TRISECTIONECTOMY OF COLORECTAL CANCER METASTASES

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ABSTRACT

INTRODUCTION: Liver metastases are diagnosed in approximately half of the colorectal cancer (CRC) patients, with 15-25% being synchronic, and the remaining 20% metachronic.

AIM: The aim of the article is to conduct a study on the benefits of trisectionectomy as an alternative treatment for CRC metastases.

MATERIALS AND METHODS: For the period 2001-2018, 307 patients with hepatic metastases from CRC were operated in the Surgery Clinic of the Naval Hospital in Varna. Six of them had a trisectionectomy (Sg1,4,5,6,7,8). The advantages and postoperative complications after trisectionectomy have been analyzed.

RESULTS: In 5 patients there was a right trisectionectomy and 1 left trisectionectomy. The largest tumor was 36 cm in diameter. The operation was synchronous with the removal of CRC in two patients (33%), and in the remaining 67% the liver resection was metachronic. No neoadjuvant chemotherapy was performed in any of the patients. The residual hepatic volume was determined preoperatively by CT volumetry, and intraoperatively by echography. Postoperative mortality was 0% and postoperative complications were diagnosed in two patients (33%); biloma in one and wound infection in one.

DISCUSSION: Liver volume and hepatic function are not equivalent. The status of the hepatic parenchyma (steatosis, sinusoidal obstruction, cholestasis, etc.) as well as the anatomical variants in its blood supply determine the size of the resection and the residual hepatic volume. Precise determination of the status and volume of residual hepatic parenchyma allows large resections of bilobar liver metastases to be performed. Trisectionectomy is a surgical method with an acceptable rate of postoperative complications (33% in the current series) and 0% mortality. The main advantage of the trisectionectomy is one-step, due to lack of parenchymal damage from previous chemotherapy.

CONCLUSION: Trisectionectomy has definite advantages over two-stage hepatectomy, ALPPS and hepatectomy after embolization or operative ligation of the right branch of the portal vein. The operation is technically feasible in cases where adjuvant chemotherapy is preferred to neoadjuvant chemotherapy.

Keywords: *trisectionectomy, liver metastases, colorectal cancer, PVE, PVL, TSH, ALPPS*

PELVIC GAS PHLEGMON AFTER COMPLICATED THD PROCEDURE FOR SYMPTOMATIC GRADE II HEMORRHOIDS: A RARE CASE

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ABSTRACT

Doppler-guided hemorrhoidal artery ligation, also called THD is a minimally invasive technique for the treatment of symptomatic hemorrhoids of grade II – IV with approximately 75% success rate. The method is developed as safe and painless alternative of PPH (procedures for prolapsed hemorrhoids) and conventional surgery of hemorrhoidal disease. People with symptomatic hemorrhoids and serious inflamatory bowel disease such as Crohn's disease or ulcerative colitis or chronic radiation proctitis operated by THD deserve a special mention because of lack of studies. The most commonly described complications are transient tenesmus, which sometimes can result in rectal discomfort or pain and postoperative bleeding that rarely requires hemotransfusion. The authors do not consider antibiotic prophylaxis as mandatory as in their experience no infections have been observed following this operation. Rectal perforation as a complication of PPH is reported in few publications. Only one case during the past fifteen years notifies of this serious complication after THD in previously fit individual. We report a case of a 55-year-old male with erythremia who underwent the procedure and subsequently developed pelvic gas phlegmon with a favorable outcome. We discuss the potential causes of this life-threatening complication and its prevention in the future.

Keywords: *Doppler-guided hemorrhoidal artery ligation, THD, haemorrhoidal disease, complications*

DOES THE EXPERIENCE CHANGE THE PERIOPERATIVE RESULTS IN LAPAROSCOPIC COLORECTAL SURGERY?

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ABSTRACT

INTRODUCTION: Nowadays, the laparoscopic approach to the surgical treatment of colorectal pathology becomes the main preferred method. Reasons for this are the proven advantages of minimally invasive surgery, the increasingly accessible and advanced technology, the skills and traditions created in many surgical centers. The accumulated experience often leads to the widening of the indications for laparoscopic interventions in the colon and rectum, even in the cases of locally and systematically advanced colorectal cancer (CRC), the need for synchronous resections, concomitant complications. There is evidence that the passage of the learning curve is accompanied by an improvement in perioperative outcomes and is a safe for the patient.

AIM: The aim of the study was to compare the early perioperative results in two groups of patients with laparoscopic interventions in the colon and rectum at different periods of time and to comment the impact of the experience on these results.

MATERIALS AND METHODS: Results were analyzed in two groups of patients with laparoscopic colorectal operations. Patients in the first group were operated between 01.01.2015 and 31.12.2017 (a three-year period) - a total of 83. In the second group there were patients operated on in the span of a 16-month period - 01.01.2018 to 24.04.2019 - a total of 81. The design of the study was single-center, randomized, retrospective.

RESULTS: The following perioperative data are analyzed: distribution of patients by sex, age, benign disease, CRC, perioperative mortality, morbidity (specific; non-specific), level of conversions, median hospital stay, local intraoperative findings, surgical team leader, intraoperative blood loss. Some results suggest that perioperative mortality is higher in the second group - 1.20% (1 patient) to 2.53% (2 patients), respectively. There is no significant difference in the perioperative morbidities of 11.9% to 11.3%, respectively. In both groups, the main indication for surgical treatment is CRC.

CONCLUSION: The absence of a significant difference in perioperative data with regard to perioperative mortality and morbidity, as well as other data, may be due to the expanding indications of a laparoscopic approach at the expense of well-selected patients operated on using a minimally invasive approach at the beginning of the learning curve.

Keywords: *laparoscopic, colorectal, video-assisted, conversion, radical*

PALLIATIVE LAPAROSCOPIC COLORECTAL RESECTIONS. PERIOPERATIVE DATA IN A CONTINIOUS SURVEY

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ABSTRACT

INTRODUCTION: Colorectal cancer (CRC) is a disease with increasing incidence and epidemic proportions in Western society. Contributing factors are the late diagnosis, the lack of adequate screening programs in Bulgaria, the increasing average life expectancy, the poor health culture. Advanced forms of the disease are common. The most common complications accompanying the local progression of the tumor are intestinal obstruction, chronic hemorrhage, infiltration of adjacent organs and anatomical structures. Performing palliative operations in CRC can improve the quality of life and be part of the complex treatment of this disease.

AIM: The aim of this article is to analyze the perioperative results in a group of 11 patients with palliative laparoscopic colorectal resections and concomitant multiple liver and/or pulmonary metastases not susceptible to surgical treatment during the diagnosis.

MATERIALS AND METHODS: For a period of 4 years and 4 months, 11 laparoscopic palliative resections of the colon and rectum were performed in patients with concomitant multiple liver and/or pulmonary metastases at the HBP and General Surgery Clinic. All methods of perioperative data analysis are used.

RESULTS: All patients were operated by laparoscopic approach. No conversions were performed. The volume of the resection is not different from that of standard resection for colorectal cancer. There were 8 left and 3 right resections. In 10 patients, excision of liver metastases was performed to prove dissemination. There are no deceased patients in the group. There are no complications registered. Average hospital stays amounted to 5.5 days.

CONCLUSION: Our own experience based on the current patient study group is insufficient to make recommendations, but good perioperative results give hope that palliative laparoscopic colorectal resections are an effective method for the prevention and treatment of complications associated with tumor formation progression and can improve the quality of life of these patients.

Keywords: *colorectal cancer, laparoscopic resection, liver metastases*

MODIFIED STAPLED HEMORRHOIDECTOMY. OUR OWN EXPERIENCE

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ABSTRACT

INTRODUCTION: Stapled hemorrhoidectomy for III and IV degree hemorrhoids is conceptually different from conventional hemorrhoidectomy. There is significantly less pain, because the sensitive anoderm remains intact.

AIM: The aim of this study is to summarize the results of stapled hemorrhoidectomy in our department and to present a modification of the procedure in patients with residual prolapse immediately after the procedure.

MATERIALS AND METHODS: In this prospective clinical trial a sample of 120 patients with III and IV degree hemorrhoids underwent stapled hemorrhoidectomy from April 2017 to September 2018 in the Department of General Surgery at St. Ivan Rilski Hospital. The results were evaluated by a questionnaire and a physical examination. Mean points were operative time, postoperative pain, residual prolapse, postoperative morbidity, hospital stay and time to return to work. All the patients were followed up for 12 months.

RESULTS: The mean operative time was 35 min. We used PCA in all patients, so that they needed no additional analgesics. There was no significant postoperative morbidity. The mean hospital stay was 3 days. The residual prolapse was significantly lower in comparison with other similar studies.

CONCLUSION: Stapled hemorrhoidectomy is a safe, reliable and convenient method for patients with III and IV degree hemorrhoids with low rate of complications, minimal postoperative pain and early discharge from hospital.

Our modification shows a significantly lower rate of residual prolapse immediately after the procedure.

