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ABSTRACTS

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COLORECTAL CANCER RADICALLY RESECTED: THE VALUE OF DIFFERENT PROGNOSTIC FACTORS

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Background Colorectal cancer (CRC) is the third most common human cancer and the second leading cancer-related deaths in many western countries. In Italy, the numbers of deaths from CRC represents about 11% in men and 14% in women of cancer mortality. The prognosis and the influence of decision-making for adjuvant treatment of radically resected CRCs are mainly based on the pathological staging: thus, high-risk stages II and III are now routinely submitted to adjuvant chemotherapy, with a benefit of survival, respectively, of 3–5 and 10%. However, it is now evident that CRC is characterized by considerable genetic heterogeneity: the two major genetic pathways are chromosomal instability and microsatellite instability. The different genetic alterations are proved to influence the clinicopathologic characteristics, the prognosis and the chemo-sensitivity of CRCs. The aim of this study is to present our results on the influence of pathologic and genetic factors on the prognosis. **Methods** From December 2003 to June 2006, 318 patients were radically resected for CRCs, 187 men and 131 women, with a median age of 68.5 years. All surgical specimens underwent histopathological analysis for grading and staging; moreover, DNA was extracted and examined by polymerase chain reaction for 10 markers of microsatellite instability; the tumors are classified in stable (MSS), low-level of microsatellite instability (MSI-LOW) and high-level of microsatellite instability (MSI-HIGH). Adjuvant therapy was delivered in selected patients when indicated; median postoperative follow-up was of 49 months: we considered non-evidence of disease at follow-up. Statistical analysis is performed by chi-square; statistical significance was assigned to p value <0.05. **Results** Patient's pathological status were for grading: G1 17, G2 241, G3 60; for staging (TNM): stages I 78, II 97, III 89, IV 54; for genetic status there were: MSS 227, MSI-LOW 56, MSI-HIGH 35. MSI-HIGH cancers were more frequently in women, in right colon; the pathology showed a more incidence of G3 and of T3–T4 lesions, but a minor incidence of N1, N2. The overall disease-free survival was of 60%. Based on the pathological and genetic correlations, survival was for grading: G1 75%, G2 62%, G3 34%; for staging: I 90%, II 68%, III 45%, IV 7%; for MS status: MSS 59%, MSI-LOW 54%, MSI-HIGH 60%. If pathological and genetic correlations are crossed, the data showed that disease-free survival is significantly better for MSI-HGH tumors in G2 (MSS 59%, MSI-HIGH 81%, $p < 0.05$) and in stages I–II (MSS 75%, MSI-HIGH 96%, $p < 0.05$), but significantly worse for stages III–IV (MSS 34%, MSI-HIGH 0%, $p < 0.01$). **Conclusions** Although pathological staging and grading remains to be the most important prognostic factor in resected CRCs, genetic features can play an independent prognostic role for long-term survival; even in decision-making on adjuvant chemotherapy the MS status should be considered, because the proved different sensibility to chemotherapeutic drugs of the two genetic pathways of CRC.

AGGRESSIVE MULTIDISCIPLINARY APPROACH IN METASTATIC RECTAL CANCER: PRELIMINARY RESULTS

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Background Preoperative administration of chemo-radiation in patients with stages II and III rectal carcinoma has an impact on local recurrence rate, but is still unable to control systemic disease, without any effect on long-term survival. More intensive chemotherapy schedules with anti-angiogenic agents can improve long-term outcome and downstage patients with resectable metastatic disease that are usually excluded from preoperative combined approach. On the basis of the results of previous studies, we started to enroll in a trial of preoperative chemo-radiation also patients with resectable metastatic disease. **Methods** Patients with locally advanced rectal cancer at high risk of recurrence (T4, N^+ or T3N0 5 cm from anal verge and/or circumferential resection margin 5 mm) or with resectable metastases (M1) received three biweekly courses of CT (OXA 100 mg m^2 and RTX 2.5 mg/m^2 on day 1, and FU 800 mg m^2 and LFA 250 mg/m^2 on day 2) during pelvic RT (45 Gy). Bevacizumab (BEV, Avastin) was administered before each CT cycle. Surgery was planned 8 weeks after CT-RT after a complete restaging. FDG PET was performed before and during chemo-radiation treatment and before surgery. **Results** All, but one of 26 patients enrolled in the study completed chemo-radiation therapy. The addition of BEV to CH-RT did not increase the treatment toxicity, or the surgical morbidity. No treatment-related or

peri-operative death occurred. Neutropenia was the most common adverse event. Twenty-three patients underwent rectal cancer surgery (TME with complete mesorectum). The median number of retrieved nodes was 25 (range 10–72). An R0 resection was performed in all patients, including resection of liver metastases in two patients. Pathologic evaluation showed a TRG1 in 10 (45%) patients and a TRG2 in six (27%) patients. Therefore, a TRG1 or 2 was reported in 72% (95% confidence limits, 52–86%) of patients, with no significant correlation with baseline clinical characteristics. FDG PET was able to predict response as demonstrated in a previous study. Perioperative major morbidity in this group (13%) was comparable to previously published results. All patients are alive and recurrence-free after a median follow-up of 18 months. **Conclusions** The role of neo-adjuvant chemo-radiation in the treatment of stages III–IV rectal carcinoma has to be explored, since excellent results in terms of both local and systemic control can be obtained. Intensive multi-drugs chemotherapy schedules including, antiangiogenic agents may help in down-staging also patients with resectable metastatic disease.

MANAGEMENT OF PATIENTS WITH RECTAL OUTLET OBSTRUCTION UNDERGOING OR NOT SURGICAL TREATMENT: ROLE OF PATIENT'S SELECTION AND OUTCOME OF REHABILITATION

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Background To report on patients' selection and on outcome of rehabilitation treatment in patients with rectal outlet obstruction undergoing or not undergoing surgical treatment. No previous studies have specifically reported on patient's selection and on outcome of rehabilitation treatment in terms of clinical, physiatric and instrumental evaluation in patients with rectal outlet obstruction (OO), undergoing or not surgical treatment. **Methods** From September 2004 to January 2006, 124 patients, 101 females and 23 males (mean age 47.3 years, age range 19–80), divided into no-surgical (90) and surgical (n = 34) groups were submitted to a standard protocol based on the proctologic examination, clinico-physiatric assessment (pubo-rectalis contraction, pubo-coccigeal (PC) test, perineal defense reflex, muscular synergies, postural examination) and instrumental evaluation (anorectal manometry, anal US and dynamic defecography). Patients were offered to pelvic floor rehabilitation (thoraco-abdomino-perineal muscles coordination training, biofeedback, electrical stimulation and volumetric rehabilitation) on the basis of such diagnostic protocol. **Results** All patients significantly improved in both Wexner score ($p \leq 0.05$) and all clinico-physiatric parameters after rehabilitation treatment ($p < 0.05$). In the no-surgical group lumbar lordosis, PC test and agonist and antagonist muscular synergies particularly improved ($p < 0.0001$). In the surgical group, a higher significance was observed for perineal defense reflex and antagonist muscular synergies ($p = 0.015$). In both groups anal resting pressure, rectal sensation, recto-anal inhibitory reflex and duration of MCV, and balloon expulsion test resulted statistically significant ($p < 0.05$). **Conclusions** A multimodal pelvi-perineal rehabilitation strategy based on a thorough diagnostic evaluation of several distinct parameters should be always considered in order to best identify and treat those functional aspects of rectal outlet obstruction. The presence of concomitant anatomical alterations significantly impacting patient's clinical picture requires surgical correction.

SACRAL NERVE STIMULATION FOR FECAL INCONTINENCE: CAN WE OPTIMIZE SELECTION OF THE RIGHT PATIENTS?

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Background Sacral nerve stimulation (SNS) chronically excites the sacral nerves, and is helpful in some of those patients with fecal incontinence (FI), non-responding to medications and rehabilitation. Its main advantage is, probably, preliminary testing (PT), which can help predict, by means of clinical diaries, the therapeutical success of SNS. The aim of the present study was to try to identify which diagnostic tests could optimize the selection of incontinent patients for a permanent implant of SNS. **Methods** Twenty-seven patients with FI (mean duration = 4.8 years) were enrolled from October 2003 to September 2008 (sex M = 2, F = 25, age range = 42–79 years, mean = 62.1 - years). All patients were studied using prior to, immediately following PT, and 1 year after permanent implant of SNS: 1. anorectal manometry (AM), 2. trans-rectal ultrasonography (TRUS), 3. Cleveland clinic incontinence score (CCIS), 4. short form (SF)-36 health survey QoL questionnaire, 5. American Society of Colon and Rectal Surgeons (ASCRS) incontinence-specific QoL questionnaire for FI (FIQoL), 6. FI visual analogue scale (FI VAS), and 7. QoL VAS. Statistical analysis was performed by means of t test. PT testing lasted for 30 days. **Results** In the 22 patients selected for permanent implant, CCIS, prior to PT, was elevated (mean = 17.7, range = 15–20), and improved significantly after testing (mean = 8.46, range = 10–4) ($p < 0.001$). FI VAS prior to PT was: mean = 8.7 and range = 7–10, and, after PT: mean = 2.8 and range = 1–4 ($p = 0.026$). SF-36, prior to, and after PT, showed a significant improvement of some variables, such as RP, SF, RE ($p < 0.001$), and MH, while GH and VT remained unchanged. FIQoL, prior to PT, showed low values in all scales, while, after PT, there was a statistically non-significant improvement in the coping/behaviour ($p = 0.023$), and in the depression/self-perception scales ($p = 0.017$). Mean QoL VAS was 1.5 (range 0–3) prior to PT, and 8 (range 6–10) after PT ($p < 0.001$). Mean follow-up of the patients who received a permanent implant of SNS was of 20 months (range 6–62). Only in one patient removal of SNS was necessary due to pacemaker contact sensitivity, while in other four patients, we found, in the second year, a decrease in the improvements achieved during the first year of treatment. **Conclusions** Our results show that it is possible to predict a successful implant in those patients who show an improvement of CCIS >50%, a significant improvement of the RE, SF, RP, and MH scales of SF-36, and an improvement >50% of FI VAS or QoL VAS, while FIQoL or the other scales of SF-36 did prove to be indispensable. We did find a relationship between VAS incontinence score and CCIS, and between VAS QoL score and four scales of SF-36. Evaluation of the VAS scores is easy and quick to perform, and could suffice to predict any long-term benefit obtained by SNS at the end of PT.

PERCUTANEOUS TIBIAL NERVE STIMULATION FOR TREATMENT OF ANAL INCONTINENCE

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Background Faecal incontinence (FI) is a not common symptom in the general population (0.4–2.2% in population-based studies), which

affects predominantly the elderly people, with a female prevalence. FI has a notable public health impact. It is psychologically and physically debilitating and can lead the patient to isolation and progressive loss of all social activities. Patient selection is decisive to opt for an effective intervention. A conservative approach is required to treat mild to moderate FI; it is based on nutritional, medical and rehabilitative therapy, with a success rate of <65%. In no-responsive cases, other several different semi-conservative procedures, such as bulking agents, injection or sacral neuromodulator implant can be proposed prior to resorting to surgery. One of the least invasive forms of neuromodulation is the tibial nerve percutaneous stimulation (PTNS), currently used for a wide variety of urologic conditions. **Methods** A prospective multicenter study to investigate PTNS for the treatment of faecal incontinence has been recently led in Europe showing heartening results. In our hospital, one of the three centres of this study, seven patients have been treated for anal incontinence with PTNS (5 women, 2 men; age 38–82, average 61.7). **Results** A 1-year control after 6 weeks of treatment revealed a large decrease in mean FI episodes, with an encouraging CCFI score variation. Main CCFI score was 10.1 (7 patients) at baseline, 6.6 at 6 weeks (7 patients), 5.7 (7 patients) at 3 months, 4.2 (5 patients) at 6 months and 2.8 at 1-year follow-up. Also psychological and social aspect has been evaluated using validated questionnaires, such as the fecal incontinence quality of life scale (FIQL) and the medical outcomes survey (SF-36). Variations in these scores demonstrated a significant improvement. No serious adverse events occurred during the procedures. **Conclusions** PTNS seems to be a safe and effective therapeutic option and it could represent a valid approach to mild to moderate FI. Tolerableness, affordability and mininvasivity of this simple procedure compel to further studies.

FINDING THE OPTIMAL TREATMENT DURATION OF GLYCERYL TRI NITRATE (GTN) FOR CHRONIC ANAL FISSURE (CAF)

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Background Optimal treatment duration of GTN for CAF is unknown. **Methods** Prospective randomized trial comparing 40 versus 80 days with twice daily topical 0.4% GTN treatment (Rectogesic®, Prostrakan Group) for CAF. Chronicity was defined as the presence of fibrosis or skin tag or visible sphincter fibers or hypertrophied anal papilla and symptoms present for more than 2 months or with pain of less duration, but similar episodes in the past. A chronicity score (the sum of anatomical chronic features) and a validated gravity score were used. Fissure healing, the primary aim of the study and maximum pain at defecation measured with VAS were assessed at baseline (which included manometry) and at 2, 4 weeks, 40 days, 6 weeks and at 80 days, when data were gathered. **Results** Of the 188 patients with chronic fissure, 96 were randomized to the 40 days treatment and 92 to the 80 days treatment. Patients were well matched for sex, age, presence of chronic features, and fissure scores. There were 35 (19%) patients (21 in the 40 days group and 14 in the 80 days group) who did not complete treatment 14 (40%) because of side effects, 5 (11%) because of worsening symptoms, 3 (9%) for both and 13 (37%) did not attend scheduled visits. Of 151 patients, who completed the assigned treatment, 79 (52%) had their fissures healed and 92 (61%) were pain free. There was no difference in healing ($p = 0.77$) and absence of symptoms ($p = 0.08$) between the two groups. At the analysis of variance, there was a significant improvement in the paired VAS scores between baseline, 2, 4, and 6 weeks ($p < 0.001$) while there was no additional improvement between 6 weeks and 80 days. Final pain score was not different between groups ($p = 0.33$). Persistence of pain was associated with the presence of fibrosis ($p < 0.05$), advanced age ($p < 0.05$), high-maximum resting pressure ($p < 0.005$), high-fissure gravity score ($p = 0.005$) and longer duration of symptoms ($p < 0.01$). Failure to heal was correlated with higher chronicity score ($p < 0.05$) and visible sphincter fibers ($p < 0.05$). **Conclusions** Pain at defecation from CAF continues to improve up to 6 weeks of topical GTN treatment. Fissures with more chronic features are less likely to heal even after 80 days of treatment.

SACRAL NEUROMODULATION FOR THE TREATMENT OF FECAL INCONTINENCE: A COST-EFFECTIVENESS ANALYSIS

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Background Fecal incontinence (FI) is the inability to control the passage of feces and gas through the anal canal. The condition has a multifactorial etiology and can cause both physical and psychological invalidity, with repercussions on the patient's social life and personal relationships. The purpose of this study is to evaluate cost-effectiveness and budget impact of introducing sacral nerve modulation (SNM) as a fecal incontinence treatment in Italy. **Methods** A decisional analytical model, composed of a decisional tree diagram and of a Markov sub model, was used to represent clinical pathway for fecal incontinence treatment in two scenarios (with and without sacral nerve modulation). Data were retrieved from published study and validated by an expert panel. National Health Service point of view was used to evaluate resources consumptions and costs were retrieved from NHS procedures price list. Time horizon was 5 years and 3% discount rate was applied to costs and benefit. Effectiveness was measured both in QALY and in symptoms free year. The analysis was performed based on the therapeutic pathways offered to patients according to whether they have an intact anal sphincter (IAS) or a structurally deficient anal sphincter (SDAS). In addition, a budget impact analysis (BIA) was conducted to estimate the financial impact of introducing SNM as a possible option for the treatment of FI on a 5-year time horizon. Fecal incontinence prevalence data and sacral neuromodulation uptake

forecasts were used to estimate budget impact over the next 5 years. **Results** With regard to SDAS patients, introducing Interstim as a therapeutic option generated a per-patient incremental efficacy of 0.45 in terms of SFY and an additional cost of € 2.417 over the 5-year period; the corresponding results for IAS patients were 0.66 and €4.878. These values are equivalent to €5.374/SFY per SDAS patient and €7.346/SFY per IAS patient. Cost-effectiveness of introducing sacral nerve modulation ranges from €28.285 to €38.662 per QALY for SDAS and IAS patients, respectively. Introducing sacral neuromodulation will have an estimated budget impact of 0.56% on the budget allocated for fecal incontinence treatment. **Conclusions** This study demonstrated that the introduction of SNM is able to improve the management of FI at a reasonable and sustainable cost with a modest financial impact which, over 5 years, would not exceed 0.6% increase to the resources currently allocated to the treatment of FI. Infact sacral neuromodulation has been shown to be an efficient investment with a cost-effectiveness ratio lower than € 40,000/QALY threshold usually accepted in Italy with a limited impact on FI allocated budget.

QUALITY OF LIFE AND STOMA CARE

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Background Patients with an intestinal stoma undergo physical and psychological distress due to altered body image and stoma-related complications. The impact of a stoma on a patient's life is little discussed and is often underestimated, as well as the contribution of stoma therapy to health-related quality of life (QOL). This present study examined the problems faced by patients with ileostomies or colostomies and the possible contribution of stoma therapy to QOL. **Methods** From September 2008 to May 2009, 65 selected and well-documented stoma patients (M/F ratio 33/17, mean age 56.7 years old) who had properly constructed, well functioning end colostomies or ileostomies were analyzed. Patients complete the observation 1 month after surgical intervention, and after training with a stoma therapist. Their QOL was assessed by completion of the SF-36 and the Stoma Quality of Life Scale—SQOL (Baxter 2006). This is a 21-item questionnaire. Three scales are featured: work/social function (6 items), sexuality/body image (5 items), and stoma function (6 items). One item (scored separately) measures financial impact, one measures skin irritation, and two measure overall satisfaction. In addition, we performed a psychological colloquy with all the patients who received the questionnaires. **Results** The overall response rate was 90%. Questionnaire results were examined separately for men and women and comparing ileostomies versus colostomies. Data analysis of SF 36 showed that there is not substantial differences on measures comparing men and women for each area of investigation (physical activities, physical role limitations, pain, physical health, vitality, social activities, emotional role limitation, mental health: ($p > 0.05$). Significant differences were found when colon versus ileostomies were compared in social activities ($p = 0.004$) and emotional role limitation ($p = 0.003$). Regarding the SQOL, there is a significant difference ($p = 0.002$) when man and women are compared for sexuality and body image, with a major impairment for women. The other scales do not show significant difference ($p > 0.05$). Comparing colon versus ileostomy, we found a trend of significance for the skin irritation ($p = 0.05$), with major impairment for ileostomy, no difference for the other scales ($p > 0.05$). **Conclusions** In this study, we observed that patients show a good compliance for psychological intervention in the stoma care centre. Evaluation of QoL highlight no disparity between men and women, using a general well-known questionnaire (SF 36), but it is possible to highlight some gender-dependent difference with a more specific assessment (Baxter Stoma Quality of Life Scale). Particularly, women seem to be more sensible to the impact of stoma on self body perception and sexuality. These results suggest that a dedicated evaluation of QoL for stoma patients and a psychological support may be helpful in stoma clinic.

