# Journal of Biomedical and Clinical Research

Vol. 15, No. 2, Suppl. 1, 2022



**PUBLISHER**

Publishing center MU - Pleven

# Journal of Biomedical and Clinical Research

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JBCR (p-ISSN 1313-6917) is a multidisciplinary peer-reviewed, open access scientific journal of Medical University-Pleven, published two times per year.
JBCR Online (e-ISSN 1313-9053) offers free access to all articles at jbcr.mu-pleven.bg
**Editorial Office:** Journal of Biomedical and Clinical Research, Medical University-Pleven, 1 Kliment Ohridski str., 5800 Pleven, Bulgaria; Phone: +359 64 884 110; e-mail: jbcr@mu-pleven.bg

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# XVIII NATIONAL SURGICAL CONGRESS WITH INTERNATIONAL PARTICIPATION

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### SEPSIS

**Damyan Nikolov Damyanov [1], Polina Georgieva Marinova[2], Ivo Petrov Zhivkov[1]**

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The aim of the publication is to review the surcgical literature and databases for publications for the last 10-12 years for updates on the topic of "Sepsis". The source of sepsis is a progressive infection. The location of the isle of infection determines the name and type of the proper surgical procedure. The review of new insights into the pathogenetic mechanisms of sepsis and its disease factors has been obtained. Epidemiological data show that sepsis is among the 10 most common causes of death in the world. About 18 millions people are affected annually / about 6%/.The consequences of septic complications are serious, often long-lasting and possibly fatal in the early and delayed period. That's why sepsis is an important topic. Immediate mortality remains high and depends on the timeliness of treatment. However, the late consequences, which lead to delayed mortality after the 90th day, are also serious. A review of changes in definitions and classifications based on the consensus "SEPSIS 1, 2 and 3" definitions has been made. The benefits of scoring systems and magnitude of risk factors are noted. The updates and upgrades in the treatment tactics and procedures are reviewed as follows: hemodynamic resuscitation, application of vasopressors, control of the source of sepsis /surgical treatment/, antibiotic therapy and complex treatment of organ dysfunction, as well as a series of supportive and new strategies for sepsis treatment.
**Key words:** sepsis, pathogenesis, definitions, consensus, score systems, risk factors, treatment

### WHAT STAYS BEHIND THE TERM INTELLIGENT SURGERY?

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Surgery is an invasive technique with the fundamental principle of physical intervention on organs and tissues for definitive therapeutic reasons. Since the 1980s the exponential rise of Minimally Invasive Surgery (MIS) has reached a plateau due to the cost of equipment and the lengthy learning curve. The former rise can be explained not only with the surgical technique itself but with the 2D, 3D and 4D visualization of the operative field. Before the modern surgeon stays the challenge to develop new skill in order to catch up to the technical progress. The rapidly developing medical technology – endoscopic and robotic systems and Artificial Intelligence (AI) surpass intellectual and spiritual development of the common surgeon. In order to stay up to date the modern surgeon should focus on expanding qualities such as imagination, spatial cognition, hands – brain connection, adaptation to the 3D working space, sense of reality, immersing in augmented reality. In conclusion requirements for proficient MIS surgeon are – superb anatomical knowledge, visual – special ability, adaptability to virtual reality and computer skills. The surgeon should also accustom to the self-isolation, self-

dependence and to strive to combine human intelligence and artificial intelligence together, which depends on individual abilities. Merging AI and human intelligence introduces the term intelligent surgery.

**Key words:** Mini Invasive Surgery, Artificial Intelligence, Intelligent Surgery, Robotic Surgery, Endoscopic Surgery

## ROBOTIC SURGERY - HISTORY, CURRENT PLATFORMS, AND FUTURE CONSIDERATIONS

**Richard Satava MD PhD(Hon)Board Member, SLS. Past Program Manager**

*DARPA, US Department of Defense/Past Senior Science Advisor, US Army Medical Research. Professor Emeritus of Surgery, University of Washington, Seattle WA USA*

The practice of surgery has had an enormous acceleration of technological advances within the current generation of surgeons, from open surgery to flexible endoscopy, to laparoscopic surgery, to robotic surgery. Having pioneered robotic surgery, this presentation will very briefly discuss the origin of robotic surgery, current commercial and some new research robotic systems, and what new amazing (non-medical) technologies are going to change the future surgical technologies. It is very true that "The future is NOT what it used to be"

## ETHICAL CONSIDERATIONS IN ALLOCATION OF SCARCE RESOURCES DURING COVID-19

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The COVID-19 pandemic caused by SARS-CoV-2 is unprecedented in modern history. Its effects on social behavior and health care delivery have been dramatic. The resultant burden of disease and critical illness has outpaced the diagnostic, therapeutic, and health care professional resources of many clinics and hospitals. It continues to do so globally. The allocation of hospital beds and ventilators, personal protective equipment, investigational therapeutics, and other scarce resources has required difficult decisions. Clinical and surgical practices which are standard in normal times may not be standard or safe during the COVID-19 crisis. How can we best adapt as physicians and surgeons? What foundational ethical principles and systems of principal application can help guide our decision making? Fortunately, a large body of work in medical ethics addresses these questions.

## SURGICAL DISEASES AND COMPLICATIONS OF COVID-19

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New Orleans Louisiana was an early site of COVID19 Infections in the United States during early 2020. As a region, we had a lower than projected mortality rate at our main teaching hospital due to adherence to Evidence-Based Protocols. Though we had excellent critical care physicians caring for these critically ill patients, they often needed surgical interventions.
COVID infections are usually mild, but in some patients, the symptoms of the disease can be severe.

Our surgical service treated many patients during this first wave, and we cared for the first know fatality in Orleans Parish during due to COVID in early 2020, and we cared for many patients who succumbed to the disease in the months after. The major surgical diseases surgeons are asked to treat are mainly the Pulmonary, Renal, and Thrombotic manifestations of the disease. The pulmonary surgical interventions were mostly tracheostomies, chest tubes, and drainage of empyema. The renal interventions focused on increased number of short-term hemodialysis and peritoneal dialysis catheters placed, and the frequent replacement of these catheters due to increased thrombosis.

Some of the many challenges we faced were risks to staff, staffing and supply shortages. The surgical supply and personally shortages limited numbers of hemodialysis tubbing and techs available, so we were asked to switch as often as possible to peritoneal dialysis to free up staff and supplies. We were also asked to care for these people with less staff due to shifts to other departments, or migrations to higher paying positions.

**Key words:** COVID-19, Surgery, Infections, Thrombosis, Pandemic

**Acknowledgements** Related to this presentation: None

## A QUANTITATIVE AND QUALITATIVE APPROACH TO IMPROVE SURGEON AND SURGICAL TEAM SKILLS AND OUTCOMES USING VIDEO BASED ASSESSMENT (VBA) PLATFORMS

**Jay A. Redan, MD, FACS**

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Most Operating Room Procedures are NOT recorded; therefore, the surgeon and their team only rely on "memories" of the surgical procedure, which we all know is a poor way to recall all the intricate details of the operation.

Video Based Assessment in a correct safe educational non-punitive environment offers a way to assign qualitative and quantitative metrics for the Surgeon and their team that is reproducible, educational, and informative for the entire Operating Room and ancillary services attached to the operating room system. VBA can be used to provide specific targets for performance improvement, both for our trainees and our practicing surgeons, thereby accelerating the learning curve.

**Key words:** Video Based Assessment, Data Analytics, Education

Support for research is in cooperation with C-SATS a subsidiary of Johnson and Johnson

## PROPER PATIENT POSITIONING IN ROBOTIC & GYNECOLOGIC SURGERIES TO AVOID PERIPHERAL NERVE INJURy

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Surgical complications involving peripheral nerves are not uncommon after robotic and gynecologic surgery. It is very important to properly position the patients prior to the procedures. Symptoms of nerve injury from improper positioning usually began shortly after the surgery. However, the signs and symptoms in general have not been recognized very well by most surgeons. These complications can lead to sensory or motor deficits. Patients may also develop neuropathic pain or increased post-operative pain.

The nerves potentially involved include Femoral, Sciatic, Tibial, Common Peroneal, Lateral Femoral Cutaneous, Obturator, Genitofemoral,

Ilioinguinal, Iliohypogastric, Perforator Branches of Abdominal Rectus, Brachial Plexus, Ulnar, Finger and Hand, Pelvic Sacral Nerves, and Pudendal Nerves.
Surgeons need to have the relevant knowledge to prevent, identify, and treat the symptoms of these patients.

## ADVANCES IN THE MANAGEMENT OF NEUROENDOCRINE NEOPLASMS OF THE PANCREAS AND THE GASTROINTESTINAL TRACT

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The last several decades have been marked by a rapid accumulation and broadening of our knowledge and understanding of the biology and natural history of neuroendocrine tumors of the gastrointestinal tract and pancreas (NETs). There have been tremendous advances in the development of novel management approaches, and the spectrum of available therapeutic options is continuously expanding. Along with the conventional chemotherapeutic options, several novel treatment strategies have been introduced for patients with NETs, including molecular targeting therapies, somatostatin analogs, tryptophan hydroxylase inhibitors, and peptide receptor radionuclide therapy, all of which can be used alone or as a multimodal approach with or without surgery. Data from randomized clinical trials designed to define the utility, appropriateness, and sequence of the growing list of available therapies is rapidly accumulating. Thorough, comprehensive literature reviews and frequent updates of the emerging evidence and major findings are essential to expand our knowledge and contribute to a better understanding, characterization, and management of NETs.

