

follow up of 34 months or more allowed for Disease-free (DFS) and overall survival (OS) data to be analysed for 144/260 patients. DFS and OS were better in the laparoscopic group (73% and 94%) compared to the open group (68% and 85% respectively) ($p=0.40$ and $p=0.015$ respectively).

Conclusions: Laparoscopic surgery for rectal cancer is safe from an oncological standpoint with additional perioperative and overall as well as disease-free survival benefits compared to open surgery.

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EVALUATION OF POOR-QUALITY RESECTION AND ANASTOMOTIC FAILURE OF ROBOTIC TOTAL MESORECTAL EXCISION FOR MID- AND LOW-RECTAL ADENOCARCINOMA

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Background: A robotic system enables surgeons to implement precise and comfortable dissection in deep and narrow pelvis. Therefore, it is known that the surgical robot has great advantages in performing total mesorectal excision (TME). The aim of this study was to evaluate the poor-quality surgical resection and anastomotic failure of robotic TME for mid- and low-rectal adenocarcinoma.

Materials and Methods: From July 2009 to December 2018, 113 patients (69 males and 44 females) with mid (5–10 cm)- and low (0–5 cm)- rectal adenocarcinoma underwent TME with colorectal or coloanal anastomosis. Poor-quality surgical resection includes incomplete quality of TME, positive circumferential resection margin (CRM), and distal resection margin. Anastomotic failure includes anastomotic leakage, fistula, and stricture.

Results: The mean age was 63 (21–88) years. The mean tumor height from anal verge was 6.2 cm: mid-rectal cancer, 67 patients (59%); low rectal cancer, 46 patients (41%). 53 patients received preoperative radiotherapy (47%, 53/113). The quality of TME was complete (97.3%, 110 patients), nearly complete (1.8%, 2 patients), and incomplete (0.9%, 1 patient). In 109 patients except pT4 (4 patients), the rate of positive CRM was 6.4% (7/109). There were no patients with positive distal resection margin. Therefore, the rate of high-quality resection was 93.6% (102/109) in 109 patients except pT4 patients. Anastomosis was performed in 63 patients with double stapling anastomosis, 2 with single stapling anastomosis, and 48 with hand-sewn anastomosis. The anastomotic failure included anastomotic leakage (7%, 8 patients), anastomotic stricture (3.5%, 4 patients), and anastomotic fistula (1.8%, 2 patients). Therefore, the rate of anastomotic failure was 12.3% (14/113). There were anastomotic failure (AF) in 10 patients in 63 patients who underwent double stapling anastomosis. In the comparison of AF group ($n=10$) with no AF group ($n=53$), the proportion of AF was significantly higher in patients receiving preoperative radiotherapy ($P=0.018$).

Conclusions: The patients with mid- and low-rectal adenocarcinoma who underwent robotic TME showed the high-quality surgical results with an acceptable anastomotic failure rate.

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SARCOPENIA IS NOT AFFECTED TREATMENT RESULTS FOR RECTAL CANCER PATIENTS IN THE LAPAROSCOPIC SURGERY

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Background: Previous studies have reported that progressive muscle loss (sarcopenia) is a negative impact on treatment for rectal cancer. However, majority of studies have been analyzed on in patients undergoing open resections. The association of sarcopenia to clinical outcomes is not clear for rectal cancer patients underwent laparoscopic surgery. The aim of the study was to evaluate the impact of sarcopenia on the clinical outcomes with rectal cancer treated with laparoscopic surgery.

Materials and Methods: A total of 301 patients with rectal cancer were included between November 2010 and October 2014. All patients

underwent laparoscopic surgery. Body composition was assessed by measuring the muscle and fat area at the third lumbar vertebra on preoperative staging computed tomography images. The L3 skeletal muscle area was used to calculate skeletal muscle index and assess for sarcopenia.

Results: The sarcopenia was identified in 72 of 301 patients (23.9%). Patients with sarcopenia have decreased skeletal muscle area ($P < 0.001$). However, there were no significant differences in visceral fat, subcutaneous fat, and body mass index. Functional recovery parameters and post-operative complications were not significantly different between sarcopenic and non-sarcopenic patients. Overall and disease-free survival were not significantly different between two groups neither.

Conclusions: Sarcopenia does not affect negatively the functional recovery, postoperative complications, and survival after laparoscopic surgery in patients with rectal cancer. Further study is necessary to validate fact that laparoscopic surgery could eliminate the negative impact of sarcopenia on treatment result in patients with rectal cancer.