COMPARATIVE STUDY OF INTERNAL DELORME PROCEDURE AND STARR FOR THE TREATMENT OF OBSTRUCTED DEFECATION SYNDROME (ODS)

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Background Stapled transanal rectal resection (STARR) and the internal Delorme procedure are two options obstructed defecation caused by rectal intussusception with or without rectocele. This study was designed to assess the safety and outcomes achieved with the two techniques. **Methods** The study had a retrospective design using a prospective date base and included 34 patients with symptomatic outlet obstruction, caused by associated rectocele and rectal intussusception, treated from March 2000 to November 2008. Patients were selected on the basis of validated constipation and continence scorings, clinical examination, colonoscopy, anorectal manometry, and defecography: 17 patients (group A) underwent an internal Delorme procedure and 17 (group B) an STARR operation as a result of two different experience periods. The patients were evaluated using the Cleveland clinic constipation score (CCCS), straining index and PAC-QoL. **Results** There was no difference in the age of patients receiving either procedure (STARR 53.8 years, Delorme 53.7 years). With a mean follow-up of 3.4 (group A) and 5.9 years (group B) one recurrence was observed in the STARR group (5.8%). Fourteen (41.2%) patients developed postoperative complications 5 (29.4%) in group A and 9 (52.9%) in group B, including suture line dehiscence with stenosis (3 in group A), proctalgia (2 in group B), fecal incontinence (2 in group B), and bleeding (2 in group B). The incidence of transient postoperative fecal urgency was significantly higher in the STARR group (50%) as compared to no evidences with internal Delorme ($p = 0.001$). Scores of constipation improved significantly in both groups as did quality of life ($p = 0.001$). A CCCS score reduction of more than 50% was observed in 82.4% of patients in group A versus 58.8% in group B as did the straining index (70.6% in group A versus 52.9% in group B). The number of evacuations increased, but without influence by the procedure (47.1 vs 41.2% of 50% increment). PAC-QoL showed a significant reduction in anxiety/depression, physical discomfort and psychological discomfort ($p = 0.001$). The overall quality of life outcome was favorable (at least 50% improvement) in 70.6% of group A and in 52.9% of group B. **Conclusions** Both techniques are safe and effective in the treatment of outlet obstruction; nevertheless, the internal Delorme procedure seems to be more effective and with minor risk of complications and fecal urgency.

PERIOPERATIVE CIMETIDINE ADMINISTRATION PROMOTES TUMOR INFILTRATING LYMPHOCYTES IN PATIENTS WITH COLORECTAL CANCER: FIRST WESTERN EXPERIENCE

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Background Cimetidine (CIM) has been shown to have beneficial effects in colorectal cancer patients. According to literature, cimetidine blocks the expression of E-selectin on vascular hepatic endothelium and inhibits the adhesion of cancer cells to the endothelium, so cimetidine treatment seems to be particularly effective in patients whose tumour had higher sialyl Lewis (sLa) antigen levels. Besides, cimetidine has an important immunomodulating action, preserving and improving the patients' perioperative immunity. This mechanism is obtained with the antagonism of circulatory suppressor T cells, the prevention of post-operative alterations of lymphocyte subpopulations, by maintenance of natural killer cell activity and the activation of tumor infiltrating lymphocytes (TIL). **Methods** In this study, a total of 62 colorectal cancer patients (mean age 66; gender M/F: 1.8/1; histological stage: 0:2; 1:6; 2:26; 3:14; 4:14) who received curative operation were examined for the effects of cimetidine treatment on the expression of TIL. The cimetidine group (15 patients) was given 400 mg twice a day of cimetidine orally preoperatively, while the control group (47) took the drug only in the postoperative period. The treatment was initiated 2 weeks after the operation and continued for 3 months and repeated for 3 weeks every 3 months ad libitum. Surgical specimens were examined during routine histopathological evaluation for the presence of TIL in tumor margin. Then, we have stratified the patients according to the expression levels of sialyl Lewis antigens A (sLa). **Results** CIM treatment boosted TIL response, as was reflected by findings that 40% of the patients in treatment group had significant TIL responses and only 8.5% of the cases had discernible TIL responses ($p < 0.05$). Furthermore, the expression of sL antigens seems to be heterogeneous, although we saw a clear correlation between expression and stages (64% at stages 3 and 4 vs. 50% at stage 1). This is line in literature with the greater biological aggressiveness in patients with higher expression of sL antigens. **Conclusions** These results clearly indicate that cimetidine treatment greatly improved lymphocytes expression in colorectal cancer patients, with tumour cells expressing high levels of sLa.

LAPAROSCOPIC RESECTION OF COLORECTAL CANCER IN ELDERLY PATIENTS

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Background The ageing of population and a longer life expectancy have led to an increased number of elderly patients presenting with colorectal cancer ad searching for treatment. However, there are not many studies addressing the issue of laparoscopic colon resection (LCR) for malignant disease in the elderly and most of them have been conducted in university centres. The aim of this study was to assess the effects of age on the outcome of laparoscopic colorectal surgery for cancer at a single department of a community hospital. **Methods** Perioperative outcome of patients >75 years old undergoing LCR between June 2005 and August 2008 for colorectal cancer were compared with findings in younger patients. **Results** The analysis considered 207 patients: 131 (63.3%) were <75 years, group A; 76 (36.7%) were >75 years old, group B. As expected, preoperative cardiovascular and respiratory risk factors were significantly more prevalent in group B, as reflected in a higher proportion of elderly patients with ASA grades III or IV (68.4 vs. 14.5%, $p < 0.0001$). This was reflected as a consequence in a significantly higher postoperative mortality and morbidity rates. The mortality rate was 0% in group A and 2% in group B patients. The overall morbidity rate was 6.9 and 18.4% in younger and older patients, respectively ($p = 0.02$). 'Surgical' morbidity rate was similar in the two groups, while 'medical' morbidity was significantly different. Three patients required reoperation, due to anastomotic leak (1 group A- and 1 group B patient) and volvulus (1 group B patient). Median hospital stay was 9 days (IQR 8–12) for patients <75 years and 11 days (IQR 9–14) for those older ($p = 0.007$). There was no significant association between ASA grading and morbidity (ASA I–II 16.7 vs. ASA III–IV 19.2%, $p > 0.999$) or postoperative stay (ASA I–II 11 vs. ASA III–IV 12 days median, $p = 0.28$) in elderly patients. On the other side, among younger patients, morbidity was three times higher in ASA III–IV (15.8%) compared with ASA I–II (5.3%). Even when we analysed postoperative data in the two groups of patients by type of operation, we confirmed a trend towards higher morbidity rate and longer postoperative stay in elderly patients. **Conclusions** Short-term results after LCR for cancer in patients over 75 years reveal a higher postoperative risk when compared with their younger counterpart. It suggests that although advanced age, per se, should not be considered a contraindication to LCR for cancer, this surgery in elderly patients should be considered preferably in well-experienced centres to keep postoperative risk to a minimum.

FUNCTIONAL RESULTS AFTER PREOPERATIVE RADIOCHEMOTHERAPY (RCT) AND TRANSANAL ENDOSCOPIC MICROSURGERY (TEM) FOR RECTAL CANCER

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Background The purpose of this study was to investigate evacuation and continence disorders in a series of 21 patients treated with RCT and TEM for extraperitoneal rectal cancer. **Methods** From 2000 to 2008, a selected group of extraperitoneal rectal cancer patients treated with long-term preoperative RCT who had a clinically major or complete response, were operated on with a full thickness local excision by TEM. Preoperative RCT was administered according to TOMOX-RT protocol (i.v. combination of raltitrexed (3 mg/m^2) and oxaliplatin (60–130 mg/m^2) on days 1, 19, and 38 and concurrent 50 Gy external beam radiotherapy). At 1 year from surgery, a questionnaire aimed in evaluating the anorectal function was administered. The answers were evaluated to establish the frequency of each parameter on a scale varying from: never, rarely (<1 per month), sometimes (<1 per week but $\geq$1 per month), often/usually (<1 per day but $\geq$1 week) and always ($\geq$1 per day). The evacuation and continence score, according to Gervaz et al. (range 0–28) and Jorge and Wexner (range 0–20) were also evaluated; higher score indicates better function in both the cases. **Results** There were 12 males and 9 females, with a median age of 61.4 years (range 41–74). Tumour location was middle rectum in 2 patients and low

rectum in 19. Pre-treatment clinical stage was T2N0 in 3 patients and T3N0 in 18. Pathological assessment revealed: 13 pT0, 6 pT1, and 2 pT2 patients who refused advised radical surgery with total mesorectal excision. The median evacuation score was 24.5 (range 19–28). No patients referred daily bowel movements >3. If we considered patients who complained symptoms at least once a week only, urgency was referred in 4.8%. The median continence score was 18.6 (range 14–20). If we considered patients who complained symptoms at least once a week only, incontinence to flatus was referred in 9.5%. No patients referred incontinence to solid stools, soiling, and necessity of wearing a pad or modification in lifestyle. **Conclusions** Preoperative RCT is considered an important worsening factor of sphincter function in patients operated on by radical surgery. In our experience, the multimodal treatment with long-term preoperative RCT and full thickness local excision with TEM seems to allow optimal functional outcome.

FACTORS THAT INFLUENCE 12 OR MORE HARVESTED LYMPH NODES IN RESECTIVE R0 COLORECTAL CANCER

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Background The number of lymph nodes required for accurate staging is a critical component in colorectal cancer (CRC). Current guidelines demand at least 12 lymph nodes to be retrieved. The results of previous studies were contradictory in factors, which influenced the number of harvested lymph nodes. This study was designed to determine the factors that influence the number of harvested lymph nodes (<12 or ≥12) in resective R0 colorectal cancer early-stage CRC in a single institution. **Methods** Between July 2005 and December 2008, data on 225 patients who underwent surgery for CRC were analysed retrospectively. A hundred and thirty-nine R0 surgery patients were taken into consideration and all the tumour-bearing specimens were fixed with node identification performed. Several possible factors that influence 12 or more harvested lymph nodes were investigated and classified according to: (1) operating surgeon, (2) examining pathologist, (3) patient's characteristics (age, sex, and body mass index), and (4) type of disease (tumour localization, tumour cell differentiation, tumour stage, and type of resection). **Results** A total of 100 patients (71.9%) with 12 or more harvested lymph nodes and 39 patients (28.1%) with <12 lymph nodes harvested were analyzed. The results demonstrate that within a single institution, tumour localization, depth of tumour invasion according to Dukes' stage and grading were independent influencing factors of 12 or more harvested lymph nodes. Neither the operating surgeon, nor the examining pathologist had significant influence on the number of harvested lymph nodes. **Conclusions** The number of harvested lymph nodes was highly variable in patients who underwent resection of R0 CRC. Neither the operating surgeon nor the examining pathologist had significant influence on the number of harvested lymph nodes. Therefore, from the viewpoint of the surgeons, disease itself is the most important factor influencing the number of harvested lymph nodes.

Video Session

Wednesday, 7 October 2009

COLOVESICAL FISTULA: LAPAROSCOPIC TREATMENT

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Background The authors report a case of enterovesical fistula due to a diverticulitis-related infection. **Methods** The case of a 53-year-old man presenting abdominal pain, constipation and fever is described. After a short hospitalisation during which common examinations did not show significant alterations, the patient was discharged. After 6 months, he came back to the hospital with acute abdominal pain, fever, constipation, pneumaturia and mild fecaluria too. The abdomen and pelvis CT and especially the cystoscopy showed an enterovesical fistula orifice. **Results** This lesion was treated laparoscopically by partial resection of sigma and suture of bladder wall. The presenting symptoms and signs of enterovesical fistulae occur primarily in the urinary tract but, in our case, the clinical presentation occurred in two times, in an atypical fashion. **Conclusions** The authors conclude by stressing the importance of laparoscopic treatment in the light of diagnostic and therapeutic measures.

HAEMORRHOIDOPEXY WITH HEMOR PEX SYSTEM AS AN ALTERNATIVE TREATMENT OF HAEMORRHOIDS IN AMBULATORY SURGERY

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Background Historically, the Milligan–Morgan technique is considered the gold standard of haemorrhoids surgery, but this procedure is characterised by postoperative pain and the need for income regularly. The introduction of the haemorrhoidopexy with Hemor Pex System (HPS) as a new technique for treating haemorrhoids II (symptomatic) and III degree in ambulatory surgery can be an alternative to the classical techniques. Our aim with this video is to present a simple procedure, reproducible in any colorectal unit with which we are having good results. **Methods** The haemorrhoidopexy with HPS is a minimally invasive surgical treatment, in which, using a rotating dedicated anoscope, sutures are placed under vision on the six terminal branches of the superior haemorrhoidal artery to lift up the anorectal mucosa and put back the haemorrhoidal cushions above the pectineal line. **Results** We present the video of a 71-year-old patient with III haemorrhoids degree, who is scheduled as ambulatory surgical intervention for haemorrhoids. With the patient in jack-knife position and under local anesthesia, the HPS dispositive is introduced into the anal canal and through the operative window and direct vision, are placed the "Z" sutures in each of the six points of the

branches of the superior haemorrhoidal artery. At the end, we review the hemostasis that appears correct. **Conclusions** Haemorrhoidopexy with HPS has many advantages: it is a safe procedure, easy to perform, with short surgical learning curve; it provides a major reduction in postoperative pain and can be done for ambulatory surgery.

A COMPLEX ANAL FISTULA TREATED BY LIFT TECHNIQUE

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Background The solution of complex anal fistulas is difficult, and the risks of recurrence and incontinence must be weighed carefully. Among current treatment techniques, fibrin glue or the anal fistula plug are associated with low to no risk for incontinence. The ligation of inter-sphincteric fistula tract (LIFT) for anal fistulas was first described in the Thai medical literature in 2007, the procedure is "simple, quick, inexpensive", and preserves continence. A study was presented during the American College of Surgeons 94th Annual Clinical Congress (October 2009, San Francisco) with interesting results. Our aim with this video is to present a simple technique, quick, reproducible in any colorectal unit, and with low cost. But the most important thing about this procedure appears the sphincter sparing. **Methods** The ligation of inter-sphincteric tract is a technique "sphincter saving". The inter-sphincteric plane at the site of fistulous tract has entered via curvilinear incision. The intra-sphincteric tract is identified by dissection. The exposure of inter-sphincteric plane is facilitated using retractors. The inter-sphincteric tract is hooked using a small right-angled clamp. The tract is then ligated close to the internal sphincter with absorbable suture 3/0. After which, the tract is divided distal to the point of ligation. The fistulous tract would then be throughly curetted. The external opening is adequately drained by additional incision. The last step is re-approximation of the intersphincteric incision wound loosely with interrupted absorbable suture 3/0. **Results** We present a video of a 67-year-old patient with complex anal fistula (recurred trans-sphincteric tract). The patient was clinically continent and was fully informed about the procedure. Under local anaesthesia, the first step is location of the internal opening; that is, identified by injection of water through the external opening. Then, the curvilinear incision is done in the inter-sphincteric plane, permitting its exposure. The tract is identified by meticulous dissection, and after is ligated with absorbable suture 3/0. The fistulous tract is curetted and the external opening is drained. Finally, the incision is closed with absorbable suture. At the first control, after a week, the patient was asymptomatic. After 3 months postoperation, there were no signs of recurrence. Clinical exploration and transanal ultrasonography were correct. **Conclusions** The LIFT technique is simple, less invasive, and the early results are satisfactory. This treatment may become a good option for most complex anorectal fistula repairs.

"VIDEO ASSISTED ANAL FISTULA TREATMENT (VAAFT) ". THE MEINERO TECHNIQUE FOR THE COMPLEX FISTULA

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Background I perform my technique with the following tools: my fistuloscope (Karl Storz), a modified anoscope, an electrode connected to the electrosurgical knife, an endospoon, a forceps, a stapler and 1 ml of cianoacrylate. The fistuloscope has an optic channel, an operative and washing channel. The technique is divided into a diagnostic and an operative phase. The fistuloscope is inserted through the external fistula opening with the washing solution already running; the fistula tract clearly appears on the screen until you arrive at the end of the fistula tract which is the internal fistula opening. I put two stitches in two opposite points of the internal opening to isolate it. I start removing the fistula by an electrode burning all fragments of the fistula wall and all granulation tissue from the internal opening to the external opening, not forgetting any abscess cavity. The assistant maintains tension on the two threads with a forceps towards the internal rectal space or the anal canal, so as to lift the internal fistula opening at least 2 cm into the shape of a volcano. The surgeon inserts the CCS30 stapler at the volcano's base and completes the mechanical internal opening closure. The final result is a scar in the area where the internal fistula opening was. Cyanoacrilate is injected into the fistula pathway thought the external opening ensuring a hermetic closure of the fistula track**. Methods** From May 2006 to March 2009, I operated 41 patients (36 males, 5 females) aged 33–67. Nineteen of them had already undergone surgery for complex anal fistula. For five males, it was the third operation, for two the fourth. There were neither Crohn's cases nor relevant associated diseases. None of the patients had ultrasound, fistulography or MRI preoperatively to demonstrate that it is of no use knowing the type of fistula before operating. **Results** No major complications occurred. In most cases (78%), postoperative pain was acceptable and there was not any correlation with the suture level. Patients were seen at 2–6–12–24-month follow-up: primary healing was achieved in 34 patients (82.9%). I re-operated three of recurrences by VAAFT: they healed 2 months later. Other two patients healed after a cyanoacrylate re-injection. Two patients will be re-operated next July. **Conclusions** This technique allows anal fistula treatment with no surgical wound in the perianal region, certainty of the location of the internal fistula opening, and certainty of accurate treatment of the fistula from the inside. There is no need to know the fistula classification because no damage is caused to the sphincters, with no risk of faecal incontinence. Moreover, this operation is performed in day surgery, the patients have no need for medication and they can start working again in a few days.

PERINEAL STAPLED PROLAPSE RESECTION

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Background We present a video regarding surgical technique of perineal stapled prolapse resection for complete rectal prolapse of the rectum. **Methods** It was performed in a 76-year-old woman with a complete rectal prolapse. **Results** Postoperative period was uneventful and the patient was discharged at V postoperative day. Follow-up of 4 months did not reveal complications or recurrences. **Conclusions** We present a new surgical technique that could be considered as a further option in the treatment of complete rectal prolapse.

LAPAROSCOPIC SURGERY FOR CROHN'S DISEASE

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Background In the last 15 years, laparoscopic surgery for Crohn's disease (CD) has been proved to be feasible and safe at least in experienced hands, even though the inflammatory nature of the

disease, the need for re-operative surgery and the presence of fistulas make it challenging. The authors review their initial experience with 10 laparoscopic procedures for CD over the past 3 years. **Methods** This study is a retrospective analysis of a prospective database. **Results** Since 2005, 10 patients out of 38 with CD underwent laparoscopic resection. The mean age of the patients was 44.8 years, 50% were women. In most cases, the indication for surgery was the presence of an abdominal mass, severe intractable disease or intestinal obstruction. The unique laparoscopic procedures performed for CD were 10 primary ileocolic resection ± fistula takedown and/or abscess drainage. Median times to passage of flatus and bowel movement were both 3 days (range 1–6), the mean length of hospital stay was 6 days (range 5–12), and the mean operative time was 145 min (range 100–220 min). There was no mortality. The only complication occurred was a pulmonary atelectasis. **Conclusions** Our early experience with laparoscopy for CD proved to be safe and effective at least as the open approach. Further experience, as well as the results of the ongoing randomised controlled trials are needed to determine the superiority of the laparoscopic approach over the open one in the long-term setting.

Posters

Tuesday, 6 October 2009

RECTO-ANAL INTUSSUSCEPTION: WHAT IS THE CLINICAL SIGNIFICANCE?

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Background Recto-anal intussusception is defined as a circumferential infolding of more than 3 mm of rectal mucosa. However, rectal intussusception has also been present in 60% of healthy volunteers. Surgery for isolated internal intussusception is more controversial and poorly supported. This study was carried out to determine defecografic findings encountered in patients with slow-transit constipation and without outlet obstruction. **Methods** Twenty-two patients (16 women and 6 men) were studied with colonoscopy, Rx transit time, defecography, and 3D endoanal ultrasound. **Results** Rectal intussusception was seen in 14/22 patients with normal rectal emptying. **Conclusions** Investigation of functional constipation and pelvic floor dysfunction demonstrated an improvement. Internal rectal prolapse (rectal intussusception) and rectocele are frequent clinical finding in patients without outlet obstruction. However, there is still no clear evidence whether surgical procedure for intussusception and rectocele has a functional benefit in the long term.