Keywords: *hemorrhoids, stapled hemorrhoidectomy, minimally invasive hemorrhoidectomy*

PROGNOSTIC FACTORS FOR ANASTOMOTIC INSUFFICIENCY IN ELECTIVE COLORECTAL SURGERY

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ABSTRACT

INTRODUCTION: Anastomotic insufficiency is a severe, potentially fatal complication of colorectal surgery. Its frequency, according to different authors, reaches up to 20%. It is related to two main types of risk factors: associated with the patient and associated with the therapeutic approach.

AIM: The aim of the study is to determine prognostic factors for anastomotic insufficiency. The collected data are from patients operated for 5 years (2013-2017) in Second Surgery Clinic, Alexandrovska were analyzed.

MATERIALS AND METHODS: A total of 158 patients undergoing elective colorectal surgery were retrospectively included. These on emergency, non-proven malignancies and with preoperative haemotransfusion were excluded from the study. All patients were evaluated by age, gender, BMI, ASA score, Charlson comorbidity score, localization, TNM stage and histological type. The surgical approach and the method of resection were determined. The postoperative period and complications were classified according to Clavien-Dindo scale. The number of leukocytes, platelets, RDW, CRP and albumin were examined preoperatively, and on the days 1 and 4 in the early postoperative period.

RESULTS: The average age of the patients was 67 (29-87). Of these, 100 (63.3%) awere men and 58 (36.7%) were women. The mean BMI was 27.1 (23-33). A total of 78.9% of the operated were in II and III TNM stage. Histologically, 77.8% were with moderately differentiated adenocarcinomas. The mean Charlson comorbidity score for the sample was 7.1 (2-13), and the ASA score was 3 (2-4). The rectum was the most common localization - 40.1%, followed by right colon - 22.8% and the sigmoid colon - 20.9%. Over the review period, most of the resections were conventional with only 15.2% done by a laparoscopic approach. The operations performed were right hemicolectomy - 36 (22.8%), left hemicolectomy - 15 (9.5%), segmental resection - 38 (24.1%), total colectomy - 4 (2.5%), resection of the rectum - 44 (27.9%), and other - 21 (13.3%). In 12 (7.6%) of the patients insufficiency was reported between day 2 and day 3, postoperatively. Five of them were treated conservatively and the other six were reoperated. Seven of the insufficiencies were after anterior resection of the rectum, 2 were after left hemicolectomy, 1 after resection of the sigmoid colon, one was after right hemicolectomy, which had been treated conservatively. The mean postoperative period of patients with insufficiency was 22 days (9-45). For patients without complications, the postoperative period was 9.4 days (4-21) and there was a strict statistical difference (P <0.05). All patients experienced an increase in leukocyte counts postoperatively, albumin drop, increased CRP and ESR. Mean platelet counts depended on the presence of insuffiency.

CONCLUSION: The anterior resection, which is associated with technically more difficult anastomosis and neoadjuvant radiotherapy is a potential risk factor for anastomotic insufficiency. The use of blood parameters in the postoperative period allows early diagnosis of the complication and possible change of the therapeutic strategy.

Keywords: *colorectal cancer, anastomotic insufficiency, colorectal surgery*

ILEOCECAL CROHN'S DISEASE COMPLICATED WITH SYNCHRONOUS ENTEROSIGMOID FISTULAE – ILEOCECAL RESECTION WITH PRIMARY SUTURE OR SIGMA RESECTION; ONE-STAGE OR TWO-STAGE PROCEDURE?

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ABSTRACT

INTRODUCTION: Enterosigmoid fistulae represent 20% of all internal fistulae in Crohn's disease. About 47% of them are diagnosed intraoperatively. On the background of complicated ileocecal Crohn's disease, the choice of the right surgical tactic regarding the sigmoid colon still remains difficult – sigmoid resection or only suture, one-stage or two-stage intervention.

RESULTS: Six cases were operated during the period 2016-2019 with a mean age 31.5 years (20-43) and mean duration of the disease 6.7 years (2-12). All of them had significant reduction of the body weight, mean serum albumin 32.8 g/L (26-43) and hemoglobin 122 g/L (94-138). Emergency operation was performed in 50% (ileus – 2, intra-abdominal abscess - 1). Only 50% of the cases had preoperative diagnosis of the fistula. In two cases there were synchronous ileovesical fistulae, in one - multiple ileosigmoid fistulae were observed. Ileocecal resection and right hemicolectomy were performed in 4 and 2 cases, respectively. Segmental sigmoid resection was performed in two cases, whereas four underwent simple suture of the fistula opening. Due to presence of risk factors in 83% of the cases (5/6) two-stage intervention was performed – ileoascendostomy in four and Hartmann' sigmostomy in one case after right hemicolectomy and insufficiency of the primary sigmoid suture.

CONCLUSION: Sigmoid resection is indicated in the presence of a defect affecting over 25% of the wall, fistula located at the mesenteric site or sigmoid Crohn's disease. The stoma is indicated in the presence of malnutrition (albumin < 35 g/L), intra-abdominal abscesses or bowel obstruction, preoperative biological therapy or corticosteroids in high doses (> 20 mg Prednisolon). In such cases we prefer sigmoid resection with anastomosis/primary suture and ileoascendostomy after the ileocecal resection because of the easier reversal through local laparotomy in contrast to Hartmann's reversal.

Keywords: *Crohn's disease, enterosigmoid fistulas, primary suture or resection of the sigma, one-stage or two-stage operation*

MULTIMODEL AND MULTIDISCIPLINAR APPROACH IN THE TREATMENT OF FOURNIER'S GANGRENE

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ABSTRACT

INTRODUCTION: Fournier's gangrene is a fulminant process, necrotizing fasciitis of the peroneum and genitals with a polymicrobe etiology. The mortality rate is high because of its rapid development when the patients are immunocompromised or having severe chronic diseases.

AIM: The purpose of this retrospetive study is describing the complex approach in the treatment of Fournier's gangrene, identifying the reasons for a lethal outcome and the methods for predicting it.

MATERIALS AND METHODS: The study is a 5-year overview of 10 patients with Fournier's gangrene, hospitalized in the Surgery Clinic of the Naval Hospital, Varna. All the patients underwent surgical treatment – breaking the intestinal passage and colostomy with the aim to abort the inflammatory distribution and additional bacterial contamination. The neccesity of repeated necrectomies is obligatory. As extra measures are used hyperoxygen therapy and antibiotics, which relied on the microbiogical samples. In 90% of the cases bioproducts and vasoactive medications were added because of hemodymamic unstability and septic conditions. After healing, the wide spread defects of the genitals and perineum were replaced using transpositional axial grafts.

RESULTS: For the last 5 years 10 patients with Fournier's gangrene have been diagnosted and medicated. All of them were men, with comorbidities. The period from the disease onset until hospitalization was 3-4 days. The onset of the inflamatory process was untreated perianal abscess. The laboratoty samples demonstated that 75% were with SIRS, 25% with sepsis and 3% with a manifestation of endotoxic shock. Breaking the intestinal passage reduced the mortality and the inflammatory distribution by almost 40%. After healing the residual wide spread defects needed replacement using transpositional axial graft in 95%.

Keywords: *gangrene, Fournier, necrotizing fasciitis, multidisciplinary approach*

COLORECTAL NIGHTMARES – STRATEGY AND MANAGEMENT OF ANASTOMOTIC LEAK AFTER ANTERIOR RECTAL RESECTION

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ABSTRACT

INTRODUCTION: Despite technical advances, complications in rectal cancer surgery still occur. There is no doubt that the most devastating complication in rectal cancer surgery is anastomotic leakage. Rectal anastomotic leakage can lead to pelvic abscess and pelvic sepsis - both of them may be a source of sepsis, septic shock and cause death. On the other hand, any infectious complication deteriorates the long-term oncological prognosis for the patient. Although anastomotic leakage is quite common, this is a complication we do not have clear definition of. In the last few years, significant progress in the understanding, strategy and treatment of anastomotic leakage has occurred. Early diagnosis and appropriate treatment choice have led to less morbidity and better outcome.

AIM: The aim of this study is to present and discuss all available treatment algorithms and preventive strategies about anastomotic leakage after anterior rectal resection in rectal cancer patients.

MATERIALS AND METHODS: The study is designed as a single center retrospective observational study. In this study are included patients with anastomotic leakage after anterior rectal resection diagnosed with rectal adenocarcinoma. For the period of three years - between 2015 and 2018 in the Department of Endoscopic Surgery in Military Medical Academy, Sofia 126 cases with adenocarcinoma of the rectum following anterior rectal resection were diagnosed and treated. Fifteen of them were included in analyses because anastomotic leakage was present. All data is extracted from past medical records from the hospital electronic registry. For the statistical analysis the SPSS v19.0 software was used with descriptive methods.

RESULTS: The incidence of anastomotic leakage for a three-year period in our Department was 12% with an average overall complication rate of up to 32% according to the Clavien & Dindo classification. All anastomotic leakages were grouped according to the ACRCS classification, with 60% of them being grade C and the remaining 40% - grade B. Six of the patients were treated by relaparoscopy or relaparotomy with lavage, drainage and stoma. Three of them were treated only by lavage and drainage. Two patients were treated by endo-vac therapy and two of them by only conservative antibiotic therapy. Open laparotomy was needed in two of the patients. Anastomotic leakage increased morbidity and prolonged hospital stay with the need of intensive care.

