anal sphincter is often used as second-line therapy, although it may give better results and fewer side effects than nitric oxide donors. Aim of this randomized multicenter study was to investigate whether botulinum toxin A (Dysport®) is more effective than ISDN in the primary treatment of chronic anal fissures.

Method: From April 2005 until October 2009, 59 patients were randomized between ISDN 10 mg/ml (1%) (n = 33) or injection with 60IU Dysport® (n = 26). The primary endpoint was complete fissure healing after 8 weeks.
**F27**

**Progress or regress? Natural history of anal dysplasia in HIV-infected patients**

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**Aim:** Anal screening is justified by the high incidence of anal dysplasia and carcinoma in HIV-infected patients. High-grade neoplasm (AIN) may progress to invasive cancer within a short period of time. The aim of our study was to assess the temporal change of dysplasia and to identify factors associated with a pejorative evolution.

**Method:** One-hundred and seventy-six HIV-positive patients (M/F:165/11; aged 47.4 ± 10.6 years) had anal cytology and a mean follow-up was 41.2 ± 40.9 months. In case of abnormal findings, biopsies were performed. Follow-up program was a 12-month interval in those with a normal cytology, a 3-to-6 month interval in case of abnormal histology.

**Results:** Anal cytology was normal (43%), ASCUS (17%), LSIL (30%) & HSIL (9.6%). At the end of follow-up, new AIN 2–3 (or HSIL) were reported in 22% patients & invasive cancer was encountered in 0.6%. In contrast, 39.6% down-staged their initial anal status. Median period to reach high-grade dysplasia was 39.1 weeks and period to regress was similar (33.9 weeks). A previous HSIL, HPV infection, condylomas, high-risk HPV & HPV16 infection were associated to progression to HSIL or AIN.

**Conclusion:** Almost one-third of HIV-positive patients develops high-grade dysplasia of the anal canal but dysplasia may also regress in a similar proportion.

**F28**

**EPSIT: endoscopic pilonidal sinus treatment**

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**Aim:** We describe a new video-assisted technique for the treatment of the pilonidal disease named E.P.Si.T. (Endoscopical Pilonidal Sinus Treatment).

**Method:** Between March and December 2012, we operated on 36 patients suffering from pilonidal disease. Most of them have already been operated one or two times by traditional techniques.

**Technique description:** The Meinero fistuloscope is used. Local anaesthesia was done. The external opening is removed, and the fistuloscope is introduced through the small hole. Firstly, we identify the pilonidal sinus area and its secondary tracts and/or abscess cavities. Secondly, we ablate and clean the infected area, always visually.

**Results:** There were no complications recorded in the patient cohort. The pain experienced was low or absent, in the early and later postoperative periods. At 1 month postoperatively, the external opening(s) were closed in all patients and there have been no cases of recurrence at a median follow-up of 6 months. All patients were admitted and discharged the same day of surgery and commenced work again after 4–5 days. Aesthetic results were excellent.

**Conclusion:** The main feature of E.P.Si.T. is the direct vision. It allows a good definition of the infected area avoiding leaving any waste material.

**F29**

**A randomized clinical trial comparing biodesign® AFP to advancement flap for the repair of anal fistulas: interim results**

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**Aim:** The reported effectiveness of the Biodesign® anal fistula plug (AFP) varies considerably (14–87%) with few carefully controlled studies directly comparing the plug’s effectiveness to other standard treatment options. The objective of this study is to compare the effectiveness of the Biodesign® AFP to the advancement flap for the repair of complex anal fistulas.

**Method:** Eighty-two patients (56M:26F) with complex anal fistulas were enrolled, randomized, and followed for 12 months in a multicenter approach. Success rates, EQSD, HQQL, pain, and change in continence (FISI), and operation time were recorded.

**Results:** After 1-year follow-up, there was no statistical difference in success rates between the study groups (67% plug, 73% flap; \(P = 0.79\)). Patients with prior fistula surgeries (\(P = 0.002\)) were less likely to have a successful outcome. Operation time for the plug group was significantly less than for the flap group (\(P < 0.001\)). There were no significant differences in other measures, but there was a trend toward more incontinence in the flap arm and a less successful outcome in women.

**Conclusion:** This study showed that the Biodesign® AFP is as effective as, and offers a significant time and cost benefit, over the advancement flap for treating complex anal fistulas.