**Key words:** neuroendocrine tumors of the gastrointestinal tract and pancreas; molecular targeting therapies; peptide receptor radionuclide therapy; somatostatin analogs; tryptophan hydroxylase inhibitors

**Acknowledgement:**
Author declares no financial interest, no funding, and no conflict of interest

## ROBOTIC RECTAL RESECTION IN RECTAL CANCER PATIENTS USING INDOCYANINE GREEN (ICG) BOWEL PERFUSION ASSESSMENT - SINGLE-CENTER INITIAL RESULTS

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Rectal resections for rectal cancer are proven to have the highest anastomotic leak rates compared to any resection surgery for colon cancer patients. The bowel perfusion assessment using indocyanine green (ICG) has shown its feasibility and safety. Initial results seem promising in terms of lowering the anastomotic leak rate.

**Methods:** All robotic rectal resections for patients with rectal cancer using ICG bowel perfusion assessment (ICG angiography) from June 2020 to June 2022 at a single institution were included. Patient characteristics, intraoperative details and complication rates were studied. This work was supported by the European Regional Development Fund through the Operational Programme "Science and Education for Smart Growth" under contract №BG05M2OP001-1.002-0010-C01(2018-2023)
**Results:** In the study period, 25 patients meeting the inclusion criteria were found. The male/female distribution was 72%/28%. Nine patients (36%) underwent neoadjuvant treatment. The mean operative time was 192 minutes and the mean docking time was 6.2 minutes. Conversion to open surgery occurred in one patient. The mean time from application of indocyanine green to reaching the colon and fluorescence was 32.9 sec. In 4 patients (16%), a change in the location of the proximal resection line was performed after the perfusion information by ICG angiography. All patients underwent end-to-end descendorectoanastomosis with a №32 mechanical circular stapler. An protective loop ileostomy was performed in 10 patients (40%). No cases of anastomotic leak were observed in the group.
**Conclusion:** ICG angiography seems to be technically feasible and safe for robotic rectal resections. Initial results for anastomotic leak rates seem promising. Randomized well-structured studies are needed to confirm these results.
**Key words:**Robotic surgery, rectal cancer, indocyanine green, anastomotic leak

## ROBOT-ASSISTED RESECTIONS OF DUPLICATION CYST OF THE ESOPHAGUS

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**Introduction:** Duplicitous cysts of the esophagus (DCE) are rare, usually asymptomatic formations, which were first described by Blassium in 1711. Their incidence is likely 1 in 100,000 live births for the entire GIS, of which only 10-15% are on the esophagus. About 80% of DCH settles in childhood.
**Object:** To present robot-assisted techniques as a modern method of definitive removal of duplication cysts.
**Materials and methods:** Two cases of patients with duplication cysts were presented, two men - 38 and 54 years old. In both DCE were established on control CT scan of the chest, with one having an endoscopic ultrasound preoperatively performed.
**Results:** The average operating time was 60 minutes. Hospital stay: 5 days. No intra- and postoperative complications were recorded. In both patients on 2 postoperative day, a contrast radioscopy was conducted, and no outflow of contrast outside the GIS was detected. Pleural drainages were removed with an reexpanded lung and a lack of secretion on a third postoperative day.
**Conclusion:** Duplicitous cysts of the esophagus most often proceed asymptomly. However, they need to be surgically removed, due to the risk of exacerbation: bleeding, obstruction, rupture of the esophagus. Endoscopic ultrasound and thin-needle aspiration biopsy play a key role in the diagnosis of DCE. Robot-assisted resections of duplication cysts are an innovative method, allowing precise resection and complete removal without affecting the mucous membrane of the esophagus.
**Key words:** Oesiphagus; Duplication cysts; Robotic surgery

## ROBOT-ASSISTED RESECTION OF THE EPIPHRENAL DIVERTICUL OF THE ESOPHAGUS

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**Introduction:** Minimally invasive approaches are becoming increasingly popular in esophageal surgery. However, these procedures are complex and require experienced surgeons with a certain set of skills. Standard laparoscopic instruments are rigid and provide limited freedom of movement. The visualization of the workspace is flat and in only two dimensions. Robotic surgical systems have been developed to overcome this. The high-resolution, three-dimensional image of the da Vinci robotic system (Intuitive, Mountain View, CA) facilitates the identification of anatomy and dissection during surgery. The full range of motion of multi-articulated instruments is useful when performing complex thoracoscopic tasks such as suturing and intracorporeal knotting. We present to your attention minimally invasive treatment for epiphrenic diverticula.
**Material and method**: We present a clinical case of a robot-assisted transthoracic divetilectomy of an epiphrenal diverticulum. The patient is 67 years old. with severe achalasia, operated laparoscopically 10 years. before admission from reflux. Develops severe achalasia and the formation of two epiphrenal diverticula on the left and right of enormous size. Prior to admission, he showed profuse bleeding on the background of anticoagulant therapy from the esophagus in the right diverticulum and was controlled by endoscopic clipping. He underwent urgent surgery with right thoracotomy and resection of the diverticulum and distal myotomy of the esophagus. A laparoscopic myotomy of the stomach was performed in one step. One month later, a robot-assisted diverticulectomy was performed on the left, resecting the entire diverticulum.
**Results:** The whole postoperative period went smoothly and without complications. The patient was fed on the 3rd postoperative day after suture control with water-soluble contrast.
**Conclusions:** This first clinical case of complicated esophageal pathology treated by robotic thoracoscopic surgery supports the impression that the esophagus is an ideal organ for a robotic approach. The potential of the da Vinci system is very great, especially for the oncological operations of the esophagus, which we have already presented at the last and current congresses.
**Key words:** Esophagus; Diverticulum; Robotic surgery

## ROBOTIC GASTRECTOMY AND LEARNING CURVE

**Gancho Kostov, Rosen Dimov**

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**Introduction:**Robotic surgery is designed to meet the needs of surgical specialties to improve operative methods through the development of technology and to overcome some limitations of laparoscopic surgery. Like any other innovation, skills mastering and getting used to this type of surgery requires some experience from the surgeon and time to improve it.
**Objective:**This study aims is to compare several indicators of our first eight robotic gastric resections and D2 lymphatic dissections with the last eight in the treatment of gastric cancer.
**Methods:**Our first eight patients with gastric

cancer who underwent robotic gastrectomy were compared with the last eight of the same group. The total number of patients with robotic gastrectomy was 27. All of them included in the study underwent total gastrectomy and D2 lymphatic dissection.

**Results:**The operative time in the first robotic operations was on average 270min(210-320min), console time 190(160-240min).The duration of surgery in the last eight was240 minutes(161-285min) with console 170(135-210min).The number of removed lymph nodes is 35.3+/-10.5 in the first group and 36.5+/-15.1 in the second respectively.The hospital stay is without differences.Postoperative complications were observed in one patient in both groups, and in both cases it was a anastomotic leakage with low grade fistula treated conservatively.

**Conclusion:**In the context of the presented results it could be assumed that with increasing experience with the robotic system and the use of established surgical steps, logically there is a decrease in total operating time, while the frequency of postoperative complications remains the same.The experience gained from laparoscopic surgery is a key factor significantly reducing the number of cases required to acquire the necessary skills in robotic gastric surgery

**Key words:** robotic gastrectomy, gastric resection

## ABDOMINAL STAGE OF ROBOT-ASSISTED DISTAL ESOPHAGECTOMY AND ESOPHAGO-GASTROPLASTY – INITIAL RESULTS IN A SERIES OF 32 CANCER CASES

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**Background**: A radical surgical procedure in distal esophagus cancer (DEC) and gastroesophageal junction cancer (GEJC) necessitates a combined abdominal and thoracic approach. Robot-assisted esophagogastric resection (RAEGR) has many advantages but minimally invasiveness and the accuracy of lymph node dissection rank first and second.

**Aim**: Discussion on the main technical steps during the abdominal stage of RAEGR.

**Material and methods**: Between 2019-2022 we performed 32 RAGER in cases of DEC and GEJC. All the patients received preoperatively the full scale of instrumental investigation and judged as appropriate candidates for robotic surgery. The abdominal stage started always with laparoscopy aiming rejection of existing peritoneal and hepatic lesions. Docking was performed next. The next steps included all gastric ligaments mobilization with preservation of the right gastroepiploic vessels, D2 lymph node dissection and modelling of a great curvature tube with adequate blood supply for the esophago-gastroplasty. The distal esophagus was mobilized through the hiatus.

**Results**: Median patients' age was 58.3 years. The male/female ratio was 2.2/1. No serious comorbidity was registered preoperatively. The docking time and the total abdominal operative time corresponded to the learning curve. There were no conversions due to technical reasons and intraoperative complications. Initial laparoscopy detected liver metastases in 2 cases and peritoneal lesions in 4 cases out of the 32 cases. Those 6 cases didn't receive the pre-planned RAEGR and were referred to endoscopic esophageal stenting and neo-adjuvant radiation and chemotherapy with re-staging in 6-8 months.

**Conclusion**: The main challenges in RAEGR concern the lymph node dissection in regions 5., 6. и 4.d with preservation of adequate blood supply of the right half of the great curvature and sufficient length of the gastric tube.