CONCLUSION: Anastomotic leakage is still common challenge for every colorectal surgeon. Classification of the leakage is a key for better understanding and treatment selection. Anastomotic leakage increases morbidity and prolongs the hospital stay including the stay in an intensive care unit.

Keywords: *colorectal cancer, anastomotic leakage, anterior rectal resection*

CURRENT TREATMENT MODALITIES IN RECTAL CANCER SURGERY

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ABSTRACT

INTRODUCTION: Innovation in medicine and technology in the era of the Fourth Industrial Revolution has transformed surgery into the most high-tech specialty in the health care sector. The high incidence of colorectal cancer is still a burden in developed countries. Rectal cancer surgery is characterized by an advanced level of complexity and difficulty, multiple non-operative and operative treatment choices and for these reasons it is technically challenging. In the last decade few new alternative methods for preoperative and operative treatment were developed, based on forgotten old principles in surgery.

AIM: The purpose of this study is to present a review of the literature about current treatment modalities in rectal cancer surgery based on our experience.

MATERIALS AND METHODS: For a three-year period - between 2016 and 2018, in the Department of Endoscopic Surgery at Military Medical Academy, Sofia, 156 patients with rectal adenocarcinoma were operated on. For the retrospective observational analysis all available data was extracted manually from the past medical records. All cases with rectal adenocarcinoma regardless of operative procedure were included in the study. For the exclusion criteria we withdrew patients with benign tumors, non-adenocarcinoma histology, Crohn's disease and ulcerative colitis.

RESULTS: For a three year-period, 139 patients with rectal cancer were treated by different approaches in the Department. Twenty-one of them were operated by the Hartmann's procedure due to obstruction in emergency settings. Sixty-one of them - by elective laparoscopic anterior resection, 9 of them by open anterior rectal resections, 4 by transanal endoscopic microsurgery and 25 by laparoscopic assisted transanal total mesorectal excisions. All of the above are classified as organ preserving techniques. Abdominoperineal resection was performed in the remaining 19 cases with permanent colostomy. The average complication rate was 32% according to the Clavien and Dindo classification. The mean hospital stay was 6 days.

CONCLUSION: Up to date, rectal cancer has no perfect treatment option, regardless of the many choices that we have. Minimally invasive surgery is characterized by significant early recovery compared to the open technique.

Keywords: *rectal adenocarcinoma, treatment, surgery, modalities*

ILIAC VESSEL RESECTION AND RECONSTRUCTION WITH FEMORAL VEIN IN CANCER RECCURENCE

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ABSTRACT

Radical surgical treatment of locoregional pelvic recurrences provides a potential cure in up to 50% of the cases. The most important thing is to obtain a clear resection margin. The new vascular reconstructive techniques allow reconstruction of major vascular structures with low morbidity and mortality rates. Autologous vein grafting is the preferred option. Although the great saphenous vein can be used in select cases, other options must be explored in cases of caliber mismatch between the saphenous vein and the native vessel. In addition, the use of synthetic grafts should be avoided in a potentially infected operative field.

Here we present our experience of en bloc resection and autologous reconstructions of iliac vessels with femoral vein for lateral locoregional pelvic and retroperitoneal recurrences. In all five cases radical resection R0 was achieved. The total count of vessel interpositions is 9, with no early and late postoperative complications. There is no locoregional recurrence and distant metastases for a period of 12 months. Patients were maintained on oral anticoagulant and compression stockings for 6 months.

Resection and reconstruction of iliac vessels for malignant recurrence is feasible and safe procedure in highly specialized oncological centers.

Keywords: *iliac vessels, femoral vein, malignant*

LEVEL OF VASCULAR LIGATION AND ASSOCIATION WITH ONCOLOGICAL EXPEDIENCY IN SIGMOID AND RECTAL CANCER

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ABSTRACT

INTRODUCTION: The techniques and oncology feasibility of high vascular ligation of the inferior mesenteric artery along with their varieties – low tie (LT) and high tie (HT) techniques in left-sided colon and rectal cancer, were described more than 100 years ago by Miles and Moynihan. However, the relationship between the level of vascular ligation and the microperfusion of the proximal anastomosis segment, on the one hand, and the volume and quality of lymphatic dissection, on the other, are the subject of numerous clinical trials and discussions. The vegetative nerve spare in the different approaches is also included in a consideration. Despite the well-established modern standardization in conventional and laparoscopic left colon and rectal cancer surgery, some surgeons still do ligation at the *a. rectalis superior* level in rectal cancer, which contradicts modern oncology principles.

MATERIALS AND METHODS: Prospective non-randomized comparative cohort study of patients from the Department of Surgery in Alexandrovska University Hospital with cancer of the sigmoid colon or rectum in clinical stage I-III, operated by an open or laparoscopic approach over a 4-year period, stratified into two groups according to the level of ligation of the inferior mesenteric artery (IMA) and vein - high tie - at the site of the origin (1 cm) from aorta and low tie - distal to the origin of the left colic artery. The comparative indicators included the anastomotic leakage rate, the number of lymph nodes harvested with a metastatic lymph node index, a 3-year disease-free survival (DFS), disease-related survival OS. The follow-up period was 12-48 months.

RESULTS: For the period 2014-2018 a total of 217 patients with cancer of the sigmoid colon or rectum underwent 169 laparoscopic and 48 open surgeries. The distribution was as follows: 69% high ligation compared to 31% low ligation; 52 in an emergency or delayed emergency manner; 58% male and 42% female, mean age 64 ± 0.8 years; 56% in clinical stage III, 40% in II and only 4% in clinical stage I, relatively evenly distributed in the two target groups. There were wide variations in the number of lymph nodes harvested from the specimen (n = 4 to 22) for both groups without significant differences in the metastatic index. There was no statistically significant difference in the incidence of anastomotic leaks for both groups (3.8% for HT versus 3.0% for LT). With respect to the 3-year disease-free interval, there were also significant differences - 81.2% (HT) and 79.4% (LT) and the overall survival rate of 79.1% (HT) compared to 77.2% (LT) with a 72% follow-up coefficient.

DISCUSSION: The findings of this study are broadly consistent with those published so far and analyzed in three systematic reviews - the last one in 2018. This indicates that no statistically significant difference between high and low vascular ligation has been identified for the most important comparative indicators. It is extremely important to discuss several technical issues at present - contemporary problems requiring future high-quality clinical trials: the necessity and means of implementing left colic flexure mobilization in both types of vascu-

lar ligation with the lack of standardization; adequate and accurate identification of a correct cleavage plane of the dissection with differentiation of target vascular areas, avoiding erroneous entry into the sigmoid mesentery along with separate ligation of sigmoid vessels - oncologically inappropriate; sequence and level of ligation of the lower mesenteric vein with wide variations; pathoanatomic processing of the specimen with adequate isolation and examination of the removed lymph nodes, respectively adequacy of the pathohistological N-staging as well as the quality of the mesorectal excision; the need for stage control of the microvascular perfusion of the anastomosis segments by ICG fluorescence on the already validated global methods (hence the prevention of anastomotic leaks); progress in the importance and technical feasibility of low tie vascular ligation + perivascular lymph dissection to the IMA origin, and complete mesocolic excision (CME) in colon carcinoma (similar to TME in the rectal), the subject of more and more current studies; the specifics and advantages of robotic surgery of left-sided colon and rectal cancer with respect to accuracy of vascular and lymphatic dissection.

Keywords: *left colon and rectal cancer, vascular ligation level, high tie, low tie*

RETROSPECTIVE ANALYSIS OF THE OPERATIVE TECHNIQUES FOR EMERGENCY TREATMENT OF COMPLICATED DIVERTICULITIS AT PIROGOV HOSPITAL, BULGARIA

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ABSTRACT

INTRODUCTION: The clinical spectrum of diverticulosis ranges from an asymptomatic condition to a life-threatening disease. The severity of the disease dictates the appropriate treatment. Challenging is not only the decision for conservative treatment, but also the decision on the right operative technique.

MATERIALS AND METHODS: All cases of complicated diverticulitis (132) that underwent surgical treatment at Pirogov Hospital for a period of five years were analyzed retrospectively.

RESULTS: The overall morbidity of diverticulosis – asymptomatic and diverticulitis in all of its forms at Pirogov Hospital consisted of 951 cases with a mortality rate of 0.04%. A total of 254 patients were treated at the Department of Surgery. They were divided into two groups – uncomplicated diverticulitis (122 patients) and complicated diverticulitis requiring surgical treatment (132 patients, accounting for 51% of the surgical treatments). The overall mortality of the operated patients was 24.2%. An analysis of the manner of the hospitalization revealed a 50% mortality rate of the moribund patients who arrived with an emergency medical team; 18% mortality of the patients who arrived by themselves at the Department and 0% mortality of the patients hospitalized by recommendation of their primary care provider. In 82 (62.1%) of the cases a colectomy with diverting colostomy was performed. In 96.3% of these this was Hartmann's resection. The mortality of this group was 26.8%. In 35 (26.5%) patients a primary resection and anastomosis, with or without a diverting ileostomy was performed with a 18.5 % mortality rate. The last group consisted of 15 (11.4%) patients who underwent lavage and drainage with a mortality rate of 22.2%

CONCLUSION: The choice of operative technique is made based on the general condition of the patient, the severity of the disease and the experience of the surgical team. Hartmann's resection is associated with high morbidity and mortality, including at the Hartmann reversal. Primary resection and anastomosis represent a feasible alternative for the appropriate patients. With primary stratification of the patients the rate of colonic resections with colostomies could decrease.