**F30**

**Three-dimensional endoanal ultrasonography and fistuloscopy in the diagnosis recurrent perianal fistulas: a comparative study**

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**Aim:** The aim of this prospective study was to compare the accuracy of three-dimensional endoanal ultrason with that fistuloscopy in diagnosis of the recurrent peri-anal fistulas.

**Method:** From November 2011 and March 2013 we considered 100 patients (70 M and 30 F; mean age 40 years), all suffering from recurrent perianal fistula. Three-dimensional endoanal ultrasound reconstructions were performed before and after hydrogen peroxide enhancement (HPUS) in all patients during pre-operative time. The fistuloscopy was performed under sedation at the time of surgical treatment.

**Results:** We observed a better diagnostic accuracy of fistuloscopy than the HPUS in the identification of primary recurrent fistulas especially those supra and extra-sphecccnic (99.2% of fistuloscopy vs 83% and 71.4% of HPUS respectively), in the diagnosis of secondary tracks (100% vs 66.6%), in the dectection of horse-shoe tracks (100% vs 63.3%), and in identification of internal opening (99% vs 76.2%).

Eighty-six patients underwent to VAAFT and fourteen patients underwent to various other types of surgical treatment.

**Conclusion:** The fistuloscopy has a better diagnostic accuracy of HPUS in the diagnosis of recurrent perianal fistulas. This procedure therefore allows the surgeon to define the correct diagnostic criteria by which to choose the most appropriate surgical strategy.

**F31**

**Rectal cancer surgery after high dose radiotherapy for prostate cancer: is sphincter preservation relevant?**

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**Aim:** The aim of this study was to assess feasibility and outcome of sphincter-saving resection for rectal cancer in patients previously treated by high dose radiotherapy for prostate cancer.
Method: Between 2000 and 2012, 1070 patients underwent rectal excision for rectal cancer. We identified two groups: A, patients treated by conventional radiotherapy (45 Gy) and sphincter-saving resection; B, high dose radiotherapy for prostate cancer (70 Gy) and sphincter-saving resection. End points were surgical morbidity, pelvic sepsis (anastomotic leakage/pelvic abscess), reperoration and definitive stoma.

Results: Group A included 230 patients and group B 14 patients. Tumour characteristics were similar in the two groups. Surgical morbidity (65% vs 24%, P = 0.01), pelvic sepsis (57% vs 16%, P = 0.001), reperoration (43% vs 17%, P = 0.02) and definitive stoma (58% vs 7%, P = 0.02) were significantly higher in the group B. Multivariate analysis showed that high dose radiotherapy for prostate cancer was the only independent factor of anastomotic leakage (OR: 10.56; 95% CI: 3.02–39.92; P < 0.001).

Conclusion: High-dose radiotherapy for prostate cancer increases morbidity of rectal surgery, inducing a high risk of permanent stoma. This suggests proposing a delayed coloanal anastomosis or a Hartmann, as an alternative to a low anterior resection in this population.

F32
Renal function remains significantly deranged 3 months after anterior resection when a defunctioning loop ileostomy is used rather than a loop colostomy.

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Aim: A loop ileostomy is the most commonly formed defunctioning stoma. This stoma is associated with dehydration but the impact on renal function is rarely reported. We compare renal function between patients with a defunctioning loop-ileostomy and loop-colostomy.

Method: A consecutive series of 55 patients receiving defunctioning stomas during an anterior resection, where 2 surgeons favour loop-colostomy (n = 19) and two loop-ileostomy (n = 36): 25 males (45%); median age 64 years (range 28–85). Patient demographics, pre-operative and 3 months post-operative renal function (eGFR), tumour site and stage, neo-adjuvant treatment, stoma type and stoma complications were recorded.

Results: The median baseline eGFR was 80 (49–90) ml/min/1.73 m² with no difference between groups (P = 0.424). At 3 months eGFR was significantly lower (P = 0.039) with a loop-ileostomy (69 ml/min/1.73 m²) compared with a loop-colostomy (78 ml/min/1.73 m²). An eGFR < 60 occurred in 16% (3/19) of patients with a loop-colostomy compared with 33% (12/36) with a loop-ileostomy. Three patients with loop-ileostomies required admission with renal impairment (eGFR < 30).

Conclusion: This case-series compares outcomes for defunctioning loop-ileostomy and loop-colostomy. Three months after surgery the loop-ileostomy group had significantly worse renal function. The risk of renal impairment is an important consideration when constructing a defunctioning stoma. Patients with chronic kidney disease or those prone to dehydration may better suit a defunctioning loop-colostomy.

