
TOXIC MEGACOLON AS A RESULT OF COMPLICATED *CLOSTRIDIUM DIFFICILE* INFECTION. THREE CLINICAL CASES OF TOTAL COLECTOMY AND LITERATURE REVIEW

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ABSTRACT

INTRODUCTION: *Clostridium difficile* (CD) is a strictly anaerobic, Gram-positive, spore-forming bacterium of the genus *Clostridia*. The most important disease that this bacterium causes is *C. difficile*-associated diarrhea. Toxic megacolon is among the most severe complications of this infection and is a condition of acute toxic dilatation of the colon. It develops from the inflammation that penetrates the musculature of the intestine and leads to nerve damage, altered peristalsis, and dilatation. Patients who develop this complication have signs of peritoneal irritation, abdominal distension, diarrhea, oliguria, tachypnea, high fever, hypotension, and marked leukocytosis.

MATERIALS AND METHODS: We present three patients (two women and one man) diagnosed with toxic megacolon and treated at the Clinic of Surgery at the Naval Hospital, Varna, at the Medical Academy during the last 2 years. The first patient had a previous operation for brid-ileus, and during the second operation on the occasion of the toxic megacolon, a synchronous gastrointestinal stromal tumor (GIST) of the stomach was discovered and removed. The second patient had no previous operations, and the male patient was diagnosed with synchronous carcinoma of the rectum. All three underwent a total colectomy with a debarrassing single-barrel ileostomy. In the case of the first patient as well as the male patient, the operation was performed urgently on the day of hospitalization, and, in the case of the other patient, after unsuccessful conservative treatment with metronidazole and oral vancomycin. Enzyme immunoassay for toxins (A+B) of the fecal sample was positive with ribotype 027 NAP1, present in all three samples.

CONCLUSION: Severe cases of toxic megacolon are associated with a high mortality rate of 24–38%. In these three cases of CD infection, the risk factors for the evolution of the disease were synchronous oncological disease, previous surgical interventions, immunodeficiency and obesity. Ribotype 027 NAP1, a marker of a virulent strain of CD, was detected in all three cases complicated by toxic megacolon.

Keywords: *toxic megacolon, Clostridium difficile, treatment*

SHORT-TERM POSTOPERATIVE OUTCOMES OF LAPAROSCOPIC AND OPEN SURGERY FOR RECTAL CANCER: A RETROSPECTIVE ANALYSIS

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ABSTRACT

INTRODUCTION: The laparoscopic approach to the treatment of rectal cancer is widely used in clinical practice. However, the safety and advantages of laparoscopy over open surgery still remain controversial and unclear.

AIM: We compared the short-term outcomes of laparoscopic and open surgery for rectal cancer.

MATERIALS AND METHODS: This study analyzed data on patients who underwent rectal resection at the Clinic of Surgery of the Naval Hospital, Varna, at the Military Medical Academy during the period 2012–2022. The study included 1,440 patients operated on during this period, 1,008 operated laparoscopically, and the remaining 432 were operated by open surgery. We performed propensity score matching analyses to compare indicators such as in-hospital mortality, morbidity, blood transfusion, stomas, anastomotic insufficiency, duration of anesthesia, postoperative stay, and readmission within 30 days between the laparoscopic and open surgery groups.

RESULTS: Laparoscopy was associated with lower in-hospital mortality (0.4% vs. 0.6%, $P = 0.006$), overall morbidity (28.3% vs. 33.1%, $P < 0.001$) and transfusion rate (11.4% vs. 22.7%, $P < .001$), shorter postoperative length of stay (5 days vs. 7 days, $P < 0.001$), and shorter duration of anesthesia (140 vs. 230 minutes, $P < 0.001$). Grade C anastomotic insufficiency did not differ between groups.

CONCLUSION: In terms of in-hospital mortality, morbidity, hemotransfusion, postoperative length of hospitalization, and rehospitalization within 30 days, laparoscopic surgery is superior to open surgery in the treatment of rectal cancer.

Keywords: *rectal cancer, laparoscopic, open surgery*

LEARNING CURVE IN LAPAROSCOPIC COLORECTAL SURGERY. RESULTS OF A RETROSPECTIVE PERSONAL STUDY

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ABSTRACT

INTRODUCTION: Nowadays the term learning curve is widely accepted in the colorectal minimally invasive surgery and defines the level of education in the performance of a specific minimally invasive operation. The term has its own graphical image. The learning curve is completed when variations in one operative procedure have a stable level and the results are comparable with the published in the literature. The results can be identified by perioperative data—operative time, perioperative blood loss, level of conversions, perioperative morbidity, mortality rate, wound infection, rehospitalizations. On the other hand, in oncological cases, the number of harvested lymph nodes, tumor and circumferential resection margins, disease free survival are indicators which can be measured. There are a lot of approaches applied in surgical practice to complete the learning curve faster. The number of operations to achieve a plateau in the learning curve is under debate in the literature.

AIM: The aim of this article is to analyze perioperative data and define the number of laparoscopic colorectal operations until reaching a plateau in the learning curve.

MATERIALS AND METHODS: A single surgeon-based retrospective study on 183 minimally invasive colorectal resections analyzed the perioperative results in the time to achieve a plateau in the learning curve. The analyzed criteria were median operative time, blood loss, perioperative morbidity, level of conversions, median hospital stay, number of harvested lymph nodes. All the clinical methods were included.

RESULTS: The level of perioperative complications decreased from 30% in 2014 to under 15% in 2018, with small variations up to date. The median hospital stay dropped from 7.5 days at the beginning to 6.5 days in 2018, blood loss became stable in median range of 73 mL in 2018. The number of extracted lymph nodes rose from 9.6 to 13.22 and more. After 2018, the conversion rate became stable in range of 16%.

CONCLUSION: To complete the learning curve, we identified 38 personally performed laparoscopic colorectal resections. The surgeon had previous personal experience of more than 100 open colorectal resections before the first laparoscopic one.

Keywords: *learning curve, laparoscopic, colorectal resection*

CONVERSIONS IN MINIMALLY INVASIVE COLORECTAL RESECTIONS. RISK ASSESSMENT AND ANALYSIS OF THE PERIOPERATIVE RESULTS

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ABSTRACT

INTRODUCTION: Since the first announced laparoscopic colorectal resections in the 1990s, this approach has become widely accepted due to its advantages and better perioperative results with long-term ones being comparable to those of open surgery. Nowadays, the minimally invasive approach is accepted as a gold standard in many centers. Despite this, there are situations which require conversion to open surgery during surgery. Conversion is related to loss of the potential benefits of the minimally invasive approach and is accompanied by a higher risk of complications. According to some publications, the conversion risk is up to 30%. Factors related to higher conversion risk are disease, patient, level of competence of the surgeon, and others. The risk factors should be identified before the surgery. Comparison of the results from open surgery with those of conversions can give the answer whether it is appropriate to begin every elective colorectal resection as minimally invasive or conversion might have poorer results than the open approach.

AIM: The aim of this article is to conduct a comparative analysis of the perioperative results in a group of 31 conversions during 183 minimally invasive colorectal resections to 102 open resections. We aim to define and create a model of conversion risk factors based on preoperative data.

MATERIALS AND METHODS: Based on retrospective study of 285 patients with elective colorectal resections divided into 3 groups—102 patients with open approach, 152 minimally invasive, and 31 conversions, perioperative results were reviewed. All the methods for clinical assessment were applied. Statistical analysis was performed with IBM SPSS Statistics 25.0; MedCalc Version 19.6.3, Excel Office 2021. The sensitivity and specificity of contrast-enhanced CT were used for preoperative assessment of stage T4 colorectal cancer.

RESULTS: The conversion level in the group of minimally invasive resections was 16.93%. Perioperative mortality rate in converted patients was 0% compared to 1.96% in the open surgery group and 1.31% in the minimally invasive one. A higher morbidity rate was registered in conversion group—34.4%. The complications were more severe according to Clavien-Dindo scale. Conversions were related to a longer hospital stay—8.58 days, compared to open surgery—7.61 days; longer operative time, and higher blood loss. Despite this, the harvested lymph nodes were more—15.88 for converted patients, 13.34 for the minimally invasive group, and 11.11 for the open surgery patients. Factors with higher conversion rate were identified: male gender, comorbidity ≥ 3 , age ≥ 78 , BMI ≥ 30 kg/m², palpable formation, CT T4 for colon cancer, MRI T4 for rectum, personal experience of the surgeon < 38 minimally invasive resections, previous open surgery.

CONCLUSION: Cases of locally advanced colorectal cancer, obese patients, previous major open surgery, and surgeons without a completed learning curve are factors related to a higher risk of conversion. Converted patients had poor perioperative results than open surgery patients.

Keywords: *minimally invasive, colorectal, resection, conversion*

ERP PROTOCOLS IN MINIMALLY INVASIVE COLORECTAL SURGERY

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ABSTRACT

INTRODUCTION: Despite constantly evolving surgical techniques focused on reducing tissue trauma during surgery, innovations in anesthesia, major colorectal resections continue to be associated with significant perioperative morbidity, which is associated by prolonged hospital stay and high cost of treatment. In order to explain the complications after operation, the mechanisms of pathophysiological changes due to surgical stress must be understood. At the end of the 1990s, components of the so-called fast-track rehabilitation program aimed to achieve early recovery after major surgery. These protocols eliminate old understandings of postoperative recovery and put into practice evidence-based principles and innovations aimed at reducing physiological stress and postoperative organ dysfunction through optimization of perioperative care and recovery.