Keywords: *diverticulitis, Hartmann's resection, colectomy*

UNUSUAL HISTOPATHOLOGICAL FINDINGS IN APPENDECTOMY SPECIMENS: A RETROSPECTIVE STUDY

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ABSTRACT

AIM: The aim of this retrospective study is to document and statistically analyse unusual findings in appendectomy specimens.

MATERIALS AND METHODS: The histopathological data of 1733 patients who underwent appendectomies for acute appendicitis from January 2015 to April 2019 were reviewed retrospectively. The focus of this analysis are 34 patients who had unusual findings in their histology results.

RESULTS: Unusual histopathological findings were determined in 34 patients (1.96%). Male to female ratio was 21 to 13. The mean age of the patients was 48.5 (from 18 to 79 years). The final pathology revealed 12 cases of carcinoids, 18 cases of parasitosis (*Enterobius vermiculris*) and tuberculosis in 4 cases. This subsequently determined the different treatment modalities for these patients.

CONCLUSION: Although unusual pathological findings are seldom seen during an appendectomy, histology analysis is etiologically the only reliable method of diagnosis.

Keywords: *appendicitis, unusual findings, carcinoid, Enterobius vermicularis, tuberculosis*

SURGICAL TACTICS IN FECULENT PERITONITIS

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ABSTRACT

INTRODUCTION: Any perforation of the colon, benign or malignant, leads to severe contamination of the peritoneal cavity. As a result, it evolves into a local or general peritonitis. Surgical treatment, especially of severe generalized peritonitis, is a complex and difficult process.

MATERIALS AND METHODS: For a 10-year period (2009-2018), in the Surgical Department of 4th MHAT, Sofia 38 patients with local and/or general peritonitis were treated. From them 20 (53%) were women and 18 (47%) were men. The main reasons, which led to a feculent peritonitis, were: colonoscopic perforations - 17, perforations of the diverticulum - 8, perforations due to advanced malignant processes - 6, perforations due to foreign bodies - 3, self-amputation of the appendix with acute appendicitis - 2, knife wound in the abdomen - 2. For diagnostics, the following methods were applied: X-ray of the abdomen - 38, abdominal ultrasonography - 17, CT of the abdomen - 8.

RESULTS AND DISCUSSION: The diagnosis in 15 of the colonoscopic perforations was established within 2 hours, and the others within 16 hours. Each operation started with middle-median laparotomy and expanded in the specific direction. The following interventions were carried out: right hemicolectomies - 8, left hemicolectomies - 10, sutures without colostomy - 5, resections of the sigmoid colon with colostomy - 8, sutures of the rectum with colostomy - 3, sutures of the rectum without colostomy - 3, apendectomy - 1. Laparostomies were performed on three patients with feculent peritonitis of over 12 hours. We have no direct postoperative mortality. The operative treatment of this severe pathology is a challenge for the surgeon and his team.

CONCLUSION: The surgical treatment tactics in feculent peritonitis are variable and in direct dependence on the leading cause of the perforation, the stage of feculent peritonitis, age, general condition, and co-morbidities of the patients.

Keywords: *surgical tactic, feculent peritonitis, colonic perforation*

SAFETY AND EFFICACY OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS TO IMPROVE GASTROINTESTINAL RECOVERY AFTER SURGERY: INTERNATIONAL, PROSPECTIVE COHORT STUDY

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ABSTRACT

INTRODUCTION: Ileus is common after elective colorectal surgery and is associated with increased adverse events and length of stay.

AIM: The aim was to assess the role of non-steroidal anti-inflammatory drugs (NSAIDs) for reducing ileus after surgery.

MATERIALS AND METHODS: A prospective, multi-centre, cohort study was delivered by an international, student- and trainee-led collaborative group. Adult patients undergoing elective colorectal resection between January and April 2018 were included. The primary outcome was time to gastrointestinal recovery, measured using a composite measure of bowel function and oral tolerance (GI-2). The impact of NSAIDs was explored using Cox regression analyses, including the results of a centre-specific enhanced recovery questionnaire. Secondary safety outcomes included anastomotic leak and acute kidney injury.

RESULTS: A total of 4164 patients were included with median age 68 years (IQR: 57-75; 54.9% male). A total of 1153 (27.7%) received NSAIDs, of whom 1061 (92.0%) received non-selective cyclooxygenase inhibitors. After adjustment for baseline differences, mean time to gastrointestinal recovery did not significantly differ between patients receiving and not receiving NSAIDs (4.6 vs. 4.8 days; HR: 1.04, 95% CI: 0.96-1.12, p=0.360). There were no differences in anastomotic leak rate (5.4% vs. 4.6%; p=0.349) or acute kidney injury (14.3% vs. 13.8%; p=0.666), respectively. Fewer patients receiving NSAIDs required strong opioid analgesia (35.3% vs. 56.7%; p<0.001).

CONCLUSION: NSAIDs did not reduce the time for gastrointestinal recovery after colorectal surgery, but they were safe and associated with reduced postoperative opioid requirement.

Keywords: *surgery recovery, NSAID, drug efficiency*

TRANSANAL ENDOSCOPIC MICROSURGERY AFTER ENDOSCPIC POLYPECTOMY

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ABSTRACT

INTRODUCTION: Management of malignant rectal polyps (MRPs) after endoscopic polypectomy (EP) is still debated. It is sometimes difficult to decide whether to simply follow-up (FU) or to treat such a removed lesion. Transanal endoscopic microsurgery (TEM) could have a role both in T staging and in treating MRPs after EP. This announcement presents our experience in this topic.

MATERIALS AND METHODS: From January 2015 until March 2017 in our unit thirteen consecutive patients with MRPs underwent a full-thickness TEM within 1 month after EP. These patients were retrospectively analyzed. If post-TEM histology showed locally advanced rectal cancer, patients underwent a laparoscopic total mesorectal excision (TME) within 4–6 weeks. Patients without malignant disease or pT1sm1 cancers at post-TEM histology were followed up every 3 months for 2 years with clinical examination, flexible rectal endoscopy, and neoplastic markers monitoring.

RESULTS: A total of 13 patients were included. Post-EP histology was adenocarcinoma in 9 cases (69.2%) and adenoma in four (30.8%). Mean operative time was 74.2 min; no 30-day mortality occurred; 30-day morbidity was 7.7% (rectal bleeding in one case). Post-TEM histology showed a T2 cancer in two patients (15.4%), both with a previous cancer diagnosis, who were further treated by laparoscopic TME and are disease-free with a mean FU of 22.2 months. Post-TEM histology showed adenoma in 4 cases and fibrosis in 7 patients. These patients are disease-free with a mean FU of 18 months.

CONCLUSIONS: A full-thickness TEM after EP of MRPs can establish the presence of residual malignant disease and its depth of invasion, precisely defining the indication to TME. In event of benign post-EP histology, TEM must be performed in the presence of macroscopic residual disease in order to obtain an RO resection and finally exclude cancer, while, in absence of macroscopic residual disease, only close FU is required.

Keywords: *transanal endoscopic microsurgery, rectal polypus, endoscopic polypectomy*

MINIMALLY INVASIVE SURGERY FOR COMPLICATED CROHN'S DISEASE – EARLY EXPERIENCE

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ABSTRACT

INTRODUCTION: The surgical and medical management of inflammatory bowel disease (IBD) has significantly evolved over the course of the last two decades. The evidence has been accumulating in favor of a minimally invasive approach to ileocolic Crohn's disease (CD), especially when the disease is complicated by an abscess, a phlegmon, or fistulizing disease. This announcement presents our primary experience with three cases of complicated ileocolic CD threated with minimally invasive approach.

MATERIALS AND METHODS: From October 2017 until November 2018 in our unit three consecutive patients with ileocolic Crohn's disease complicated by a paracolic abscess, a phlegmon, or a fistula underwent minimally invasive ileocolic resection. Data recorded included demographic information, body mass index (BMI), estimated blood loss (EBL), length of surgery, rate of conversion to open surgery, length of hospital stay, and rate of complications.

RESULTS: A total of three patients were identified. Complications from Crohn's disease included one patient who developed a paracolic abscess that required drainage upon admission, one patient who developed a phlegmon, and one patient who developed an enteroenteric fistula. Mean age of the study population was 24 years, with a mean BMI of 22 and a mean ASA score of 2. Two (66.6%) of the patients were immunosuppressed with high-dose steroids. Mean operative time was 180 min, with a median EBL of 80 mL. Two (66.6%) patients required diversion with a loop ileostomy, there were no conversions to laparotomy. Median time to flatus was 1.6 day. All patients were put on a diet on the day of surgery, with a median length of stay of 4 days. There were no deaths and no complications related to bleeding, organ injury, surgical site infections, or anastomotic leaks.