IMPAIRMENT OF ANAL SPHINCTER FUNCTIONS AFTER TRANSANAL INTRODUCTION OF STAPLING INSTRUMENTS

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Background Transanally introduced stapling techniques can produce several damages to sphincter functions (temporally or permanent) and consequently several clinical pictures: soiling, obstruction defecation syndrome, anal fissures or stenosis, etc. The aim of the present study is to value the role of stapling techniques and several factors who emphasize or minimize this outcome, to point out consequently useful devices in these routinely tricks. **Methods** From January 2007, till December 2007, we retrospectively observed 78 patients: 11 (14.1%) underwent a right hemicolectomy (group A) and 67 (85.9%) a trans-anal anastomosis after left hemicolectomy or anterior rectal resection (group B). All patients with rectal anastomosis performed less than 4 cm from anal verge, hemorroidopexy and patients with previous proctologic diseases due to anal sphincter disorders, after mandatory clinical pictures, by ultrasound (EAUS), anorectal manometry (AM) and Rx-defecography were excluded form the present series. At follow-up after resective surgery, patients with symptom suggestive for anal sphincter dysfunction underwent to EAUS and AM. **Results** Fifteen patients presented symptoms due to anal sphincter injuries: 1 (6.6%) belong to group A and 14 (93.3%) to group B. Ten (63.3%) were females. Four patients in group B (28.5%) underwent an anastomosis from 5 to 8 cm from the anal verge and 10 (71.4%) higher than 8 cm. Eight patients (57.1%) underwent a trans-sutural anastomosis (Knight and Griffen technique). Eight anastomoses (53.3%) were performed with a 31-mm stapler, while 3 (20.0%) with a 29-mm stapler and 4 (26.6%) with a 28-mm stapler. Ten patients (63.3%) had only temporary pathological findings. **Conclusions** Anal sphincter injuries after transanal introduction of stapling instruments are a relatively frequent complication, but in the majority of cases sphincter dysfunctions are only temporary. To prevent these complications, it is necessary an accurate study of previous proctologic disease, selection of adequate stapler (especially in inflammatory disease), use copious lubrication, gentle operates and previous divaricating of anal sphincter.

ARE ECHOENDOSCOPIC FINDINGS PREDICTORS OF SURGICAL TREATMENT IN PATIENTS WITH DEEP PELVIC ENDOMETRIOSIS WITH BOWEL INVOLVEMENT?

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Background Deep pelvic endometriosis, defined as a lesion, which penetrate the retroperitoneal space by more than 5 mm, is usually located in the pouch of Douglas and in the connective tissue of the rectovaginal septum and it may penetrate through the intestinal wall causing specific symptoms. Endoscopic ultrasound (EUS) is an important technique in the diagnosis of intestinal endometriosis, since it may determine the extent of pelvic involvement, infiltration of the bowel wall and distance from the anus. The management of bowel endometriosis, in the absence of severe obstructive symptoms or significative stenosis, is controversial and it remains to be unclear whether surgery should be performed due to complications related to bowel resection. Our study aimed to evaluate if EUS is predictive for a need of surgical treatment. **Methods** The data of 63 patients, with deep pelvic endometriosis with rectal or recto-sigmoid involvement, without intestinal obstruction, observed between January 2005 and May 2009, were reviewed. All the patients underwent physical examination, performed by an experienced gynecologist, and were studied with EUS: number of lesions, mean volume, invasion of the bowel wall, distance from the anal verge were recorded. All the patients underwent medical treatment with oral contraceptive. After 6 months on average, 53 patients experienced relief or improvement of symptoms. Ten patients underwent surgical treatment for persistence of severe symptoms. Ultrasound data of the surgical and non-surgical groups were compared. **Results** The mean diameter of the lesions was 50.8 mm in patients that required surgical treatment and 28.4 in the

medical group ($p = 0.002$). Number of lesion were <2 in the medical treatment group and $\geq$2 in the surgical treatment group ($p = 0.004$). Distance from the anal verge and the depth of infiltration of the bowel wall did not differ in the two groups. **Conclusions** The number and size of the endometriotic lesions seen during EUS are associated with poorer response to medical therapy and are a predicting factor for the need of surgical treatment.

RESULTS OF SURGICAL TREATMENT OF RECTAL OUTLET OBSTRUCTION WITH INTERNAL DELORME PROCEDURE

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Background We report our experience with the internal Delorme procedure with or without levatorplasty for internal rectal prolapse (rectal intussusception) with or without rectocele. **Methods** A retrospective study was carried out using a prospective date base of 95 patients treated from March 2002 to 2009 with obstructed defecation caused by rectal intussusception ($n = 74$) associated with a rectocele or by rectocele without intussusception ($n = 21$). Patients were selected on the basis of validated constipation and continence scorings, clinical examination, colonoscopy and defecography. Fifty-eight patients (group 1) were treated by the internal Delorme procedure and in 37 (group 2) the internal Delorme was combined with a levatorplasty. The patients were evaluated using the Cleveland clinic constipation score (CCCS), straining index and PAC-QoL. The mean follow-up period was 3.2 (range 0.2–6.9) years. **Results** Twenty-one (22.1%) patients developed a postoperative complication, 15 in group 1 and 6 in group 2. They included bleeding (3.1%), suture line dehiscence (4.2%) with stenosis (3.1%). One patient (1.05%) in group 2 complained of dyspareunia and transitory rectal pain occurred in two patients (2.1%) in group 1. Four (4.2%) patients reported recurrent symptomatic rectal intussusception, 2 (3.4%) in groups 1 and 2 (5.4%) in group 2. Constipation improved ($p < 0.001$) with a reduction in the time to evacuate (13.4 vs. 7.6 min), the need for manual assistance (83 vs. 6.1%) and laxative use (100 vs. 27.1%) ($p < 0.001$). The CCCS score decreased from 11.32 to 4.17 ($p < 0.001$) as did the straining index (10.96 vs. 4.26; $p < 0.001$). The number of evacuations increased from 5.97 to 8.51 per week ($p < 0.001$). The overall clinical outcome was considered favorable in 84.2% of patients. PAC-QoL showed a reduction in anxiety/depression, physical discomfort and psychological discomfort ($p < 0.001$). **Conclusions** The internal Delorme procedure is a treatment option for rectal outlet obstruction caused by rectal intussusception with or without rectocele. It produces with excellent functional results and patient satisfaction. The risk of recurrent prolapse and morbidity is low.

SURGICAL TREATMENT OF POSTOPERATIVE COMPLICATIONS FOLLOWING PROCEDURE FOR PROLAPSED HEMORRHOIDS (PPH)

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Background Haemorrhoids are very common among coloproctological pathologies, with about 50% of people experiencing them at some time in their life in the industrial countries. **Methods** This study analyses 181 patients (116 women, 65 men; age 25–80, average 50.2), that have been subjected to coloproctological visit from January 2003 to May 2009. Each patient showed symptoms correlated to stapled haemorrhoidectomy. Most represented symptoms were: tenesmus (100% of cases), chronic pain (100%), rectal bleeding (61.9%, 112 patients), low cicatricial stenosis within a distance of 2 cm from the pectinate line (37%, 67 patients), high stenosis—over than 2 cm (24.3%, 44 patients), evacuation and post-evacuation pain (76.2%, 138 patients), light-moderate degree faecal incontinence (26.5%, 48 patients) and persistent or relapsing haemorrhoidal prolapse (36.5%, 66 patients). High or low stenosis or substenosis was present in 70% of cases at rectal exploration. Hypertonus was detected by anorectal manometry (65–70 mmHg) in all cases except patient with faecal incontinence. In all cases, the fibrotic anastomotic stricture was showed at the defecography as a "clepsydra" image. A corrective surgical treatment was proposed to the patients we selected (74 patients: 40 women, 34 men) with pain, anal stenosis and/or substenosis. Each patient was subjected to a careful anamnesis, inspection, rectal exploration, anoscopy, anorectal manometry and defecography. The correction consists into a deep 180° wide lateral section, a breaking down the scarring and, if needed taking away some residual stitches. Postoperative course was of 2 days, with 7, 21 and 60 days controls. **Results** Of the 74 selected patients, we operated 40 cases: we have had a full remission of the pain in 80% (32 patients), the remaining 20% (8 patients) having had to be subjected to outpatient removal of the stitches. **Conclusions** The procedure of circular stapler prolaxectomy should have to be reserved just to the third degree haemorrhoid disease with mucosal prolapse, performing the anastomosis beyond the pectinate line of about 2 cm, according to the brand patent. We observed patients who have improperly undergone stapled procedures with moderate to severe complications. We want to stress that Milligan–Morgan procedure is the gold standard treatment for the haemorrhoid up to date. In those patients, where indication for stapler haemorrhoidectomy was correct (<50%) and, however, showed early or late complications (rectal bleeding, substenosis and chronic pain) we proposed a type of operation with intention to resolve the symptomatology by breaking down the scar ring in two diametrically opposite lateral points. Considering patients number and significant complications detected in the indicated period, it is reasonable to think that in the most of cases there is an abuse in using stapler out of its real indications.

USE OF AUTOLOGOUS PLATELET GEL FOR RECURRENCE OF PERIANAL AND SACRO-COCCIGEAL FISTULA

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Background The treatment of Sinus Pilonidalis and Perianal Fistulas is still not entirely standardised due to the frequency of relapses, the inconvenience for patients and last but not least, for the economic commitment by the health-care structure. The potential therapeutic value and versatility of products stemming from blood and platelets have long stimulated research and interest in the field of surgery. The autologous gel platelets (PG), generated by activated human thrombin and platelets, represent a new biotechnology for angiogenesis stimulation on speeding up the healing and regeneration of tissues. Do not underestimate its effect as analgesic. Our study shows the employment of gel platelets in the treatment of complicated wounds and recurrences following surgery for Sinus Pilonidalis and Perianal

Fistulas. **Methods** From January 2006 to May 2009, we selected eight patients (6 males and 2 females, aged between 19 and 54 years) with infected wound following surgery for Sinus Pilonidalis and 10 patients (6 males and 4 females, aged between 31 and 72 years) with recurrence after Perianal Fistulas. Exclusion criteria was diabetes mellitus, cancer, psychiatric patients, pregnancy, HIV patients, fistulas with more ways, wounds with more than 5 × 4 cm openings, local sepsis, patients with fissure anal or being treated with anticoagulants or immunosuppressive, with perianal abscesses. The application of PG into the clean and not infected wound (in case of Sinus) was preceded by thorough cleaning with the only saline. As regards the application of the PG in patients with fistula, the procedure was brought forward by the deep surgical toilette through the fistula, followed immediate injection PG. The procedures were performed in Day Hospital and under local anesthesia. Patients with fistula were observed the first 3 days, at 7th days and at the 14th days. For patients with Sinus 2 PG applications (the second one at 7th days) were necessary with a control at 14th days. **Results** Of the 10 patients with Perianal Fistula relapse, so far seven are free from symptoms, the margin of fistula is well established and homogeneous surrounding area. In the other three patients, we have observed a further recurrence. Of the eight patients with infected wound after surgery for Sinus Pilonidalis, seven healed presenting a uniform and well established scar tissue while in one case we had a recurrence. **Conclusions** Our results, although obtained on a small group of patients, support the safety and efficacy of PG in the treatment of infected wounds following surgery for the excision of Sinus Pilonidalis and Perianal Fistulas relapses. Further studies and longer follow-up are needed to come to any conclusion.

THE MULTI FUNCTIONAL ANOSCOPE: A NEW DEVICE FOR EARLY TREATMENT SELECTION

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Background During the first proctological examination, it is difficult to detect anorectal functionality. Nowadays, with minor pathologies where manometry is not foreseen, no instrument is able to predict attendant diseases and postoperative complications. The multi functional anoscope (MFA) takes its place between nothing and manometry, allowing the selection of patients with hyper- or hyporectal sensitivity. Both rectal hypersensitivity and hyposensitivity are correlated with pathologies that the proctologist might suspect; so he will be able to carry out further examinations. The MFA is made up of a graduated anoscope and a catheter with a latex balloon. **Methods** It is “multifunctional” as it can perform rectal-sensation test (RST), first sensation (FS), defecatory desire volume (DDV) and maximum tolerable volume (MTV). Normal values are FS 30–60, DDV 60–160, and MTV 160–270. If different from normal range rectal hypersensitivity or hyposensitivity are identified. In 189 patients studied, 30 were found with hypersensitivity (seven patients with external sphincter dysfunctions) and 47 with hyposensitivity (8 with anismus, 2 with faecal incontinence). All patients were examined with both the MFA and manometry: identical results because the technique is the same. A hundred and twenty-three patients with haemorrhoids were operated by stapled prolaxectomy, 43 with ODS by STARR. After a 6 months of follow-up defecatory urgency (DU) was considered and divided into temporary (TDU), permanent (PDU), and severe (SDU). The preliminary study demonstrates a clear correlation between rectal hypersensitivity, DU and SDU ($p < 0.001$). **Results** (1) Balloon expulsion test (BET): the inability to expel the balloon confirms the anismus or ODS suspicion, (2) the extent of prolapse assessment (EPA) can influence the proctologist’s decision to use one or two staplers for prolapse resection and is also useful in compiling the consent form, (3) length measurement of anal canal (LMAC) is useful when the operation aim is to lengthen the anal canal, (4) increased anal canal length, and MTV value are also predictive of the biofeedback bed results in patients with anismus. **Conclusions** The MFA represents a useful instrument for preoperative selection of patients and procedure.

AGGRESSIVE ANGIOMYXOMA OF THE PERINEUM: A CASE REPORT

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Background A 45-year-old woman, with a history of two pregnancies and two interruptions, presented with a 2 years long swelling on the right perineum cause of nonspecific perineal symptoms. Clinical examination showed an elastic, soft and painless mass. Ultrasound revealed a hypo/iso-echogenous tissue, inhomogeneous with several anecogenic areas in the context, without signs of vascularization. MRI scans revealed a huge well-defined tubular area (30 × 5 × 4 cm) posterolateral to the lower vagina on the right but anterolateral to the rectum extending into the right ischio-rectal fossa. Excision biopsy was performed and histopathological examination revealed a myxoid tumor with sparse infiltrates of polymorphic cells clustering around blood vessels. Immunohistochemical studies showed strong staining for CD34, actin, desmin, S100 protein. The patient underwent a surgical excision. The entire mass was removed and sent for histopathological examination that confirmed the locally infiltrative aggressive angiomyxoma (AAM). She had a smooth uneventful postoperative recovery and was discharged 5 days later in good conditions. After 6 months, there is no evidence of recurrence either clinically or on MRI. **Methods** AAM is a rare tumor of mesenchymal origin, first described by Steeper and Rosai in 1983 with fewer than 150 cases reported in the medical literature. The tumor, found mainly in the pelvis, in the perineum and in the vulva in women of reproductive age, has a female to male ratio of approximately 6:1. AAM is locally infiltrative, and has the notorious tendency for local recurrence (30–72%). Although locally aggressive, angiomyxoma is usually non-metastasizing, as two cases of metastasis are described in literature. **Results** The etiological factors of the tumor are not known. Macroscopically the tumor looks like a mass of variable size often greater than 10 cm. Microscopically the tumor is composed of small, spindle-shaped mesenchymal cells dispersed in a loose myxoid matrix, with characteristic dilated blood vessels. Mitoses and cellular atypia are generally absent. Several immunocytochemistry studies showed a strong staining for desmin, actin, vimentin, CD34, CD44, S100 protein, estrogen and progesterone receptor. The differential diagnosis with other soft tissue cancer is not always clear so that AAM is though to be misdiagnosed in about 82% of cases. However, other diagnoses, such as myxoid liposarcoma and angiomyofibroblastoma, could be clearly ruled out on the basis of histomorphologic and immunohistochemical criteria. **Conclusions** Clinically, this tumour is most frequently diagnosed as a Bartholin cyst, vulvar mass, vulvar abscess. CT or MR imaging studies of these tumors are important to determine the extent and optimal surgical approach. Indeed, due to the different locations of the AAM, a surgical technique standard is not possible. A complete surgical excision is the basis of a definitive treatment

despite a recent retrospective review has shown a rate of recurrence in patients with positive margins quite equal to that of patients with negative margins.

LONG-TERM RESULTS OF DELORME PROCEDURE AND ORR-LOYGUE RECTOPEXY TO TREAT COMPLETE RECTAL PROLAPSE

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Background Several surgical techniques have been developed in attempt to treat rectal prolapse. The aim of this study is to assess short and long-term outcome of Delorme procedure and a modified Orr-Loygue technique adopted in our unit to manage rectal prolapse. **Methods** Retrospective chart review of consecutive patients who underwent surgical repair for complete rectal prolapse at our institution between July of 1996 and December of 2008 was performed. This retrospective database was used to audit our experience with perineal and abdominal approaches. Delorme procedure was chosen in case of high-operative risk patients, male patients and in case of absence of uterine or vaginal vault prolapse or enterocele. Modified Orr–Loygue technique was applied to patient with genital prolapse and or enterocele or large recto-vaginal space. Orr–Loygue rectopexy consisted of a reduced posterior mobilisation of the rectum to the level of the lateral ligaments avoiding nerve damage; a polypropylene mesh, trousers shaped, was fixed to the sacral promontory and sutured to the anterolateral rectal walls. The distal ends of the mesh were sutured to the vaginal fornix or vaginal vault. **Results** Forty-three patients underwent either a Delorme's procedure (25 patients: 4 male, 21 female) or an Orr-Loygue rectopexy (18 patients, all females) for complete rectal prolapse. In Delorme's group the mean age was 60.4 years, the mean operating time was 114.5 ± 28.5 min (range 65–200 min) and mean hospital stay was 7.8 ± 3 days (range 4–15 days). No mortality was recorded. The overall complication and recurrence rates were 16 and 10%, respectively. Preoperative constipation was completely resolved or improved in 84.6% patients. Preoperative incontinence improved in 40% of patients postoperatively. Patients were followed up for 72 months (mean follow-up of 30.2 ± 29.7 months). In the rectopexy group the mean age was 51 ± 17 years, the mean operating time was 142 ± 39.9 min (significantly longer compared with the Delorme's group: $p < 0.05$) and hospital stay ranged between 3 and 11 days (mean of 6 days: significantly shorter compared with the Delorme's group; $p < 0.05$). Laparoscopic approach was chosen as standard procedure; 1 case (5.5%) needed conversion to laparotomy. No mortality occurred. The overall complication and recurrence rates were both 5.5% (no significant difference between each operative group: chi-squared tests were 0.29 and 0.74, respectively). Following surgery preoperative constipation was completely resolved or improved in 77.7% patients. Faecal incontinence improved in 4/5 patients (80%). Patients were followed up for 120 months (mean follow-up of 38.3 ± 28.7 months). One case of new onset postoperative obstructed defecation was recorded (5.5%). **Conclusions** In this study, modified Orr–Loygue procedure had shorter length of hospital stay and lower complication and recurrence rate than Delorme's technique. However, this surgical procedure is still associated with new onset obstructed defecation. Both techniques, in the long term, provided good result for prolapse and associated symptoms. Recurrence rates were similar.