**Key words:** cancer of the distal esophagus; esophago-gastric junction cancer; robot-assisted esophago-gastric resection

## ROBOTIC GASTROINTESTINAL STROMAL TUMORS SURGERY- INITIAL RESULTS

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**Introduction:** Gastrointestinal stromal tumors (GISTs) usually present as an exophytic mass localized in stomach. Years ago conventional surgery was the only option. In the past few decades with advancements of technology and improvement of surgical techniques laparoscopic and robotic procedures are get in front.
**The aim of this study** was to evaluate the safety and feasibility of robotic surgery of GIST.
**Methods:** All patients who underwent robotic surgery for a GIST in the University Hospital Kaspela-Plovdiv between November 2021 and April 2022 were included. Postoperative course and short oncological outcomes were analyzed.
**Results:** Four patient with gastric GIST, median size 50 mm [40–70 mm], underwent robotic surgery. Conversion to open surgery not occurred. We have two cases with localization in corpus, one in antrum and one in the fundus. We have registered one complications- anastomotic leakage after proximal resection treated conservatively. In others the post operative period was uneventful. The average hospital stay was 8.2(4-11) days. The median operating time was 255 min(220–320 min).
**Conclusion:** On basis of this initial results we can conclude that robotic gastrointestinal tumors surgery is safe, feasible, and oncologically sustained. Of course one of the weakest sides of this surgery is prolonged operative time and increased expenses.
**Key words:** Robotic gastric resection, gastrointestinal stromal tumor surgery

## ROBOT-ASSISTED DISTAL GASTRECTOMY – ADVANTAGES AND DISADVANTAGES

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**Background**: Mini-invasive radical surgery in gastric cancer (GC) is not accepted as a "gold standard" worldwide yet but it has many advantages compared to open surgery. Robot-assisted distal gastrectomy (RADG) offers a treatment option with proven superiority to laparoscopy.
**Aim:** Analysis of the results in the initial institutional series of RADG.
**Material and methods**: Between 2019-2022 we performed 8 RADG. All the patients received preoperatively the full scale of instrumental investigation and were judged as appropriate candidates for robotic surgery. Initial laparoscopy confirmed the absence of peritoneal and/or other organ involvement.
**Results:** Median patients' age was 55.0 years (range 41-68 years). The male/female ratio was 5/3. No serious comorbidity was registered preoperatively. Indication for RADG included 7 cases of GC and 1 case of GIST. The docking time and the total operative time demonstrated a tendency for shortening. There were no conversions. Clean resection margins were obtained in all cancer patients and were confirmed by frozen sections. Accuracy of D2 lymph node dissection was proved by the median number of lymph nodes removed – 24 (range 18-41). No early postoperative specific morbidity and mortality were registered.
**Conclusion:** RADG is an attractive mini-invasive

option since it has even better characteristics than laparoscopy (3D image, almost unlimited volume of wrist movement, etc.). Financial cost is the main disadvantage of this procedure in our country.

**Key words:** gastric cancer; robot-assisted distal gastrectomy

## ROBOTIC SURGERY IN CARCINOMA OF THE RECTUM – THE EXPERIENCE OF UNIVERSITY HOSPITAL "ST. MARINA "- VARNA

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**Introduction:** Minimally invasive surgery is characterized by a number of advantages over conventional. The narrow space in the small pelvis is a technical challenge in low resections of the rectum. In these cases, robotic surgery has potential due to the articulation of instruments and excellent visualization.

**Objective:** To study the experience in robotic surgery for rectal cancer.

**Material and methods**: In the First Clinic of Surgery at the University Hospital „St. Marina "- Varna for the period December 2019 - April 2022, 29 robot-assisted resections of the rectum were performed with the DaVinci® Xi system platform (Intuitive Surgical, CA, USA). The protocol for preoperative diagnosis includes FCS, histological verification, CT with contrast material, PET-CT. In carcinomas of the middle and lower third of the rectum, endorectal ultrasound and MRI of the pelvis were performed. In T2-T4N0-2 carcinomas, neoadjuvant radiation chemotherapy was performed.

**Results:** The mean age of the patients was 65 years, predominantly male (62.0% male, 37.9% female). The average BMI is 26 kg / m2. 23 anterior resections of the rectum, 5 extirpations of the rectum and 1 intrasphincter resection of the rectum were performed. The average operating time was 225 minutes. The average number of dissected lymph nodes was 11.6. Early postoperative results are similar to those of conventional and laparoscopic access. The docking time averaged 32.3 minutes (26-35 minutes) and the console time averaged 153 minutes. One conversion was performed. The incidence of complications is 8.3%, Dindo-Clavien 3b - n = 1, Dindo-Clavien 2 - n = 1.

**Conclusion:** The presented initial results demonstrate the possibilities of robotic surgery for rectal cancer, and the method is comparable to the results of a series of conventional and laparoscopic operations. The long-term oncological results are yet to be studied.

**Key words:** robotic surgery, rectal carcinoma, minimally invasive surgery, robotic rectal resection

## MINIMALLY INVASIVE SURGERY FOR ADRENAL TUMORS

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**Introduction:** Hiatal hernia is one of the most common anatomical defects of the gastrointestinal tract and benign diseases of the cardio-oesophageal connection, and is often accompanied by gastro-oesophageal reflux disease. Laparoscopic fundoplication is accepted as the gold standard in the treatment of

the disease and is widely used. The analysis of the results would lead to the improvement of the method and the reduction of the complications.
**Objective:** To conduct a study on the application of laparoscopic fundoplication in hiatal hernia.
**Material and methods:** The study covers 362 patients who were diagnosed and operated on in the First Clinic of Surgery at the University Hospital „St. Marina ”for the period 2005 - 2022. The perioperative results, morbidity, mortality, complications, specific complications, as well as pre- and postoperative data according to the follow-up protocol were analyzed in the patients.
**Results:** The gender distribution was 30.5% and 69.5%, respectively. The mean age of the patients was 62.0 years, with 59.1 years for men and 62.9 years for women. Patients are dominated by mixed hiatal hernia (type III) (36.8%), followed by type IV (27.9%), type I (15.4%) and paraesophageal hiatal hernia (n = 19.9%). The most commonly performed operative method for fundoplication was Nissen. Collis gastroplasty was also performed in 45 patients with evidence of brachioesophage. Postoperative complications were considered according to the Dindo-Clavien classification. The recurrence rate is 11.1%. After each intervention, a significant change in the value of the GILQI quality of life index was observed. Data on specific complications and behaviors are presented.
**Conclusion:** Laparoscopic fundoplication is a method that is being improved. Functional outcomes with low mortality and morbidity ensure a good quality of life for the patients.
**Key words:** laparoscopic adrenalectomy, adrenal tumors, pheochromocytoma, adrenal adenoma

## THE USE OF MINIMALLY INVASIVE SURGERY IN THE TREATMENT OF UNDESCENDED NON-PALPABLE TESTIS IN CHILDHOOD

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Cryptorchidism, or undescended testis, is one of the most common abnormalities in pediatric surgery and affects 1 to 4 percent of full-term and 40 percent of preterm infants. With advances in laparoscopic techniques and instruments, laparoscopic orchidopexy has become the standard procedure in the management of non-palpable undescended testes. The disease-related problems with fertility and malignant transformation have long been proven. This review summarizes the knowledge of cryptorchidism, today‘s concept of diagnosis and therapy, and places particular emphasis on the use of minimally invasive surgery in the treatment of undecended, non-palpable testis.
**Aim.** To evaluate and determine the therapeutic role, sensitivity, and specificity of laparoscopy in localizing non-palpable testes and the mean operative time, postoperative wound infection, postoperative stay.
**Materials and Methods.** This was a study carried out in the Department of Pediatric Surgery, University Hospital „N.I.Pirogov“ Sofia from January 2015 to December 2021. All 43 patients who presented to the outpatient department with complaints of absent testes were examined, and the ones with non-palpable testes were included in the study.
**Results.** The mean operative time for unilateral non-palpable testis was 93.56 minutes. Minor postoperative wound infections were noted in 4 of our patients. Mean duration of hospital stay was 24 hrs.
**Conclusion.** Laparoscopy clearly demonstrates the anatomy and provides visual information upon which a definitive decision can be made for further management of the undescended nonpalpable testis.
**Key words:** undecended non-palpable testis, laparoscopic orchidopexy

## DEEP SPACE SURGICAL INFECTIONS: MANAGEMENT

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There are approximately 310 million surgeries

performed worldwide with average rate of postoperative surgical infections being between 5% to 30%. This is a significant number with a direct impact on patient outcome and costs to the medical health system. Open surgery and emergency procedures carry higher surgical site infection rates compared to minimally invasive surgery. Deep space infections carry the highest mortality and cost associated with their incidence.

The talk will discuss some of the causes of and focus on current treatment plans with specific regards to deep space infections. Most deep space infections can be managed non operatively via interventional radiology; however, this is not a service that is available universally. Operative approach to these infections particularly via minimally invasive techniques whether by laparoscopy or robotic approach, and the ability to adequately drain the space and potentially reduce hospital stay will be focused on. Differences in drainage devices placed and their ability to adequately drain the site of infection for abdominal and thoracic cavities will also be emphasized.

Minimally invasive approach to abscess cavities inaccessible by interventional radiology whether because of anatomy or unavailability of resources is a viable alternative to open surgery in many instances.

**Key words:** Surgical site infections; deep space infections; minimally invasive

**ACKNOWLEDGEMENTS**

RELATED TO THIS PRESENTATION: NONE

## FACTORS AFFECTING OVER THE RATE OF SURGICAL SITE INFECTIONS

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**Introduction:** The development of a surgical site infection is a significant problem of the modern surgerythat affects not less than 3% of all the patients, despite the use of new generations of antibiotics, the earlier diagnostics of surgical problem, improved techniques and superior instruments for postoperative vigilance. The prevention of a surgical site infection is paramount for the stages of the healing process, its exit, longterm complications and cost.

**Objective:**Definition of the most importent risk factors for developing a surgical site infection and undertaking of adequate prevetive mesures.

**Methods:** retrospective research of the cases through the last 3 years.

**Main results and conclusions**:The risk of infection depends on the specific surgical procedure performed and surgical wounds are classified according to the relative risk of surgical site infection occuring- clean, clean-contaminated, contaminated and dirty. The developing of an infection depend on three major group of factors: 1. wound classification; 2. Duration of the operation;3. Factors ralated to the patient such as: presence of a severe systemic disease like diabetes, hronic renal or cardiac failure, morbid obesity, smocking, immunosuppressive therapy, older age. Prevention of the surgical site infection is based on changing or dealing with the risk factors. Preoperative bowel preparation reduces the patient's risk of infection from contaminated to clean-contaminated case in 25%. Hair removal by clipping is done immediately before the operation. The perioperative antibiotic prophylaxis is compulsory for clean-contaminated and contaminated cases. The use of antibiotics for dirty and contaminated wounds has a theraputic purpose.