CONCLUSIONS: Minimally invasive surgery for complicated ileocolic Crohn's disease can be performed safely, with short lengths of hospital stay and with a low rate of complications. A multicenter study would be beneficial to validate these findings.

Keywords: *complicated ileocolic Crohn's disease, minimally invasive approach, ileocolic resection*

SURGICALLY TREATED INFLAMMATORY DISEASES OF THE COLON

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ABSTRACT

INTRODUCTION: Inflammatory diseases of the colon are subject to medical treatment and endoscopic and biochemical screening in the long run. The incidence of inflammatory bowel diseases (IBDs) in Bulgaria is continuously rising with the change of dietetic habits in the last decade, thus increasing the number of hospitalizations of such patients in surgical units. Surgically treated are patients with surgical complications of IBD such as:

- **perforation**
- **massive hemorrhage**
- **ileus (intestinal obstruction)**
- **intra-abdominal abscesses**

AIM: The aim of this work is to determine the frequency and type of inflammatory diseases of the colon leading to a surgical treatment in urgent or elective in the First Surgical Clinic of the Dr. Georgi Stranski University Hospital for the last 5 years.

MATERIALS AND METHODS: A retrospective study for the period 2013-2017 was conducted. A total of 115 patients (65 women and 50 men) were admitted in our surgical unit with IBDs of benign origin. Thirteen patients were at ages 18 to 65 and 102 were over 65 years of age. Thirty-two patients (28%) were operated on. Eight patients were operated on for uncontrollable hemorrhage from the sigmoid diverticulum. Twenty-four of the operated patients had signs and symptoms of acute abdomen. Perforation of the sigmoid diverticulum with diffuse peritonitis was found in all patients in this group. The Hartmann's procedure - resection of sigmoid colon and a proximal colostomy was performed in all patients. Seven patients were left with laparostomy due to advanced peritonitis. Three patients died in the late postoperative period from cardiovascular complications.

DISCUSSION: The treatment of this type of disease requires an integral approach and dynamic follow-up. At any time a dietetic error or another disease can trigger the development of a surgical complication, requiring urgent surgical treatment from a general-purpose team. Knowledge of surgical complications and therapeutic options gives a chance for adequate and professional treatment of these patients

Keywords: *inflammatory diseases of the colon, rectorrhagia (haematochesia), perforation of the diverticula*

THERAPEUTIC APPROACH TO ANORECTAL ABSCESSES WITH A HIGH RELAPSE RATE

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ABSTRACT

INTRODUCTION: Anorectal abscess is a pathology that requires surgical treatment in an emergency, often by surgeons with little experience in anorectal surgery. This leads to frequent recurrences, anorectal fistulae or residual abscesses.

AIM: The aim of this article is to present our experience in the treatment of anorectal abscesses with a high rate of recurrence.

MATERIAL AND METHODS: Retrospective single-center study enrolling patients with a high incidence of recurrent anorectal abscesses - treated over 15 times in the department for the period 2016-2019.

RESULTS AND DISCUSSION: We used wide incisions, draining all abscess cavities presented by CT and MRI, double-barrel colostomy, vacuum therapy, continuous abscess cavity drainage with gradual drainage, presentation of internal iliac artery for the control of eventual intraoperative haemorrhage in the revision of the pelvic rectal space. Patients were enrolled and recovered without recurrence at the time of publication. The hospital stay was 5 days.

CONCLUSION: Often recurrent anorectal abscesses are a challenge for the surgeon who, in the presence of severe fibrosis, perianal anatomy disturbance, deep inflamation present, should adequately drain the rectal and pelvic space, preserve the anal continence, and not cause massive bleeding when tearing the fibrotic tissues.

Keywords: *recurrent anorectal abscesses*

CRITERIA IN THE SELECTION OF PATIENTS WITH CRC FOR HIPEC - THE ROLE OF PERITONEAL WASH

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ABSTRACT

INTRODUCTION: Cytoreductive surgery (CRS), in combination with hyperthermic intraperitoneal chemotherapy (HIPEC), is a modern treatment for patients with peritoneal metastases (PM) of colorectal carcinoma (CRC).

CRS and HIPEC show good results in the treatment of metastatic CRC. In some countries, they have become a gold standard in patients with metastatic disease. Unfortunately there are still no specific criteria for the selection of patients eligible for intraoperative chemotherapy.

AIM: The purpose of this report is to analyze the role of peritoneal washing in the selection of patients for HIPEC treatment.

MATERIALS AND METHODS: We have researched articles in PUBMED/Medline, SCOPUS, and Science Direct databases for a 10-year period. The keywords we used were: peritoneal wash, colorectal carcinoma, prognostic and predictive value, metastatic disease

RESULTS: Although the peritoneal cancer index (PCI) is very important in the selection of patients, new criteria are continually being sought in order to be included in the preparation of a standardized approach to selection.

CT, PET-CT, MRI applied to date have unsatisfactory and even contradictory to PCI results. PW as a predictive and prognostic factor for peritoneal metastasis in CRC may be useful to optimize the selection of patients who would benefit most from the CRS and HIPEC

CONCLUSION: A peritoneal wash is a suitable method for the selection of patients eligible for CRS and HIPEC, but multicenter studies on large cohorts are needed.

Keywords: *peritoneal wash, HIPEC, cytoreductive surgery*

CLINICAL SPECIFICATIONS, EPIDEMIOLOGY, MORPHOLOGY AND FREQUENCY OF RECURRENCES IN RIGHT AND LEFT COLORECTAL CANCER

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ABSTRACT

INTRODUCTION: Colorectal carcinoma includes a heterogeneous group of neoplasms with specific features depending on their localization. Over the past twenty years, there has been a steady increase in the incidence of right colorectal cancer compared to that of the left. There have been numerous studies focused on looking for differences in clinical symptoms, survival, morphology and epidemiology of left and right colorectal cancer.

AIM: The purpose of this report is to investigate the symptoms, epidemiological parameters, morphology and recurrence rates in patients operated on for left or right colorectal carcinoma in a 2-year period (2016-2018) at the Department of Coloproctological and Purulent Septic Surgery at the University Hospital in Pleven.

MATERIALS AND METHODS: Retrospective single-center study covering the 2016-2018 period, comparing clinics, epidemiology, morphology and recurrence rates in patients operated on for right or left colorectal carcinoma.

RESULTS AND DISCUSSION: The study included patients who have undergone emergency or elective colorectal surgery for right or left colorectal cancer. It is noteworthy that right and left colorectal carcinoma differ not only in clinical presentation, but also in histological variation, by gender of the patient and by age range of diagnosis. The percentage of patients with right colon vs. those with left predominates. Recurrence rate is higher for right colon cancer.

CONCLUSION: Knowing the main differences in right and left colorectal carcinoma would improve the treatment and follow-up of patients with colorectal cancer.

Keywords: *colorectal carcinoma, left colon, right colon*

SUPRALEVATOR ABSCESS – CLINIC, DIAGNOSIS AND TREATMENT

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ABSTRACT

INTRODUCTION: The supralevator abscess, though uncommon, is a significant issue in the emergent colorectal surgery due to its atypical symptoms, surgical approach and frequent postoperative failure.

MATERIALS AND METHODS: For a period of 15 years, from 2004 till 2018, a retrospective analysis of 845 urgently admitted patients with an acute anorectal abscess (ARA) was done. Depending on the localization, we established four types of ARA: perianal – 392 patients (46.39%), ischiorectal – 287 patients (33.96%), intersphincteric – 93 patients (11.01%) and supralevator – 73 patients (8.64%). Superficial localization was determined in 450 patients (53.25%) and deep in 395 (46.75%). Males were 53 (72.60%) and females were 20 (27.40%), with a ratio of 2.65:1. The age of the patients varied between 17 and 85 years, with an average age of 51.27±8.43 years old. The following operations were performed: single surgery in 39 patients (53.42%) - two incisions, revision, necrectomy, lavage and drainage №2, and in 34 reoperated patients (46.58%) – reincisions, revision, necrectomy and redrainage.

RESULTS: In all of the cases the early signs of the supralevator abscess were atypical, therefore timely diagnosis was exceptionally rare. After the formation of the purulent collection, an inflammatory intoxication syndrome with manifestations of sepsis was determined. The main diagnostic methods in patients with supralevator abscess were digital rectal examination, rectoscopy, anoscopy, transrectal ultrasound, CT and MRI of the pelvis. During the operation, in 25 patients (34.25%) with supralevator abscess, a rubber seton ligature was placed through the internal opening for gradual tightening of the sphincter. There were no patients with a lethal outcome.

CONCLUSION: The variety and atypical presentation of the supralevator abscess makes the diagnosis difficult, which may lead to delays of hospital admission and operative treatment. The timely and adequate removal of the purulent necrotic structures requires total necrectomy until full mechanical eradication, followed by daily control and proper follow-up of the postoperative period.