SURGICAL TREATMENT OF RECTAL INTUSSUSCEPTION BY INTERNAL DELORME PROCEDURE

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Background Occult rectal prolapse is frequently related to symptoms of obstructed defecation. Patients' refractory to conservative treatment may be candidates for surgical options. Indications for Delorme's procedure have been recently expanded to include rectal outlet obstruction secondary to internal rectal prolapse. This study evaluates the results of Delorme's procedure. **Methods** Database of all patients undergoing Delorme's procedure for occult rectal prolapse at our institution between 1999 and 2008 was reviewed. Defecography, anorectal manometry, double-contrast barium enema or colonoscopy, were routinely performed preoperatively. Delorme procedure was chosen in case of high-operative risk patients, male patients and in case of absence of uterine or vaginal vault prolapse or enterocele. Demographics, results of imaging studies, mortality, morbidity and functional outcome were retrospectively analyzed. **Results** Eighty-three patients underwent Delorme's procedure for occult rectal prolapse, with a mean age of 54 years (17 males, 66 females). The mean length of prolapse was 15.2 ± 3 cm. The mean operating time was 121.4 ± 33.1 min. Hospital stay ranged between 3 and 36 days (mean of 7.6 days). No patients died as a result of the procedure. Complications occurred in 22 patients (26.5%): bleeding (2 patients); urinary retention (5 patients); perineal cellulitis (1 patient); postoperative ileus (1 patient); suture line stricture (6 patients); suture line dehiscence (4 patients); rectal wall abscess (2 patients); abdominal collections and sepsis (one patient who was taken back to the theatre). Following surgery preoperative constipation was completely resolved or improved in 80.3% patients. Preoperative incontinence was present in nine patients, seven of whom improved after the procedure. Patients were followed up for 104 months (mean follow-up of 29.7 months). The recurrent prolapse rate was 8.4% (7/83). **Conclusions** Delorme's procedure for the management of rectoanal intussusception is a safe and effective surgical treatment. It is associated with low morbidity has an acceptable relapse rate and effectively improves symptoms of obstructed defecation.

RESULTS OF THE DELORME PROCEDURE FOR COMPLETE RECTAL PROLAPSE

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Background Many surgical techniques have been described for the treatment of full-thickness rectal prolapse performed by either a perineal or an abdominal approach. During the last decade, a renewed interest in perineal approach and in particular for the Delorme procedure has raised. The aim of this work is to evaluate clinical and functional outcome of Delorme procedure in total rectal prolapse management. **Methods** Retrospective chart review of consecutive patients who underwent surgical repair for complete rectal prolapse at our institution between January of 1999 and December of 2008 was performed. Patients managed during this period by Orr–Loygue rectopexy, Altemeir or Frykman–Goldberg procedure, were excluded from the study. Dynamic defecography, anorectal manometry,

double-contrast barium enema or colonoscopy, were routinely performed preoperatively. Delorme procedure was chosen in case of high-operative risk patients, male patients and in case of absence of uterine or vaginal vault prolapse or enterocele. Outcome measures were mortality, morbidity, prolapse recurrence, constipation and faecal incontinence. Data were retrieved from case note review, clinical assessment and telephone consultation. **Results** A total of 25 patients underwent Delorme's procedure for complete rectal prolapse, with a mean age of 60.4 ± 19.7 years (4 males; 21 females). The mean length of prolapse was 16.7 ± 3.1 cm. The mean operating time was 114.5 ± 28.5 min (range 200–65 min). Hospital stay ranged between 4 and 15 days (mean of 7.8 ± 3 days). No mortality as a result of the procedure was recorded. Complications occurred in four patients (overall complication rate of 16%): congestive heart failure (1 patient); urinary retention (1 patient); suture line stricture (1 patient); suture line dehiscence (1 patient). Fifteen patients had symptoms of obstructed defecation preoperatively. Following surgery preoperative constipation was completely resolved or improved in 84.6% patients. Preoperative incontinence was present in 10 patients, 4 of whom improved after the procedure (40%). Patients were followed up for 72 months (mean follow-up of 30.2 months). Five patients were lost at follow-up. The recurrent prolapse rate was 10% (2/20). **Conclusions** Delorme's procedure for the management of complete rectal prolapse is a safe and effective surgical treatment. It is associated with low morbidity, has an acceptable relapse rate and effectively improves symptoms of obstructed defecation and anal continence.

CHANGES IN QUALITY OF LIFE (QOL) DURING TREATMENT WITH TOPICAL 0.4% GLYCERYL TRINITRATE (GTN) IN PATIENTS WITH CHRONIC ANAL FISSURE (CAF)

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Background CAF has a negative impact on QoL. The aim of the study was to assess if fissure healing and absence of pain at defecation, following treatment with topical GTN had any effect on QoL. **Methods** Within a prospective randomised trial comparing 40 days versus 80 days treatment with twice daily 0.4% GTN (Rectogesic®, Prostrakan Group), QoL was assessed using the descriptive system and the VAS part of the EQ5D. The descriptive EQ5D is organised into five scales (mobility, self care, usual activities, pain/discomfort and anxiety/depression). In the VAS part, the patient answers the question "what is your health status today?" by choosing a visual scale of 1 (worst) to 100 (best). The EQ5D was administered at baseline, after 2 weeks and at the end of treatment. For the statistical analysis, non-parametric repeated measures ANOVA and Mann–Whitney test were used. **Results** Of 188 patients with chronic fissure, 96 were randomised to the 40 days treatment and 92 to the 80 days treatment. Baseline QoL measured with VAS was lower in the 40 days group ($p = 0.01$) which limits the value of comparison between treatment groups. Of 151 patients who completed the assigned treatment 79 (52%) had their fissures healed and 92 (61%) were pain free. There was a significant improvement in mobility, self care, usual activities, pain/discomfort, anxiety/depression and VAS score with treatment in all patients ($p < 0.0001$). All improvements, except self care, were already significant at 2 weeks. A significant improvement in self care was seen only in the 80 days group. When correlating QoL parameters with fissure characteristics self care and usual activities were correlated with fissure healing ($p < 0.05$) while anxiety/depression was correlated with pain at defecation ($p = 0.001$). **Conclusions** There is a marked improvement in QoL after treatment with twice daily 0.4% GTN which is already significant after 2 weeks. Improvement in self care, which was correlated with fissure healing, requires longer treatment duration.

HEMOR PEX SYSTEM VERSUS MILLIGAN–MORGAN: ONE YEAR FOLLOW-UP

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Background HemorPexSystem (HPS) is a new technique for haemorrhoids transanal treatment that combines anopexy with no-doppler-guide dearterialization. Early and 1-year follow-up results are presented comparing HPS with conventional excisional haemorrhoidectomy (Milligan–Morgan). **Methods** Eighty-six patients with haemorrhoids (grade II 26, grade III 50, grade IV 10) were randomized to HPS (group 1) or Milligan–Morgan (group 2) techniques. All operations were performed under local anaesthesia in 43 cases of group 1, and general anaesthesia in 32 cases of group 2. All patients scored peak and average postoperative pain (VAS), symptoms, complications, and recurrence. **Results** Duration of surgery was lower for HPS (19 vs. 30 min, $p < 0.001$). Seventy-six cases were treated as outpatients, while 10 (group 2) were admitted overnight. Peak postoperative pain was significantly higher in excisional group (VAS 7 vs. VAS 4) during 2 weeks postoperative ($p < 0.05$). No statistically significant difference of average pain was scored after 15 days. Fifteen patients had complications within 14 days: bleeding was present in 4 cases (3 in group 1, 1 in group 2), but never requiring hospitalization. Ten patients had complications consisting in urinary retention (4 in group 1, 5 in group 2), and thrombosed haemorrhoids (1 in group 1, none in group 2). Re-bleeding was present in three cases within 3 months; 1 year recurrences were 3 in group 1 (grade IV), none in group 2 ($p < 0.05$). The cost was 300 € in group 1 vs. 80 € in group 2. **Conclusions** Both techniques (HPS and Milligan–Morgan) demonstrated good results in haemorrhoids treatment. Pain is less intensive after HPS technique along the 15 postoperative days and recovery is shorter in comparison to MIlligan–Morgan technique. In contrast, costs and recurrence rate are lower for Milligan–Morgan technique, which treatment appears to be the gold standard for IV degree haemorrhoids.

BOTULIN TOXIN FOR THE TREATMENT OF CRONIC ANAL FISSURE: A CLINICAL STUDY

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Background Chronic anal fissure is a tear in the distal anal canal that persists after 6–8 weeks of conservative treatment. It usually occurs at the time of defecation, internal anal sphincter spasm exacerbates local ischemia and impedes healing of the fissure. Ideal treatment for anal fissure has the following objectives: to alleviate pain, to promote healing, and to preserve sphincter integrity. We present our experience on 31 patients with chronic anal fissure treated with injection of botulin toxin type A (BTX-A) into the internal anal sphincter. **Methods** From January 2007 to December 2008, the patients referred to our institution for anal fissure treatment were selected for BTX-A injection according to the following criteria: (1) evidence of distal anal tear with visible transverse internal anal sphincter fibers; (2) persistence of symptoms (pain and/or bleeding) for at least 2 months; (3) clinical evidence of moderate to severe internal anal sphincter hypertonia. With a 27-g needle, a total of 150 U of BTX-A (Dysport) was injected into the internal anal sphincter as follows: 1 mL of lidocaine 2% followed by 100 U of BTX-A at the fissure site and 1 mL of lidocaine 2% followed by 50 U of BTX-A at the opposite side. **Results** During the study period, 31 consecutive patients with clinical evidence of chronic anal fissure were treated with a 150-U dose of BTX-A into the internal anal sphincter. There were 14 men and 17 women, mean age 42.7 years (range 17–68). The procedures were performed in a mean time of 10 min. Clinical follow-up data were available at 1, 3, 12, and 24 weeks after treatment for 100, 97, 81, and 65% of patients, respectively. A minor injection site hematoma was observed in two cases (6%), whereas one patient (3%) suffered from transitory gas incontinence. All patients reported a progressive decrease of pain score during follow-up and a reduction in anal sphincter spasm was observed at 3- and 12-week control visit in all cases. At the end of the study period, 78% of patients were totally asymptomatic and complete fissure healing occurred in 65% of cases. Anal fissure recurrence was observed after 24 weeks in seven patients (22%), four were managed conservatively with benefit, two were successfully treated with repeat injection of 150 U of BTX-A, and one underwent internal lateral sphincterotomy. **Conclusions** Chronic anal fissure is often a serious problem for both the patient and the physician. Treatment with topical nitrates or calcium channel blockers allows fissure healing in the majority of cases, however, about one-third of patients relapses within a short time. Lateral internal sphincterotomy leads to rapid healing in >90% of patients but sphincter division bears the risk of permanent fecal incontinence. Chemical denervation of the internal anal sphincter with botulin toxin injection is a safe and effective alternative option for fissure healing with an acceptable rate of recurrence.

RADICAL EXCISION AND V–Y FLAP RECONSTRUCTION FOR GIANT CONDYLOMA: CASE REPORT AND REVIEW OF LITERATURE

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Background Gyant condyloma acuminatum (GCA) or Buschke Lowenstein tumour (BLT) is an aggressive variant of condyloma. The management may be challenging. The incidence of malignant transformation is up to 50%. Recurrence as high as 67% has been reported. The ideal treatment is still controversial. Topical chemotherapy, radiotherapy, immunotherapy and surgery have been reported as effective treatment. Surgery seems to be the most radical option; furthermore, it enables to examine properly the entire specimen. Nevertheless, radical surgery is major undertaking with significative morbidity. **Methods** A 22-year-old heterosexual man not having HIV was referred from other hospital with a histological diagnosis of GCA. He was complaining of anal itching and painful walking. At examination, there was a 13 cm exophytic perianal mass with few small scrotal condylomas. The inguinal lymph nodes were normal. Rigid rectoscopy was normal. We performed a wide circumferential excision and we reconstructed the defect with a bilateral V–Y advancement flap. The smaller scrotal condylomas were also excised. **Results** The postoperative recovery was normal. Nevertheless, wound infection occurred at just one lateral edge of the flap without the involvement of the anastomosis between anal mucosa at dentate line and skin flap. After 3 weeks, the wound was completely healed. The histology of the specimen showed GAC without malignancy. At a 2 years of follow-up, there was no recurrence. **Conclusions** Wide excision and VY flap reconstruction for giant condyloma may be an effective radical option.

CONSERVATIVE AND SURGICAL TREATMENT OF CHRONIC ANAL FISSURE: PROSPECTIVE LONG-TERM RESULTS

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Background The aim of this prospective study was to assess the efficacy of different medical treatments and surgery in the treatment of chronic anal fissure (CAF). **Methods** From 1/04 to 03/09, 311 patients with typical CAF completed the study. All patients were initially treated with 0.2% nitroglycerin ointment (GTN) or anal dilators (DIL) for 8 weeks. If no improvement was observed after 8 weeks, patient was assigned to the other treatment or a combination of the two. Persisting symptoms after 12 weeks or recurrence were indications for either botulinum toxin injection into the internal sphincter and fissurectomy or lateral internal sphincterotomy (LIS). **Results** During the follow-up (29 ±16 months), healing rates, symptoms, incontinence scores and therapy adverse effects were prospectively recorded. Overall healing rates were 64.6 and 94% after GTN/DIL or BTX/LIS. Healing rate after GTN or DIL after 12 weeks course were 54.5 and 61.5% respectively. Fifty-four patients (17.4%) responded to further medical therapy. One-hundred-two patients (32.8%) underwent BTX or LIS. Healing rate after BTX was 83.3% and overall healing after LIS group was 98.7% with no definitive incontinence. **Conclusions** Although LIS is far more effective than medical treatments, BTX injection/fissurectomy as first-line treatment may significantly increase the healing rate while avoiding any risk of incontinence.

ANAL MALIGNANCIES ASSOCIATED TO CONDYLOMATA ACUMINATA

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Background Human Papillomavirus (HPV) infection is emerging as an important factor in the oncogenesis of various squamous cancers.

The incidence of HPV-associated anal cancer has recently increased, largely attributed to immunocompromised states such as human immunodeficiency virus (HIV) infection. HPV infections may cause squamous intraepithelial neoplasia, which may progress from low grade to high grade and may be found in areas adjacent to squamous cell carcinoma. HPV DNA was found in 88% of anal cancer in one study and in more than 90% of cervical squamous cell carcinoma. We present our experience in the treatment of anal condylomata and in particular our histological findings after surgery. **Methods** At our Department, University of Turin, 993 patients (638 M and 355 F) were diagnosed as affected by anal and perianal condylomata in a period from October 1999 and March 2008. Mean age was 32 years. Eleven percent of patients were HIV+, 5.4% HBV+ and 2.2% HCV+. Ninety-five percent presented a perianal localization, 58.4% an endoanal (4.6% only endoanal), and 35.8% a genital localization. Eight hundred forty-three patients were submitted to surgery in one or more sessions. **Results** Histological examination revealed degeneration in 47 patients (5.57%). Twenty of these patients were HIV+ (58.8% of degenerations); and 2 patients were immunosuppressed (5.9%). Other 12 patients were immunocompetent. In particular, histological examination revealed 11 AIN I; 2 AIN II; 3 AIN III; 10 Buschke–Lowenstein neoplasms, 13 Bowen disease or Bowenoid papillomatosis; 2 carcinomas in situ; 6 carcinomas. HPV tipization was performed in 135 patients and we observed 105 patients low risk; 18 high risk and 12 low/high risk. Patients with diagnosis of Buschke–Lowenstein tumour was submitted to radical surgery; patients with anal carcinoma to RT + CT or to surgical excision; and other patients to surgical excision. All patients are actually in follow-up. **Conclusions** HPV-related perianal condylomata become increasingly frequent. Clinical diagnosis is simple. However, histopathological examination should be performed to confirm the diagnosis and to detect precancerous or cancerous changes. Molecular biological techniques allow identification of the HPV genotype so detecting the oncogenic strains. An accurate follow-up is mandatory for patients revealed as malignancies to prevent transformation in anal carcinoma.

OUTCOME OF SURGICAL TREATMENT AMONG HIV-POSITIVE PATIENTS WITH ANO-GENITAL WARTS

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Background Anogenital warts represent the most frequently diagnosed STI worldwide. Also in Italy a steady increase in cases over the years has been observed, in particular among subjects with HIV infection. Treatment failure is observed up to 70% of cases: surgical ablative therapy showed a clearances rate of 50–70% in general population. The objectives of the study are: (1) to describe the clinical characteristics of anogenital warts among HIV-positive- and HIV-negative patients referred to a proctologist for surgical treatment as a first-line therapy; (2) To evaluate the effectiveness of surgical therapy among HIV-positive patients and to assess factors related to recurrences rate. **Methods** From 1st July 1999 to 1st November 2007, all STI outpatients with anal–perianal warts seen at Infectious Diseases Department in Turin were referred to a dedicated Coloproctological Service. All subjects underwent to proctologist examination with anoscopy. The exophytic lesions were classified as exclusively perianal, exclusively endoanal and mixed localization. Blood and microbiological test were offered. Surgical treatment has been carried out, after patient's informed consent, by surgical excision methods at General Surgical Department. Only patients who have completed a 6 months' follow-up were included in the analysis. **Results** Among 807 subjects with warts (294 women, 513 men, mean age 32 years, range 17–81), 11.5% were HIV positive and 89.2% of them were under HAART treatment. The most frequent localization was the peri-endoanal one, in particular among heterosexual males (OR 1.48 $p < 0.01$). Eighty subjects did not undergo to surgery after being booked. At 6-month interval time, 44/438 did not complete the follow-up and among the 394 examined subjects total recurrences rate was 26.4%. Recurrence was not associated with age, gender, sexual orientation, but relapses between HIV positives and HIV negatives were significantly different: 44.9 and 23.8% respectively (OR 2.60, 95% CI = 1.33–5.04; $p < 0.05$). Recurrences were more frequent among HIV positives with CD4+ count <200 per mmc (OR = 2.46; $p < 0.05$). Surgical complications were not increased among HIV-positive patients compared with HIV-negative ones (2 and 2.3% respectively). **Conclusions** HIV-positive patients are not at a risk of surgical morbidity, but show a higher recurrence rate of anogenital warts compared with HIV-negative subjects even after being surgically treated. Ablative surgery should be considered a safe treatment but, due to recurrences, the need to be repeated is a major limit. Further studies are needed to assess the best therapeutic approach for anal warts among HIV-positive patients.

SURGICAL TREATMENT OF ANAL WARTS

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Background Anogenital warts are among the most common sexually transmitted diseases seen in surgical practice, found in up to 1.7% of the population. Condyloma acuminata are not usually a serious problem, but it causes emotional distress to the patient and the physician for its marked tendency to recurrence. Swerdlow and Salvati reported that 45% of their male patients were homosexual. Abcarian and Sharon reported an incidence of anal intercourse of 90% in a series of 70 patients with anal warts. The presence of anal condyloma mandates treatment. **Methods** At our Department 993 patients (638 M, 355 F) were visited between October 1999 and March 2008. Mean age was 34 years (range 17–81 years). Eleven percent of patients were extra-communitarians (39.4% from East Europe; 32.1% from Africa, 14.6% from South America and 13.7% from other Countries). Regarding sexual habits 67.27% patients were heterosexual; 22.75% patients homosexual and 9.9% bisexual patients. Main symptoms were pruritus (48%), bleeding (16.6%), pain (8%) and discharge (16%). Between the onset of symptoms and diagnosis elapsed 8 months (range 10 days–30 years). 65% of patients were submitted to previous treatments. Many patients presented associated diseases: 11.5% sexually transmitted diseases; 8.5% anal diseases; 1.3% dermatological diseases and 1.3% neoplastic diseases. Considering serological markers 11.2% were HIV+; 2.2% HCV+; 5.4% HBV+. Localization in our patients was perianal in 20.3%; endoanal in 4.4%; perianal + endoanal in 46.8%; associated genital in 32% and others in 2.9%. 843 patients were submitted to surgery. 18% of these

patients were submitted to a treatment in several times for the extension of original disease. **Results** No postoperative mortality was observed. Morbidity occurred in 78 patients (7.85%): bleeding in 0.6%; stenosis in 1.6% non-healing scar in 2.8% and others in 2.1%. Recurrence after 1 month were observed in 104 patients (12.33%) with a 2.7% of drop out. Seven hundred and twenty-six patients were followed for 6 months and further 55 patients developed a recurrence (6.5%), with a drop of 4.3% of cases. The total recurrence rate was 18.9%. In 135 patients, we performed HPV typing: 30 were HR or LR/HR. **Conclusions** A careful selection of patients and a meticulous surgical procedure are mandatory to obtain good postoperative results and a good percentage of recurrence that could be reduced by immunostimulating postoperative therapy. A great attention has to be performed in possible degeneration in anal dysplasia and neoplasms.