F33
Effect of anti-tumor necrosis factor alpha agents on postoperative anastomotic complications in Crohn’s disease: a systematic review

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F34
Does intramesorectal proctectomy (IMP) provide improved outcomes compared to standard total mesorectal excision (TME) in patients with ulcerative colitis (UC)?

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Aim: Our goal was to compare IMP vs TME in regard to complication rates, bowel and sexual function.

Method: About 89/201 (44%) patients completed the Memorial Sloan-Kettering Cancer Center (MSKCC) Bowel Function Scale, Fecal Incontinence Quality of Life (FIQL) instrument, Fecal Incontinence Severity Index (FISI), Female Sexual Function Instrument (FSFI), and International Index of Erectile Dysfunction (IIED).

Results: There were no differences in abdominal sepsis, post-operative length-of stay, or hospital readmissions between groups (P = ns). For bowel function, IMP patients reported similar MSKCC scores (P ≥ 0.24) but better fecal continence scores (FI7 17 ± 3 vs 31 ± 4, P = 0.009) compared to TME patients. However, this difference did not translate into improved FIQL scores. For sexual function, there were no differences in overall sexual function regardless of technique for either women (FSFI; P ≥ 0.20) or men (IIED; P ≥ 0.22). On multivariate analysis controlling for baseline differences between groups, only higher surgical apgar scores were associated with better sexual function in women (P = 0.04).

Conclusion: Use of an IMP technique appears to be associated with similar overall post-operative complications, better fecal continence, and no difference in sexual function compared to TME in patients with UC.

F35
Laparoscopic approach for inflammatory bowel disease is a real alternative to open surgery: an experience in 790 consecutive patients

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Aim: This study aimed to report a 14-year experience of laparoscopic approach for inflammatory bowel disease (IBD).

Method: From 1998 to 2012, all intestinal resections for IBD were prospectively enrolled. Adjusted risks of conversion and severe postoperative morbidity (Dindo ≥ 3) were computed using a multivariate logistic regression model.

Results: Seven-hundred and ninety consecutive colorectal resections for IBD were performed on 633 patients, including 377 ileocolonic resections (48%), 149 subtotal colectomies (19%), 167 ileal pouch-anal anastomoses (21%), 60 segmental colectomies (8%), and 37 abdominoperineal resections (4%). Laparoscopic approach was performed in 73% of the procedures, including 25% of complex cases (recurrence (n = 66), 12%) and/or intra-abdominal abscess and/or fistula (n = 93, 16%).

Splitting the study in 5 time-periods, laparoscopic approach rate increased from 42% to 80% (P < 0.001). Among laparoscopic procedures, the rate of complex cases increased (from 16% to 33%, P = 0.023) whereas both adjusted risks of conversion and severe morbidity decreased with time (from 14% to 6%, P < 0.001 and from 15% to 7%, P < 0.001, respectively).

Conclusion: This study demonstrated that laparoscopy is a safe alternative to laparotomy for IBD management. With growing experience, the rate of laparoscopy for complex procedures increased, while adjusted risks of conversion and severe morbidity decreased significantly.
F36
Do perianal Crohn’s fistulae arise from the gut?
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Aim: The aetiology of fistulating perianal Crohn’s disease (CD) remains unclear and the disease a challenge to treat. Dendritic cells play major roles in the immunopathogenesis of CD and express tissue-specific homing markers. Data on the characterisation of dendritic cells from perianal Crohn’s and idiopathic fistulae are sparse. We aimed to determine alterations in homing marker expression on dendritic cells from Crohn’s and idiopathic perianal fistulae.

Method: Biopsies were taken from anal fistula tracts of 23 Crohn’s and 21 idiopathic patients. Dendritic cells were identified as HLA-DR positive and lineage (CD3, CD14, CD16, CD19, CD34 and CD56) negative, and were characterized by flow cytometry. The expression of the skin-homing marker CLA, and the gut-homing marker b7 was determined.

Results: Percentage expression of b7 on dendritic cells was significantly higher in Crohn’s compared with idiopathic perianal fistulae (P = 0.017).

Conclusion: Increased expression of b7 on dendritic cells of Crohn’s perianal fistulae implies that they might be arising from the gut. This may lead to increased gut dendritic cell infiltrates contributing to impairment in healing. Anti-b7 therapies may aid healing when applied to perianal Crohn’s fistulae.