AIM: The aim of this article is to analyze the current recommendations for good clinical practice and the postulates of accelerated recovery protocols in minimally invasive colorectal surgery.

MATERIALS AND METHODS: The evidence in the modern literature on the methods of enhanced recovery after minimally invasive colorectal surgery was reviewed. Our experience with 152 minimally invasive colorectal resections was discussed.

RESULTS: Results published in the literature regarding postoperative recovery and morbidity using ERP were analyzed. The results of a personal study of 152 minimally invasive colorectal resections are reported. The perioperative complication rate was 13.8%, with a median hospital stay of 5.9 days, and perioperative mortality rate of 1.3%.

CONCLUSION: Implementation of evidence-based methods of preparation, perioperative monitoring, and postoperative care and rehabilitation are associated with significantly better outcomes in terms of perioperative complications and postoperative recovery.

Keywords: *fast-track, laparoscopic, colorectal, enhanced recovery*

LAPAROSCOPIC VERSUS ROBOTIC RECTAL RESECTIONS. COMPARATIVE ANALYSIS OF PERIOPERATIVE RESULTS

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ABSTRACT

INTRODUCTION: Globally, the minimally invasive approach in colorectal surgery is accepted as more effective compared to open surgery in terms of better perioperative results with comparable oncological long-term ones. Laparoscopy in low rectal resection is challenging, even for experienced surgeons and is related to a high conversion rate. Robotic surgery has advantages in rotations of the instruments, 3D image, ergonomic position of the surgeon, precise movements, and intelligent systems for electrosurgery. The advantages are more visible in dissections in narrow spaces, such as the pelvis. On the other hand, the operating theater price of robotic surgery is higher compared to conventional laparoscopy. There are still limitations of both techniques in cases of advanced rectal cancer, obesity patients, and previous major surgery. Collected data in the literature show lower conversion rates in robotic rectal resections.

AIM: The aim of this article is to conduct a comparative analysis of the perioperative results of a personal series of patients with laparoscopic and robotic rectal resections. We aim to assess the levels of perioperative complications and conversion rate.

MATERIALS AND METHODS: This study is based on an individual series of 76 minimally invasive rectal resections divided into two subgroups—46 laparoscopic resections and 30 robotic ones. An assessment is performed on perioperative results using all clinical methods

RESULTS: There were no differences between the patients according to gender and age distribution. The male to female ratio was approximately 2:3. In the group of laparoscopic operations, 21 were high anterior rectal resections. In the group of robotics, the number of high resections was only 4. The conversion rate for the laparoscopic group was 23.9% compared with 12.9% for the robotic one. The mortality rate was 0% for both techniques. The perioperative morbidity rate was 11.4% for the laparoscopic group and 19.2% for the robotic one. The median operative time the laparoscopic group vs. the robotic group was 144.7 min vs. 194.7 min; the median hospital stay—6.0 vs. 6.2 days; the median blood loss—34.7 vs. 43.9 mL; the extracted lymph nodes—12.2 vs. 8.8, respectively.

CONCLUSION: Robotic rectal resections have a lower conversion rate. It seems to have higher morbidity rate with the other perioperative results being comparable to conventional laparoscopy. The prevalence of low rectal resections in the group of robotic operations might explain this fact.

Keywords: *robotic resection, rectal, laparoscopic, conversion*

DIAGNOSTIC AND THERAPEUTIC APPROACH TO ACUTE DIVERTICULITIS

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ABSTRACT

INTRODUCTION: Acute diverticulitis is a relatively common disease in Western countries, with an increasing incidence in young individuals. The manifestations of the disease are variable, ranging from a local inflammatory process to perforation and peritonitis. The lack of sufficient randomized clinical trials suggests diagnostic and therapeutic decision-making based on the surgeon's personal preference rather than evidence.

AIM: The aim of this article is to analyze the experience and outcomes in the diagnosis and treatment of patients with acute diverticulitis in our clinic.

MATERIALS AND METHODS: We performed a retrospective, nonrandomized analysis of patients with acute diverticulitis over a 5-year period (2018–2022). We analyzed demographics; clinical presentation; laboratory markers; imaging studies; type of treatment performed—conservative or surgical, and surgical findings; hospital stay; morbidity; and lethality.

RESULTS: The analysis included 99 patients with acute diverticulitis divided into two groups—conservative and operative. The markers of inflammation had significantly higher values in the group treated by surgery. The incidence of surgical treatment was higher in the complicated forms. Morbidity, hospital stay and lethality also had higher values in this group.

DISCUSSION AND CONCLUSION: The need for adequate evaluation with analysis of clinical symptoms, laboratory parameters and imaging tests to determine the most appropriate approach for each individual patient are discussed. Uncomplicated forms of the disease are amenable to conservative treatment, whereas complicated forms (Hintchey stage III–IV) require emergency surgical treatment. The optimal choice of surgical intervention is discussed.

Keywords: *acute diverticulitis, abdominal infection, surgery*

LAPAROSCOPIC TOTAL MESORECTAL EXCISION AFTER 450 CASES

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ABSTRACT

INTRODUCTION: The laparoscopic technique is widely adopted in the surgical treatment of colorectal carcinoma. Thus, patients benefit from the usual short-term advantages of minimally invasive surgery over classical open surgery, with comparable long-term oncological results.

AIM: The study presents the experience of the Clinic for General and Endoscopic Surgery of St. Ivan Rilski University Hospital in Sofia, with laparoscopic radical rectal resections for rectal carcinoma over a 14-year period and more than 450 completed laparoscopic interventions.

MATERIALS AND METHODS: From January 2009 until December 2022, 454 laparoscopic curative rectal resections for rectal carcinoma were performed. Only patients with cT1–cT3 tumors, without distant metastases, were included in the study.

RESULTS: The studied group included 301 (66.3%) men and 153 (33.7%) women, aged between 34 and 86 years, with an average BMI of 26 kg/m² (21–32 kg/m²). According to the localization of the tumor in the rectum, the patients were divided as follows: proximal 1/3 (10–15 cm)—148 (32.6%); middle 1/3 (5 < 10 cm)—203(44.7%), and distal 1/3(< 5 cm)—103 (22.7%). A total of 277 (61%) patients underwent neoadjuvant chemoradiation. Eighty-five (18.7%) of the operated were in the 1st stage, 159 (35%)—in the 2nd stage, 219 (46.3%)—in the 3rd stage. Conversion was necessary in 23 cases (5.1%). The average duration of the operative intervention was 180 minutes. (120–420 min), and the blood loss was 80 mL (20–800 mL). Intestinal passage was restored on average on the 2nd postoperative day (1–7 days). The average postoperative hospital stay was 5 days (3–17 days). Complications occurred in 35 patients (7.7%). The operated patients were followed up for an average of 36 months (3–60). The overall recurrence rate was 15.6%.

CONCLUSION: Laparoscopic rectal resections for carcinoma are safe interventions, characterized by less postoperative pain, less blood loss, faster bowel recovery, shorter hospital stay, and excellent cosmetic results with comparable to open surgery oncological outcomes.

Keywords: *laparoscopy, rectal carcinoma, TME*

ROBOTIC COLOPROCTOLOGY—INITIAL EXPERIENCE

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ABSTRACT

Laparoscopic coloproctology has slowly, with the support of indisputable evidence, replaced open colon surgeries. The shortened hospital stay, faster recovery of the passage and fewer wound problems, against the background of no worse oncological results, made the laparoscopic treatment of colon diseases a standard. With the advent of surgical robots, minimally invasive coloproctology has entered a new era. 3D visualization of the operative field, 360° articulating instruments, and the absence of fatigue during long operations made it possible to perform more complex minimally invasive operations, with less blood loss and a lower conversion rate.

We present our first cases of robotic colorectal interventions performed at the General Surgery Clinic of the Heart and Brain Hospital in Burgas.

Keywords: *laparoscopic, coloproctology, resection, colon cancer, robot-assisted surgery*

ROBOTIC EN BLOC RESECTION OF ADVANCED SIGMA CARCINOMA INVOLVING THE SMALL INTESTINE— A VIDEO

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ABSTRACT

En bloc resections in abdominal surgery have always been challenging from a technical and oncological point of view. The development of minimally invasive methods and, in particular, the advancement of surgical robots, has allowed en bloc resections to be performed, with all the advantages of minimally invasive surgery without compromising the oncological aspect of such operations.

We present a case of a patient with locally advanced sigmoid colon carcinoma with ileal loop infiltration, in whom robotic en bloc resection was successfully performed.

Keywords: *ileal loop infiltration, carcinoma, sigmoid carcinoma, small intestine*

ROBOTIC ANTERIOR RECTAL RESECTION—A VIDEO

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ABSTRACT

Minimally invasive surgery has established itself as a standard intervention for many diseases of the digestive tract. The natural evolution of laparoscopic surgery—robotic surgery—quickly entered clinical practice, proving to be a sufficiently safe and effective methodology. Already 20 years since the first robotic colorectal resection, surgical robots are considered a good option for the treatment of rectal carcinoma, overcoming the technical difficulties that appear in standard laparoscopic surgery. Studies demonstrating advantages of robotic over standard laparoscopic surgery for the treatment of rectal disease are now available.