Keywords: ***deep anorectal abscess, supralevator abscess, surgical treatment***

TREATMENT APPROACH FOR COMPLICATED DIVERTICULITIS

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ABSTRACT

INTRODUCTION: The number of cases of diverticular diseases has increased several times during the century, leading to a growing number of complications demanding surgical treatment in a hospital.

In our opinion, clinical signs of left-sided peritonitis are not a justification for routine laparotomy, because it does not meet the modern requirements of minimal invasion.

Traditional obstructive resection also is not a choice for various categories of patients with different periods of occurrence of free perforation and especially without it, as far as it contradicts organ-preserving tendencies in surgery and leads to an increase in the number of stoma-disabled patients.

AIM: The aim of this article is to analyze the possibility of minimal debridement in a case of diverticular peritonitis, avoiding traditional obstructive resection, the capacity of applying an early colorectal anastomosis and assessing the effectiveness of the abdominal VAC system in patients with tertiary peritonitis.

MATERIALS AND METHODS: Patients with complicated forms of diverticular disease were included in the study. In the period 2015 - 2018 our hospital treated 33 patients with complicated forms of diverticular disease. Eight patients (29.6%) had stage I-II by the Hinchey classification - the presence of infiltrating or retrocolic abscess in diameter <4 cm. The treatment was started with conservative therapy. Three (37.5%) patients did not respond to the prescribed therapy, so they were treated by an ultrasound controlled puncture; 1 (12.5%) patient was subjected to laparotomy and anterior resection of the rectum. Nine patients (33.3%) had purulent peritonitis without free edge perforation into the abdomen, which corresponds to stage III by Hinchey. The patients‘ treatment started with diagnostic laparoscopy, abdominal debridement, and a bubble test. If no perforations wall were found at the intestine along the free edge then the surgical intervention ended with drainage of the abdominal cavity. Satisfactory results were observed in 5 patients (71.4%) from this group. In 2 (22.2%) patients, due to the progression of peritonitis, a laparotomy was performed, resection of the affected area and the formation of terminal colostomy. In another 2 (22.2%) cases on the grounds of mobile sigmoid colon and a low body mass index positive bubble test results were identified. So we performed laparoscopically assisted exteriorization of the sigmoid colon in the form of double-barrel colostomy, with laparoscopic debridement and drainage of the abdominal cavity. The treatment had satisfactory results in both cases. Fourteen (42%) patients were with total fecal peritonitis, developed in the presence of a diverticulum. In these cases the affected area of the colon was removed by Hartmann's obstructive resection and left-sided hemicolectomy with a terminal colostomy formation. In 5 patients (35.7%) from this group, treatment of common fecal peritonitis was performed using the VAC system. For this group, 1 case (7.4%) was complicated by the formation of postoperative ventral hernia, and in 2 cases (14.2%) - by enteroatmospheric fistula, which required long-term treatment. No lethal outcomes were observed with such treatment. In 6 cases (42.8%) of fecal peritonitis, the treatment was done by programmed laporostomy. The postoperative period in 3 (50%) patients was complicated by the progression of peritonitis, the development of eventration, abdominal sepsis, and death.

RESULTS: The use of a vacuum treatment system for patients with common fecal peritonitis makes it possible to avoid lethal outcomes. Still, in 21.6% of the patients complications in the form of postoperative hernias and the formation of enteroatmospheric fistulas were observed.

CONCLUSION

1. **Applying the minimally invasive methods for purification of purulent areas by means of ultrasound and in combination with conservative therapy for patients with pelvic abscesses provides the opportunity to avoid laparotomy and colon resections.**
2. **Laparoscopic treatment of purulent peritonitis without perforation of the free edge of the colon is an effective method for treating patients with complicated diverticulitis in stage III by Hinchey.**

Keywords: *diverticulitis, treatment approach, complicated diverticulitis, fecal peritonitis*

QUALITY IN COLORECTAL CANCER CARE

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ABSTRACT

Colorectal cancer is one of the most significant medico-social malignancies worldwide. That is why health institutions and cancer associations around the world create and regularly update standards for complex colorectal cancer care. All the standards are monitored by analyzing different validated quality indicators.

Nowadays, most of countries have established systems of indicators for assessing the quality of medical care in patients with colorectal cancer. Their implementation is being monitored by the European cancer organizations. Indicators are developed by expert boards, mainly including: diagnostic groups, multidisciplinary discussion, staging, surgical and local/regional treatment, systemic treatment and follow-up. The indicators are used as the main method for monitoring compliance with standards in the treatment of colon and rectal cancer patients. At the same time some of indicators are used as mandatory indicators in a certification process of specialized centers for colorectal cancer.

Working groups regularly publish trends in quality indicators in certified centers, taking into account improvements in the work of specialized units and the survival of patients treated there. Quality indicators are systematically evaluated and adapted to novelties in clinical practice.

There are currently no validated indicators in Bulgaria for the treatment of patients with colorectal cancer. This leads to poor disease control and lower 5-year survival (12.6% lower than the European average, according to EURCARE-5).

Patients' survival and quality of life are the major measure of treatment efficacy. It is necessary to establish a system and indicators for the quality of care in the treatment of colorectal cancer in Bulgaria in order to provide better treatment outcomes, reduce mortality and increase patients' survival.

Keywords: *quality indicators, colorectal cancer, certification*

CLINICAL SIGNIFICANCE OF MMP2 AND MMP9 EXPRESSION AS A PREDICTIVE FACTOR FOR DISEASE PROGRESSION AND SURVIVAL IN PATIENTS WITH COLORECTAL CANCER

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ABSTRACT

INTRODUCTION: Matrix metalloproteinase-2 (MMP-2) and matrix metalloproteinase-9 (MMP-9) are related to tumor development and progression in colorectal cancer (CRC) and their utility as biomarkers has been suggested.

AIM: Our aim was to determine the significance of the expression of MMP-2 and MMP-9 in tumor tissue, preoperative serum concentration and how their levels correlate with progression of the disease.

MATERIALS AND METHODS: For the period 2011 - 2019, we analyzed 112 patients with CRC who subsequently underwent surgical intervention at the Department of Surgery at the Prof. Dr. Stoyan Kirkovich University Hospital, Stara Zagora, Bulgaria. MMP-2 and MMP-9 levels were analyzed according to patient's gender, age, tumor localization, TNM stage, hystopathological stage, lymph node and distant metastases. MMP-2 and MMP-9 expression was evaluated using immunohistochemistry (IHC) and light microscopy, and ELISA method was used to determine serum levels.

RESULTS: Elevated serum levels of MMP-2 and MMP-9 in patients with CRC have an effect on survival. Differences were found in the subgroups of patients determined by disease stage and associated distant metastases. The incidence of recurrence in patients with high concentration of MMP-2 and MMP-9 is significantly higher than in negative tumors.

CONCLUSION: The increased tissue MMP-2 and MMP-9 expression and preoperative serum levels correlate with tumor aggression and therefore lead to higher metastatic potential. These predictive markers should be critically interpreted by the surgical team when determining the type and volume of the surgical approach. Target therapy in these cases could individualize the chemotherapy treatment in CRC patients.

Keywords: *colorectal carcinoma, MMP, prognosis*

TREATMENT APPROACHES TO COLORECTAL CANCER LIVER METASTASES: ARE EVIDENCE-BASED PROTOCOLS STILL MISSING?

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ABSTRACT

INTRODUCTION: Cases of colorectal cancer liver metastases (CRCLM) still represent a challenge since there are no evidence-based treatment protocols. Tumor biology is often unpredictable. Cellular and genetic heterogeneity is detected not only between different patients but even while comparing primary tumors and metastatic lesions in a single patient. R0-liver resection (LR) when possible offers definitive cure but late results are quite poor - 30-75% recurrence rate and less than 40% 5-year survival rate.

AIM: The aim of this article is to conduct a study on the long-term results after LR as a part of the multimodal treatment of CRCLM.

MATERIAL AND METHODS: Data from 160 LR of CRCLM were collected retrospectively and 75 of them were selected for the study. All of them: were available for a 5-year follow-up or at least until a recurrence of the disease was diagnosed; had no extrahepatic disease (EHD) at the time of LR and no primary tumor recurrence for metachronous cases; received only R0 procedure.

RESULTS: Disease-free survival (DFS) and overall survival (OAS) rates were analyzed in correlation to well-known factors that might influence the outcome after potentially curative LR of CRCLM, such as characteristics of the primary tumor and of the metastases, CEA-levels and DFS in metachronous CRLM. The median DFS and OAS in our series were 21.6 and 58.8 months, respectively.