STARR WITH CONTOUR® TRANSTAR™ CCS30: THE NEW SURGICAL TREATMENT OF THE OBSTRUCTED DEFECATION SYNDROME. OUR EXPERIENCE

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Background The obstructed defecation syndrome (ODS) represents a very wide-spread clinic problem. The anatomic alterations connected with this trouble are mainly two and almost always concomitant: the rectal prolapse with intussusception (RI) and the anterior rectocele (RA). We have carried out a prospective and monocentric research aiming at the valuation the validity of the STARR with Contour® TRANSTAR™ CCS30 (TRANSTAR) in the treatment of the anatomical alterations which provoke the ODS. **Methods** We have selected and studied a homogeneous group of 12 exclusively female patients, affected by RI and RA in ODS in absence of functional alteration. All the patients have been submitted to TRANSTAR and have been observed until 6 months after the operation. We wanted to valuate parameters connected with the obstructive symptomatology, parameters concerning the life quality and anatomic parameters. Before the operation and 6 months after, questionnaires have been submitted to quantify the constipation symptom: Wexner, Kess, and Longo. We have, eventually, elaborated an aggregation score, which we have named WKL, calculating the square root of each score. A further questionnaire, PAC-QOL©, suggested before the operation and 6 months after, allowed us to valuate the impact of the constipation on the life quality. The anatomic parameter has been valued comparing the dimensions of the RA, measured with the perineography, before and after 4 months of the prolapsectomy. On the basis of the reduction percentage of the WKL score, calculated before the prolapsectomy and 6 months after, the success of the operation has been considered: excellent for a reduction >90%, good for a reduction from 75 to 90%, fairly good for a reduction from 50 to 75% or not sufficient for a reduction <50%. We have considered as successful any operation the result of which ranges from excellent to good. **Results** For each variable taken into consideration, we have registered a difference statistically meaningful ($p < 0.001$). The obstructive symptomatology (Wexner score pre-operation 23.1 ± 3.5 vs. at 6 months 1.9 ± 3.3; Kess score pre-operation 27.6 ± 5.7 vs. at 6 months 3.0 ± 3.8; Longo-score pre-operation 34.4 ± 3.9 vs. at 6 months 4.7 ± 6.4; WKL score pre-operation 49.8 ± 7.4 vs. at 6 months 6.3 ± 7.8) resulted drastically reduced. Similar reduction in the PAC-QOL© score: pre-operation 90.6 ± 8.9 versus at 6 months 13.2 ± 13.1. For the anatomic parameter (RA) as well, we have registered: pre-operation 3.8 ± 0.5 versus after 4 months 1.7 ± 0.3. Based on the reduction percentage for each patient WKL score, we have obtained an excellent result in the 66.7% of the sample and a good result in the 25%, with an overall result of the 91.7% of positive results. **Conclusions** The obstructive symptoms appeared drastically reduced in the majority of the cases treated, the life quality resulted improved and the anatomical correction concerning the defects that provoked ODS was obtained. The results are encouraging and the TRANSTAR treatment seems may revolutionize the ODS due to RI and RA. Further multicentric and randomized studies with a larger number of patients and a longer follow-up to confirm the validity of this new technique are, however, necessary.

SURGICAL TREATMENT OF RECTOCELE: BLOCK VERSUS STAPLED TRANS-ANAL RECTAL RESECTION (STARR)

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Background The aim of this study is to compare block technique and stapled trans-anal rectal resection for treatment of symptomatic rectocele associated with obstructed defecation syndrome (ODS). **Methods** 32 patients (all female) entered the study. All patients underwent anorectal manometry, defecography, and colonoscopy. Sixteen patients were treated with block technique (group A); 16 patients were treated with STARR (group B). The two groups were homogeneous for the presence of preoperative symptoms such as pain ($p = 0.923$), bleeding ($p = 0.704$), mucous discharge ($p = 0.273$), urgency ($p = 0.219$) and in all patients the main complain was ODS. Visual analogue scale (VAS) was used for pain evaluation, Student's t test to analyze quantitative variables, Fisher's exact test for qualitative variables. **Results** Hospital stay was, respectively, 2.7 ± 1.8 days for group A and 4 ± 4.1 for group B ($p = 0.27$). Postoperative pain was significantly less in STARR compared with block, 3.6 ± 3.1 versus 4.8 ± 3.2, respectively, during the first five postoperative days ($p = 0.02$). Pain duration in days was not different in the two groups: 13.6 ± 13.2 group B versus 13.9 ± 15.9 group A ($p = 0.950$). The number of patients who had an improvement of ODS 3 months after surgery was 14 (87.5%) in both the groups. Each patient was asked to quantify the percentage of improvement of ODS: the mean result was 67.5% improvement for block versus 82% for STARR ($p = 0.19$). We observed two major complications in group B: one patient had severe retroperitoneal sepsis, who required faecal diversion, the other had rectal bleeding requiring blood transfusions and Enterococcal infection requiring 1 months of antibiotic therapy; in group A one patient had bleeding requiring blood transfusions. **Conclusions** In this preliminary report comparing block versus STARR technique for the treatment of rectocele postoperative pain was significantly less after STARR; although postoperative pain duration was not different. Hospital stay was longer in STARR, but not significantly when compared with block group. The improvement of ODS was present in 87.5% of patients in both groups and was similar quantified by the same patients. We report in one case treated with STARR a severe retroperitoneal sepsis which needed reoperation with fecal diversion. The STARR technique showed less postoperative pain in this study with a similar outcome with regard to ODS compared with block, but had higher costs, longer hospital stay and showed the possibility of life-threatening complication.

HAEMORRHOIDOPEXY WITH HEMOR PEX SYSTEM. FOLLOW-UP OF THE FIRST 719 PATIENTS

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Background The Hemor Pex System (HPS) is a new technique for haemorrhoids treatment, consisting of the repositioning of haemorrhoidal cushions in the anal canal by means of sutures that determine a lifting of the anorectal mucosa, and the ligature of the branches of the superior haemorrhoidal artery. This procedure is performed on outpatients, using a rotating dedicated anoscope (HPS). **Methods** We present the experience with this technique during 3 years of monitoring in four institutions, in Genoa, Cagliari, Barcelona and London. One thousand one hundred twelve patients with II, III, and IV haemorrhoids degree were operated with HPS technique. The mean age was 47 years. In 92% of cases, the intervention was performed under local anaesthesia. Prospectively, the following parameters were analyzed: postoperative pain, incidence of complications, recurrence of affection or symptoms, and satisfaction degree. **Results** One thousand one hundred twelve patients underwent this surgical procedure, but only 719 completed the follow-up. The average time surgery was 20 min (range 15–25). Six hundred ninety-four patients (96.5%) were discharged within 6 h, 14 (3.5%) overnight. The immediate postoperative pain, according to VAS, was absent (0) in 5.3% of cases, light in 59.9% (VAS 1–3), medium with tenesmus in 30.3% (VAS 4–6), intense in 4.5% (VAS 7–10). 64% of cases reported modest haemorrhage between 5 and 15 days in postoperative, and 2% had more important haemorrhage, but not requiring surgery. In 6.4% was present a real recurrence in 22% persistence of skin tags. More than 80% had a good compliance and satisfaction degree, and a rapid integration into working life. **Conclusions** We believe HPS is a safe procedure, with a short learning curve for surgeons. The treatment offers a great reduction in postoperative pain, is applicable simply with local anaesthesia, under ambulatory surgery, rapid, low cost, lacking of major complications, and with few minor complications.

PET-CT IN ANAL CANCER: PRE-TREATMENT STAGING AND POST-TREATMENT RESULTS

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Background Anal cancer is an uncommon malignancy of the gastrointestinal tract. Pre-treatment and post-treatment imaging is, in many cases, not accurate. PET-CT is a new emerging tool in the staging of neoplasms. Also in anal cancer, it took an important place in staging and in follow-up of these cancers. We present our experience with PET-CT, compared with CT scan and with anal biopsy, trying to assess the best clinical work-up. **Methods** At our Department 38 patients (12 M, 26 F) were submitted to a PET-CT. They were submitted to a pre-treatment PET-CT and a following PET-CT 1 and 3 months after the end of the treatment. PET-CT was compared with pre-treatment TC and with anal biopsies. **Results** Pre-treatment PET-CT confirmed the presence of anal neoplasm in 33 of 34 patients (97%). The false negative was a T1 anal cancer (20% of T1 patients). CT scan revealed an anal neoplasm in 80% of patients. The visualization of perirectal and pelvic nodes occurred in five patients (13.1%) with PET-CT and in five patients (16.6%) with CT scan. Considering inguinal metastases PET-CT was positive in 18.4% of patients and CT scan in 20% of patients. PET-CT and an anal biopsy were performed 1 month after the end of the treatment in 36 patients. Our results revealed three false positive (8.3%) for anal disease with PET-CT and one false positive (2.8%) with anal biopsy. PET-CT a 3 months revealed one false positive for anal recurrence (2.63%) and one false negative (2.63%), while anal biopsy presented one false negative (2.63%) and PET-CT guided to a correct diagnosis after a second biopsy. Median follow-up was 20.4 months (range 2–54 months). **Conclusions** In our experience, PET-CT detects the primary tumour more often than CT scan, but both the tools are not indicated to reveal persistent disease after surgery. The results in staging perirectal/pelvic or inguinal lymph nodes are similar with the two techniques. Inguinal lymph nodes are better staged with sentinel node biopsy than with these techniques. PET-CT at 1 month is useful in assessing results of RT and CT treatment, but PET-CT at 3 months better value the persistence or the recurrence of anal disease.

A NEW SURGICAL PROCEDURE FOR ENTERO-RECTOCELE REPAIR WITH OR WITHOUT VAGINAL VAULT PROLAPSE

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Background A new surgical procedure to repair entero-rectocele with or without vaginal vault prolapse using a T-shaped mesh is described. **Methods** Twenty patients, mean age 62 years (range 48–75) with entero-rectocele were treated from January 2004 to March 2009. Concomitant vaginal vault prolapse was present in 18 patients. Cystocele grades II or III, and stress urinary incontinence was present in 9 and 12 patients. The T-shaped mesh was prepared with biologic mesh in its vertical arm (Veritas ®; Collagen Matrix-Synovis) and polypropylene for the horizontal arm. Surgical procedure: in lithotomy position, a midline incision of the vaginal wall from the apex to the posterior fourchette was made. Enterocele sac was isolated, open and closed with a stitch at the base of the neck. The anterior rectal wall was prepared superiorly and inferiorly to expose the muscular wall. An area of weakness of the rectal muscular layers is often present; this was exposed as far as to the intact muscular wall was identified. This area of weakness was closed with absorbable stitch and by plication of the anterior rectal wall with a running longitudinal suture; the procedure reduced the bulging of the rectum and fixed the redundant rectal mucosa. Two tunnels were made with a finger laterally to the enterocele neck. The polypropylene lateral parts of the mesh were introduced in the tunnels and the central point of the mesh was fixed to the enterocele closure. The biological portion was tailored to be fixed to the endopelvic fascia and to the anterior rectal wall. Concomitant cystocele and IUS were treated at the same time. **Results** Follow-up (3–50 months). No complication was observed. No relapse occurred. Obstructed defecation symptoms were resolved in 15 of 20 patients. **Conclusions** If these results will be confirmed in larger series with a longer follow-up, the surgical technique proposed could be a valid alternative to current surgical procedures.

ENDOSCOPIC VACUUM-ASSISTED CLOSURE OF CHRONIC PELVIC ABSCESSES FOLLOWING ANTERIOR RESECTION OF THE RECTUM

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Background Chronic abscesses after anastomotic leakage following anterior resection of the rectum is a challenging situation that requires careful evaluation of risks and benefits in the management, as the possibility of a definitive abdominoperineal amputation of the rectum is not remote. A new conservative treatment of acute anastomotic leakage after anterior resection of the rectum has been recently proposed with a considerable success rate. The aim of the report is to demonstrate the possibility of treatment of misdiagnosed chronic abscesses as well. **Methods** Two patients who underwent rectal resection 24 and 34 months respectively before our observational both submitted to chemo- and radiotherapy, and suffering of a chronic pelvic abscess located in front of the holy bone were recruited. One has a diverting stoma, while the other had it closed already after primary surgery. Both underwent a novel treatment consisting of an endoscopic vacuum-assisted closure attempt (Endosponge, B. Braun, Germany). The main feature of this new method is the endoscopically assisted placement of an open-cell sponge connected to a vacuum device into the abscess cavity via an introducer device. The fistula orifice is first cannulated, and then dilated by means of a 20 mm balloon. The endoscope is advanced into the cavity. The outer sheath of the introducer system is advanced under endoscopic control over the scope till the end of the cavity. The endoscope is removed leaving the outer sheath in place. The sponge is introduced into the distal end of the sheath. The sponge is pushed through the outer sheath by the inner sleeve and finally released in the cavity. The evacuation tube coming out of the anus of the patient is connected to a vacuum device. The sponge system is changed every 48–72 h, till the cavity is fully covered of a new epithelium and smaller that 10 mm in diameter. **Results** The first patients obtained a complete healing in 45 days and 17 sessions. The second patient is still under treatment but after 5 weeks and 12 sessions of treatment the abscess cavity is reduced to $<50\%$. The patient without diverting stoma was allowed to enteral nutrition for the first week, to avoid faeces formation and transit. The comfort of the procedure was judged good by both patients. Non-signs of abdominal sepsis were demonstrated during treatment. **Conclusions** Endoscopic vacuum-assisted closure may be proposed as a new efficacious modality for treating not only acute anastomotic leakage following the anterior resection but also chronic and misdiagnosed pelvic abscesses. Further studies will demonstrate the real effectiveness and safety of the treatment.

LIGASURE HEMORRHOIDECTOMY VERSUS STAPLED HEMORRHOIDOPEXY: A PROSPECTIVE RANDOMIZED CLINICAL TRIAL

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Background Hemorrhoidectomy remains to be the definitive treatment for grades 3 and 4 hemorrhoids. The present study was conducted to compare the efficacy and outcome of Ligasure hemorrhoidectomy (LH) and stapled hemorrhoidopexy (SH) for prolapsed hemorrhoids. **Methods** Sixty-eight patients with grades 3 and 4 hemorrhoids were randomized into two groups of 34 patients each; group 1 patients underwent LH, whereas group 2 patients underwent SH. Data regarding patient demographics, operative details, postoperative pain score, number of parenteral analgesic injections, hospital stay, and time to return to work or normal physical activity were all prospectively collected. Postoperative complications and recurrence of prolapse were also recorded. All patients were regularly followed up every 2 weeks for the first 8 weeks postoperatively, and at 3-month intervals thereafter for a total period of 12 months. **Results** Patient demographics and clinical characteristics were similar between both the groups. The mean operating time, postoperative pain score and parenteral analgesics, hospital stay and time off work or normal activity were not statistically significant between the two groups ($p > 0.05$). Likewise, both groups had similar postoperative complications except for a residual prolapse that was observed, at 4 weeks postoperatively, in eight patients (23.53%) in the SH group as compared to two patients (5.89%) in the LH group ($p = 0.040$). Although prolapse recurrence, at 1 year, was also higher among the SH group as compared to the LH group (11.76 vs 2.94%, respectively), yet the difference was not statistically significant ($p = 0.163$). **Conclusions** Both LH and SH are safe and effective procedures for the treatment of grades 3 and 4 hemorrhoids yielding comparable results and minimal side effects, with less residual prolapses observed with LH. Further, owing to their low postoperative pain, short hospital stay and rapid return to work, both procedures offer an excellent therapeutic option for prolapsed hemorrhoids.

RANDOMIZED COMPARISON OF LIMBERG FLAP VERSUS MODIFIED PRIMARY CLOSURE FOR THE TREATMENT OF PILONIDAL DISEASE

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Background The best surgical technique for treating sacrococcygeal pilonidal disease (SPD) is still controversial. The aim of this randomized prospective trial was to compare both the early and long-term results of Limberg flap procedure and primary closure. **Methods** Two hundred sixty patients with SPD were randomly assigned to undergo Limberg flap procedure or "tension free" primary closure. Duration of operation, postoperative pain, time to first mobilization, hospital stay, postoperative complications, time to resumption of work, and recurrence were assessed in all patients. **Results** Success of surgery was achieved in 84.62% of Limberg flap patients procedure versus 77.69% of primary closure patients ($p = 0.0793$). Operating time for primary closure was shorter than for Limberg flap. Wound infection was more frequent in the primary closure group ($p = 0.0254$) that experienced less postoperative pain than Limberg arm ($p < 0.0001$). No significant difference was found in time off work ($p = 0.672$) and wound dehiscence. Recurrence was observed in 3.84 versus 0% in the primary closure versus Limberg flap group ($p = 0.153$). **Conclusions** Our results do not demonstrate a clear benefit for surgical management by Limberg flap or tension-free primary closure. Limberg flap showed less convalescence and wound infection but the benefits, regarding wound dehiscence and recurrence, were not statistically significant. Furthermore, our technique of tension-free primary closure was a day-case procedure less painful and shorter than Limberg flap.

REINTERVENTIONS AFTER COMPLICATED OR FAILED STARR PROCEDURE

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Background The aim of the study is to assess an unselected group of patients referred to a tertiary coloproctological unit following stapled transanal rectal resection (STARR) procedure for obstructed defecation (OD) when the procedure was complicated or failed. The STARR procedure has been suggested as a simple surgical option for patients presenting evacuatory difficulty in the presence of rectocele. Most of these patients have a multiplicity of pelvic floor pathology unaddressed by the performance of one single procedure. Assessment of 'failed' cases may provide insight into indications for the original operation as well as a treatment algorithm when clinical and functional outcome is suboptimal. **Methods** Anorectal, urogynecological and psychological examination with objective constipation/incontinence scoring, anal–vaginal–perineal ultrasound, manometry and defecography were selectively performed utilizing the Iceberg diagram to detect occult pelvic floor pathology. **Results** Twenty-nine patients were referred with 20 cases (17 females, median age 58 years, range 35–72) operated upon. Only one patient had the STARR performed by the authors. One of them had nine interventions in 1 year. Post-STARR surgery was performed for 5 complications and 13 failures including recurrent OD, rectal stricture, severe proctalgia and fecal incontinence. Overall, 13 patients underwent biofeedback therapy and psychotherapy. Of the operated group, 13 patients had a median of four associated disorders. Nine patients had significant psychological overlay with severe depression or anxiety and four heterogeneous anal sphincter defects. Operative procedures were tailored to the clinical findings using enterocele repair, staple removal, fistulectomy, rectosigmoid resection and levatorplasty, where appropriate. Eighteen patients were evaluated after a median follow-up of 16 months. Of these, nine (all with psychoneurosis) remained unchanged. Four patients with no psychological overlay were asymptomatic with a further three improved. **Conclusions** The STARR procedure when complicated or failed has a poor outcome following surgical re-intervention. It requires careful patient selection to determine associated pelvic floor pathology and pre-existent psychopathology.