**Key words:** surgical site infection, risk factors, prevention.

## SURGICAL INFECTION IN ELECTIVE SURGERY OF THE ANTERIOR ABDOMINAL WALL

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Despite the development of surgical techniques and materials in anterior abdominal wall surgery, between 2% and 20% of laparotomies performed will lead to postoperative hernias. The assessment of operative treatment of postoperative hernias, as well as the type of surgery, still remains a challenge due to the significant risk of complications. There is still no consensus on anterior abdominal wall reconstruction.

The treatment of surgical infection after anterior abdominal wall surgery in some cases requires removal of a previously placed mesh, removal of a large defect in the area of the infected field, and resection of the small or large intestine.

Regardless of the type of surgical technique, surgical interventions for surgical infection of the anterior abdominal wall are characterized by a high percentage of recurrent hernias.

The approach to surgical treatment should take into account several risk factors, including patient's health as well as the characteristics of the ventral hernia.

Evaluation criteria have been developed that predict the risk of complications associated with anterior abdominal wall surgery.

Risk factors include uncontrolled diabetes, smoking, previous hernia surgery, the presence of a stoma, evidence of abdominal infection, concomitant component separation, and BMI.

Important factors reducing the percentage of surgical infections in anterior abdominal wall surgery include prevention, preoperative assessment of the patient's comorbidity, smoking cessation, adequate control of diabetes, weight loss in elective surgical interventions.

## TREATMENT OF COMPLICATED FORMS OF SOFT TISSUE INFECTIONS WITH NEGATIVE PRESSURE

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**Introduction:** Severe soft tissue infections are life-threatening conditions that require timely diagnosis and immediate surgical treatment. Risk group for rapid progression of these infections is old age, the presence of concomitant diseases such as diabetes or peripheral vascular angiopathy. As part of the comprehensive treatment of severe fasciitis in order to improve local status, the use of treatment under permanent negative pressure may be considered.

**Aim:** The aim of the present study is a retrospective analysis of patients with severe soft tissue infections treated at the First Surgical Clinic of UMHAT "Dr. G. Stranski" EAD - Pleven with negative pressure and to analyze the available literature on this issue.

**Materials and methods:** A retrospective, non-randomized study over a 5-year period (2017-2021) at the First Surgical Clinic, including patients with severe soft tissue infections treated surgically with fasciotomy and wound debridemen- t. Postoperatively, a vacuum system was used for the treatment of severe fasciitis with a permanent negative pressure of - 100 mbar, performing continuous aspiration of wound exudate.

**Results:** The study included patients with fasciitis, which are184 (7.6%) of all patients with soft tissue infections treated during this period - 2395. Fasciotomy was performed urgently in 133 patients with severe soft tissue infection, and subsequent treatments with extension of fasciotomy were performed in 51 patients. All patients with fasciitis were treated in the first stage of the complex treatment surgically with a fasciotomy with decompressive effect and wound debridement, and in the second stage with vacuum aspiration - 15 patients were treated. (8.1%). Vacuum therapy was not performed on patients who, due to the localization of the inflammatory process, the placement of vacuum was dangerous due to the risk of damage of main vessels.

**Conclusion:** We did not observe any complications in the treatment of severe soft

tissue infections with negative pressure. Vacuum therapy has a beneficial effect in the complex therapy of severe fasciitis by improving local trophic, stimulates regenerative processes in the wound Permanently removes inflammatory exudate from the wound leads to a significant reduction in microbial count.

**Key words:** fasciitis, severe soft tissue infection, vacuum therapy

## DEHISCENCE - CAUSES AND PREVENTION

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**Introduction:** Dehiscence is one of the most unpleasant surgical complications. It can be complete, incomplete and partial.

**Aim:** The purpose of this report is to analyze the causes of dehiscence of the operative wound in the Department of Abdominal and visceral Surgery- University hospital 'Dr. Georgi Stranski' – Pleven. for the period: 2016 - 2022.

**Methods:** The study covers two periods, retrospective 2016-2021 and prospective 2022. The patients included in the study are completely dehiscent due to previous surgery. We evaluated the patients on the basis of: Date and type of first operation, subsequent rehospitalization, concomitant diseases, isolated microbiological causative agent, mortality, and others..

**Results:** For the period 2016-2022; 4149 patients were operated on, and 25 patients (0.60%) were diagnosed with dehiscence of the operative wound. 84% are men and 16% are women. The mean postoperative period until dehiscence was 11.96 days, with 15 patients being diagnosed during treatment at first hospitalization and 10 patients required rehospitalization. Mortality is 20% (5 patients). Patients whom diagnosed with dehiscence underwent operation due to: perforation of the hollow abdominal organ -20%, acute intestinal obstruction -16%, acute appendicitis - 16%, mesenteric thrombosis - 16%, gastric hemorrhage - 12%, acute cholecystitis- 8%, hemorrhage from the small and large intestines - 8%, acute pancreatitis -4%, and trauma with peritonitis -4%.

Laboratory studies with statistical significance are albumin and CRP. 5 of the patients underwent reoperation more than once. Materials for microbiological examination were taken according to the type of the pathological process. The most commonly isolated microorganisms after the first operation were;

E. coli -24%, E. faecalis-16%, K. pneumoniae -16%. After the first reoperation are - K. pneumoniae - 24%, E. coli - 24%, E. faecalis - 16%. In the subsequent operative interventions, the leading isolates are Ac.baumani and P.aeruginosa - 8%.

The methods for closing the anterior abdominal wall in patients with surgical wound dehiscence were as follow; Ventrophil in 16 patients, and in 3 it is combined with a one-component mesh. In 7 patients the mesh was used for reconstruction of the anterior abdominal wall. In two of the patients the operation ended with the placement of U-shaped retention sutures.

**Conclusion:** The causes of dehiscence are different and multifactorial, we have divided them into three groups: causes related to the patient; causes related to the operative wound (identification of the cause of the wound infection) and causes related to the surgical team.

**Key words:** Dehiscence, microbiological causative agent, reoperation

## PRIMARY PROPHYLACTICS OF ACUTE INCISIONAL WOUND LEAKAGES AND POSTOPERATIVE INCISIONAL HERNIAS BY INTRAPERITONEAL MESH IMPLANT

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**Introduction:** Aiming to decrease the rate of the acute postoperative incisional wound leakages and postoperative incisional hernias, since 2019 we decided to implant intraperitoneal mesh in the end of extended radical visceral operations.
**Aims:** To assess the feasibility, effectiveness and complications of intraperitoneal mesh implanting in concern to prevent acute postoperative incisional wound leakages and postoperative incisional hernias in patients with open radical and extended visceral operations for malignomas.
**Materials and methods**: In the end of 2019 we started to implant intraperitoneal mesh as a part of incisional wound closure, in patients with colorectal resections or pelvic exenterative surgery. The mesh is placed intraperitoneally, and we prefer to lay it over the omentum. We use 7-10cm wide mesh and attach it through peritoneum to the posterior sheet of rectus muscles vagina. Later on we started to imply this procedure in patients with stomach resection surgery and finally in open cholecystectomy and biliary tract operations – now we finish every case of open abdominal surgery with this preventive procedure. For 2019-2021 we implanted mesh with preventive intent in 184 patients after: colorectal surgery - 75; pelvic exenterations and other extended abdominal and retroperitoneal operations - 72; stomach resection surgery – 14; open cholecystectomy and biliary tract operations – 23.
**Results:** For the study period we had to perform emergency re-laparotomy in 4 of the studied patients. Secondary (subsequent) laparotomy with oncologic indications (second look or cancer progression) was necessary in 12 of the studied patients. Incisional wound haemathoma in 1 patient; operative site infection - 5 patients. Fistulas in the anterior abdominal wall and the incisional wound – 2 patients. Since we use this procedure, we have not observed acute postoperative incision wound leakages. Bowel obstructions were not observed as well.
**Discussion:** The performed secondary laparotomies with oncologic indications appeared to be a good attestation for the qualities of the procedure. Contrary to some opinions, it became evident that there are no massive adhesions of the visceral organs to the mesh, which could make difficult the subsequent entering into peritoneal cavity. When emergency laparotomy is required , we detach the mesh from one lateral side, and in the end of the operation we place it like for laparostoma.
**Conclusions:** Implanting of intraperitoneal mesh appears to be feasible and effective method for prevention of acute postoperative incisional wound leakages and postoperative incisional hernias, with low complication rates.
**Key words:** intraperitoneal mesh, implant, prevention, postoperative incisional wound leakage, incisional hernias