We present the results and an edited video of the initial experience of the General Surgery Clinic of the Heart and Brain Hospital in Burgas in the treatment of rectal carcinoma.

Keywords: *robotic, rectal cancer, anterior resection, MIS*

ROBOTIC RIGHT HEMICOLECTOMY—A VIDEO

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ABSTRACT

Laparoscopic surgery provides patients with good oncological and early postoperative outcomes. Despite the indisputable evidence in favor of the laparoscopic approach, large series directly comparing the laparoscopic versus the robotic approach in the treatment of oncological diseases of the right colon are still lacking. From the few available series at the moment, it can be concluded that, after robotic right hemicolectomy, the patients have less blood loss, and a lower frequency of conversions when a D3 lymphadenectomy is needed, but at the expense of a higher price and a longer operative time.

We present a case of robotic right hemicolectomy with extracorporeal anastomosis for carcinoma of the right colon.

Keywords: *hemicolectomy, right hemicolectomy, robotic, oncology, robotics, MIS*

TREATMENT APPROACH IN MALIGNANT LEFT-BOWEL OBSTRUCTION USING A SELF-EXPANDABLE METALLIC STENT

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ABSTRACT

Endoscopic self-expandable metallic stent (SEMS) decompression in patients with bowel obstruction due to colon carcinoma has been practiced for over two decades now, both in potentially curable cases and metastatic cancer. Using this case series, we aim to review the literature on the subject and to present our initial experience with using this technique as a bridge to single-stage surgery, thus minimizing colostomy creation.

Since 2020 our department has placed over 30 colonic stents, most of which were used for palliative purposes in geriatric patients with concomitant diseases or metastatic cancer. In fourteen cases the patients did not have metastatic lesions on CT and CEUS, or had liver metastases that were resectable. Those patients received SEMS prior to being treated, 7 to 14 days later, using either laparoscopic surgical techniques or open surgery methods. They underwent single-stage surgery, eliminating the need for placing a temporary or permanent stoma.

We concluded that treatment with SEMS for bowel obstruction in colorectal cancer was safe and well tolerated. It is a bridge to surgery resulting in primary anastomosis and restoration of the intestinal passage as well as low short-term morbidity.

Keywords: SEMS, self-expandable stent, colonic obstruction, large bowel

THE PLACE OF THE TRANSANAL ENDOSCOPIC MICROSURGERY IN THE TREATMENT OF RECTOVAGINAL AND RECTOVESICAL FISTULAS—TECHNIQUE, INDICATIONS, AND COMPLICATIONS

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ABSTRACT

INTRODUCTION: Rectovaginal fistulas are congenital and acquired due to traumatic manipulations in the pelvis, inflammatory bowel disease, radiation treatment, neoplasms, or infections. Rectovesical fistulas are rare complications of radical prostatectomy. There is no established gold standard in the treatment of rectovaginal and rectovesical fistulas.

The introduction of transanal microsurgery in the 1980s for some rectal polypus and early stages of rectal carcinoma and its subsequent improvement lead to a new stage in the treatment of rectal fistulas.

AIM: The aim of this article is to prove the benefits of the treatment of rectal fistulas with transanal endoscopic microsurgery (TEM) as a method of choice.

MATERIALS AND METHODS: During the period from 2017 to May 2023, at the Clinic of Endoscopic and General Surgery of St. Yoan Krastitel University Hospital in Sofia, 7 rectal fistulas (4 rectovaginal and 3 rectovesical fistulas) were treated by TEM. In 2 cases a relapse occurred and a second procedure was necessary.

DISCUSSION: Transanal endoscopic microsurgery exceeds all other methods in the treatment of lesions under 22 cm from the anorectal line.

Among the reported in the literature TEM complications in the treatment of rectal fistulas, the most common are suture failure and relapse of the condition, intraoperative bleeding, perforation of the rectum, and anal sphincter dysfunction.

CONCLUSION: The studies conducted through the years have shown a lower frequency of the specific for TEM complications and the complications from other organs and systems in comparison with more invasive procedures.

Keywords: *rectovaginal fistula, rectovesical fistula, transanal endoscopic microsurgery*

SURGICAL METHODS FOR MINIMIZING THE INCIDENCE OF PARACOLOSTOMY HERNIAS

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ABSTRACT

INTRODUCTION: Regardless of the advances in surgical techniques, parastomal hernia continues to be a frequent and serious complication after colostomy construction. The outcomes after surgical treatment are often not satisfactory, and the recurrence rate is high.

AIM: The study aims to present modern surgical methods for the prevention of paracolostomy hernias.

MATERIALS AND METHODS: The study included 77 patients with formed colostomies in the Clinic of Surgery of Alexandrovska University Hospital during the period from 2017 to 2022, analyzed with a follow-up period of at least six months. Group A includes 35 patients whose stoma was constructed by the extraperitoneal route. Group B consists of 42 patients with the traditional transperitoneal technique. In addition, 2 patients in whom synthetic mesh was used to treat and prevent paracolostomy hernia are reported.

RESULTS: In group A only one patient was diagnosed with parastomal hernia, while in group B there were 9. The difference between the two groups was found to be statistically significant ($p < 0.05$). In the cases where a prophylactic synthetic mesh was utilized, no complications we observed.

CONCLUSION: Improving surgical techniques for preventing paracolostomy hernias is crucial, as they represent an inevitable complication, in most cases, after colostomy formation. The results of the conducted study as well as the available literature data highlight the benefits of methods such as the extraperitoneal route for stoma construction and the prophylactic use of synthetic meshes.

Keywords: colostomy, parastomal, hernia, colorectal surgery

OPERATIVE TECHNIQUES FOR THE TREATMENT OF HEMORRHOIDAL DISEASE—OUR EXPERIENCE

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ABSTRACT

INTRODUCTION: Hemorrhoidal disease is the most common coloproctological disease. Numerous operative methods have been developed for its treatment.

AIM: The purpose of the analysis is to present our experience in the treatment of hemorrhoids.

MATERIALS AND METHODS: Retrospective analysis of 288 patients of the Clinic of Endoscopic and General Surgery of St. Yoan Krastitel University Hospital in Sofia, for a period of 5 years, was conducted. The applied operative methods were the Longo procedure, Parks' operation, and HAL-RAR. The criteria included: intraoperative time; postoperative pain on the first, third, fifth, and seventh postoperative day, as well as on the first and sixth month (determined by interview); postoperative timing of ambulation; length of hospital stay; late complications (fecal incontinence—defined by the Parks scale); and the occurrence of relapses.

RESULTS: Patients had stage III–IV hemorrhoidal disease. In the last two and a half years, the patients operated on by the Longo method for the last 5 years were 178, those by the Parks' method were 85, and by HAL-RAR—25. The lowest number of recurrences were observed with the Longo method, while a significant number of recurrences were found with the other methods.

CONCLUSION: The HAL-RAR method has a limited application (it is applicable in patients with stage III hemorrhoids), its cost remains the reason why it is not routinely applied in our practice. The Longo procedure represents an excellent alternative, with a low risk of disease recurrence and late complications.

Keywords: *hemorrhoidal disease, coloproctology, Longo procedure, HAL-RAR*

THROMBOSIS OF THE SUPERIOR VENA PORTAE AND VENA MESENTERICA IN A NON-CIRRHOTIC PATIENT UNDERGOING CHEMOTHERAPY FOR COLORECTAL CARCINOMA AFTER ANTERIOR RECTAL RESECTION

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ABSTRACT

INTRODUCTION: Thrombosis of the vena portae is a rare condition occurring in 0.7–1% of the population. It occurs most often as a result of cirrhosis or prothrombotic conditions (sepsis, hepatocellular carcinoma, myeloproliferative diseases, trauma, abdominal surgery, taking contraceptives, etc.). When classifying it, the term recent is preferred over acute. The most common symptoms are severe abdominal pain unresponsive to opioid analgesics and antispasmodics, dyspeptic syndrome, and symptoms related to the underlying disease. When the thrombosis also involves the superior mesenteric vena (SMV), it is possible to have complaints of paralytic ileus accompanied by regurgitation or melena (symptoms of intestinal ischemia). The appearance of fever indicates septic pyphlebitis.

Behavior in most cases is conservative. With progression of thrombosis and symptoms, an interventional approach is discussed.

CLINICAL CASE: We present a 62-year-old man operated on for carcinoma of the sigmoid colon in whom a laparoscopic anterior rectal resection with descendorectal anastomosis was performed. Three months after the operation, during chemotherapy treatment, the patient developed non-specific complaints of pain and heaviness in the abdomen of a non-permanent nature. A restaging CT scan with contrast revealed thrombotic masses in the vena portae. Conservative therapy was started. Due to lack of response and progression of symptoms and involvement of SMV, interventional treatment was decided upon. Local thrombolysis was performed by venesection and SMV branch cannulation. In the postoperative period, a regression of symptoms until their complete disappearance was reported.

CONCLUSION: The therapeutic approach used by us combines the advantages of the interventional and operative techniques described in the literature and is adapted to the conditions of the health system in the country, but is associated with the risk of additional complications. It is necessary to set standards for therapeutic behavior at the national level in order to improve the results of the treatment of this disease.