EPIDEMIOLOGY OF CONSTIPATION IN AN ITALIAN TERTIARY REFERRAL COLORECTAL UNIT

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Background Data on the epidemiology of constipation are not commonly available, particularly in Italy. Here, we review the prevalence and clinical features of patients attending a Tertiary Referral Italian Center and complaining of constipation as the main disturbance. **Methods** Clinical data of all patients attending our unit of coloproctology are prospectively stored in a computer data base since 1994. From this database, demographic and clinical features of patients with constipation as the main cause of complaining, of the last 10 years were retrospectively analyzed. Definition of constipation was made according to Rome III criteria, and a new classification of constipation was adopted to allot each patient to a defined category of constipation. **Results** Ten thousand three hundred eighteen patients were visited in our outpatient clinic. 210 were excluded from the analysis because of non-coloproctological diseases. There were 901 patients with constipation (8.9%), 332 had slow-transit constipation of different etiology, 420 has obstructed defecation and 149 both types of constipation. 76.6% of them were females (83% in the obstructed defecation group and 65% in slow-transit group). The distribution of the patients according to the sex and age was Gaussian-like in females (higher frequency between 40 and70 years) while in males there was a uniform distribution in every class of age. In the slow-transit group, the constipation was idiopathic in 58% of the cases and secondary to other causes in 42% (neurologic, pharmacologic, endocrine, child abuse, etc.). Forty-seven patients of the 191 with a primary slow transit had an abnormal dilated colon–rectum (Hirschsprung's disease, megacolon or chronic intestinal pseudo-obstruction) and in further 27 the final diagnosis was constipation-predominant irritable bowel syndrome, leaving 114 patients with pure idiopathic slow-transit constipation. In patients with ODS, five main causes of outlet obstruction were identified at video colpo-defecography using semi-solid radiopaque medium (rectocele, intussusception, perineal descent, pelvic muscle dys-synergia, and rectal inertia). These findings were identified as a single cause of ODS in 11, 15.9, 9, 5.9, and 1% respectively, but more frequently were associated with each other. Rectocele was the main finding in 38.6% of the cases, rectal intussusceptions in 41.2%, pelvic floor dys-synergia in 19.6% and perineal descent in 21.2%. In 95 cases (14.8%) (30% of whom were males), no apparent cause of ODS was identified at defecography. **Conclusion** Severe constipation accounts for about 9% of all patients attending a tertiary referral colorectal unit. Females are much more frequently affected; both in case of slow transit and ODS. The latter was caused by anatomic or functional defecatory disturbances frequently associated with each other, although in about 15% of them no evident cause was identified. In particular, rectal intussusception and rectocele were the most common findings.

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SACRAL NERVE STIMULATION FOR FECAL INCONTINENCE: A SINGLE CENTRE 10 YEARS EXPERIENCE

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Background Sacral nerve stimulation (SNS) is a reliable therapeutic option for faecal incontinence, with possible new indications for chronic and idiopathic pelvic pain. The procedure is usually performed in two stages: a percutaneous nerve evaluation (PNE) of the sacral roots (S2, S3, and S4) by a lead connected to an external stimulator. The second stage is the permanent implant of the electrostimulator (Medtronic Inc.). **Methods** From January 1999 to June 2009, 98 patients (80 females, 18 males) underwent PNE test (43 were tested with a unipolar electrode and 55 with a tined lead) for faecal incontinence caused by surgical injury in 29 patients, obstetric lesion in 8, radiotherapy in 1, spinal lesions in 8, Crohn's disease in 2, anorectal malformation in 2,. The remaining 50 patients had idiopathic faecal incontinence with 19 also affected by urinary incontinence. The severity of faecal incontinence was evaluated by the Wexner score and the American Medical System (AMS) score

and frequency of episodes of incontinence were collected in a bowel diary. Quality of life was evaluated by the Italian version of the SF-36 questionnaire. Anal manometry was performed in pre- and postoperative operative work-up. Forty-nine patients (45 females, mean age 58 years, range 21–79), had a positive PNE test and 44 underwent a permanent implant after a mean period of observation of 14.6 days (range 9–60 days). The site of implant was S3 in 40 patients, S4 in 4 patients. The mean follow-up period was 46.8 months (range 2–121 months). **Results** Wexner and AMS scores decreased significantly after definitive implant (from 14.2 to 5.6, $p < 0.001$ and from 101.7 to 58.9, $p < 0.001$), respectively. The mean number of solid/liquid incontinence episodes decreased significantly from 14 to 2 per week. Quality of life improved in all domains. Anorectal manometry showed a positive trend in increasing sphincter pressure and rectal sensitivity. Mean resting pressure was not significantly modified, while mean squeeze anal pressure was increased (from 66 to 74 mmHg). Eight postoperative complications were recorded (lead displacement in 5, infection in 2, liquorrhea in a patient with spina bifida). Four patients had the device removed for the loss of effectiveness after a mean period of 78 months. **Conclusions** SNS is a safe and successful treatment, because is minimally invasive, with a low morbidity and effective over time on symptoms control and quality of life. The wide range of possible indications and the possibility of selecting patients on the basis of a preliminary test make SNS a unique treatment for faecal incontinence. Identification of factors predicting the success of the preliminary test could further decrease the number of failure and the costs of the procedure.

THICKNESS OF INTESTINAL WALL IS THE MOST RELIABLE CRITERION IN SURGICAL MANAGEMENT OF OCCLUSION: OUR EXPERIENCE

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Background Intestinal obstruction is a very frequent cause of admission with a relatively high rate of mortality and morbidity. Focus questions are if and when is opportune surgical option to prevent strangulation or other bowel injuries. The goal of this study, based on our experience, is the correlation between several criteria in a score for an adequate management in intestinal occlusion and overall the evaluation of bowel wall thickness as the most reliable criterion if it is considered the only one. **Methods** From January 2007 to December 2008, 203 patients were admitted with a diagnosis of intestinal occlusion in our structure. In these patients, we are considered: symptoms (pain, characteristic and length of time, vomiting, distention, air and stool passage), clinical evaluation (abdominal objectivity), leukocytosis, radiological studies (erect plain abdominal radiograph) and monitoring of bowel wall thickness by TC and/or ultrasounds (US) to detect progressive increase in bowel wall thickness. In the present study, we are excluded patients with acute abdomen (peritonitis), toxic signs, known IBD, a history of abdominal or pelvic irradiation, known advanced oncologic disease. All patients are submitted to gastric decompression with NG tube, intravenous hydration and clinic-instrumental follow-up. **Results** After a waiting period of 4 days (1–10) 53 patients (26.1%) underwent to surgical option. Any sign was mandatory to surgical option if it is regarded as the only one, except the increase in bowel wall thickness: all patients in which we are detected a bowel wall superior to 4 mm, underwent to a treatment in operating room and in all cases this decision were supported by surgical findings. Controversy still exists regarding the optimal period of non-operative treatment before surgical intervention. To prevent unnecessary early surgery and the complications of late surgery, a more objective criterion of the timing of surgery is needed. Several reports have suggested that US (and TC) is useful in the evaluation of intestinal occlusion. The mechanism of bowel wall thickness is initiated with high-capillary pressure and endogenous products: in the bowel obstruction fluid accumulates not only within the bowel lumen, but also within the walls. To prevent bowel strangulation, subsequent US examination within 24 h was mandatory. In our experience, we used US to determine treatment strategy, but this method vs TC has these limitations: interference of gas effects (it may be necessary to change the patient's position), difficulty to detect the same intestinal tract in follow-up and 24 h unavailability of US physician in our structure. **Conclusions** US (and TC) can be used to evaluate the degree of bowel wall thickness and determine treatment strategy. In our experience, patient with initial intestinal wall thickness have a higher incidence of surgery and patients with progressive increase thickness recorded during non-operative treatment period (after 24 h) underwent surgical treatment. The role of other parameters is fundamental, but not always useful to definite objective timing of surgical option.

OUTCOME OF SEGMENTAL COLORECTAL RESECTION FOR DEEP ENDOMETRIOSIS

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Background Intestinal involvement in deep endometriosis occurs in up to 12% of all endometriosis and colorectal locations account for about 90% of all intestinal locations making the gastrointestinal tract the third localization of the disease. Therefore, a multidisciplinary approach is advisable. **Methods** Clinical records of eight patients (mean age 35.6 years, range 28–48) operated for intestinal endometriosis with histological demonstration and requiring intestinal resection from 1999 to 2009 have been retrospectively reviewed. Endometriosis was localized in the ovaries and scattered into the peritoneum in almost all the cases. Rectal involvement was present in four cases, sigmoid localization in five cases and small bowel in one case. One patient had both sigmoid and rectal involvement and one more presented bladder and left ureter involvement causing hydronephrosis. Symptoms included cyclic pelvic and dysmenorrhea pain in all and dyspareunia in 50% cases. The patient with intestine involvement had recurrent bowel obstruction wrongly diagnosed as Crohn's disease. Preoperative diagnosis was correct in the other cases. **Results** The operations were performed in open laparotomy except for the last two cases operated by laparoscopy. Seven of the eight patients required rectosigmoid or small bowel resection and anastomosis. In a single case of low rectal resection, a covering ileostomy was fashioned and closed 2 months later. In one case, the sigmoid was spared and the endometriosis tissue removed. There were no postoperative mortality or complications. Most of the patients had associated gynaecological surgery (hysterectomy 1 case, salpingectomy 3 cases, and ovariectomy 2 cases), or urological surgery on the bladder and ureter (2 cases). In the follow-up period, only two patients complained of constipation and mild pelvic pain which lasted only few months. Fertility was not investigated, but no one of these patients became pregnant in the follow-up period, although the operation improved their quality of life significantly. **Conclusions** Multidisciplinary surgical approach involving colorectal and urologist together with gynaecologist is often necessary for a safe and effective treatment of patients with deep endometriosis. Their quality of life improves significantly after surgery.

LACK OF PROGNOSTIC ROLE OF PERITONEAL CYTOLOGY IN RECTAL CANCER RECURRENCE AFTER CURATIVE SURGERY

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Background Surgery for rectal cancer is still affected by about 10% of local recurrence despite the major improvements in surgical technique (total mesorectal excision) and neoadjuvant radiochemotherapy have been introduced in the last decades. A possible cause for recurrence may be the implant of viable exfoliated cancer cells from the primary tumor or from severed lymphatic vessels. The aim of the study was to evaluate the prognostic role of residual peritoneal cancer cells on the local recurrence of rectal cancer. **Methods** Patients with neoadjuvant radiochemotherapy and those with metastasis were excluded from the study. Thirty-three consecutive patients (20 males, mean age 65) undergone curative surgery for rectal cancer between May 2005 and 2007 entered the study. In all, patients peritoneal cytology were performed on 150 ml of saline solution injected into the peritoneal cavity immediately after the abdomen opening and, at the end of the operation (rectal resection and anastomosis) before closing the abdomen. Nucleated cells were analyzed by the thin-prep method to identify cancer cells. Each patient was scheduled for systematic followed up for at least 2 years (median follow-up 39 months, range 26–50) to detect any local or distal metastases. **Results** All the rectal specimens fulfilled the oncological criteria for a curative operation (distal clearance >2 cm, lateral margin at least 1 cm, complete mesorectal excision and minimum 12 lymph nodes harvested). Cancer was located in the rectum 31 cases and sigmoidorectal junction in 2 cases). The cancer stage according to the TNM and UICC was: stage I 5 patients, stage IIa 11 patients, stage IIb 1 pt, stage IIIa 1 pt, stage IIIb 6 patients, stage IIIc 5 patients. One patient was excluded because of liver metastases detected intraoperatively and four patients were lost at follow-up leaving 27 patients available for final analysis. Peritoneal cytology was positive in four cases, while only one patient with negative preoperative cytology had positive finding postoperatively. At the end of the follow-up, five patients died; one for postoperative complications, one for unrelated cancer, one for liver and pulmonary metastases and two for local recurrence. No one of the local or distant recurrences had pre or postoperative cancer cells detected in the peritoneal lavage. **Conclusions** The presence of peritoneal exfoliated cancer cells identified by thin-prep method does not predict recurrence of rectal cancer after curative surgery.

THE EFFECT OF SACRAL NERVE MODULATION (SNM) ON CEREBRAL SENSORY EVOKED POTENTIALS (SEP) IN PATIENTS WITH FEACAL INCONTINENCE AND CONSTIPATION

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Background To determine the influence of SNM on SEP in patients with incontinence (I) and constipation (C). **Methods** The threshold (mV) and latency (ms) of pudendal nerve stimulation before (T0) and at 1 month after (T1–21, T2–40 Hz) SNM to induce a cerebral SEP were measured in 23 patients with I and 19 with C. The results were correlated with clinical outcome at 6 months. **Results** In 16 incontinent patients with successful outcome (Wexner ≤7), there was a significant fall after pudendal nerve stimulation in the threshold of SEP following SNM (4.02 mV-T0; 2.59 mV-T1, $p < 0.011$; 2.99 mV 40 Hz-T2, $p < 0.033$). There was also a significant reduction in the P40 latency (38.81 ms-T0, 37.49 ms-T2, $p < 0.049$) and in the N50 latency (46.97 ms-T0, 45.23 ms-T2, $p < 0.045$). In the seven incontinent patients with unsuccessful outcome, there was no change on pudendal stimulation. In the 12 constipated patients with successful outcome (Wexner ≤ 15) at 6 months, there was a significant fall on pudendal nerve stimulation following SNM in threshold (3.84 mV-T0, 2.99 mV-T1, $p < 0.020$) but no significant correlation with latency. In the seven constipated patients with unsuccessful outcome, there was a fall in P40 latency (41.20 ms-T0, 39.30 ms-T2, $p < 0.047$). **Conclusions** In incontinent and constipated patients having a successful outcome, SNM reduced the threshold and the latency of SEP after left-sided pudendal nerve stimulation. This may be of value in selecting patients for SNM.

ABDOMINAL VENTRAL RECTOPEXY: A NOVEL APPROACH TO TREAT COMPLETE RECTAL PROLAPSE

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Background A novel surgical technique for the treatment of total rectal prolapse has been proposed by D'Hoore in 2004; it has given good functional outcomes regarding patient quality of life and satisfaction, compared with other traditional surgical techniques. This technique is based on the only anterior rectal wall dissection, with fewer risks of nerve lesions; a mesh is fixed very low in the recto-vaginal septum (with some stitches anchoring the mesh to the posterior vaginal wall and to the anterior rectal wall); the upper edge of the mesh is fixed to the sacral promontory. In this way, there is no risk of sigmoidal-rectal kinking. **Methods** Between June 2006 and 2008, 25 patients (female, mean age 55.7), underwent surgical operation with traditional mesh rectopexy (group A: 20 patients), and Ventral Rectopexy/D'Hoore technique (group B: 5 patients). This is a prospective study with 1 year follow-up; results were evaluated through anorectal examination, proctoscopy, defecography, and clinical questionnaires (Wexner Incontinence score, Wexner Constipation Score and Rome III criteria). **Results** Group A: 9/20 patients had a resection-rectopexy cause of diverticular disease, redundant sigmoid colon or slow-transit constipation. Preoperative Wexner Constipation Score was higher than 15 in all the patients (mean value 21); postoperative score was lower than 15 in 15/20 patients (mean value 13) and higher than 15 in 5/20 patients (mean 17): in 25% patients we have a persistent obstructed defecation syndrome, even if postoperative score is lower than preoperative one. One patient (5%) showed a clinical and proctoscopic relapse of rectal prolapse. Two patients (10%) showed only a proctoscopic, but not a clinical relapse, so that they had no more treatments except for dietary adjustments. Group B: in these five-patient group, we performed the novel "D'Hoore technique"; preoperative Wexner Constipation Score was higher than 15 in all the patients (mean 22), while the postoperative one was lower than 15 in all the patients (mean 11); no postoperative constipation was found and all the patients showed an improvement regarding the continence. We had no postoperative complications and no relapses in this first follow-up year. **Conclusions** Abdominal rectopexy techniques, for the treatment of full-thickness rectal prolapse, are safe and effective, with an improvement in quality of life and functional scores. In our D'Hoore

group, we have no postoperative constipation probably due to better hypogastric nerves preservation, due to the absence of posterior dissection and lateral ligaments sparing; the peculiar anterior mesh position: the absence of rectal encirclement allows to avoid the sigmoidal-rectal kinking and the subsequent obstruction to the fecal transit. This new technique seems to be safe even regarding perioperative major complications: we had no sepsis or bleeding.

REFINED STAGING OF CARCINOMA OF THE ANAL CANAL WITH SENTINEL NODE BIOPSY

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Background Radiochemotherapy is the standard treatment for patients with anal canal cancer, therefore, a surgical specimen is not usually obtained. Inguinal lymph nodes metastasis cannot be accurately predicted, clinically and by imaging techniques. In this study, we applied the sentinel node technique in patients with squamous-cell carcinoma of the anal canal, to provide a more reliable inguinal lymph nodes staging. **Methods** Between May 2007 and 2009, 11 patients (7 females), mean age 65 (range 39–80), with squamous-cell carcinoma of the anal canal, and clinically and radiologically negative groin lymph nodes, were studied. The patients were staged with endorectal ultrasound, CT scan, MRI of the pelvis and PET. There were 2 T1, 4 T2, and 5 T3 tumor (AICC classification). A lympho-scintigraphy, with peri-tumoral, 99 mTc colloid injection, was performed 16–18 h before surgery. During surgery, sentinel node, in the inguinal region, was identified by a hand-held gamma probe (Neo2000® Gamma Detecting System) and patent blue dye. The resected lymph nodes were examined by hematoxylin–eosin stain. **Results** Sentinel lymph node was detected in all the 11 patients, by scintigraphy. In nine cases, the sentinel nodes were in the inguinal region. All these patients underwent radio guided node biopsy and a total of 12 lymph nodes were removed. The average diameter of the resected nodes was 8 mm (range 4–20 mm). No serious complications occurred. In three patients, metastasis was identified in the sentinel node. **Conclusions** Sentinel node biopsy seems an accurate and mini-invasive method to better staging patients with anal carcinoma.

SEVERE COMPLICATIONS OF SURGERY FOR URINARY INCONTINENCE: A FRENCH UNIVERSITY CENTRE EXPERIENCE

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Background In France, rectal promontofixation combined with posterior colpopexy for complex pelvic floor disorders, and TVT or TOT for isolated urinary incontinence are the most common surgical techniques used for the correction of urinary incontinence. **Methods** In our unit four women aged from 50 to 70 being affected by complex recto vaginal fistula post-surgical repair prosthetics of urinary incontinence have been treated. The clinical symptoms were characterised by urinary iterative infections, vaginal and anal losses, pneumaturia. **Results** All the patients have been subjected to remove the prosthetic materials. Then, a rectal resection, a rectal suture associated with a protection ileostomy, a posterior pelvectomy and proctocolectomy; a definitive colostomy has been carried out. The erosion of the vaginal wall and the appearance of recto vaginal fistula post repair prosthetics are known complications. The rate of incidence ranges from 3 to 12% and from 2 to 9% for the abdominal and the vaginal techniques, respectively. The pathway of the infection, which brings to the fistula, is multi-factorial and linked to different causes such as the nature of the prosthetic materials, surgical technique, the incomplete asepsis, injuries and delay in the vaginal healing, the use of a wire suture quickly absorbed; the precocious resumption of the sex activity. It seems that the material used is the factor mainly influencing the appearance of the fistula. The definitive surgical treatment should be realized within the 3 and 6 months later on the appearance of the fistula. This period is needed to stabilize the signs of the local inflammation. The surgical treatment should be in line with the following three key points: prosthesis removing, surgical suture, rectal suture tension free. **Conclusions** The incidence rate of the rectal–vaginal fistula is quite high considering kindness disease and that young and sexually active women are involved. The ratio risk/benefit should be evaluated taking into account the appearance of the rectal–vaginal fistula is a severe complication difficult to be treated. At present, the autologous prosthetic material based on the animal collagen represents the great challenge.