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FIRST CLINICAL RESULTS OF IMAGE-GUIDED NAVIGATION IN LOCALLY ADVANCED PRIMARY AND RECURRENT RECTAL CANCER PATIENTS

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Background: Surgery of locally advanced primary and recurrent rectal tumors can be challenging due to disrupted anatomical planes caused by tumor ingrowth, fibrosis or radiation effects. The proportion of positive (R1) margins after resections in locally advanced primary and recurrent rectal surgery is 15% and 50%, respectively. To improve surgical margins, intra-operative guidance could be of additional value. This study reports the first clinical results of a novel electromagnetic navigation system used in rectal cancer surgery.

Materials and Methods: This was a prospective study on image-guided navigation in rectal cancer surgery. Patients with locally advanced primary or recurrent rectal tumors were eligible. Preoperatively, a patient specific three-dimensional (3D) model was created based on CT and MRI scans. During surgery, a cone beam CT scan was acquired and registered to the 3D model based on the pelvic bone. Electromagnetic patient trackers continuously determined the intraoperative position of the patient. A tracked pointer was used for guidance during the surgical procedure, linking the resection plane to the 3D model. The primary endpoint was histopathological negative (R0) resection margin. Secondary endpoints were safety and usability, where the usability was assessed using questionnaires.

Results: In total 30 patients were included, 15 patients with locally advanced primary rectal cancer and 15 patients with recurrent rectal cancer. An R0 resection was accomplished in 14 out of 15 patients (93.3%) after primary tumor resection and in 12 out of 15 patients (80.0%) after recurrent rectal cancer surgery. There were no navigation-related safety issues. Intraoperative complications occurred in 5 patients (16.7%): 4 patients suffered from abdominal bleeding and one patient from ureteral injury. In 85% of the procedures surgeons stated that the system simplified complex surgery and improved decisiveness.

Conclusions: Application of this novel intraoperative navigation system in locally advanced primary and recurrent rectal cancer surgery is safe and effective. Positive resection margin rates are low and surgeons indicate that it simplifies complex rectal surgery.

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SECOND LOOK SURGERY AND HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY FOR PATIENTS WITH COLORECTAL CANCER AT HIGH RISK OF PERITONEAL CARCINOMATOSIS: A SINGLE CENTER EXPERIENCE.

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Background: Second look surgery, complete cytoreduction (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) has the rational to treat patients with high recurrence risk, at an early stage with low peritoneal carcinomatosis index (PCI) score and give a better chance of cure. The purpose of this study is to evaluate our results in terms of morbidity and oncologic benefit for the patient.

Materials and Methods: Data were retrospectively collected from all patients with second look surgery and HIPEC between April 2012 and May 2018. Twelve patients with limited carcinomatosis initially resected or perforated tumour (in the literature, 70% and 50% of risk for peritoneal recurrence respectively) were identified (colorectal n=8 and appendicular cancer n=4). At second look a HIPEC was systematically proposed, even if there was no evidence of macroscopic recurrence.

Results: Median follow-up from initial diagnosis was 24,8 months (range 9–67). The mean PCI score was 1 (range 0–8). Only 2 patients out of 12 had PCI score other than 0 but histopathology showed peritoneal disease in 3 patients. Three patients were explored by laparoscopy and HIPEC was performed by mini laparotomy. One 90 days, Dindo-Clavien grade IIIb complication occurred (8%) and no mortality. Mean hospital stay was 14 days (range 8–29). All patients are alive in the follow up but 5 of them presented recurrent disease (42%): 1 peritoneal with redo HIPEC, 1 hepatic with partial hepatectomy, 1 pulmonary resected, 1 multisite recurrence.

Conclusions: In our series of 12 patients, with a theoretical risk of 50 to 70% of peritoneal relapse, we only identified 1 (8%) of peritoneal recurrence suggesting that this strategy can be considered as an essential weapon in the management of colorectal cancer and this with an acceptable morbidity.

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RESULTS OF MAXIMALLY INVASIVE SURGERY OF LOCALLY ADVANCED RECTAL CANCER

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Background: The aim of this study was to review the main reasons and risk factors for colon and urinary anastomotic leakage and results after combined operations for the locally advanced rectal and sigmoid adenocarcinoma with tumor penetration to a genitourinary organs in 65 patients in the academic hospital in Kharkov city, Ukraine

Materials and Methods: Between 2008 and 2019, 63 patients were operate for rectal and sigmoid cancer T4 complicated on recto-vesical (38) or recto-vaginal (25) fistula without distant metastases were identified in our prospective database, containing patient characteristics, operation notes, histopathological reports, and follow-up details. An evaluation of prognostic factors for anastomotic leakage, mortality rate and overall survival was performed.