DISCUSSION AND CONCLUSION: The Fong clinical risk score is the most widely quoted among different scoring systems aiming to provide a risk assessment in patients with CRCLM. Even multimodal treatment options (neo-adjuvant/adjuvant chemo- and target therapy, radiation, RFTA and LR) do not guarantee improvement of survival rates. Different cases demonstrate different long-term results since specific tumor biology. Nowadays we realize that molecular profiling and integrating biomarkers are the keys to new prognostic systems, such as KRAS status BRAF, EGFR, circulating cell-free DNA (cfDNA), MicroRNA, others. What must be the approach to CRCLM in our country since there are no evidence-based protocols and genetic tests are not routine? To our understanding and according to the institutional experience we recommend a personalized treatment approach, taking in consideration tumor biology (when possible), disease staging and characteristics, and the patient's condition

Keywords: *colorectal cancer, colorectal cancer liver metastases*

ROBOT-ASSISTED COLORECTAL SURGERY – INITIAL INSTITUTIONAL EXPERIENCE IN THE ENVIRONMENT OF CONTROVERSIAL DATA FROM LITERATURE

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ABSTRACT

Robotic technology was approved for surgical procedures in the year 2000 and the Da Vinci Surgical System (Intuitive Surgical, Sunnyvale, CA, USA) became a significant part of the surgical armamentarium. A rapid rise in the number of robotic surgeries, including robotic colorectal procedures (RCRP), has been reported worldwide for the next two decades.

However, conclusive clinical evidence supporting the benefit of that surgery remains limited. Several recent meta-analyses and systematic reviews compared RCRP to laparoscopic colorectal procedures (LCRP). These articles found significantly better results after robotic rectal cancer surgery in terms of lower rates of: (1) positive circumferential resection margin involvement; (2) erectile dysfunction; (3) conversion; (4) overall complications; (5) shorter hospital stays. In contrast, some other meta-analyses reported no significant difference in operation time, length of hospital stay, morbidity and mortality, nor improvements in the quality of resection specimens.

Supporters of RCRP put an emphasis on the technical advantages of robotic surgery, such as instruments that can rotate and bend in all directions, three-dimensional high-definition vision and surgeon-controlled multi-arms. Supporters also cite the above-mentioned data from literature. Opponents of RCRP calculate the cost of the procedure itself and state that it has no proven huge benefits over traditional laparoscopic surgery.

We do not consider RCRP a "fantastic and expensive toy". The robotic surgery program started at the Clinic of Hepatobiliary, Pancreatic and General Surgery, Acibadem City Clinic Tokuda Hospital Sofia in December, 2018. This announcement reports the initial institutional experience in RCRP.

Keywords: *robotic surgery; laparoscopic surgery; colorectal cancer*

ROBOTIC SURGERY IN THE TREATMENT OF RECTAL CARCINOMA - CLINICAL EXPERIENCE IN A SINGLE CENTER IN BULGARIA

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ABSTRACT

INTRODUCTION: Despite the fact that laparoscopic surgery (LS) is a widely used technique for the treatment of rectal cancer, this type of surgery is still a difficult one for which the conversion rate can reach up to 30%. Some of the randomized multicentric trials failed in the attempt to prove non-inferiority of the laparoscopic surgery to open surgery in treatment of rectal cancer patients. Obesity, narrow pelvis and male sex are already well known risk factors for conversion in LS of rectal cancer. Robotic surgery (RS) provides some technological advantages to LS facilitating more precise dissection, especially in narrow spaces such as the pelvis. The only multicentric randomized controlled trial comparing LS and RS in the treatment of rectal cancer showed benefits of RS in high-risk patients.

AIM: The objective of our study is to present the clinical results from the initial experience with RS for treatment of rectal cancer patients in the Department of Surgical Oncology, Dr. Georgi Stranski University Hospital, Pleven.

MATERIALS AND METHODS: We performed a prospective study of patients with rectal cancer who underwent robotic resection of the rectum between October 2016 and April 2019. Intraoperative time, conversion rate, intraoperative complications, intraoperative blood loss, length of hospital stay, and incidence of postoperative complications were analysed .

RESULTS: For the indicated period, 30 patients with rectal cancer were selected and robotic surgery was performed. TME was performed in all patients. The mean intraoperative time was 270 minutes. Intraoperative complications were reported in only one patient. The average blood loss was 100 mL. The average hospital stay was 7 days.

CONCLUSION: Based on the presented clinical experience, RS is safe and feasible minimally invasive technique for the treatment of rectal cancer, which has the potential to improve results in technically difficult cases.

Keywords: *rectal carcinoma, robotic surgery, laparoscopic surgery, minimally invasive, colectomy*

ROLE OF C-REACTIVE PROTEIN IN EARLY DETECTION OF ANASTOMOTIC LEAK IN PATIENTS UNDERGOING ELECTIVE COLORECTAL RESECTION SURGERY WITH PRIMARY ANASTOMOSIS

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INTRODUCTION: Despite improvements in surgical technique and perioperative care anastomotic leaks (AL) are still present, causing increased morbidity, mortality, length of stay and costs.

MATERIALS AND METHODS: Prospective study in the period January 2017 - December 2018 of all patients undergoing elective colorectal surgery for cancer with primary colonic anastomosis in the clinic of Surgical Oncology, Dr. Georgi Stranski University Hospital – Pleven was conducted. All patients were treated according to the Enchanced Recovery After Surgery (ERAS) protocols for colorectal surgery. The incidence of anastomotic leaks, changes in CRP levels and leukocytes were studied.

RESULTS: A total of 201 patients were subjected to colonic resection in the Clinic for the study period. In 123 of the interventions an intestinal anastomosis was performed and this is the group of interest. Fifty-two of all interventions were minimally invasive (laparoscopic or robot-assisted). Anastomotic leak was found in 7 cases (5.7%), of whom 2 patients were conservatively treated, and 5 patients were operated on.

All patients with anastomotic insufficiency had serum levels of CRP above 130 mg/L. In five patients we found CRP levels above 130 mg/L without anastomotic leak. There were no patients with anastomotic insuffiency with CRP levels below 130 mg/L. The positive predictive value of these levels of CRP was 58.33% and the negative predictive value was 100%. In 6 out of 7 patients (85.7%) with AL leukocyte levels were in normal range at the time of AL detection. The mean time to leukocyte level elevation was 28.3 hours

CONCLUSION: CRP is an early marker with excellent negative predictive value for the development of anastomotic leak after colorectal surgery.

Keywords: *CRP, anastomotic leak, detection, rectal resection, primary anastomosis*

LARGE (W-3) INCISIONAL HERNIA AFTER PERFORMING COLORECTAL ONCOLOGIC SURGERY

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INTRODUCTION: Large (>100 cm^2) incisional hernia after performing colorectal oncologic surgery continues to be a serious surgical problem with a high risk of recurrence due to the carcinoma, comorbidity and incorrect surgical technique.

MATERIALS AND METHODS: We present our clinical experience with 16 patients with large (W-3) incisional middle hernias over a period of 10 months (August 2018 to May 2019). In all of these a posterior component separation by Ramirez with TAR was performed as well as a sublay of polypropylene mesh, a technique described by Novitsky in 2013. A questionnaire was used to assess the quality of life in all patients 1, 3 and 6 months after the surgical intervention.

RESULTS: Patients claim that pain and discomfort in the area of surgical intervention are progressively decreasing as the time passed. Up to 10 months after performing the ventral hernia repair with posterior component separation by Ramirez with TAR, no new abdominal wall defects have been identified.

CONCLUSION: Posterior component separation with TAR, described by Novitsky is a reliable surgical technique for large and very large ventral hernia.

Keywords: *rectal resection, incisional hernia, hernioplasty, TAR*

POSTOPERATIVE PERINEAL HERNIA AFTER ABDOMINOPERINEAL LAPAROSCOPIC RESECTION

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ABSTRACT

A peineal hernia can severely disable everyday activities. Repair is challenge for a surgeon, without limitation regarding guidelines in literature.

A 65-year-old woman came to the Clinic complaining of painful bulging of the perineum 24 months after abdominoperinal resection for rectal cancer with uneventful postoperative course. The size of the protrusion increased gradually. In the last 3 months the patient had felt pain and difficulty while sitting. Physical examination: the defect in the perineum was approximately 3x3 cm. The laboratory and biochemical results were within the referential values, the finding on abdominal and pelvic imaging were normal and tumor markers were within normal range. She denied other symptoms except pain and discomfort during sitting. Apart from rectal cancer she had no medical history and no family history. After cancer recurrence had been excluded, hernioplasty was planned.

A standard preoperative evaluation was performed.

The patient was placed in a lithotomy position combined with steep Trendelenburg to allow safe access to the perineum. The urethral catheter was placed to decompress the bladder. An elliptical incision was made over the hernia defect and hernia sac was dissected and opened. A 10x15 cm composite mesh (Parietex composite mesh) was used to reconstruct the pelvic floor. The mesh was sutured through the urogenital diaphragm. The postoperative course was uneventful.

Three years after surgery, there was no recurrence of the disease or hernia.

Keywords: *rectal cancer, abdominoperineal resection, laparoscopic, perineal hernia, hernia repair*

METASTATIC COLORECTACAL CARCINOMA ASSOCIATED WITH PYOGENIC LIVER ABSCESS

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ABSTRACT

INTRODUCTION: A liver abscess represents capsulated purulent focus in the liver parenchyma, due to bacterial, fungal or parasite invasion. In the recent years their frequency rate related with malignant diseases increases including abscesses in liver metastases.