CLINICAL AND FUNCTIONAL OUTCOME OF MODIFIED ORR–LOYGUE RECTOPEXY

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Background Complete rectal prolapse (CRP) and symptomatic rectoanal intussusception (RAI) are very disabling condition. Several surgical methods have been developed in attempt to overcome these diseases. Treatment has historically been by transanal or abdominal approaches, with transanal approaches tending to have lower morbidity, and abdominal approaches having lower recurrence. The aim of this work is to evaluate clinical and functional outcome of a modified Orr–Loygue technique adopted in our unit to manage rectal prolapse. **Methods** A retrospective database was used to audit our 10 years experience of this technique. The rectum was mobilized posteriorly to the level of the lateral ligaments avoiding nerve damage. Anteriorly, the Douglas pouch was opened and the posterior vaginal fornix or vaginal vault was exposed. A polypropylene mesh, trousers shaped, was fixed to the sacral promontory and sutured to the anterolateral rectal walls. The distal ends of the mesh are sutured to the vaginal fornix or vaginal vault. Modified Orr–Loygue technique was applied to all patients with symptomatic rectal prolapse associated with genital prolapse and or enterocele or large recto-vaginal space. Data of all patients between July 1996 and December 2006 were retrieved form case-note review, clinical assessment and telephone consultation. Outcome measures were mortality, morbidity, prolapse recurrence, constipation and faecal incontinence. **Results** Ninety-two patients underwent modified Orr–Loygue procedure for rectal prolapse, with a mean age of 55 ± 14 years (range 16–83), 91 females. Eighteen patients (19.1%) suffered a complete rectal prolapse and 74 patients had RAI. The mean operating time was 158 ± 49 min. Forty-two patients had associated surgical procedures (hysterectomy, cholecystectomy, etc.). Laparoscopic approach was used whenever possible (82.6% of cases); 10 cases (11.6%) needed conversion to laparotomy, all in the first 2 years; six cases underwent a laparotomic approach (5

of whom had concomitant different surgical procedures). Hospital stay ranged between 3 and 34 days (mean of 7 ± 4 days). No mortality was recorded. Complications occurred in 13 patients (14%): bleeding (4 patients); jugular vein thrombosis (1 patient); urinary infection (2 patients); bowel injury (2 patients); bladder injury (1 patient); small bowel obstruction (1 patient); rectal wall abscess (1 patient); trocar site incisional hernia (1 patient). Mean follow-up was 42.6 ± 30.3 months (range 1–120). Four patients were lost at follow-up. Preoperative constipation was completely resolved or improved in 67% of 82 patients complaining of obstructed defecation symptoms. Preoperative fecal incontinence improved in 8/10 patients (80%). The recurrent prolapse rate was 3.4% (3/88). Two cases of new onset postoperative obstructed defecation occurred (2.1%). **Conclusions** Modified Orr–Loygue procedure is safe, with relatively low morbidity. In the long term, it provides good result for prolapse and associated symptoms of incontinence and obstructed defecation. New onset postoperative obstructed defecation is very rare.

LAPAROSCOPIC VENTRAL RECTOCOLPOPEXY FOR RECTAL PROLAPSE

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Background Many surgical techniques have been described for the treatment of rectal prolapse performed by either a perineal or an abdominal approach. Whilst abdominal procedures offers better functional result and lower recurrence than perineal procedure, mesh rectopexy is complicated by postoperative constipation. Laparoscopic ventral rectopexy (LVR) limits the risk of autonomic nerve damage and the colpopexy allows correction of a concomitant prolapse of middle compartment. The aim of this work is to evaluate clinical and functional outcome of laparoscopic ventral rectocolpopexy procedure in rectal prolapse management. **Methods** Between November 2006 and December 2008, all patients with symptomatic rectal prolapse associated with genital prolapse and or enterocele or large recto-vaginal space underwent LVR. Demographics, the results of imaging studies, mortality, morbidity and functional outcome were retrospectively analyzed. Data were retrieved from case-note review, clinical assessment and telephone consultation. Altomare's obstructed defecation syndrome (ODS) score system was used to evaluate defecation problems. Wexner's faecal incontinence score was used to evaluate faecal continence problem. **Results** A total of 17 patients underwent LVR for rectal prolapse, with a mean age of 63 years (all patients were females). Only one patient suffered from a full-thickness rectal prolapse. All patients had concomitant enterocele and or vaginal prolapse. The mean operating time was 103 ± 47 min. Conversion to laparotomy was never needed. Hospital stay ranged between 3 and 14 days (mean of 7 ± 3 days). No mortality was recorded. Only one complication occurred (6.25%): one patient developed trocar site incisional hernia. Following the surgery, preoperative constipation was completely resolved or improved in 87.5% patients. Significant reduction in mean Altomare OD score (9.8–4.3; $p < 0.001$) was recorded. Preoperative incontinence was present in one patient, and it improved after the procedure. Patients were followed up for 20 months (mean follow-up of 12.8 months). No recurrence of prolapse has been recorded. **Conclusions** Laparoscopic ventral rectocolpopexy is safe, with very low morbidity. In the medium term, it provides good result for prolapse and associated symptoms of obstructed defecation. Nevertheless, it seems appropriate to wait for longer follow-up and comparative data to allow final conclusion.

CARCINOMA OF THE ANAL CANAL IN HIV-POSITIVE PATIENTS

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Background A poorer prognosis in HIV-positive patients with anal canal cancer has been reported in early studies. The aim of this study was to compare the prognosis of patients with anal canal carcinoma, with and without HIV infection. **Methods** Data of 54 patients (17 males), mean age 59.7 (range 43–94) referred to our Institute between 1998 and 2008 for squamous-cell carcinoma of the anal canal were reviewed. Eight patients (7 males), mean age 43.6 (range 38–51) were HIV+. All HIV+ patients were taking antiretroviral therapy and had CD4 lymphocyte count >200 per mm^3. Average time between diagnosis of HIV and tumor diagnosis was 14.5 years (range 5–23). The overall and disease-free survival, local and distant recurrences, and local and systemic complications in both groups were analyzed. **Results** All patients underwent combined radiochemotherapy according to Nigro protocol (5-FU, mitomycin C), inguinal basins was always included in the radiation field. UICC 2002 stage at presentation was: T1 in 8 HIV− patients (16.3%), T2 in 4 HIV+ (57.1%) and 13 HIV− (31%), T3 in 3 HIV+ (42.9%) and 16 HIV− (38.1%), T4 in 5 HIV− (11.9%). For five patients, it was not possible to retrospectively determine tumor stage. Prevalent stage at diagnosis was T2 in HIV patients (57.1%), T3 in non-HIV patients (38.1%). Clinical inguinal lymph nodes involvement was found in 71.4% of HIV+ and 57.1% of HIV− patients. A male gender prevalence (87.5%) and younger age ($p < 0.05$) was observed in the HIV+ group. No difference was observed in overall survival (159 vs. 119 months), and disease-free survival (102 vs. 153 months); 11 (20.3%) patients had local relapse (2 HIV+), and 8 (14.6%) distant metastasis (2 HIV+), with 14 and 11 months disease-free survival, respectively. Twenty-five HIV− patients (54.3%) and 5 HIV+ patients (83.3%) developed local complications from radiotherapy, namely anal ulcers, rectal tenesmus and G1 and G2 radiation dermatitis. Twenty-one HIV− patients (46%) had minor complications and 4 (8.6%) had systemic serious complications (thrombocytopenia and leucopenia) from chemotherapy, but did not require interruption of treatment. In the HIV+ group three patients (37.5%) had serious systemic complications (leucopenia, enteritis and liver toxicity); all of them interrupted the treatment ($p > 0.05$). Eleven patients (3 HIV+) underwent abdominoperineal rectal resection because of medical failure. Temporary colostomy was performed in three (2 HIV−, 1 HIV+) patients because of local complications from radiotherapy. **Conclusions** No significant difference in overall and disease-free survival, local recurrence and distant metastasis between HIV− and HIV+ patients, were observed. However, a higher incidence of local and systemic complications, requiring interruption or reduction of the treatment, was observed in the latter group.

PROTECTION OF INTESTINAL ANASTOMOSIS BY BIOLOGICAL GLUES: AN EXPERIMENTAL RANDOMIZED CONTROLLED TRIAL

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Background Leakage of colorectal anastomosis is one of the most frequent and serious postoperative complication, causing sepsis,

increased risk of cancer recurrence and mortality. The aim of the study is to compare the healing and air tightness of hand sewn colonic anastomosis sealed with different biological glues. **Methods** Ten New Zealand white rabbits of mean 2,110 g weight were operated under general anesthesia by the same operators. The colon was interrupted and sutured at 5, 10, 15 cm from the ileocecal valve with 4/0 PDS running sutures. Each of the anastomosis was randomized to be treated with Tissucol, Coseal or nothing. Antibiotic prophylaxis was started immediately before operation and continued until postoperative day 3. Rabbits were allowed to chow standard food and water ad libitum. 15 days after they were killed and the anastomosis examined for their integrity and resistance to bursting using an inflatable micro-balloon connected with a pressure transducer. Van der Hamm scale was used to score postoperative adhesions. A blind histological evaluation of the quality of reparative tissue was performed on paraffin embedded specimens using the Ehrlich–Hunt scale. **Results** One rabbit died at day 7. One more rabbit developed an intrabdominal abscess for colonic perforation in the anastomosis without glue. Postoperative adhesions were present in all animals ranging from 1° to 3°. Mean anastomosis bursting pressure in Tissucol, Coseal and control anastomosis was 0.88, 0.83 and 0.73 atm, respectively. The mean pressure values were 0.84, 0.84 and 0.77 atm in the three different proximo-distal sites, respectively. Although an increased resistance was observed in the glued anastomosis, the difference did not reach statistical significance. Lymphocytes infiltration, fibroblast activity, blood vessel density and collagen deposition were lower in controls although statistical significance was reached only for fibroblasts activity and blood vessel density in the group treated with Coseal compared with controls. **Conclusions** All three methods reached a satisfactory integrity of the anastomosis, except for one case without glue. The use of both biological glues increased the bursting resistance without reaching statistical significance probably because of the low number of cases treated. Similarly, the histological evaluation demonstrated more intense reaction in the glue group which was significant in the Coseal group compared with controls. In conclusion, the use of biological glue to reinforce intestinal anastomosis could play a role in decreasing leakage rate.

HYDROGEN BREATH TEST WITH INULIN SUPPLEMENTATION EFFECTIVELY DISCRIMINATES THE QUALITY OF BOWEL PREPARATION FOR COLONOSCOPY

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Background Quality of bowel preparation is essential for colonoscopy. Polyethylene glycol (PEG) electrolyte solutions used in bowel preparation cause depletion of substrates fermentable by colonic microflora measured by hydrogen breath test (HBT). The aim of the study was the investigate the possible prediction of quality of colonic preparation by HBT in patients scheduled for colonoscopy and to test the reliability of inulin (probiotic fermented by colonic microflora) supplementation to improve discrimination between good and poor bowel preparation. **Methods** One hundred twenty-seven patients had HBT before/after bowel preparation for colonoscopy with PEG solution. A subgroup of 31 patients ingested inulin (10 g) to increase colonic hydrogen production. The quality of colonic preparation was scored as excellent–fair (clean bowel allowing pancolonoscopy) and poor (incomplete colonoscopy due to faecal debris). **Results** Colonoscopy was incompletely performed in 31% of patients, and in 68% of them because of poor preparation. HBT levels after bowel preparation were significantly lower in patients with excellent–fair than in those with poor preparation ($p < 0.01$). Inulin supplementation induced an overall increase in hydrogen breath levels and improved the discrimination between patients with excellent–fair and poor colonic preparation, leading to a sensitivity and specificity of such test up to 100%. **Conclusions** Inulin supplementation is a reliable method to predict bowel preparation by HBT.

TREATMENT OF SIMULTANEOUS FECAL INCONTINENCE, URINARY RETENTION AND GASTROPARESIS BY MULTIPLE IMPLANTABLE PACE MAKERS

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Background Chronic intestinal pseudo-obstruction is a challenging disease, sometime associated with other motility disturbances involving the stomach, gallbladder, bladder and anorectum. Its etiology is often unknown and its treatment uncertain. Here, we report a case successfully treated by two pace makers applied to the stomach and the pelvic nerves. **Methods** A 48-year old female patient was affected by gastroparesis and fecal incontinence due to idiopathic, systemic and progressive dysautonomia. She complained of severe dyspepsia, vomiting, abdominal bloating, upper abdominal pain and constipation due to gastric reflux, delayed gastric emptying, chronic intestinal pseudo-obstruction, chronic urinary retention and gas and fecal leakage and impaired rectal sensitivity. A long list of previous operations included rectocele repair, dynamic graciloplasty, hysterectomy, cholecystectomy, appendectomy and Malone operation for anterograde colonic enema. Inability to oral feeding caused severe malnutrition (BMI 17) requiring home parenteral nutrition. Esofagogastroscopy and colonoscopy ruled out any organic diseases. Pre and postoperative work-up included QoL and severity of disease questionnaires administration, measurement of gastric emptying time, electrogastrography, hydrogen breath tests, and anorectal manovolumetry. Surgical treatment included sacral nerve stimulation using an Interstim Medtronic Inc. pace maker under local anesthesia and, afterwards, gastric pacemaker implant with an Enterra device (Medtronic Inc.). **Results** Sacral nerve stimulation improved fecal continence significantly and at the same time improved defecation by enhancing the rectal sensitivity. Most remarkably the patient also reported normal urinary voiding and interrupted self-catheterization. After the Enterra implant, she started oral feeding on the third postoperative day, and progressively stopped home parenteral nutrition when her BMI reached 23. Qol also improved significantly when evaluated by the SF36 questionnaire **Conclusions** Mini-invasive surgery with simultaneous implant of pace makers for sacral and gastric electrostimulation was safe and effective in the treatment of a complex motility disorder involving the whole gastrointestinal and urinary tract.

ANAL NEOPLASIA IN HIV-POSITIVE PATIENTS

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Background The incidence of human papilloma virus (HPV)-related cancers has increased among patients with HIV infection compared

with the general population and recent data imply that HPV-related cancers do not decline among HIV-positive men and women, since the introduction of highly active antiretroviral therapy (HAART). **Methods** Twenty HIV-infected patients with anal cancer were diagnosed at the Sacco Hospital during a screening program for HPV infection in HIV-positive patients. Demography, epidemiology and immunovirology parameters and current antiretroviral regimen information were evaluated through the clinical records. **Results** Of the 20 patients observed, 16 were males and 4 females with a median age of 40.8 years (range 2–69). HIV infection was acquired for unprotected homosexual contacts in 84% of patients, unprotected heterosexual contacts in 30% of patients and drug addiction in 30% of patients, median age at diagnosis of HIV was 40.8 (range 22–69). At the time of diagnosis, only four patients were off HAART according to the national guidelines for antiretroviral treatment of HIV-infected patients; 65% of patients were on AIDS according to CDC classification; median CD4 count was 379.7 cells/ml and median viral load 7,421.4 μl. HPV infection was demonstrated through Digene test in all the patients tested (80%) with a combination of high- and low-risk HPV genotypes. Patients have been treated with a combination of radiation and chemotherapy (65%), surgery alone (10%), radiotherapy (10%), or chemotherapy (15%). Median survival after anal cancer diagnosis was 26.9 months (range 69–5), with 65% of patients alive at most recent follow-up, 40% of them disease free. Survival rate was higher in patients treated with complete combination therapy than those treated with a single intervention (surgery, radiation or chemotherapy). **Conclusions** HIV-positive men and women remain at risk for human papillomavirus associated cancers, even in the highly active antiretroviral therapy era and this support the urgent need for developing anal cancer screening programs for HIV-infected patients. According to our study, even with a small number of cases, we underline that HIV-positive patients must receive the same protocol of treatments of HIV-negative patients but it seems that HIV-positive patients has a worst prognosis compared with negative patients.

TOTAL COLECTOMY WITH CECORECTAL ANASTOMOSIS FOR INTRACTABLE SLOW-TRANSIT CONSTIPATION: IS IT STILL A VIABLE OPTION?

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Background There is no consensus on which type of operation is recommended to treat patients suffering from slow-transit constipation. The aim of our study was to retrospectively compare total colectomy with ileorectal anastomosis (IRA) with subtotal colectomy with end-to-end antiperistaltic cecorectal anastomosis (CRA). **Methods** Between February 1997 and May 2007, 28 patients underwent surgery for colonic slow-transit constipation. Fifteen patients were treated with IRA and thirteen patients with subtotal CRA. All patients had undergone colonic transit studies, colonoscopy and defecography prior to surgery. Clinical parameters, subjective perception of quality of life and GIQLI quality of life questionnaire were retrospectively evaluated through clinical charts and telephone interviews. **Results** Mortality was 7% in IRA group (1/15) due to complications after anastomotic dehiscence and 0% in CRA group. One patient of each group had to be readmitted to the hospital for symptoms related to bowel obstruction. In one case of IRA group, a relaparotomy was necessary to restore intestinal function due to severe adhesions. Morbidity was 33% (5/15) in IRA group and 38% (4/13) in CRA group and included: urinary infection, anastomotic bleeding, bowel obstruction, severe diarrhoea, wound infection. Length of hospital stay was 16 days (11–24) for IRA group and 15 days (10–21) for CRA group. Frequency of bowel movements changed from 1.5 per week to 4 a day in the IRA group and from 1.5 per week to 2 a day in the CRA group. Bloating and pain at evacuation improved postoperatively in the majority of patients of both groups. Postoperative Wexner's fecal incontinence score was >10 in three patients of IRA group and in one patient of CRA group. Urgency was reported in nine patients of IRA group and in only three patients of CRA group ($p < 0.01$). The need of nocturnal evacuation (2 per night) was reported in two cases of IRA and in none of CRA group during the first postoperative year. The results were judged acceptable or very good with regard to constipation in 12 patients of IRA group (80%) and in 11 patients of CRA group (85%). GIQLI scores showed an overall improvement of postoperative quality of life in both groups. **Conclusions** Both total colectomy (IRA) and subtotal colectomy (CRA) are valid treatments for patients suffering from severe slow-transit colonic constipation refractory. In particular, despite the limits of a retrospective evaluation, CRA does not appear to be inferior to IRA in terms of therapeutic effectiveness, postoperative mortality and morbidity and overall impact of quality of life. Functional results in terms of urgency, need of nocturnal evacuations and fecal incontinence are reported to be better in the CRA group, at least during the first 12 months after the operation. Failure of cure is reported in those cases where slow-transit constipation is associated with more complex diseases involving small bowel slow transit, and does not depend on the type of operation performed.

PREOPERATIVE STOMA POSITIONING BEFORE LAPAROSCOPIC SURGERY: INTERFERENCE WITH TROCAR INTRODUCTION SITES

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Background Preoperative stoma siting seems to be a pivotal point in surgical procedures planning when stoma formation is envisaged. Efficacy of preoperative stoma positioning was well-demonstrated in stoma's complications decreasing; this procedure improves also the rehabilitation process and stoma patients' quality of life. Up to now, literature does not show any study about the influence of laparoscopic surgery on the preoperative stoma siting. The aim of this study is to identify how, according to correct stoma's positioning criteria, the laparoscopic approach may modify present indications and cause interference. **Methods** We used a stoma positioning approach based on an abdominal map, locating common landmarks in stoma siting: costal margin and iliac crest, laparotomy site, belt line, underwear limit line, lateral border of rectus muscles, skin folds or pre-existing scars. Ideal stoma sites (for left colostomy and ileostomy) were temporarily traced as circles with dermographic markers, based on the map and evaluation of abdominal wall in three body positions: supine, sitting and orthostatic. Further abdominal mapping based on the trocar introductions sites and extraction mini-laparotomy has been performed to identify if ideal stoma site were according with trocar placement sites. Eight healthy volunteers (4 females and 4 males) were submitted to the abdominal mapping by stoma care's nurse and by a colorectal surgeon following the reported technique. **Results** Ideal stoma sites were not according on preoperative criteria (stoma must be formed at 4–5 cm distance from surgical incisions and never on a laparotomy incision) in seven cases on eight for colostomy and in six cases on eight for ileostomy. **Conclusions** This study reflects the technical difficulties of the preoperative stoma positioning before laparoscopic surgery, using open surgery criteria. There will be necessary further clinical trials to identify an ideal technique for a proper stoma positioning before laparoscopic surgery.