## THERAPEUTIC BEHAVIOR IN PATIENTS WITH INFLAMMATORY ABDOMINAL DISEASES IN THE ELDERLY

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**ABSTRACT**
With the increase in life expectancy, the contingent of elderly surgical patients increases as well. These patients, as a rule, often suffer from various concomitant chronic diseases. That is why they require a personalized multidisciplinary approach to determine an adequate and specific therapeutic approach.
**OBJECTIVE:** To analyze our own experience and results in the surgical treatment of patients over 80-years of age with inflammatory diseases of the abdominal cavity.
**MATERIAL AND METHOD:** We analyzed retrospectively and non-randomly the results of the surgical treatment in 149 patients >80 years during a 6 years period (2016 - 2021). We analyzed the demographic data (sex and age),

the co-morbidity, the presence of preoperative complications and the time from the onset of symptoms to hospital admission, the type and the timing of surgical treatment, the operative findings, the postoperative morbidity, the postoperative complications, the mortality, the median and the postoperative hospital stay.
**RESULTS:** We marked a significant part (>50%) of patients with various concomitant diseases. In most cases, the hospitalization was delayed and they were admitted in a complicated and decompensated state. The preoperative stay has been extended due to the necessity of pre-operative intensive care preparation. The parts of indirect (cardiac, pulmonary, neurological, nephrological, etc.) post-op complications and mortality were increased, as well as the resuscitation period and the postoperative hospital stay were prolonged.
**DISCUSSION AND CONCLUSION**: The possibilities for accurate preoperative assessment and preparation for improving the results of surgical treatment of patients >80-years of age are discussed. Based on the conclusions, were formulated recommendations, with the aim to reduce the risk of postoperative life-threatening complications and death in these cases.
**Key words:** abdominal infections; surgery in elderly; geriatric surgery

## TREATMENT OF INTRA-ABDOMINAL INFECTIONS - CONTEMPORARY TACTICS AND METHODS

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**Summary**
Intra-abdominal infections are emergency surgical conditions that are reported as the cause of death of the patient, which are without trauma, admitted to the emergency departments of the world.
The cornerstones for effective treatment of intra-abdominal infection, early detection, adequate control of sources and appropriate antimicrobial therapy. Rapid resuscitation of patients with ongoing sepsis is essential.
In hospitals around the world, non-acceptance or lack of access to evidence-based practices and guidelines and experience leads to poor outcomes in patients with intra-abdominal infections.
The aim of our study is to promote the use of global standards of care for patients with intra-abdominal infections, as well as to update its treatment in the same direction.
**Key words:** intra-abdominal infection, sepsis, peritonitis, antibiotics

## SECONDARY PERITONITIS AND SEPSIS. SEARCHING FOR OPTIMAL THERAPY

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Secondary peritonitis and intra-abdominal sepsis are worldwide problems. The life-threatening systemic infection resulting from intra-abdominal sepsis has been studied in detail, but remains somewhat poorly understood. While local surgical therapy for hollow abdominal perforations has been known since ancient times, systemic therapies to control the subsequent systemic inflammatory response are insufficient. Advances in critical care have led to improved outcomes in secondary peritonitis.
Understanding the effect of secondary peritonitis on the human microbiome is an evolving field and has led to potential therapeutic goals. The examination of secondary peritonitis discusses the history, classification, pathophysiology, diagnosis, treatment, future directions in the treatment of secondary peritonitis, by discussing current

clinical trials for the treatment of secondary peritonitis and open abdomen / laparostomy /.
**Key words:** quality of prescribed antibiotics; low-risk intra-abdominal infections; postoperative antibiotic treatment, secondary peritonitis, laparostomy

## PREDICTORS OF EARLY ANASTOMOTIC LEAKAGE AFTER COLORECTAL RESECTION

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AL is a life-threatening complication after colorectal resection. Prevention and early diagnosis are essential to improve both short-term and long-term morbidity and mortality. Our goal is to identify diagnostic biomarkers for AL that provide an accurate medical approach to managing patients after colorectal resection and anastomosis. Our methods include testing of IL-6, TNF-α, MMP-9 and PCT in blood serum and drainage, in 40 patients at 2 and 5 POD after rectal resection and anastomosis and their statistical treatment. From the studied proteins, we found that PCT, IL-6 and TNF-α had statistically significant results for a potential predictor role for AL. In conclusion, biomarkers that can identify patients at high risk of developing AL or provide early diagnosis of AL have the potential to significantly change the way we manage patients with rectal resection and anastomosis.
**Key words:** colorectal anastomosis; anastomotic leakage; biomarkers; colorectal surgery; colorectal resection
**Abbreviations:** Anastomotic leakage (AL); Postoperative day (POD); Interleukin-6 (IL-6); Tumor necrosis factor-α (TNF-α); Procalcitonin (PCT); Matrix metalloproteinase-9 (MMP-9)
**Acknowledgments:** The research was conducted under the GRANT project and is funded by the Medical University of Sofia.

## RETROSPECTIVE COHORT ANALYSIS OF THE EFFECT OF ANTIBIOTIC TREATMENT IN COMPLICATED INTRA-ABDOMINAL INFECTIONS

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**Introduction:** Recent data suggest that the effectiveness of short-term postoperative antibiotic prophylaxis (PAP) in intra-abdominal infections is no worse than long-term postoperative therapy, given the clinical results. The aim of this study was to compare the outcome of short-term versus long-term PAT in complicated intra-abdominal infections (UIAIs) without sepsis.
**Methods**: We conducted a study to assess the duration of antibiotic therapy after emergency surgery for complicated intra-abdominal infections (UIAI) with adequate control of the source of infection in 260 cases (160 patients with a short course of antibiotics versus 100 patients with a long course of antibiotics) for 2018. until 2020. The quality of the prescribed antibiotic treatment was assessed by an internal team for management of antimicrobial products and periodic analysis of the microbial background of the clinic.
**Results:** No significant differences in patient characteristics were observed between short-term and long-term PAT. The incidence of long-term PAT decreased during the observation period from 48.1% to 26.3%. Prolongation of PAT is not associated with any clinical benefit, on the contrary, the clinical outcome of patients

receiving longer-term antibiotic treatment is associated with higher postoperative morbidity.
**Conclusion:** Short-term antibiotic therapy after successful surgical control of the source of infection in UIAI is more effective, safe and cost-effective than long-term PAT.
**Key words:** postoperative antibiotic treatment, antibiotic treatment management, postoperative intra-abdominal infection, sepsis

## RISK FACTORS, PREVENTION AND TREATMENT OF MESH INFECTIONS IN ABDOMINAL WALL ENDOSCOPIC HERNIA RECONSTRUCTIONS

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**Introduction:** Endoscopic mesh reinforcement is considered the standard of care in abdominal wall reconstruction surgery worldwide. Mesh placement is part of the procedure. Mesh implantation has its advantages and also hide risks of complications. Such complications could be seroma, hematoma, mesh migration and infection. Mesh infection is a rare but devastating complication which rates may reach 3.6% according to some issues. There is no worldwide approved algorithm of action in such conditions yet.
**Purpose of research:** The purpose of the research is to support the creation of algorithm of action in mesh infections after endoscopic mesh implantation.
**Methods:** Our study is a review of the current English literature obtained from searches of PubMed, Cohrane and Google. The searched terms were key words.
**Results:** In the majority of cases mesh salvage was impossible. Only in a small percentage of conservatively treated patients a surgical removal of the mesh was not undertaken. This probably is due to the lack of major risk factors like obesity, smoking and mesh type. More often a surgical removal of the mesh and definitive operative treatment is undertaken.
**Conclusion:** There is necessity of adequate and prompt actions in a case of mesh infection after endoscopic mesh reinforcement. The best strategy is still the prevention and elimination of risk factors before and during the operation. Such statistically significant risk factors are obesity, smoking, duration of operation, contamination of the mesh. With more similar studies it would be possible to create worldwide approved algorithm of action in a case of mesh infection.
**Key words:** "infection", "endoscopic mesh implantation", "hernia", "risk factors", "algorithm of action".

## PERINEAL WOUND COMPLICATIONS IN EXTRALEVATOR ABDOMINOPERINEAL EXCISION FOR ANAL CANCER

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Anal cancer is a relatively rare type, affecting 69 cases /0.2%/ of the bulgarian cancer patients in 2014 year. Despite that, it is characterized by a worldwide increase in incidence by approximately 2.2% annually for the last decade. Extralevator abdominoperineal excision is one of the treatment options in patients without effect from radiotherapy, but often leads to a large perineal defect, that requires a reconstruction and carries an increased risk of post-operative complications.
**Aim of study** is to perform a retrospective analysis of the perineal complications following extralevator excision in anal cancer patients

in the Department of Surgery at UMHAT "Kaspela" for a three-year period.

**Materials and methods:** All patients who underwent extralevator excision for anal cancer in the University Hospital "Kaspela" were included in the study. The data was collected from the medical records of patients, operative reports and follow-up exams.

**Results:** For the described period 21 patients have been diagnosed with anal cancer. 10 of them /47.6%/ underwent radiotherapy with complete response, confirmed by a control biopsy and were excluded. Persisting disease, after radiotherapy, was confirmed in 11 patients /52.4%/ and surgical treatment was performed. The gender distribution was 7 males /63.6%/ and 4 females /36.4%/ with median age of 67 years. 2 females /18.2%/ underwent local excision, because of their explicit insistence. Extralevator abdominoperineal excision was performed in 9 patients, 7 males /77.8%/ and 2 females /22.2%/ respectively. Perineal complications were observed in 2 of them/18.2%/.

**Conclusion:** Extralevator abdominoperineal excision in anal cancer is associated with a decreased rate of intraoperative dissemination and local relapses, compared with the standard abdominoperineal procedure. Despite the improved oncological results, it is characterized with increased incidence of perineal wound complications. Based on the limited cohort, we believe that the improvement of surgical techniques and patients selection can decrease the frequency and severity of complications.

**Key words:** Anal cancer, Extralevator adominoperineal excision, Perineal wound complications

## ESOPHAGEAL TUMOR LENGTH – AN UNDERESTIMATED PREDICTOR OF SURVIVAL AFTER ESOPHAGEAL CANCER RESECTION

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**Introduction:** Esophageal cancer is one of the most aggressive visceral tumors with increasing frequency and poor prognosis. Differences in survival between patients in the same clinical tumor stage necessitate searching for additional prognostic markers to help identify patients at high risk of recurrence, metastasis or death.