Keywords: *thrombosis, vena portae, thrombolysis*

COMPLETE TREATMENT OF COMPLICATED FORMS OF COLON DIVERTICULOSIS—OUR EXPERIENCE

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ABSTRACT

INTRODUCTION: One of the most frequent benign diseases of the colon is diverticulosis. Its frequency enhances in direct proportion to age. In people over 40 years, it is established in around 10% of the cases. Over 50% of those over 60 years are affected. There are two main forms of diverticular disease—uncomplicated and complicated. Choosing the right treatment depends on the form of the disease and the performance status of the patient. Conservative treatment is the method of choice in the uncomplicated forms of the disease, while in complicated forms the treatment is predominantly surgical.

AIM: The aim of our study is to analyze the perioperative complications in the surgical treatment (laparoscopic and conventional) for complicated forms of colon diverticulosis.

MATERIALS AND METHODS: In the present paper we examined patients with complicated forms of colon diverticulosis treated at the Department of Surgery at Eurohospital University Hospital in Plovdiv for a period of 10 years (from 2012 to 2022). During this period of time, there were 140 patients. In 55 of them, we established a perforated diverticulitis with different stages of the infection spread. Non-operative methods were used in 9 of the cases—antibiotic treatment, dietary regimen, and percutaneous drainage. We performed emergency surgery in the remaining 46 of the cases. They were divided into groups according to the operation type (minimally invasive or conventional), performed procedure, and the presence of complications.

RESULTS: From the 46 patients that underwent surgery, we used laparoscopy in 25 of the cases (54.35%). Our conversion rate was 8%, or 2 cases. The rest (21 patients) we operated conventionally (45.65%). We observed complications, such as wound infection in 11 patients. Ten of them were in the conventional group and only 1 was in the minimally invasive one. The frequency of the stoma-related complications, such as partial stomal dehiscence, was 6.52% (2 in the conventional group and 1 in the laparoscopic group). For the minimally invasive group, we reported shorter operative time, length of hospital stay, and less need of antibiotic use.

CONCLUSION: According to literature data, around 15–20% of all patients with acute diverticulitis undergo surgery. According to the data that we received from the surgical treatment of complicated diverticulosis, we think that the minimally invasive techniques can be the first method of choice. The use of these methods is related to shorter hospital stay, shorter operative time, and lower frequency of postoperative complications.

Keywords: *complicated diverticulosis, minimally invasive surgery, individual approach*

TREATMENT OF THE PERIANAL FISTULAS WITH FIBRIN GLUE AND PLUG—OUR EXPERIENCE

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ABSTRACT

A perianal fistula is a newly formed connection or tract between the inside of the anal canal or rectum and the skin around the anus. Frequency may vary. In the population, the reported prevalence of perianal fistulas ranges from approximately 1 in 10,000 to 1 in 20,000 people. The treatment of perianal fistulas depends on various factors, such as comorbidities, etc. Treatment can be conservative or surgical.

The treatment of perianal fistulas with glue, also known as fibrin glue or adhesive treatment, is a relatively new approach that aims to help close the fistula and reduce the need for invasive surgical procedures.

Treatment of perianal fistulas with plugs, also known as fibrin plugs, is another approach aimed at reducing the need for invasive surgical procedures.

In the Clinic of Endoscopic and General Surgery at the St. Yoan Krastitel University Hospital in Sofia, we performed a comparative analysis of 11 patients with perianal fistulas treated with glue or plug over a period of 3 years (2020–2023).

The gender distribution was as follows: 6 women and 5 men. The mean age of the research group was 54.6 years.

Ultimately, the choice between glue and plug treatment must be based on a thorough assessment of the individual patient, including the specific characteristics of the fistula and the expertise of the treating physician. The decision should be made through a discussion between the patient and the healthcare professional to determine the most appropriate treatment approach.

Keywords: *fibrin glue, fibrin plug, perianal, fistulas*

ADVANTAGES AND LIMITING FACTORS IN LAPAROSCOPIC COLORECTAL SURGERY

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ABSTRACT

INTRODUCTION: Laparoscopic surgery has become the gold standard for surgical treatment of diseases of the gastrointestinal tract. In terms of results, it is comparable and has established itself as a reliable alternative to conventional surgery, both in benign and malignant diseases. The minimally invasive approach enjoys all the short-term advantages, such as less postoperative pain, better cardiopulmonary function, faster recovery of the gastrointestinal passage, faster mobilization and recovery, shorter intensive care, and hospital stay. Long-term oncological outcomes still remain debatable.

AIM: Our study aims to demonstrate the advantages of the laparoscopic approach and highlight some of its limiting factors in terms of operative time and postoperative stay in the conditions of the Clinic of Anesthesiology and Intensive Care (CAIL).

MATERIALS AND METHODS: A total of 42 patients with histologically proven colorectal cancer (CRC) and resection with primary anastomosis were retrospectively included. We divided the patients into two groups according to the surgical technique: Group A: 21 patients operated by laparoscopic surgery (LS), and Group B: 21 patients operated by conventional open surgery (OS). Some of the basic characteristics: sex, age, body mass index (BMI), preoperative staging, mean operative time, postoperative period in CAIL, and analgesia, were examined.

RESULTS: The mean operative time (MOT) in the LS group was 201 min and 189 min in the OS group. With respect to the gender factor, the MOT in LS was 211 min in men and 185 min in women, while in OS, there was no difference in MOT in relation to the gender factor. The mean operative time in patients compared to BMI was examined. In patients with normal weight, it was 160 min in LS and 351 min in OS, 220 min and 164 min in overweight patients, and 218 min and 197 min in obese patients, respectively. In the OS group, all patients had a stay in CAIL of more than 72 hours, while in LS only 57% of patients stayed for 72 hours. Regarding intraoperative and postoperative analgesia, natural opioid analgesics, including morphine, were administered to 10% of the LS group and 100% of the OS patients. Semi-synthetic opioid analgesics were administered in 60% of LS patients and 100% of OS patients.

CONCLUSION: Laparoscopic colorectal surgery does not show an advantage in terms of mean operative time, but patients have a shorter stay in the CAIL setting, less postoperative pain, and enjoy all the advantages of a minimally invasive approach with equivalent oncological outcomes

Keywords: *laparoscopic surgery, open surgery, average operative time, analgesia, BMI, CAIL*

THE ROLE OF ENDOSCOPIC TATTOOING IN COLORECTAL SURGERY

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ABSTRACT

The intraoperative finding of a lesion, which has already been located previously by endoscopy, can sometimes be a challenge, especially during laparoscopy. Failure to locate the exact place of the lesion can cause the resection of a wrong bowel segment. Endoscopic submucosal tattooing is a minimally invasive technique, allowing marking of a carcinoma or polyp that is not suitable for endoscopic mucosal resection (EMR) in the colon.

During a colonoscopy for marking a certain spot, we use 0.5–1.0 mL of submucosal solution of indigo ink. Injecting the substance causes a dark mark, which is visible in the peritoneal cavity during surgery. The risks of this manipulation are coloring the peritoneum and other structures and organs outside the colon such as kidneys, omentum, stomach, or a part of the intestines. This can be avoided using the proper technique of injection. There are no strict rules of execution of the manipulation. The approach is individual and depends on the endoscopist and the location of the lesion. Frequently used methods are circular marking of the affected area and placement of the ink distally and/or proximally of the lesion.

In conclusion, tattooing reduces time in the operating room, lowers the risk of healthy bowel resection and aids in faster finding of the exact location of the lesion. The procedure is easily executed by an experienced endoscopist and does not carry a significant risk of complications.

Keywords: *endoscopic tattooing, lesion, intraoperative*

EVALUATION AND MANAGEMENT OF PATIENTS WITH COLORECTAL CANCER AND SYNCHRONOUS LIVER METASTASES

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ABSTRACT

INTRODUCTION: Liver metastases are found in about 15 to 25% of patients with colorectal cancer at the time of the initial diagnosis. Adequate initial evaluation and then re-staging is needed for proper and timely management of these patients. About 20% of these patients are initially resectable. According to different data, 10 to 30% of those evaluated as unresectable became resectable after chemotherapy.

MATERIALS AND METHODS: We analyzed patients from our hospital for five-year period (2016–2020). A total of 148 (14.8%) of 859 patients underwent surgery for colorectal cancer with synchronous liver metastases. We divided them into three groups depending of the chosen strategy: bowel first, liver first, or simultaneous resection. It was individualized for every patient, because there are no evidence-based universal approaches.

RESULTS: In 32 cases, simultaneous resections were performed. In 53 cases, a primary first strategy was preferred due to obstruction symptoms and poor performance status of the patients. After chemotherapy, only in 6 cases a liver resection was performed. In the third group of 14 patients, we chose the liver first strategy, because of their performance status and lack of bowel obstruction or bleeding. In 5 of them, the surgery plan was completed.

We compare the overall survival rate between patient with completed surgical treatment and those who did not reach a second procedure due to disease progression or poor performance status. The better overall survival (OS) rate was clearly visible in the first group: 67.5% vs. 29.7% after 2 years and 32.1% vs. 8% after 5 years.