ACCESS RELATED COMPLICATIONS AFTER OPEN AND LAPAROSCOPIC COLORECTAL SURGERY: A PROSPECTIVE STUDY

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Background Open colorectal surgery (CRS) leads to high rates of adhesive small bowel obstruction (SBO) and incisional hernia development, with large clinical impact and financial burden. In this study, we evaluated the cumulative incidence of access related complications in a cohort of patients who underwent open and laparoscopic CRS. **Methods** We reviewed cases of elective or emergency CRS patients kept prospectively on a database and examined annually. Case notes were studied for adhesive SBO episodes requiring admission or re-intervention. Development of incisional hernia with or without repair was also recorded. The diagnosis of SBO was defined by a combination of clinical criteria and imaging. Time interval of SBO, surgery type and setting, readmission length and findings at reintervention were recorded. Patients undergoing CRS for inflammatory bowel disease, patients with peritoneal carcinosis, or patients with SBO secondary to local or peritoneal recurrence during the follow-up were excluded. Patients who underwent other abdominal surgery during the follow-up were also excluded. Data were analyzed using Mann–Whitney U test and χ^2 test. The Kaplan–Meier method was used for cumulative probability of developing SBO. **Results** From 1/03 to 11/08, 527 patients satisfied our criteria and underwent elective (84.8%) or emergency (15.2%) CRS (83.3% open and 16.7% laparoscopic). Median follow-up was 27 months (range 0.2–71.8). Thirty-two patients (6.1%) experienced 54 SBO episodes and 8 required surgery (1.5%). There was a large variation in the time of first SBO occurrence, 56.3% occurred within 3 months, 21.9% between 3 and 12 months and 21.8% after 1 year. The risk of surgery at first admission for SBO was 25% and the number of readmissions predicted the need of surgery. The risk of reoperation was greatest during the first year after CRS and steadily risen every year thereafter. SBO was higher after pelvic surgery or extensive resections compared with minor procedures (6.6 vs. 2.9%). Likewise, SBO risk was higher after emergency compared with elective surgery (1.3 vs. 6.9%), but similar after open compared with laparoscopic surgery (6.2 vs. 5.7%). Any previous or additional surgery raised the overall risk of SBO from 5.3 to 12.3%. Incisional hernia development was similar between open and laparoscopic surgery (3.4 vs. 1.6%). **Conclusions** Colorectal surgery results in significant ongoing risk of SBO according to the colorectal procedure. This risk seems to be similar between laparoscopic and open approach, higher after emergency surgery and for patients with previous surgery. The number of readmissions for SBO predicts the need of surgery.

CORRELATION BETWEEN ULTRASOUND MEASUREMENTS OF TISSUE THICKNESS, MANOMETRY AND MULTICHANNEL SURFACE ELECTROMYOGRAPHY OF THE EXTERNAL ANAL SPHINCTER

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Background The probability of sphincter damage and the prevalence of anal incontinence have been estimated in the literature in relation to episiotomy rates. Injury to the pudendal nerve from prior obstetric trauma is described as the principal risk factor in women (Wheeler et al. 2007). The current knowledge of the external anal sphincter (EAS) is limited to global strength indexes (manometry), to structural data (ultrasonography, MRI, and anatomical studies on cadavers) and to local electrophysiological properties. This work focuses on detection and interpretation of multichannel surface electromyography (sEMG) of the EAS. **Methods** We investigated the relationship among sEMG parameters, manometric measurements and anatomical parameters measured with endoanal 3D ultrasound. The study was conducted on 32 female patients (age 48.7 ± 12 years). A novel anal probe was used to record multichannel sEMG signals at different depths during maximal voluntary contractions. The probe holds three circumferential arrays of 16 equally spaced silver bar electrodes. Manometric measurements were performed on a subset of 29 patients. Endoanal 3D ultrasound images were detected on a subset of 18 patients. **Results** Information about innervation zone position, sEMG amplitude, and motor unit discharge rate was obtained with innovative signal processing techniques. Knowledge of innervation zone location could be valuable in performing episiotomy with minimal risk of EAS denervation. Negative correlation was observed among sEMG amplitude and the thickness of anal mucosa and internal sphincter with Pearson's linear correlation coefficient $r = -0.48$ ($p < 0.05$). Positive correlation was observed between sEMG amplitude and the maximum sphincter pressure $r = 0.37$ ($p < 0.05$). **Conclusions** The information extracted from sEMG signals is complementary to that provided by ultrasound images and manometry. The technological innovation described in this work is promising for the investigation of pelvic floor pathologies and for episiotomy planning.

PREVALENCE OF BOWEL AND BLADDER DYSFUNCTIONS, FECAL INCONTINENCE AND CONSTIPATION IN MULTIPLE SCLEROSIS

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Background In multiple sclerosis (MS) symptoms, course and outcome are variable. Constipation or faecal incontinence occurs and often coexist. However, there is great variability of incidence of these complaints in different reports. The relevance of intestinal dysfunction has changed over the decades due to the criteria adopted to perform the survey. New treatments improving the general condition of the patient might also have an influence. An up-to date survey is, therefore, needed. This study estimates the prevalence of anorectal, urinary and bowel dysfunctions in patients with multiple sclerosis (MS) and their relationship with clinical characteristics. **Methods** Two hundred and seventy-six consecutive unselected patients, with a mean age of 43 years and mean disease duration of 12 years were involved in the present study. Patients were predominantly females ($n = 200$). The questionnaire consisted of 38 items on bowel function, covering frequency of bowel movements, faecal consistency, problem of evacuation, deferring of defecation, and different aspects of incontinence. **Results** Bowel complaints, such as abdominal pain and distention are present in 41% of patients. Evacuation difficulties are present in 58% of cases, more than once a week in 32%. Flatus incontinence is present in 61% of patients and soiling in 29%, 10% of

cases have faecal incontinence. Faecal incontinence and constipation coexist in 6% of cases. Voiding difficulties are present in 53% of patients, 18% needed medications to relieve symptoms. Urinary incontinence is present in 37% of cases; 18% were incontinent every day, 6% needed intermittent catheterization to empty the bladder, but none was using an indwelling catheter. Twenty-four (9%) of 269 patients have no bowel symptoms at all; 137 (50%) have some bowel dysfunctions, but have relative faint symptoms. The other 47 (41%) have important dysfunctional problems, that are a reason of social handicap in 80% of cases. Evacuation difficulties seem to increase from mild to moderate disability. **Conclusions** Bowel complaints, anal incontinence and bladder dysfunctions are observed with a variable frequency in most of the MS patients, interfering with the everyday life. In most of the cases, they are a reason for social handicap. Symptoms tend to increase with the increasing disability. Because preventive strategies can manage some of these problems, it is important to focus also on these aspects of the disease when consulting patients.

TOTAL MESORECTAL EXCISION FOR RECTAL CANCER: OUR SINGLE CENTRE 10 YEARS EXPERIENCE

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Background Colo-rectal cancer is the third most common neoplasia after lung and prostate cancer in men and after breast cancer and lung cancer in women. After her introduction by Heald in 1979, TME became the gold standard surgical treatment of middle and lower rectal cancer, as this technique implements the local control of disease and, thus, reduces the local recurrence of disease. The benefits of chemo-radiation therapy as an adjuvant or neoadjuvant treatment have been well documented, allowing a better tumor control and overall survival with the postoperative treatment, and a tumor regression, downstaging, and a reduction in local recurrence rate with the preoperative treatment. We present our 10 years experience analyzing our short and long-term outcomes. **Methods** A hundred and fifty-nine patients were enrolled between January 1999 and 2009 presenting with histologically proven rectal cancer. There were 102 males and 57 females with a median age of 66 years (range 27–87). A sphincter saving resection was performed in 134 cases (84%) and an abdominoperineal rectal resection in 25 cases (16%) (Miles' operation). A TME and a nerve sparing technique were performed in medium and low rectal. A protective stoma was made in 31% of the cases. Overall, 53% of patients received adjuvant treatment (13% preoperative and 40% postoperative). Thirty percent of patients had a stage I tumor, 23% a stage II tumor, 34% a stage III tumor and a 13% a stage IV tumor. **Results** The postoperative complications rate was 36%; the most frequent complication was the anastomotic leakage. Postoperative mortality was 1%. Overall, 43 patients (27%) showed a recurrent disease; an isolated local tumor recurrence was observed in 8% of patients and distant metastasis in 19% of patients. The local recurrence was 8% in sphincter saving resections and 8% in Miles' operation. At a median follow-up, the overall 3–5 years cancer-specific survival was 84 and 72%, respectively. The 3–5 years stage-related cancer-specific survival was 100 and 90% for the stage I patients, 84 and 77% for the stage II patients, 84 and 75% for the stage III patients, and 40 and 0% for the stage IV patients. **Conclusions** Our single institution 10 years long experience of TME for rectal cancer shows good results in terms of postoperative morbidity; we underline the excellent 1% rate outcome in terms of postoperative mortality. Oncologic outcomes in terms of local recurrence and cancer-specific survival are interesting, showing a local recurrence rate similar to the reported literature rate, and an excellent 3–5 year cancer-specific overall survival.

THE INFLUENCE OF MIRNA IN THE DEVELOPMENT OF COLORECTAL CANCER

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Background The early diagnosis of colon and rectal cancer would be to improve the cure rates. The miRNA could participate in the early stages of carcinogenesis. The objective of this research is to study the pattern of expression of miRNA in stages I and II of colorectal cancer and compared them with normal tissue from the same patient, and secondly, whether the regulatory mechanisms in the early stages of carcinogenesis are regulated by these target proteins. **Methods** Samples of normal and tumoral tissue of 22 patients with colorectal cancer in stages I and II were analyzed. A quantification of 157 mature miRNA was done by stem–loop RT and PCR in real time. The results are statistically analyzed. **Results** In stage II, there is a higher overexpression of miRNA compared with stage I and normal tissue. Among the miRNAs, which highlights the miRNA-17–92 is present in stages I and II and is absent in normal tissue. The levels of miRNA-17–92 are inversely related to E2F1 protein. **Conclusions** (1) The expression of miRNAs is different in tumoral tissue and normal tissue. (2) The cluster formed by the miRNA 17–92 is related to the initial stages of the disease. (3) This cluster appears to relate to the level of E2F1. (4) Confirmation of these preliminary results would be useful for diagnosis and treatment of colorectal cancer in early stages.

SENTINEL NODE IN ANAL CANCER: A REVIEW OF LITERATURE

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Background Anal cancer is a rare neoplasm, but its incidence is increasing as rates of infection with human papilloma virus (HPV) continue to rise. Some 10–25% of patients are noted to have

synchronous inguinal lymph node metastases which, according to a multivariate analysis of the EORTC phase III trial, are an independent prognostic factor for local failure and overall mortality in patients with anal cancer. A recent technique to assess inguinal node status and plan treatment of patients with anal cancer is sentinel lymph node (SLN) biopsy. **Methods** We searched the PubMed database to find papers and case reports about the use of this technique in patients with anal cancer. **Results** The 8 articles selected for review described 161 patients who underwent inguinal SLN biopsy. The detection rate ranged between 56 and 100% when a radioactive marker or blue dye, or a combination of the two was used. Nodal metastases were found in 0–30% of cases. No major technique-related complications were reported. **Conclusions** SLN biopsy of inguinal nodes has been proved as a simple, safe and effective method for staging patients with anal cancer. Accurate detection of inguinal node metastases with this technique could obviate the need for prophylactic inguinal radiotherapy and eliminate-related morbidity (e.g. inguinal fibrosis, external genitalia edema, lower limb lymphedema, osteonecrosis of femoral head, and small bowel injury) which subsequently develops in 33% of irradiated patients. Close follow-up is required to confirm long-term results.

COMPARISON OF POSITRON EMISSION TOMOGRAPHY SCANNING AND SENTINEL NODE BIOPSY IN THE DETECTION OF INGUINAL NODE METASTASES IN PATIENTS WITH ANAL CANCER

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Background Inguinal lymph node metastases in patients with anal cancer are an independent prognostic factor for local failure and overall mortality. Inguinal lymph node status can be adequately assessed with sentinel node biopsy and radiotherapy strategy subsequently changed. We compared the technique versus dedicated 18F-FDG PET to determine which was the better tool for staging inguinal lymph nodes. **Methods** At our Department, 27 patients (9 men and 18 women) underwent both inguinal sentinel node biopsy and PET-CT. PET-CT was performed before treatment and then at 1 and 3 months after treatment. **Results** PET-CT scans detected no inguinal metastases in 20/27 patients and metastases in the remaining 7. Histologic analysis of the sentinel lymph node detected metastases in only 3 patients (4 PET-CT false positives). HIV status was not found to influence the results. None of the patients negative at sentinel node biopsy developed metastases during the follow-up period. PET-CT had a sensitivity of 100%, with a negative predictive value of 100%. Owing to the high number of false positives, PET-CT specificity was 83% and positive predictive value was 43%. **Conclusions** In this series of patients with anal cancer, inguinal sentinel node biopsy was superior to PET-CT for staging inguinal lymph nodes.

YKL-40 AND P53 EXPRESSIONS IN ANAL CARCINOMA PREDICT SHORTER OVERALL AND DISEASE FREE SURVIVAL

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Background The aim of the study was to assess the potential prognostic/predictive value of histopathological features and of various immuno-phenotypical markers, including YKL-40, in a series of anal carcinomas treated by chemo-radiotherapy (CM-RT). **Methods** A series of 34 biopsies of AN were obtained from a consecutive cohort of patients between January 2003 and December 2006. Clinical and histopathological data such as age, gender, HIV status, histotype, tumour stage and grade were collected. Immunohistochemistry with antibodies raised against Ki67, p53, p63, epidermal growth factor receptor (EGFR) and Ykl40 was performed. Statistical correlations between these parameters and clinical outcome were achieved. **Results** Thirty-five percent of patients developed recurrences after CM-RT treatment No statistical differences were noted in patients with recurrence regarding clinical and histopathological data. HPV, p63, Ki67 and EGFr expressions were unrelated to prognosis, whereas higher levels of p53 expression were significantly associated with poorer radio-chemotherapy response. Interestingly, in our study, we found that Ykl40 expression can predict overall survival and disease-free survival and that its expression is strongly related with histotype; in fact, squamous keratinizing carcinomas showed significantly higher expression of YKL40 than non-keratinizing ones. In contrast, only 50% of the basaloid carcinomas expressed Ykl-40, and these patients had a worse prognosis than negative ones. In addition, p53 and Ykl40 expressions were strongly related. **Conclusions** Ykl40 and p53 co-expression in the majority of recurrences bears a relevant significance in predicting poor response to CM-RT. Moreover, Ykl40 expression in basaloid carcinoma could select a group of patients in which surgical treatment is more suitable than CM-RT.

SELF EXPANDING METAL STENT AS A BRIDGE TO LAPAROSCOPIC COLON SURGERY: 2 CASE REPORTS

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Background Diffusion of metallic self-expanding stents applied in acute large bowel obstruction is of great help in allowing elective laparoscopic surgery for cancer. SEMS offer various advantages: accurate preoperative cleansing of an obstructed bowel, better management of haemodynamics and ion balance and the best chance of radical tumour and node dissection. **Methods** (1) A 64 year-old man was admitted for abdominal pain, vomiting and bowel obstruction.

Plain abdomen film: multiple occlusive levels. CT with contrast enema showed mechanical bowel obstruction of the sigmoid. Colonoscopy demonstrated a malignant stenosis at 22 cm from the anal verge, through which a guide-wire was passed and a 22 mm 8 cm long SEMS released. After an X-ray check of prosthesis positioning and a 48-h bowel preparation, the patient underwent laparoscopic rectal resection. Division of adhesions was followed by dissection of the rectum and sigmoid having easily localized the tumour due to the stent. An end-to-side transanal anastomosis was performed after division of vessels and bowel. The postoperative period was uneventful and the patient was discharged 8 days after surgery. (2) A 76-year-old man was admitted for abdominal pain, bowel obstruction and vomiting. Abdomen X-ray demonstrated significant bowel distention with occlusive levels. Contrast enema CT showed irregular thickening of the middle portion of the sigmoid, suspect for stenosis. Colonoscopy found a stenosis at 30 cm from the anal verge through which a guide-wire was passed and an 8 cm long 22 gauge SEMS positioned. Left laparoscopic hemicolectomy was scheduled after stent position check and 72-h bowel cleansing. During the procedure, tumour identification was easy due to the stent that enabled us to correctly choose resection margins. An end-to-end transanal anastomosis was accomplished. The postoperative period was uneventful with gas emission on the second postoperative day, food assumption after 5 days and discharge on the eighth postoperative day. **Results** Positioning of stents was done as soon as obstruction was diagnosed; we had no migration or stent misplacement, nor obstruction or incomplete expansion of prostheses. We had no bleeding or perforations. In both cases, SEMS allowed adequate bowel preparation with good cleansing and complete decompression. Such conditions allowed us to perform the procedures laparoscopically with safe removal of the tumour within disease-free and viable margins. We also avoided colostomies which are often necessary in emergency surgery for bowel obstruction. **Conclusions** These two cases hope to prove that SEMS positioning in malignant obstructions of the colon and rectum allow a safer elective surgery with the same radicality. SEMS do not exclude equally radical laparoscopic procedures. Combined endoscopy and laparoscopy are less invasive when compared with any traditional (sometimes multistage) open procedure. Postoperative morbidity for laparoscopic procedures is nil, whereas it reaches 20% in open surgery. Hospital stay is about 7 days after laparoscopy while it reaches 13 days for open procedures. Laparoscopy affords better pain control, quicker resumption of bowel movements, decreased the use of antibiotics.

TRANSANAL ENDOSCOPIC MICROSURGERY FOR RECTAL NEOPLASMS. EXPERIENCE OF 333 CONSECUTIVE CASES

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Background Trans-abdominal rectal resection is associated with a significant morbidity, in particular referred to sphincteric, urinary and sexual dysfunctions. To reduce these complications, the transanal endoscopic microsurgery (TEM) is an effective minimally invasive technique for local excision of rectal cancers in highly selected patients. **Methods** A single institution database of rectal neoplasms excised by TEM was prospectively analyzed. Preoperative assessment included digital examination, proctoscopy, colonoscopy, transanal ultrasound, CT scan and an anorectal manometry. The parameters evaluated included operating time, morbidity and mortality rate, hospital stay, histological and staging discrepancy and oncological results. **Results** From January 1993 to 2008, 333 patients underwent TEM, with a median age of 66 (range 25–94) years. Distal tumour's margin ranged from 2 to 20 cm from the anal verge. Preoperative indications were 243 (73.0%) adenomas, 70 (21.0%) carcinomas, 3 (0.9%) carcinoids and 17 minor pathologies. Median operative time was 60 (range 15–320) min. In 13 cases, the peritoneum was inadvertently opened. The rate of conversion to abdominal surgery was 0.9% (3/333). No patients required intraoperative blood transfusion. There was no mortality. The overall incidence of postoperative morbidity was 6.9% (23/333). Median hospital stay was 5 (range 2–14) days. At final histology, there were 194 adenomas, 46 pT1, 40 pT2 and 15 pT3. Twenty-one patients who underwent TEM with radical intent following endoscopic polypectomy of misdiagnosed cancer, showed no residual disease. Therefore, the histological discrepancy was 20.2%. Median follow-up was 100 months for adenomas and 36 for carcinomas, with a recurrence rate of 5.7% in adenomas, 10.8% in pT1 (0% in "low risk" patients), 22.5% in pT2 and 50% in pT3. Overall estimated 5-year survival was 87.9%; the disease-free survival rate was 75.8%. **Conclusions** TEM is safe and effective in the treatment of adenomas and pT1 carcinomas with a lower morbidity than conventional surgery and a recurrence rate comparable to conventional surgery.