The aim of the study was to assess prognostic significance of tumor length on survival after esophageal cancer resection in patients operated at a centre for esophageal surgery.

**Materials and methods:** A prospective cohort study including 117 patients who had undergone surgical resection with curative intent for esophageal cancer in the First Surgical Clinic of UMHATEM " N.I.Pirogov", Sofia, Bulgaria was conducted. The inclusion period was between 1st January 2013 and 31st December 2015 and the patients were followed – up until 10 april 2022. The patients were divided into two groups according to the tumor length – under 3 cm (group 1) and over 3 cm (group 2). The prognostic impact of tumor length on survival was analyzed with Cox regression analysis. Overall survival was presented by the Kaplan-Meier method with log-rank tests.

**Results:** The 5-year survival rate is 11.1 %. Median survival rate is 42,9 months (95% CI 20,3-65,4 months) for the patients in the first group and 22,1 months (95% CI 15,7-28,6 months) for the second group patients. p=0,05 Tumor length over 3 cm is a negative prognostic factor (HR 2,36 95% CI 1,06-5,25; p=0,03).

**Conclusion:** Length of esophageal cancer is a powerful independent predictor of survival in addition to the TNM stage.

**Key words:** Esophageal carcinoma, Tumor length, Prognostic factor, Survival

## SEVERE COMPLICATIONS AFTER ESOPHAGEAL SURGERY AND OPTIMAL SOLUTIONS

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**Introduction:** Complications in esophageal surgery are one of the most unpleasant and severe pathologies and are associated with high perioperative mortality and serious consequences for the patient. Late recognized (unrecognized) insufficiency of the esophagoanastomosis and their poor management are the most common causes of these dramas.
**Material and methods:** For a period of 15 years, 10 patients with late complications of esophageal surgery, endoscopies and Boerhave syndrome from external hospitals were operated. 3 patients died. I concretize this presentation on 2 patients with interesting complex solutions for late complications of esophageal surgery. The first patient underwent esophagogastroplasty for distal esophageal carcinoma and cardia. At admission 1 month after surgery, there were clinical and radiological evidence of esophagopleural fistula and pleural drainage and grostomy. In a septic state. Several unsuccessful attempts to place an esophageal stent have been made. ½ from the circumference of the anastomosis has necrotic dehiscence.
The second patient was operated on abroad 15 days before admission to the clinic at the same location of the tumor. Robotic laparoscopy and right thoracotomy were performed. Evidence of anastomotic insufficiency with dustary massive pleural empyema and septic condition.
**Solutions:** The first patient underwent long-term / 3 weeks / treatment with vac therapy. The patient underwent surgery after relaparotomy and rethoracotomy, decortication and omentoplasty of the fistula. In a calm postoperative period he was discharged on the 12th postoperative day.
The second patient initially received a gastrostomy, an esophageal stent, and bilateral VATS to rehabilitate both pleura (standard behavior for such complications). The insufficiency did not occur due to suturing of the stomach by the previous operator for the pleura, diaphragm and azigos vein. Urgent surgery was required on day 3 due to dramatic bleeding from the esophagus. Angiographically, a stent-free thoracic aortic lesion was found, which was closed endovascularly with a stentgraft and the proximal stomach was removed and the esophagus was removed to the esophagostomy. The patient was discharged on the 20th postoperative day after prolonged mechanical ventilation, sepsis and repeated bleeding from possible stress ulcers.
**Conclusions:** Early diagnosis of such complications is of particular importance for esophageal surgery. The anastomosis should always be checked for any changes in the patient's clinical condition and timely correct decisions should be made.
**Key words:** Esophagus; Complications; Robotic surgery

## SURGICAL TREATMENT OF GASTROOSOPHAGEAL JUNCTION CANCER

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Gastroesophageal junction carcinoma remains a significant clinical problem, with an increase in the incidence and a poor long-term prognosis. The majority of patients present with advanced disease and less than 50% suitable to undergo

surgical treatment. The specific biological behavior of the malignancies in this area, their characteristic path of metastatic spread along with the desire of surgeons to maximize oncological radicalism, mark a number of challenges and problems seeking solutions in everyday clinical practice. There is currently no consensus on operative access, margins of organ resection and lymphatic dissection in both proximal and distal directions. The most commonly used surgical techniques in recent decades have not shown statistically significant differences in terms of recurrence rate and associated long-term survival, taking in consideration the significant postoperative morbidity.

In this presentation we would like to share the experience of the Clinic of General and Abdominal Surgery in the surgical treatment of carcinomas of the gastrooesophageal area: the use of surgical access, resection volume, techniques to reduce the incidence of postoperative complications, minimally invasive solutions to ensure adequate early enteral nutrition.

**Key words:** GEJ cancer, Ivor-Lewis resection, postoperative enteral nutrition.

## PREDICTORS FOR RESECTABILITY IN PATIENTS WITH GASTRIC CARCINOMA

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**Introduction:** Gastric cancer (GC) is the fifth most prevalent and leading cause of death among cancer patients worldwide. It is characterized by high malignant potential – locally aggressive growth with lymphogenic and hematogenous dissemination. Despite the development of various screening programs, the emergence of novel diagnostic methods and optimization of treatment, GC still has a poor prognosis and low survival rate.

**Aim:** The aim of this study is to investigate the potential link between different criteria (individual characteristics, inflammatory markers and preoperative staging with PET-CT) and the resectability in patients with GC.

**Materials and methods:** The current study includes 209 patients with histologically verified gastric carcinoma over a 15-year period (from 2005 to 2020). All patients were divided into two groups depending on the resectability of the tumor – 104 (49.8%) with unresectable (Group A) and 105 (50.2%) with resectable carcinoma (Group B). The association between individual characteristics, main markers of inflammation (leukocytes, ESR and fibrinogen), preoperative staging with PET-CT and resectability was studied.

**Results:** There is a statistically significant difference between the mean age and resectability (61.8 ± 10.4 years (Group B) vs 66.03 ± 10.5 years (Group A), p=0.004) as well as between the age groups between 51-60 years and >70 years (23.4% (Group B) vs 27.3%(Group A), p=0.025). A relation between resectability and fibrinogen (p = 0.008) and ESR (0.013) serum levels was observed. Statistical difference was found between standard uptake values (SUV) levels during preoperative PET-CT staging in the two study groups and resectability (p=0.039).

**Conclusion:** Age, inflammatory syndrome and SUV during PET-CT staging may be predictive factors for GC resectability.

**Key words:** gastric cancer, resectability, predictors

## ENDOSCOPIC SUBMUCOSAL DISSECTION AS TREATMENT FOR EARLY GASTRIC CANCER

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Stomach cancer has the 5th highest incidence rates and 3th highest mortality rates in the world and is still leading medical and socio-economical issue in the countries of Eastern Asia, Eastern Europe and South America. In the cases that gastric cancer is diagnosed in an early stage, it can be definitively treated with the endoscopic organ-preserving procedure endoscopic submucosal dissection (ESD). Early gastric cancer is defined as a cancer confined to the mucosa or submucosa, regardless of lymph node metastasis. The assessment that certain lesion is suitable for ESD is made under strict indications and only in patients that are considered to have less than 1 percent risk of lymphogenic dissemination.
Since 2019, we have performed 12 ESD procedures, in patients with previously histologically diagnosed superficial lesions (high-grade dysplasia or adenocarcinoma), that have been made aware of their clinical condition and its treatment alternatives. After the dissection of the lesion en-bloc, the material is being extracted and thorough histological examination is performed, that determines the curability of the procedure. The follow-up is determined based on the histological results, age and concomitant diseases of the patient using the eCura system.
Our data shows high percentage of curability of performed ESDs and no data of lymphogenic or hematogenic dissemination from the follow up examinations up to this moment in time. Based on our results, we have concluded that ESD is a safe, organ-preserving procedure with satisfying outcome as a choice of treatment in the indicated cases.
**Key words:** Early gastric cancer, Endoscopic submucosal dissection, endoscopic treatment

## VARIATIONS IN LYMPHADENECTOMY FOR GASTRIC ADENOCARCINOMA: D1+ ALPHA OR BETA; MODIFIED D2; LYMPH NODE SAMPLING

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**Introduction:** Gastric cancer is a malignant disease with high incidence and poor prognosis. Despite the multidisciplinary approach, surgery remains the first-line treatment with curative intent. Most cases are diagnosed with advanced-stage of the disease. Despite the improvements in surgical technique, radiotherapy, chemotherapy and neoadjuvant therapy, gastric cancer remains a leading cause of cancer death worldwide. Lymphadenectomy has an important place in improving postoperative results.
**Purpose:** The aim of this review is to summarize the variations in lymphadenectomy according to disease stage.
**Methods:** We performed a literature review of the published clinical trials and the treatment guidelines for gastric cancer for the last 5 years.
**Results:** D2 lymphadenectomy is indicated for cN+ or ≥cT2. D1 and D1+ are possible options for cT1N0 tumors. Pre- and intraoperative assessment of nodal involvement could be unreliable so D2 lympadenectomy should be performed if there is a suspicion of nodal involvement. Lymph node sampling could have a role in some cases with planned limited or atypical resection.
**Conclusion:** Lymphadenectomy is an important component of surgical treatment, due to high frequency of lymph node metastases. Improvement of surgical technique and lymph node dissection for gastric cancer is of paramount importance for achieving better outcomes. Standardization of surgical treatment could help improve the overall survival and lower the rates of recurrence and morbidity.