CONCLUSION: Selecting the best surgical strategy for every patient, combined with effective chemotherapy, can increase the OS rate. A relatively large number of patients do not reach the second operation when a two-staged approach is performed.

Keywords: *liver, metastases, synchronous liver metastases, simultaneous resection*

RISK FACTORS FOR DEVELOPMENT OF LARS IN ANTERIOR RECTAL RESECTION FOR RECTAL CARCINOMA AND QUALITY OF LIFE IN PATIENTS WITH DEVELOPED LARS

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ABSTRACT

INTRODUCTION: Laparoscopic surgery has been established as a treatment method for patients with colorectal carcinoma. Thanks to the minimally invasive approach, patients with rectal carcinoma receive all the advantages of laparoscopic surgery without violating oncological principles.

Low anterior resection syndrome (LARS) is a symptom complex seen in patients operated on for rectal carcinoma. It includes the following symptoms: fecal incontinence, increased frequency of bowel movements or urgency of defecation, tenesmus. These symptoms can have a significant negative impact on the patient's quality of life.

AIM: The purpose of this study is to determine the risk factors for the development of LARS and the degree of manifestation of this syndrome in different groups of patients.

MATERIALS AND METHODS: As inclusion criteria in the present study, we defined patients with histologically verified adenocarcinoma of the rectum. A retrospective analysis was made of 44 patients for the period of 2019–2023 operated on in the Prof. Alexander Stanishev Clinic of Surgery. In all patients, individual characteristics were considered: gender, age, accompanying diseases, performed non-adjuvant treatment, distant carcinoma from LAR, stage of the disease, and type of anastomosis performed. Exclusion criteria of the study were: unresectable carcinoma, patients operated conventionally, laparoscopy with conversion to laparotomy, amputation a.m. Miles.

RESULTS: From the conducted research regarding risk factors, the following were related: gender (women have a higher risk of developing major LARS); age (between 50–69 years with a higher risk of developing LARS); the distance of the carcinoma from the LAR (at 0–6 cm from the LAR—a higher risk for the development of major LARS); radiotherapy (higher risk of developing major LARS); concomitant diseases (in all patients with diabetes—manifestation of major LARS); the advanced stage of the disease (at T3 >= according to TNM—the risk of developing LARS is higher).

CONCLUSION: According to our study, risk factors for the development of LARS are: female gender, low location of the rectal carcinoma, conducted radiotherapy, diabetes mellitus, and advanced stage of the disease.

Keywords: *rectal carcinoma, laparoscopic surgery, LARS*

MSI-H AS A PREDICTIVE FACTOR FOR THE TREATMENT OF COLON CANCER. REVIEW OF THE LITERATURE

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ABSTRACT

Colorectal carcinoma (CRC) is the third most common malignancy in the developed world and one of the leading causes of cancer-related death. Morphological features may serve as diagnostically useful markers of colorectal cancer (CRC) with high microsatellite instability (MSI-H) phenotype. These kinds of tumors are characterized by lymphocytic infiltration, mucin secretion and poor differentiation, and are apparent in both sporadic MSI-H CRC and CRC occurring in the context of hereditary non-polyposis colorectal cancer (HNPCC). Approximately 10% of CRCs show MSI-H. High microsatellite instability is found more often in carcinomas located in the right colon. Although heterogeneous, MSI-H colorectal carcinomas as a group show some distinct biologic characteristics when compared to CRC with stable or low level microsatellite instability. Colorectal carcinoma is now treated with a number of drugs aimed at target-specific signaling pathways, e.g., anti-EGFR-based therapy (panitumumab and cetuximab for KRAS/NRAS wild type CRC) and bevacizumab (for inhibition of angiogenesis). The microsatellite instability status has been shown to have a predictive value in terms of lack of benefit from 5-FU-based adjuvant treatment. According to the most recent clinical trials, MSI-H colon cancer in metastatic setting is sensitive to treatment with immune check point inhibitors. Treatment with anti-PD-1 antibodies has resulted in durable objective responses in metastatic MSI-H cancer.

Keywords: *high microsatellite instability (MSI-H), colon cancer, anti-PD-1 antibodies*

CLINICAL APPLICATION OF ENDOANAL AND ENDORECTAL ULTRASOUND FOR BENIGN AND MALIGNANT CONDITIONS OF THE ANUS, PERIANAL SPACE, AND RECTUM

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ABSTRACT

INTRODUCTION: Benign and malignant conditions of the anus, perianal space, and rectum encompass various disorders: perianal abscesses and fistulas, anal fissures, hemorrhoids, incontinence, defecation disorder, rectovaginal and rectovesical fistulas, rectal prolapse, neoplasms of the anal canal and rectum. Very often patients have more than one condition. The high prevalence of benign anal disorders makes them socially significant. In the last two decades, a lot of new diagnostic methods were introduced. This has improved the understanding of the pathogenesis of these conditions. Endoanal and endorectal endoscopic ultrasound has become an important part of the evaluation of anal and rectal disease. This method is widely preferred because of its low price, accessibility, lack of complications, and good tolerance to the examination without sedation.

MATERIALS AND METHODS: Thirty patients have undergone endorectal ultrasound (ERUS) examination, from April 2023 to June 2023. All ERUS examinations were performed using 3D 20R3 and 3D X14L4 endorectal transducers connected to BK 3000 Ultrasound System (BK Medical Aps, Denmark).

RESULTS: The mean age was 48.4. Eighteen patients were male (60%). The main clinical indication was an evaluation of perianal abscesses and fistulas or neoplasms. Nine of the examinations, or 30%, were performed for anal and rectal tumors. Perianal abscesses were identified in 7 cases (23%); 5 patients had anal fissures; 4 had perianal fistulas (13%); 1 had a rectovaginal fistula. The rest of the patients had hemorrhoidal disease.

CONCLUSION: Endorectal and endoanal ultrasound is a sensitive and reliable method for the assessment of the anatomical structures and diagnosis of benign and malignant diseases of the anus, perianal space, and rectum.

Keywords: *endorectal and endoanal ultrasound; benign and malignant anal, perianal, rectal disease.*

THE APPLICATION OF THE ERAS PROTOCOLS IN EMERGENCY COLORECTAL SURGERY

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ABSTRACT

INTRODUCTION: ERAS protocols are the standard in elective colorectal surgery and their application leads to a reduction in postoperative complications, shortens hospital and intensive care unit stays, and accelerates patient recovery. Over the past few years, evidence has been published for the effective and safe use of modified ERAS protocols in patients undergoing emergency colorectal surgery.

AIM: The aim of this article is to analyze the results of the implementation of ERAS protocols in emergency colorectal surgery based on our experience.

MATERIALS AND METHODS: A prospective study on 76 patients with urgent colorectal pathology (acute intestinal obstruction, acute peritonitis and intra-abdominal abscesses), treated in Dr. Georgi Stranski University Hospital in Pleven between January 2020 and May 2023, was conducted. Patient demographics, operative treatment information, length of hospital stay, complications, mortality, and number of pre-, intra-, and postoperative elements of the ERAS protocols administered were collected and analyzed.

RESULTS: The mean hospital stay was 5.2 days (SD \pm 1.9). The average number of ERAS components applied was 9. The most frequently used elements were: preoperative correction of water-electrolyte balance, prevention of nausea and vomiting, early removal of the nasogastric tube, multimodal analgesia, early nutrition, and early mobilization. Mortality was 3%.

CONCLUSION: The application of ERAS protocols in emergency colorectal surgery leads to shorter hospital stay of patients, reduction of complications and mortality.

Keywords: ERAS, emergency colorectal surgery

SYNCHRONOUS COLON CARCINOMAS LEADING TO EMERGENCY SURGERY. CLINICAL CASE AND LITERATURE REVIEW

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ABSTRACT

Colorectal carcinoma (CRC) is one of the most common malignant pathologies. It is also a leading cause of mortality in both sexes. The term synchronous colon tumors refers to the presence of two or more separate cancers in different parts of the colon in a given patient.

The present study aims to examine the data from the world exchange on the subject and to present a clinical case of a patient who, before his hospitalization, had mild complaints such as disturbances in the tract and the act of defecation. Immediately after hospitalization for a colonoscopy examination, with no preparation, the patient suddenly developed an extensive picture of obturation ileus and, after a short preoperative preparation, he was operated on as an emergency.

Due to the rapid negative dynamics in the patient's general condition, the following physical examination methods: biochemical blood analysis, complete blood count, and abdominal X-ray, were used to establish the diagnosis and make a decision on urgent surgical intervention. Two tumor formations were found intraoperatively, one on the cecum obturating the ileocecal valve, causing ileus and diffuse peritonitis, and a second smaller one located immediately after the hepatic flexure. Operative intervention included extended right hemicolectomy, ileostomy lavage, and abdominal drainage. The histological examination determined an adenocarcinoma.

In conclusion, we can confirm that synchronous colon tumors are a rare clinical finding. They often represent a challenge in surgical intervention due to the extended volume of resection, a combination of accompanying diseases, and the age of the patient require a differentiated approach in elderly patients.