Results: Combined operations were performed in 63 patients, accounting for 7.3% of the total number (862) operations for rectal and sigmoid cancer. A total of 36 patients were treated by posterior exenteration (anterior rectal/sigmoid resection and hysterectomy en bloc), 24 – combined posterior exenteration (rectal resection with hysterectomy and resection of bladder/left ureter) and 4 – combined abdominoperineal resection (abdominoperineal resection with prostate and vesiculectomy and resection of prostatic uretra and lower third of both ureters). Microscopically complete resections (R0) was achieved in 95%. The histological study confirmed the presence the direct tumor invasion to the adjacent organs in the 55 patients (87%), in 7 patients (13%) – inflammatory penetration. Anastomotic leakage rate was 11.1%. Postoperative mortality was 2.4%. An oppression of a cellular link of immunity, augmentation of cytotoxicity of blood serum, urinary excretion of aminoacids proline and oxyproline, were a markers of the disintegration of collagen type 1 and early predictor of anastomotic leakage. Also risk factors for anastomotic failure were hypo-proteinemia, incomplete resection (R1), male gender and 3 or more anastomoses. The 5-year overall survival rate was 48%. Anastomotic leakage, positive lymph nodes, and an incomplete resection all significantly influenced the 5-year overall survival and local recurrence rate.

Conclusions: Patients with rectal and sigmoid cancer complicated with recto-vaginal or recto-vesical fistulas without distant metastases can safely be treated with combined operations and leads to a satisfactory overall survival and local control. New methods of the combined

operations compared with evisceration allowed to improve the early and late outcomes with satisfactory medical and social adaptation of patients after the resections of the adjacent organs.

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PROGNOSTIC IMPACT OF TUMOR IMMUNE MICROENVIRONMENT AND SYSTEMIC INFLAMMATORY MARKERS IN COLORECTAL CANCER

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Background: The aim of this study was to investigate the association and prognostic impact of tumor immune microenvironment and systemic inflammatory markers in colorectal cancer.

Materials and Methods: The density of CD3+ and CD8+ tumor infiltrating lymphocyte in epithelial and stromal compartments of tumor were analyzed in 348 cases of colorectal cancers. Colorectal cancers were scored as “0” or “1” in each area when the density of CD3+ and CD8+ tumor infiltrating lymphocyte was below or above the median value. According to the results of survival analysis, colorectal cancers were classified into low T-cell density (0) or high T-cell density (1–4). Systemic inflammatory markers, such as the neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), lymphocyte-to-monocyte ratio (LMR), prognostic nutritional index (PNI), and modified Glasgow prognostic score (mGPS) were retrospectively reviewed. Survival analysis was performed to identify factors associated with overall survival (OS) and progression-free survival (PFS).

Results: There was no significant correlation between T-cell density and systemic inflammatory markers. T-cell density (Hazard ratio [HR] = 0.55, 95% Confidence interval [CI] = 0.22–0.91, P = 0.020; HR = 0.595, 95% CI = 0.38–0.90, P = 0.015 for OS and PFS, respectively), PNI (HR = 0.46, 95% CI = 0.28–0.76, P = 0.002; HR = 0.51, 95% CI = 0.33–0.77, P = 0.002 for OS and PFS, respectively), location, stage and serum CEA were independent significant prognostic factors for both OS and PFS. High T-cell density and high PNI groups had better OS and PFS than other groups (p<0.001 and P<0.001, respectively).

Conclusions: T-cell density was not associated with systemic inflammatory markers in colorectal cancer. This study suggests that both tumor immune microenvironment (T-cell density) and systemic inflammatory marker (prognostic nutritional index) provide prognostic information in colorectal cancer.

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ADDING DIAGNOSTIC LAPAROSCOPY TO COMPUTED TOMOGRAPHY FOR THE EVALUATION OF PERITONEAL METASTASES IN PATIENTS WITH COLORECTAL CANCER: A RETROSPECTIVE COHORT STUDY

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Background: Despite its widespread use, computed tomography (CT) is not perfect for evaluating peritoneal metastases of colorectal origin before cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS+HIPEC). We therefore aimed to evaluate the value of adding diagnostic laparoscopy to CT when determining patient eligibility for CRS+HIPEC.

Materials and Methods: This was a retrospective study of a consecutive series of 112 patients evaluated systematically by diagnostic laparoscopy and by CT between January 2012 and January 2018. Patient eligibility for CRS+HIPEC was assessed by the peritoneal cancer index (PCI) both at the