**Key words:** gastric adenocarcinoma; lyphadenectomy; gastrectomy

## SURGICAL TREATMENT OF GASTRIC CANCER - SEVENTEEN YEARS OF OWN EXPERIENCE AND LITERATURE REVIEW

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**AIM:** To evaluate the short- and long-term outcomes of radical surgical treatment of gastric cancer (GK).
**Methods:** Retrospective study of 350 patients diagnosed with GC who underwent radical surgical treatment from 2004-to 2021. 244 patients underwent standard gastric resection (SGR) and 106 multivisceral resection (MVR). A control group of 101 patients with palliative procedures (bypass anastomosis or exploration) was used to assess survival.
**Results**: In the SGR group, 60% are men, and 40% are women. 52.5% underwent subtotal gastric resection and 47.5% gastrectomy. The average age is 64 years (31-90). The average postoperative stay is nine days (5-35). In 92.5%, R0-resection is achieved. In the MVR group, 75 are men, and 31 are women. The average age is 64 years (28 - 88). The average postoperative stay is 13 days (7 - 55). The percentage of R0-resection is 83.96%. The results between the SGR and the MVR in terms of survival (43.1 vs. 28.1 mo.), the 30-day mortality rate (0.6% vs. 3.96%), and major postoperative complications (≥IIIa, 6.4% vs. 14.85%) were compared, and a significant difference in favor of the standard resections ($p < 0.05$).
**Conclusion:** Despite the development of diagnostic methods in recent decades, in Western countries, gastric cancer is still discovered at an advanced stage. In order to achieve optimal outcomes, a multidisciplinary approach and early prophylaxis are mandatory.
**Key words:** gastric adenocarcinoma, standard gastric resection, multivisceral resection.

## PANCREATIC RESECTIONS IN T4 GASTRIC CANCER

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**Background**: Even nowadays R0 surgery in locally advanced gastric cancer (LAGC) remains a challenge. Such procedures often include pancreatic resections (PR) as a part of a multivisceral resection (MVR).
**Aim**: Analysis of some technical aspects and early results after MVR, including PR in cases of LAGC.
**Material and methods**: A total of 549 gastric cancer patients received surgery at our institution between 2007-2022. Pancreatic involvement without hematogenous nor peritoneal dissemination was registered in 97 cases (17.6%). Those data indicated MVR including 78 (1.4%) "wedge" atypical pancreatic resections (capsule and a thin fragment of parenchyma), 5 (0.9%) Whipple procedures and 14 (2.5%) left pancreatectomies and splenectomy. R0 resection was guaranteed by clean resection margins at frozen sections.

**Results**: The early postoperative mortality and morbidity rates after PR as a part of MVR were 1.0% (n=1) and 14.4% (n=14) respectively. Pulmonary embolism was the cause of fatal outcome. A fluid peripancreatic collection was the most common specific complication (n=6, 6.2%) but all those patients were treated by interventional non-operative drainage. Postopretaive pancreatic fistulas Grade A ranked second - 3.1% (n=3). Bleeding indicated re-operation in 1 case (1.0%).

**Conclusion**: MVR including PR may be taken in consideration as a treatment option of LAGC. Such an approach is advocated by the aim of radicalism but the risk of high specific morbidity rate might be demotivating. That's why this aggressive surgery must be performed only in selected cases and in high-volume centers.

**Key words:** locally advanced gastric cancer, pancreatic resection, multivisceral resection

## POSSIBILITIES FOR RADICAL TREATMENT OF ADVANCED GASTRIC CANCER (GC), T2-4N1-3BM1, P1 WITH POSITIVE CYTOLOGY OR PERITONEAL METASTASES

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**Aim:** Establishing the effectiveness of the combination of radical laparoscopic or open gastrectomy with D2 lymph dissection (H2) with HIPEC (Hyperthermic Intraperitoneal Chemotherapy), in ASA of the stomach for the prevention and / or treatment of PC.

**Introduction:** Peritoneal spread in gastric cancer occurs in 40-50% of patients. AF is more common in diffuse, poorly differentiated adenocarcinoma or linitis plastics (60-70%), gastrectomy with peritonectomy and HIPEC, shows a good opportunity to treat this group of patients.

**Material and method:** We summarize the available evidence for the effectiveness of HIPEC added to surgical treatment and adaptation of our own experience.

**Results:** Addition of HIPEC to standard treatment in patients with advanced SC with positive cytology resulted in statistically significant prolonged 3- and 5-year overall survival (RV) (RR 0.82, p <0.01). The authors reported the greatest effect of HIPEC on OP in patients with positive peritoneal cytology and limited nodal involvement (N1-2). It is reported that 1-, 2- and 5-year OPs, respectively. in 50.0%, 35.8% and 13.0% of patients after cytoreductive surgery (CF) with HIPEC. All studies reported the most significant prolongation of survival in patients with peritoneal carcinoma index <6 and complete cytoreduction - CC-0.

**Conclusion:** HIPEC HF should be used in patients with locally advanced gastric cancer (T3-4 and / or N + and / or CY +) and in patients with peritoneal metastases to achieve a complete response, reduce recurrences and improve survival.

## MULTIVISCERAL RESECTIONS FOR T4 LOCALLY ADVANCED GASTROINTESTINAL TUMORS

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**Background:** The role of multivisceral resections for locally advanced tumors is still

debated, because of its increased morbidity and mortality rate. However, performing multivisceral resection for locally advanced T4 carcinomas with no distant metastases may be the only chance of achieving R0 resection line and obtaining better survival rate.

**Aim:** Our Aim is to evaluate the efficacy of multivisceral resections in terms of morbidity, mortality and survival rate.

**Materials and methods:** 17 patients (12men and 5 women), with average age of 65.7 years were admitted to our clinic with locally advanced T4 gastric (58%), distal pancreatic (17%), colonic (5%) and renal (5%) cancer with no established distant metastases. All the patients underwent mltivisceral en bloc resection involving two (17.6%) three (41.2%), four (23.5%) and five (11.7%) organs, respectively.

**Results:** All the patients were transferred to the ICU department for the early postoperative period where no assisted ventilation was needed. Early complications included Covid – 19 associated pneumonia (with 53 days hospital stay,) death by one of the patients and duodenal leakage with reoperation also by one of the patients. 82,3% of the patients were discharged on the 13.6$^{th}$ postoperative day. Pathologic examination revealed no residual tumour and presentation of nodal involvement in about 54.5% of patients with mean number of isolated lymph nodes – 31.6. With the mean follow up of 10 months we observed 29.4% mortality rate and 71,6% survival rate.

**Conclusions:** Multivisceral resections for locally advanced upper abdominal tumors is technically feasible and can be achieved with acceptable mortality rate. However, performing this kind of surgeries should be made only in specific centers by experienced surgeons.

**Key words:** multivisceral resection, locally advanced T4 tumor

## QUALITY OF LIFE AFTER RADICAL SURGICAL TREATMENT FOR GASTRIC CANCER

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**Introduction:** Quality of life has become an increasingly important factor for long term survivors after surgery for gastric cancer. Quality of life also includes social and psychological aspects.

**Purpose of research/Aim:** The aim of this study was to compare quality of life after total gastrectomy (TG) with that after subtotal gastrectomy (SG) for gastric carcinoma. So we are able to identify which resection would produce a better quality of life for the patient.

**Methods:** The patients in this review had undergone total gastrectomy or subtotal gastrectomy with D2 lymph node dissection. All patients were free from recurrence at the time of the study. Quality of life was measured before operation and at first, third, sixth month and a year after operation. For the evaluation of the quality of life are used several functional scales (Rotterdam symptom checklist (RSCL), the Troidl index, the hospital anxiety and depression (HAD) scale, Visick grades, activities of daily living score)

**Results:** Decreased overall health status and scores on several function scales were less in the SG group, while increases on the symptom scales were higher in the TG group.

**Conclusion:** In most studies, quality of life of patients after a subtotal gastrectomy was generally better than after a total gastrectomy. In those cases where an adequate proximal safety margin can be achieved by a subtotal gastrectomy, that procedure is preferable to a total gastrectomy.

**Key words:** quality of life, gastric cancer, total and subtotal gastrectomy

## GIANT GASTRIC TUMORS

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**Background:** There is no definition of a "Giant gastric tumor" (GGT) but many authors have accepted as a limit size neoplasms larger than 10.0 cm. In rule gastric cancer in not included in this heading. GIST and lymphomas represent the great majority of GGTs. Signs and symptoms depend on tumor size and location. Often the initial clinical presentation is due to a complication – acute/chronic bleeding.
**Aim:** Analysis of treatment results in patients with GGTs
**Material and methods:** Thirteen patients with GGTs (larger than 10.0 cm) received distal gastrectomy at our institution between 2007-2022. Weakness caused by anemia (n=13) and weight loss (n=10) were the most common sign while massive upper GI bleeding was the first and only manifestation in 2 cases. Diagnostics was based on FGS, CT scan and MRI. Recently we relied on endoscopic ultrasonography.
**Results:** Mean age of patients was 52.4 years (range 47-71 years). The male/female ratio was 8/5. No fatal outcomes and 3 complications were registered. Two episodes of anastomotic bleeding (Grade A and Grade B) and one anastomotic oedema represented specific morbidity. Histological tests found out 8 GISTs, 3 MALT-lymphomas and 1 intramural lipoma.
**Conclusion:** Usually benign gastric tumors smaller than 4.0 cm are asymptomatic except those in the cardia or pylorus. Tumors affecting the gastric corpus and fundus might grow up to GGTs. Ulceration and chronic bleeding cause the "mandatory" anemia. Preoperative substitution of blood loss is the main prerequisite for low morbidity and mortality rates.
**Key words:** giant gastric tumors; distal gastrectomy