Keywords: *synchronous colon tumors, colorectal carcinoma, emergency surgery, ileus*

STANDARDIZED OR PERSONALIZED LYMPH NODE DISSECTION VOLUME IN RIGHT COLON CARCINOMA

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ABSTRACT

INTRODUCTION: Colorectal carcinoma is among the leading oncological diseases in frequency and mortality. There is no standard technique for right-sided colon carcinoma, and the length of resection and the extent of lymphadenectomy remain a matter of debate. Complete mesocolic excision (CME) and D3 lymphadenectomy could potentially become a standard approach for right-sided carcinoma in the future. With the rapid development of new technologies entering surgery, similar results can be achieved using personalized approach concerning the length of resection and the extent of lymphadenectomy.

AIM: The overall aim of this review is to compare current techniques, approaches, and technologies in right colon resection for carcinoma, to discuss their advantages and disadvantages, as well as obstacles to their widespread implementation.

MATERIALS AND METHODS: We conducted a literature review after 2019 using the PubMed and Google Scholar databases. The keywords used were: “colon”, “cancer”, “lymph node staging”, “intraoperative”, “surgery”. Based on the results and after reviewing, we performed additional searches.

RESULTS: We performed a comparison of a standard technique—CME and D3, and personalized intra-operative staging approaches using novel technologies—sentinel lymph node biopsy, indocyanine green lymph node mapping, optical coherence tomography, near-infrared imaging, fluorescence.

CONCLUSION: Complete mesocolic excision/D3 lymphadenectomy offers a standard method with good long-term results, but has a long learning curve and potentially serious intra-operative complications. Randomized controlled trials in personalized approaches need to be performed in order to prove their feasibility over the standard method. Some of them come at high cost, but offer limited resections and potentially rapid recovery and fewer complications.

Keywords: *right colon cancer, CME, personalized surgery, lymphadenectomy*

A PERSONALIZED APPROACH TO COMPLICATIONS OF TEMPORARY ILEOSTOMY IN PATIENTS WITH ANTERIOR RECTAL RESECTION FOR CARCINOMA

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ABSTRACT

INTRODUCTION: Low anterior resection has become the operation of choice for mid rectal or low rectal cancer. A protective ileostomy is routinely created at some centers, including ours, to decrease the risk of leakage requiring surgical intervention.

AIM: The aim of the presentation is to show the need to bring out a temporary ileostomy in low anterior rectal resection despite the possible complications that would arise as a result.

MATERIALS AND METHODS: Ninety-two patients with stage I to III rectal carcinoma operated on from 2017 to 2021 were retrospectively analyzed. All patients were operated according to the principles of the minimally invasive concept of total mesorectal excision described by Heald. All patients underwent radiochemotherapy before surgery.

RESULTS: The mortality and morbidity rate were 12.6% and 0%. We had R0 resection in all of our cases. The morbidity related to the ileostomy includes: 1. dehydration followed by acute renal failure (6 patients); 2. maceration of the skin (4 patients); kinking of afferent loop (1 patient).

DISCUSSION: Due to the increasing desire to perform sphincter-preserving operations, which leads to lower and lower anterior resections, the frequency of derived protective ileostomies is increasing. This inevitably poses the need to study the predictors of severe complications, reducing the frequency of rehospitalizations and improving the quality of life.

CONCLUSION: The use of a temporary protective ileostomy reduces the frequency of reoperations. In parallel, the risk of developing severe dehydration, acute renal failure, ileus, and skin maceration increases. This further emphasizes the need to personalize the approach after ileostomy and take measures to prevent dehydration and subsequent acute renal failure.

Keywords: *low anterior rectal resection, temporary protective ileostomy, acute renal failure, quality of life, personalized approach*

ROBOT-ASSISTED COLORECTAL SURGERY—THE REALITY IN THE OPERATING ROOM DIFFERS FROM YOUTUBE

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ABSTRACT

INTRODUCTION: Robot-assisted colorectal surgery (RACRS) dates back to 2001 when P. Weber reported the first two oncological cases. During the next two decades, RACRS demonstrated all the advantages of minimal invasiveness and overcame some of the disadvantages of basic laparoscopy.

MATERIALS AND METHODS: A total of 131 cases underwent RACRS at the authors' institution between 2019 and 2023. Most of them were low rectal resection (LRR) (n = 72, 54.9%). Lateral-to-medial approach with early detection of the left iliac and spermatic/ovarian vessels and the left ureter was preferred as being easier and safer. Both intracorporeal and extracorporeal techniques for anastomosis were applied. The REAL score was routinely used for estimating the risk of anastomotic leakage after LRR and the necessity of protective ileostomy. Early enteral nutrition began by rule on postoperative day 2 with fluids and mash on day 3.

RESULTS: The skin-to-skin operative time and the time for docking demonstrated significant dependence on the learning curve. Sometimes tumor characteristics and/or anatomical varieties offered a challenge that differed much from standard cases and necessitated individual approach. Peritoneal adhesions after previous surgeries (n=3) and a locally advanced tumor indicating a multivisceral en bloc resection (n = 1) were the cause for conversion. No early postoperative mortality was registered. Four cases of anastomotic leakage were discovered. One patient developed ileus and received laparotomy on postoperative day 5. Another patient presented with a low debilit enteric fistula 36 days after robot assisted right colectomy and simultaneous partial nephrectomy for synchronous colon and kidney cancers. One case of recurrence and 2 cases of metachronous liver metastases were found among the followed up cases.

CONCLUSION: Robot-assisted colorectal surgery is a reliable surgical option. Several technical approaches for each step of the procedure exist. The knowledge and mastery of these techniques offer certainty for the surgeon and safety for the patient. But reality in the operating theater is often much more difficult and challenging than showy performances on the Internet.

Keywords: *robot-assisted colorectal surgery, colorectal cancer, anastomotic leakage*

OPTIMIZATION OF FUTURE LIVER REMNANT BEFORE MAJOR HEPATECTOMY—EFFICACY AND SAFETY OF DIFFERENT PROCEDURES

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ABSTRACT

INTRODUCTION: Portal vein embolization (PVE) is generally considered the standard technique for inducing increase in future liver remnant (FLR), but there is 20% unsuitable rate for resection due to either insufficient FLR growth or tumor progression during the post-PVE period. To overcome these limitations, associating liver partition and portal vein ligation (ALPPS), has been recently introduced. These techniques show greater and faster hypertrophy than PVE, but at the cost of significantly higher morbidity and mortality. In the past 5 years, the simultaneous embolization of the portal vein and one or two hepatic veins has been proposed in order to increase the damage to the liver leading to an increase in hypertrophy of the contralateral parenchyma—liver venous deprivation (LVD).

MATERIALS AND METHODS: The primary outcome was the efficacy of different procedures, including standardized FLR (sFLR) increase, time to hepatectomy, and resection rate. The secondary outcome was the safety of different treatments, including the Clavien-Dindo rate $\geq 3a$ and 90-day mortality.

RESULTS: One meta-analysis, three randomized controlled trials (RCTs), and three prospective trials (PTs) were recruited in this study. Associating liver partition and portal vein ligation had much higher sFLR increase when compared to other techniques. It showed significantly shorter time to hepatectomy. Associating liver partition and portal vein ligation had comparable resection rate to LVD. It had a higher Clavien-Dindo $\geq 3a$ complication rate and 90-day mortality compared to other treatments, although there were no significant differences between different procedures.

CONCLUSION: Associating liver partition and portal vein ligation demonstrated a higher regeneration rate, shorter time to hepatectomy, and higher resection rate, but ALPPS developed the trend of higher Clavien-Dindo $\geq 3a$ complication rate.

Keywords: PVE, deprivation, embolization, liver, hepatectomy, LVD, ALPPS

POSSIBILITY TO TREAT LOCALLY ADVANCED COLORECTAL CANCER (LACC) USING SURGERY PLUS PIPAC

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ABSTRACT

INTRODUCTION: Despite efforts to conduct screening, 60% of patients are diagnosed at an advanced stage with a significantly poorer prognosis compared to early-stage disease. Nearly 25% of patients with locally advanced (T4 stage) or perforated colon cancer are at risk of developing peritoneal metastases with poor prognosis. Local relapse and peritoneal carcinomatosis (PC) for pT4 colon cancer are assessed in 15.6% and 36.7% for 12 months and 36 months from surgical resection, respectively, achieving a 5-year overall survival of 6%. There are promising results using prophylactic hyperthermic intraperitoneal chemotherapy (HIPEC) in this group of patients, and it is estimated that up to 26% of all T4 colon cancer could benefit from this treatment with a minimal morbidity. We aimed to determine the safety and efficacy of radical surgery plus pressurized intra-abdominal chemotherapy (PIPAC) in patients with locally advanced colon cancer (LACC), compare to surgery plus systemic adjuvant chemotherapy.

MATERIALS AND METHODS: Patients with LACC (T4), obturated, perforated cancers, and patients with positive cytology are eligible. After radical surgical treatment (laparoscopy, open surgery). We perform PIPAC with Oxaliplatin, followed by adjuvant chemotherapy. Since 01.01.2023, 8 patients have undergone radical surgical treatment plus PIPAC for LACC.

RESULTS: The morbidity rate is zero. Secondary targets are relapse of disease and 1- and 3-year survival rate.

CONCLUSION: Pressurized intra-abdominal chemotherapy shows superior pharmacological properties with high local concentration and low systemic exposure. Radical surgery combined with PIPAC could reduce incidence of peritoneal metastases followed by better long-term results.