AIM: We present five cases of pyogenic liver abscesses associated with metastatic colo-rectal cancer which were treated in Second Surgery Clinic at St. Marina University Hospital Varna for the period 2011-2018.

RESULTS: We registered synchronous metastases in two patients and the remaining three had metachronous metastases. The mean age of our patients was 60 years (range 45-80). The patients were operated on and the following interventions were performed: in one - segmentectomy; in two - liver resection with right hemicolectomy; in one - incision, biopsy and drainage; in one – percutaneous drainage. We established the following systemic complications: pleural effusion in two patients, in one – arrhythmia, and subphrenic abscess – in two patients. The bacterial strains showed *K. pneumonia* in two patients, two were sterile and in one we found *S. epidermidis*.

DISCUSSION: In the recent years a lasting trend of an increasing frequency rate of malignant diseases of the GIT has been observed. The liver abscesses complicating a malignant disease can be treated like abscesses due to benign pathology – via aspiration, drainage and antimicrobial therapy. Surgical treatment is applied in larger (more than 5cm) abscesses or with colorectal cancer. The prognosis in these cases is worst due to the malignant diseases and the higher frequency rate of the septic complications.

Keywords: *metastasis, colorectal cancer, live metastases, abscess, liver abscess*

TWO CASES OF LAPAROSCOPIC TREATMENT OF SIGMOID DIVERTICULAR DISEASE AND URINARY BLADDER FISTULA

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ABSTRACT

Sigmoid diverticular disease is a common problem with potential severe complications and impact on the quality of life. Laparoscopic surgery is increasingly being accepted as the surgical approach of choice for most presentations of the disease. However, few studies on the laparoscopic management of diverticular colovesical fistulas exist. We report our experience in two cases successfully treated with totally laparoscopic approach including sigmoid resection with intracorporeal colorectal anastomosis and urinary bladder repair.

Keywords: *sigmoid diverticulitis, laparoscopic treatment, colovesical fistula, urinary bladder repair*

CLINICAL PRESENTATION AND DIAGNOSIS OF COLONIC PERFORATIVE PERITONITIS

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ABSTRACT

INTRODUCTION: Colonic perforative peritonitis (CPP) is a life-threatening surgical emergency where timely diagnosis is of ultimate impact on the outcome.

MATERIALS AND METHODS: For a five-year period /2014 - 2018/, 62 patients with CPP were treated in First Clinic of Surgery in St. George University Hospital - Plovdiv. Males were 48 (77.42%) and females - 14 (22.58%), with a ratio of 3.4:1.

Patients' age ranged from 14 to 92 years, with an average age of 71 years ± 2.4.

Colonic perforative peritonitis was more common in patients over 80 years of age (n=21; 33.87%). The main causes of CPP were: perforated colon diverticulitis (n=19), perforated colon cancer (n=18), perforation in incarceration (n=9), sigmoid volvulus (n=6), mesenteric ischemia (n=5) and miscellaneous (n=5). There were 12 patients with local peritonitis (19.36%), 21 patients (33.87%) with diffuse peritonitis, and 29 patients (46.77%) with total peritonitis. The following surgical procedures were performed: Hartmann's procedure – 21, right hemicolectomy - 13, left hemicolectomy - 9, right hemicolectomy with ileostomy - 8, diverticulectomy - 7, colon excision and suture - 4.

RESULTS: Twenty-four patients (38.71%) were with subacute perforation type, while 38 (61.29%) were with acute type. Atypical clinical presentation with vague symptoms was found in 7 patients (11.29%). Early clinical symptoms in subacute and atypical forms of CPP were nonspecific. According to the elapsed time from the beginning of the perforation to the operation, the patients were divided as follows: up to the 6th hour - 24 (38.71%), from the 6th to the 12th hour - 19 (30.65%), from the 12th to the 24th hour - 12 (19.35%) and over 24 hours - 7 (11.29%). Of the total 62 operated patients with CPP, 49 patients (79.03%) survived. Postoperative mortality was 20.97% (n=13) with an average age of 78.9 years.

CONCLUSION: Early diagnosis of colonic perforation can be difficult, due to omissions and inaccuracies on admittion and follow-up. The correct and timely diagnosis of CPP is crucial for prompt surgery, lower morbidity and mortality and better outcome.

Keywords: *perforative peritonitis, diagnosis, clinical signs*

LAPAROSCOPIC COLORECTAL SURGERY – AN ESTABLISHED GOLD STANDARD

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ABSTRACT

INTRODUCTION: During the past years laparoscopic surgery has become the method of choice in colorectal cancer treatment. Despite initial contradictory reports on its oncological adequacy, series of randomized, prospective clinical trials show that laparoscopic colorectal surgery is associated with far better short-term benefits and equivalent to open surgery long-term oncological results.

AIM: The aim of this article is presentation and comparison with the results worldwide, of the achievements in the field of laparoscopic colorectal surgery at the Department of HPB Surgery and Transplantology, Military Medical Academy, Sofia.

MATERIALS AND METHODS: A total of 1384 colorectal resections for colorectal carcinoma were performed at the Department for the period 09.2004 - 05.2019. The data collected for the 446 laparoscopic interventions has been prospectively and retrospectively analyzed and compared.

RESULTS: The share of the laparoscopic compared to the conventional operations performed through the past years showed a significant increase. The laparoscopic interventions we performed were as follows: right hemicolectomy - 93 (20.85%), right hemicolectomy with simultaneous resection of sigmoid colon - 1 (0.22%), left hemicolectomy - 9 (2.01%), resection of the sigmoid colon - 118 (26.45%), anterior resection of the rectum - 162 (36.32%), Hartmann's rectal resection - 3 (0.67%), Miles' abdominoperineal resection - 53 (11.88%), subtotal colectomy - 2 (0.45%), and total colectomy - 5 (1.12%). The average hospital stay was significantly shorter for the laparoscopically operated patients, approximately 5-7 days, compared to 10-14 days for the open surgery. Depending on the type of surgery, the operative time was a little longer for the laparoscopic operations, but with the progression of the learning curve, it noticeably shortened. In terms of long-term oncological results, the average survival was almost the same for both groups, for the laparoscopic group respectively – 1-year – 95.56%, 3-year – 78.7%, 5-year – 63.4%, and 10-year – 10.8 %. The histological results clearly showed that laparoscopic patients were not compromised in terms of oncological results and radical surgery was accomplished in all the cases.

CONCLUSION: In carefully selected patients and experienced surgical team, laparoscopic colorectal surgery has undeniable advantages in terms of short- and long-term outcomes, providing faster and easier recovery with equivalent oncological results.

Keywords: *laparoscopic surgery, colorectal resections, colorectal carcinoma*

TOTALLY LAPAROSCOPIC MULTISTAGE APPROACH IN THE TREATMENT OF DISSEMINATED COLORECTAL CANCER WITH PRIMARY UNRESECTABLE LIVER METASTASES

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ABSTRACT

INTRODUCTION: Laparoscopic surgery is the current standard of care for colorectal cancer (CRC). In recent years, it has become increasingly used in the treatment of liver lesions. This allows the application of laparoscopic approaches for treatment even in cases of metastatic colorectal cancer.

AIM: The aim of this article is to demonstrate the applicability of the staged laparoscopic approach, along with all its benefits and oncologic efficacy, in stage IV colorectal cancer.

CASE REPORT: We report a case of a 56-year-old woman, who was diagnosed with a low rectal cancer and synchronous, primary unresectable liver metastases, after colonoscopy and CT scan of pelvic, abdomen and chest. She was clinically staged cT3N1M1a, pG2. A short course of neoadjuvant radiotherapy (25 Gray) was conducted. One week later, we performed laparoscopic low anterior rectal resection with protective ileostomy. The patient was discharged on the fifth postoperative day with no complications. Pathologic and genetic analysis revealed ypT4N1M1aG2 tumor, mutant RAS, with no microsatellite instability. The patient underwent a six-month course of FOLFOX + Bevacizumab. After a control CT scan of the abdomen, a regression of liver metastases was detected, which allowed a reassessment of the case and the planning and performing of two-stage laparoscopic liver resection.

The first procedure consisted of laparoscopic metastasectomy from segment 3 of the liver and right portal branch ligation. The surgery lasted 120 minutes, with minimal blood loss and no postoperative complications, which allowed the patient to be discharged on the 4th postoperative day. One month later, after CT-liver volumetry, we performed laparoscopic right hepatectomy. This operation continued 170 minutes, with minimal blood loss. A small-volume biliary leak was registered, which was managed conservatively, and the patient was discharged 13 days after surgery.

The patient underwent another six cycles of chemotherapy, after which, we restored the intestinal continuity. The follow-up CT-scan, six months after right hepatectomy, showed no evidence of disease.

CONCLUSION: The laparoscopic, multistage approach is fully applicable in cases of disseminated colorectal carcinoma, with all the benefits of the minimally invasive surgery and good oncologic results. With careful selection of patients, their management by a multidisciplinary team, and when performed by an experienced surgical team, this procedure shows excellent short- and long-term results.

Keywords: *colorectal cancer, laparoscopy, multistage approach, disseminated cancer, liver resection, liver metastases*