Keywords: PIPAC, LACC, colorectal, cancer, HIPEC

COMPLICATIONS OF LOW ANTERIOR RECTAL RESECTIONS—FROM CONVENTIONAL LAPAROTOMY TO LAPAROSCOPY AND ROBOTIC SURGERY

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ABSTRACT

INTRODUCTION: Cancer is one of the most serious socially significant diseases of our time and is becoming more common due to unhealthy diet, lack of physical activity, obesity, harmful habits and stress. Certain types of cancer are attracting particular attention for the rate at which their incidence is growing, in addition to the psychoemotional and physical consequences resulting from prolonged diagnosis and treatment. Rectal carcinoma is one of them. Due to the increasing incidence in developing countries and the younger age of the patients, rectal carcinoma occupies an increasing role in socioeconomic aspects due to the serious change in the quality of life of the patients.

MATERIALS AND METHODS: We have conducted a retrospective study of the perioperative data and postoperative results in patients with rectal carcinoma operated on in the Clinic of Hepatobiliary and General Surgery of Acibadem City Clinic Tokuda University Hospital and analyzed the obtained information. For the period 01.01.2008–31.05.2023, a total of 574 patients with histologically verified rectal carcinoma were hospitalized and operated on a planned basis in the Clinic of Hepatobiliary and General Surgery of Acibadem City Clinic Tokuda University Hospital, and low anterior resections were performed with/without stoma.

Our methods were as follows: 1/ diagnostic and anamnestic data (including accompanying documentation), clinical picture, instrumental diagnostics (laboratory diagnostics, ultrasound of the abdomen, CT of the abdomen; fibrocolonoscopy (FCS)); 2/ operative methods—laparotomy/scopy/robotic Da Vinci surgery in the volume of anterior resection with/without stoma; 3/ follow-up in the early and late postoperative period (follow-up of patients in the GammaCode Master hospital system)

RESULTS: The study included 574 patients who underwent anterior rectal resection for carcinoma. Regardless of the preferred method of work, laparotomy/scopies or robotic surgery, a high frequency of postoperative complications, insufficiency of the anastomosis, was observed; bleeding; postoperative suppuration.

CONCLUSION: The study demonstrated the severity of complications associated with anterior rectal resection in patients with rectal carcinoma despite emerging innovations in surgical technique and care.

Keywords: *complications, low anterior rectal resection, RRA, conventional surgery, laparoscopy, robot-assisted surgery, cancer*

SEXUAL DYSFUNCTION AFTER MULTIMODAL THERAPY FOR LOCALLY ADVANCED RECTAL CANCER

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ABSTRACT

INTRODUCTION: The incidence of sexual dysfunction after multimodal therapy for locally advanced rectal cancer ranges from 11% to 55%.

AIM: The aim of this study was to identify potential risk factors for impaired sexual function after multimodal therapy for locally advanced rectal cancer.

MATERIALS AND METHODS: An analysis of randomized prospective trials, meta-analyses and cohort studies from the last ten years concerning sexual dysfunction after multimodality treatment for advanced rectal cancer was conducted. Surgical factors directly responsible for postoperative sexual dysfunction have been studied. Sexual dysfunction in women was validated according to the Female Sexual Function Index (FSFI-6), while in men—according to the International Index of Erectile Function (IIEF-5).

RESULTS: Sexual dysfunction was recorded in 88.46% of women, and severe erectile dysfunction was found in 52.83% of men. Univariate analysis found that independent risk factors for the occurrence of sexual dysfunction were: female gender, elderly patients, tumors located < 6 cm from the anal verge, and operative volume. Multivariate analysis showed that female gender and tumor location < 6 cm from the anal verge were independent factors for the occurrence of sexual dysfunction.

CONCLUSION: Age, female sex, distal rectal tumors and operative volume are risk factors for the occurrence of sexual dysfunction after multimodal therapy for locally advanced rectal cancer.

Keywords: *rectal cancer, sexual dysfunction, plexus hypogastricus, plexus pelvicus*

PORT POSITIONING IN LAPAROSCOPIC LIVER RESECTIONS

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ABSTRACT

INTRODUCTION: Laparoscopic liver resection for colorectal cancer metastases is routinely performed in an increasing number of centers. There is a lack of generally accepted standardization in the literature for patient position and port configuration in different types of liver resection.

AIM: Patient positioning and port placement as a critical element allowing optimal visualization, ergonomic and safe dissection is the subject of the present study.

MATERIALS AND METHODS: The advantages of different types of patient positioning, port configuration, according to the localization of liver metastases and the habit of the patient are presented.

RESULTS: Although there are established frameworks for patient positioning and ports in liver resection, surgeons are required to modify approaches according to patient habitus, size, and location of metastases.

CONCLUSION: The present study can serve as a guide to the different possibilities of port configurations in laparoscopic liver resections, which can be individually adapted by surgeons based on their preferences and patient habitus.

Keywords: *liver metastases, laparoscopy, laparoscopic liver resection*

RECTAL CANCER BEFORE SURGERY. IMAGING OF RECTAL CANCER

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ABSTRACT

INTRODUCTION: Preoperative staging and follow-up of rectal cancer is of great importance in modern oncology and diagnostic imaging has a key role.

AIM: The aim of this study is to explain the imaging anatomy of the rectum in the context of total mesorectal excision and to determine imaging biomarkers to be followed before and after surgery. An insight into imaging in the era of watch-and-wait strategy for rectal cancer will be also given.

MATERIALS AND METHODS: Tumor regression (mrTRG), T and N stages, circumferential resection margin (CRM) and extramural vascular invasion (EMVI) are the most important imaging markers and they are identified by magnetic resonance imaging (MRI).

RESULTS: Aiming at best surgical outcomes, the preoperative staging of rectal cancer is crucial. Important anatomical landmarks are best determined by MRI.

An explanation of the anatomy provided by the radiologists helps the surgeons plan the surgical procedure. Transanal endoscopic microsurgery (TEM) is suitable in T1 stage. Total mesorectal excision (TME) is the universally established standard for optimal oncological surgery in rectal cancer. It is an independent predictor of local recurrence. There might be deferral of surgery or watch-and-wait strategy, a novel strategy based on organ preservation if complete clinical response is achieved by neoadjuvant therapy (references on EURECCA and TRIGGER). No surgery and stoma placement are methods in locally advanced and unresectable T4b tumors.

The main goal is to achieve downstaging and downsizing of the tumor and, therefore, optimal mesorectal excision. This is possible with neoadjuvant therapy and it has a leading role in treatment of rectal cancer. Synchronous to better therapeutical options, many imaging markers for response measurement are found out.

CONCLUSION: Preoperative staging should be stratified according to the initial status of T, CRM, EMVI and subsequent determination of tumor regression with mrTRG parameter.

Keywords: *rectal carcinoma, magnetic resonance imaging, tumor response*

THE ROLE OF DRAINS IN COLORECTAL SURGERY— IS IT TIME TO CHANGE THE PARADIGM?

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ABSTRACT

The necessity of placing drains in colorectal surgery has been debated for years. Many surgeons place them based on their personal and institutional experience, but not always for rational reasons. With the introduction of enhanced recovery protocols, including in colorectal surgery, studies have emerged showing that intraperitoneal drains may have difficulty adequately draining the abdominal cavity on one hand and may delay patient recovery on the other.

The primary role of drains is to diagnose early and late complications, such as bleeding and anastomotic insufficiency. The prophylactic placement of drains is now being closely examined by the surgical community. Data indicate that intraperitoneal drains often stimulate the secretion of serous intraperitoneal fluid, which can increase the frequency of the so-called surgical site infections (SSIs) and lead to postoperative adhesions. Drains also have a psychological impact on the patient, potentially further delaying their recovery.

Contemporary studies do not show significant benefits of intraperitoneal drains in elective colorectal surgery. With the implementation of Enhanced Recovery After Surgery (ERAS) protocols following elective colorectal surgery, it is increasingly proven that intraperitoneal drains are not necessary. In elective colorectal surgery, drains have their place, specifically in low rectal resections, where they can transform from diagnostic tools into therapeutic instruments.

We present a retrospective, single-center, cohort study covering a period of 3 years. We included all patients undergoing elective colorectal procedures (laparoscopic and open), excluding patients with rectal resections where the anastomosis is extraperitoneal, as we consider drainage mandatory in such cases due to the therapeutic value in anastomotic insufficiency. We investigated the association between the presence or absence of drains and the occurrence of major complications (Clavien-Dindo grade 3 or higher) and the duration of the postoperative period.

Keywords: *drains, colorectal surgery, ERAS*

LAPAROSCOPIC LIVER SURGERY FOR COLORECTAL LIVER METASTASES

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ABSTRACT

INTRODUCTION: Laparoscopic liver surgery has undergone significant development in the last decade. In comparison to the conventional approach, laparoscopic procedures have demonstrated superior outcomes in terms of blood loss, hospital stay, and postoperative complications, while achieving similar oncological results.

MATERIALS AND METHODS: A prospective, managed database analysis was conducted on patients who underwent liver resection for colorectal liver metastases (CRLMs). Between January 2009 and January 2023, a total of 515 radical liver resections were identified in CRLM patients. Among them, 110 patients underwent a laparoscopic approach. Laparoscopic two-stage hepatectomies were performed in three patients, and laparoscopic simultaneous colorectal and liver resections were performed in 16 patients. A comparison of perioperative outcomes was conducted between patients undergoing laparoscopic and conventional liver resections for CRLMs.

RESULTS: The average age of the laparoscopic group was 60 years (range: 27–78 years), with 54% of patients being male. Among the 110 laparoscopic liver resections performed, 40 were high-volume resections, including 34 right hemihepatectomies, 2 left hemihepatectomies, and 4 polisegmentectomies. The mean operative time was 216 minutes (range: 96–378 minutes), and the average hospital stay was 6 days (range: 2–13 days). The overall complication rate was 20%, with severe complications classified as Clavien-Dindo ≥ 3 occurring in 4% of patients. In

comparison to open liver resections, laparoscopic resections for CRLMs showed significantly longer afferent vessel control time (38 vs. 23 minutes, $p < 0.05$) and operative time (247 vs. 196 minutes, $p = 0.046$). However, the laparoscopic group exhibited a significantly lower frequency of blood transfusions ($p = 0.031$) and severe complications ($p = 0.002$).

CONCLUSION: Experience in conventional liver surgery and meticulous laparoscopic technique are essential prerequisites for the safe and successful development of a laparoscopic liver program. Our results demonstrate reduced blood loss, lower transfusion rates, and a lower incidence of severe complications in laparoscopic liver resections for CRLMs.

Keywords: *laparoscopic liver surgery, colorectal liver metastases, CLRM*

ROBOTIC HEPATECTOMY FOR COLORECTAL LIVER METASTASES—CHALLENGES AND FUTURE

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ABSTRACT

Hepatectomy is increasingly performed laparoscopically and robotically with the benefits of minimally invasive surgery and equivalent oncological outcomes compared with conventional open hepatic resection. Although the learning curve for robotic hepatic liver resection is long with a longer operating time compared with open surgery, this can be reduced to a duration similar to that for open liver resection through standardization of techniques and case number. Perioperative outcomes such as length of stay, blood loss, and transfusion requirement are significantly improved compared to open hepatic resection and fewer cases require conversion to open. It offers the best surgical option for patients with colorectal liver metastases.

Keywords: *robotic hepatectomy, colorectal liver metastases, surgery*

SURGICAL TACTICS IN LOCAL MANAGEMENT OF LESIONS IN THE TREATMENT OF POLYMICROBIAL NECROTIZING FASCIITIS OF THE PERINEUM

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ABSTRACT

INTRODUCTION: Fournier's gangrene (FG) is a rare but severe disease characterized by necrosis of the loose connective tissue in the perineum and genitalia caused by a synergistic polymicrobial infection involving aerobic and anaerobic microorganisms. It was first described by Fournier in 1883. This condition is currently defined as polymicrobial necrotizing fasciitis of the perineal or genital areas. Early surgical removal of necrotic tissues and broad-spectrum antibiotic therapy are essential in the treatment of FG.

AIM: The objective of this study is to analyze the treatment outcomes of FG as published in the medical literature and compare them with our own experiences.

MATERIALS AND METHODS: We conducted a retrospective monocentric study covering a three-year period. We analyzed a patient group of 44 individuals with polymicrobial necrotizing fasciitis of the perineum, admitted as emergencies and treated at the Dr. Georgi Stranski University Hospital in Pleven. The results were then compared with data from a previous retrospective study covering an 11-year period and a patient group of 21 individuals. Out of the considered patient group, 4 patients died, resulting in a collective mortality rate of 9%. The average hospital stay was 14 days. Local skin flap reconstruction was performed in 16 patients. Bilateral orchiectomy was performed on 1 patient. Despite advances in surgical techniques, reported mortality for this disease varies between 20% and 30%. The recorded mortality rate from our previous study was 19%. The analysis of the results reveals a halving of the mortality rate.

CONCLUSION: An aggressive surgical approach to the affected area, anticipatory incisions, targeted antibiotic therapy, and daily monitoring of the topical spread of infection are pivotal to the success of treatment.

Keywords: *Fournier's gangrene, necrotizing fasciitis*

SURGICAL TREATMENT AS RESPECT FOR DEVELOPMENTALLY DISABLED PATIENTS TREATMENT

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ABSTRACT

Disabled adult patients represent a challenge for the surgeon. Both sigmoid volvulus and foreign body are the most encountered diseases. Two males and 1 female at a mean age of 26.6 have been treated from 2011 to 2016. Two patients were affected by sigmoid volvulus and 1 patient was affected by foreign body due to pica. The patients affected by sigmoid volvulus have been submitted to sigmoid resection and direct anastomosis. The postoperative period of these two patients was uneventful. The patient affected by ingestion of foreign body was submitted to extraction of foreign bodies and intestinal resection. Then, this patient was transferred to another hospital. A developmentally disabled person should be treated at all times as a unique individual and not as some anonymous disabled person.

Keywords: *surgical treatment, intestinal resection, sigmoid volvulus*

ANAL FISTULAS: SPHINCTER-PRESERVING TECHNIQUES AND INNOVATIONS

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ABSTRACT

Anal fistula represents a common anorectal disease. In the majority of patients, the etiology is based on a cryptoglandular infection of the intersphincteric space. Accordingly, anal fistula is frequently associated with perianal abscess. Surgery remains the only definite therapy. The primary goal of definite fistula surgery is healing. However, success of fistula surgery is influenced by a variety of factors including the surgeon's experience, type of fistula, affection of sphincter muscle, type of procedure, and patient-related factors.

Focussing on complex (high) anal fistula of cryptoglandular origin, a variety of procedures have been described, including fistulectomy with sphincterotomy. However, the risk of impairment of continence is considerable. On the other hand, sphincter-preserving techniques include different flap procedures (mucosal flap, advancement flap), ligation of the intersphincteric fistula tract (LIFT), video-assisted fistula closure (VAAFT), the use of a plug, and, finally, innovative techniques, such as collagen or fibrin glue sealants as well as the application of laser or

clip. The basis for all sphincter-preserving procedures include effective closure of internal opening and removal of fistula epithelium without division of the sphincter muscle.

In general, searching for quality indicators in surgery for high anal fistulas, there is the challenge between healing and preservation of continence. Identifying potential quality indicators both careful principles of anal fistula surgery and selection of procedure are of crucial importance to achieve high healing rates without compromising continence and preventing surgical revision due to abscess or fistula recurrence. Based on available literature and guidelines, considerable differences in patient selection, etiology of anal fistula, length of follow-up and heterogeneity of treatment protocols lead to a lack of quality to define which is the best option for complex anal fistula of cryptoglandular origin.

Focusing on anal fistulas related to Crohn's disease, the role of luminal disease, the different etiology and the specific biological behavior of fistulas have to be considered. Despite progress in multidisciplinary diagnostic and therapeutic strategies, complex anal fistulas associated with Crohn's disease remain a challenge for both medical and surgical management. Although significant progress in medical treatment, including biologicals and cell-based therapies, development of sphincter-preserving surgical techniques, and interdisciplinary co-working, is maintained, failure rates after definite surgery for perianal fistulizing Crohn's disease remain still high. Moreover, in patients with severe and refractory perianal disease, the decision to perform fecal diversion or even proctectomy has a tremendous impact on quality of life, particularly in younger patients.

As the majority of patients need surgery for perianal fistulizing Crohn's disease and a high proportion of patients need further surgery due to abscess and recurrent fistula, the integrity of the anal sphincter is essential for preservation of continence. Therefore, the risk of deterioration of the continence status increases with the number of surgical procedures and with the invasiveness of procedures performed. For complex Crohn's anal fistulas, endorectal flap procedures (advancement or mucosal flap) and the LIFT procedure can be considered as effective surgical options in stable disease and absence of proctitis or luminal activity with acceptable healing rates. However, sphincter-preserving techniques, such as flap procedures or LIFT, are still associated with considerable persistence and recurrence rates. The main disadvantage or limitation of both procedures are high complex fistulas with suprasphincteric course or multi-tract fistulas with two internal and external openings (multiple branching tracts). In these patients, long-term seton drainage is the favored option. Alternatively, proctectomy can be considered. Based on this surgical dilemma, a novel therapeutic approach of local stem cell therapy (mesenchymal stem cells) seems to be an alternative for highly selected patients with multi-tract, complex fistulas. Currently, results of stem cell therapy for Crohn's anal fistula have shown promising results representing a sphincter-preserving technique. In particular, adipose-derived, allogeneic stem cell therapy (Darvadstrocel) has shown encouraging healing rates within the randomized controlled ADMIRE-CD trial which were reproducible in several real-world data of limited clinical studies. The current evidence has led to the integration of allogeneic stem cell therapy into international guidelines. To date, the status of allogeneic stem cells in the multidisciplinary treatment algorithm for complex anal fistulas associated with Crohn's disease cannot be definitely evaluated.

In conclusion, sphincter-preserving techniques are associated with promising healing rates for high anal fistulas of cryptoglandular origin. However, focusing on complex anal fistulas associated with Crohn's disease, an interdisciplinary treatment has to be recommended including medical (e.g., anti TNF alpha) and surgical treatment.

Keywords: *anal fistula, cryptoglandular, Crohn's disease, sphincter-preserving techniques, healing*