## LAPAROSCOPIC ATYPICAL RESECTION OF THE STOMACH FOR A RARE TYPE OF MESENCHYMAL STOMACH TUMOR

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**Summary:** Mesenchymal tumors represent a heterogenous groups of neoplasms, that include benign, malignant and borderline malignant tumors. Those tumors make up around 1 % of all malignant formations in adults and up 15 % in the pediatric population. The most common type of mesenchymal tumor of the GI tract is the GIST (gastro-intestinal stromal tumor), which arise from the pacemaker cells of Cajal and in most cases express mutations int CD 117 gene (Kit). Immunohistochemistry helps us to differentiate between this diverse set of tumors, with the most common stains being CD 34, CD 117, desmin, actin and others. Signs and symptoms of these tumors usually include non-specific pain or discomfort in the abdomen, GI bleeding and in some cases the firs presentation of the tumors is the incidental finding of metastases. A peculiar type of mesenchymal neoplasms are the inflammatory myofibroblast tumors. They are included in the group of spindlecell tumors, with their specific qualities being the expression of actin, as well as the inflammatory component. The frequency of these tumors is extremely rare, with there being around 150-200 cases diagnosed in the US yearly (including all localizations).
**Case**: 42-year-old patient presenting with sudden severe abdominal pain, mimicking that in hollow organ perforation. Duo to these symptoms an ultrasound and an abdominal CT was performed, with both showing a massive

formation in the epigastrium (around 8 cm in it's largest diameter). The tumor itself is in contact with the abdominal wall, the 3rd segment of the liver as well as the stomach. Preoperatively it was not possible to determine the exact origin of the tumor. Upon laparoscopy it was determined that it is a large, inflamed formation, with an intratumor hemorrhage, that arose from the body of the stomach along the large curvature, that infiltrated the abdominal wall as well as the left liver lobe. What followed was a laparoscopic atypical resection of the stomach, along with partial resection of the affected part of the abdominal wall as well as 3rd segment of the liver. Postoperatively the patient was verticalized on the first day postop, the drain was removed on the 3rd, oral intake was resumed on the 3rd and the patient was discharged on day 5. On the pathohistological report it was determined that the formation is an inflammatory myofibroblastic tumor with borderline malignancy. The cells express actin, but they do not express CD 117, CD 34, desmin, beta-cathenin,

**Conclusion:** This case demonstrates that laparoscopic surgery is a safe and effective way of treating complicated gastric tumors

**Key words:** GIST, Myofibroblastic tumor, Immunohistochemistry, Laparoscopy.

## POSTOPERATIVE INFECTIONS AFTER RADICAL SURGERY FOR GASTRIC CANCER - FACTORS ASSOCIATED WITH THEIR OCCURRENCE AND IMPACT ON SURVIVAL

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**Purpose:** To study postoperative infections and associated risk factors and their impact on survival in patients undergoing radical surgery for gastric cancer.

**Methods:** From 2000 - to 2021, in the Department of General Surgery, University Hospital „Alexandrovska" - Sofia, 609 patients with gastric cancer underwent radical surgery - 420 gastrectomies, 187 subtotal resections of the stomach and two upper polar resections. Some patients underwent combined surgical interventions, including splenectomies, left resections of the pancreas, and liver resections. D2 lymph dissection was performed as standard. Clinicopathological data were collected retrospectively. Postoperative infections were found in 119 patients (19.54%). The prognostic factors for postoperative infections were identified using univariate and multivariate analyses. Cox regression analysis was used to assess the relationship between postoperative infections and survival.

**Results:** Multivariate analysis showed that combined multiorgan resection, blood transfusions, blood loss volume, BMI ≥ 25 kg / m2 and the presence of comorbidity are independent risk factors for postoperative infections. It was also found that postoperative infections and the need for a large volume of blood transfusions perioperatively worsen long-term results.

**Conclusions:** Infections are the most common complications after radical resections for stomach cancer. In order to achieve a better surgical result and a long-term oncological outcome, postoperative complications should be minimized, paying attention to influencing the risk factors for their occurrence.

**Key words:** gastric cancer, gastrectomy, postoperative infections, blood transfusions, survival

## MEDIAN STERNOTOMY INFECTIONS – AN APPROACH TO PREVENTION AND TREATMENT

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Surgical site infection after median sternotomy also known as sternal wound infection is a serious complication after open heart surgery which sets challenges before surgeons. It is associated with high morbidity and mortality as well as financial burden upon the health system. Therefore preventive measures which are proved to reduce the risk of sternal wound infection should be implemented into clinical practice. Should infection occur, treatment is mainly surgical. Two general approaches exist for surgical treatment – conventional treatment and negative pressure wound therapy or vacuum therapy. Over the last twenty five years the vacuum therapy have gained widespread acceptance due to improved techniques and materials and proved its merits against conventional therapy. Thus it is nowadays a major method for treating infected postoperative sternal wounds as well as other infected or slowly healing wounds.
The present text takes an overview of the principal strategies for limiting sternal wound infection and the surgical treatment methods. Special emphasis is placed upon negative pressure wound therapy, which is the standard approach for treating infected wounds in the authors' institution.
**Key words:**sternal wound infection, prevention, negative pressure wound therapy

## INFECTIOUS COMPLICATIONS IN CANCER PATIENTS AFTER PORT-A-CATH INSETION FOR CHEMOTHERAPY INFUSION

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**Summary:** Comprehensive treatment of cancer patients usually requires adequate venous access through totally implantable venous access systems such as port-a-cath systems. They are associated with various complications, including infectious complications.
We present our experience with cephalic cut-down technique for implantation of port-a-cath systems in cancer patients in our clinic between September 2017 and November 2021. The characteristics of patients,cancer type, operative time, success rate, early and late infectious complications were studied.
During the period, 137 interventions were performed. All patients were followed for at least 6 months postoperatively. The male/female distribution was 58.2%/41.8%. The mean age was 68.4 years. No cephalic vein was found in six patients and a cephalic vein was smaller than the catheter diameter in two patients. This necessitated the placement of the catheter with a puncture technique in 8 patients (success rate 129/137 - 94.16%). Erythema of the skin was observed in two patients up to the 7th postoperative day, treated with local antiseptics without use of antibiotics. Catheter-associated sepsis was observed in three patients 3 months after implantation of the system, possibly related to improper usage, requiring removal of the systems and intravenous antibiotic treatment. One patient died at home after 3 days of fever up to 40 degrees Celcius.
Port-a-cath totally implantable venous access system through cephalic cut-down technique is safe and feasible with low levels of postoperative infectious complications.
**Key words:** infection, port-a-cath, haemoport, cancer

## AGGRESSIVE APPROACH IN THE TREATMENT OF POLYMICROBIAL NECROTIZING FASCIITIS OF THE PERINEAL, PERIANAL AND GENITAL AREA

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**BACKGRAOUND:** Fournier's gangrene is a rare but severe disease characterized by necrosis of loose connective tissue in the perineum and genitals caused by a synergistic polymicrobial infection represented by aerobic and anaerobic microorganisms. It was first described by Fournier in 1883. This condition is currently defined as polymicrobial necrotizing fasciitis of the perineal, perianal or genital areas. Early surgical removal of necrotic tissue and broad-spectrum antibiotic therapy are essential in the treatment of FG.
**AIM:** To analyze the results of the treatment of Fournier's Gangrene, published in the medical literature and compare them with our experience.
**METHODS:** A retrospective monocentric study covering a three-year period. 44 patients with polymicrobial necrotizing fasciitis of the perineum, admitted urgently and treated in OKPGSH, was analyzed. The results were compared with data from a previous retrospective study covering an 11-year period and 21 patients.
**RESULTS:** 4 patients died – with mortality up-to 9%. The average hospital stay is 14 days. Non-free skin grafting was performed in 16 patients. Bilateral orchiectomy was performed in 1 patient. Despite advances in surgical science and technology, the reported mortality from this disease in various studies is between 20% and 30%. The reported mortality from the previous study was 19%. Analysis of the results showed a 2-fold reduction in mortality.
**CONCLUSION:**The aggressive approach in the surgical treatment of the affected area, pre-existing incisions, targeted AB therapy and daily control of the local spread of infection are key to a successful treatment.
**Key words:** Fournier's gangrene; necrotizing fasciitis

## LOWER-EXTREMITY AMPUTATIONS AFTER DIABET FOOT COMPLICATIONS: SINGLE CENTER STUDY OVER A 2-YEAR PERIOD

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**Introduction:** Between 40% and 60% of non-traumatic amputations worldwide are due to diabetic foot complications. In Bulgaria, there are no accurate statistical data on the percentage of amputations performed annually for complications of diabetic ulcer.
**Objective:** We present epidemiological data on the performed amputations of the lower limb after diabetic foot for the period January 2020 - January 2022.
**Materials and methods:** 27 patients who underwent amputations of the lower limb, below-knee or above-knee amputations for 2 years period were analyzed.
**Results and discussion:** In 11 patients amputations were performed below the knee, and in 16 above the knee. A mortality rate of 11.11% was reported. 21 of the patients are men and only 6 are women. None of the amputated patients had prosthetics.
**Conclusions**: The percentage of amputations after complications of diabetic ulcer remains alarmingly high. In Europe there is a tendency to reduce their frequency and increase the number of prosthetic patients, while in Bulgaria there is a reverse trend.

**Key words:** lower limb amputation, diabetic foot, prosthesis

## TOE PRESSURE INDEX AS A PROGNOSTIC FACTOR FOR READMISSIONS DUE TO DIABETIC FOOT INFECTIONS

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**Introduction:** With the increasing number of patients with diabetes worldwide the rate of the complications related with it also increase dramatically. Among the surgical complications of this disease diabetic foot infections attributes for the majority of the cases. This bears a huge burden to the healthcare systems, taking up huge medical and financial resource.
**Aim:** To research the correlation between Toe Pressure Index (TPI) and the frequency of the repeated hospitalizations in patients with diabetic foot infections.
**Materials and methods**: A data for patients, admitted in department of Colo-proctology and Septic Surgery during 2017 was collected. For that period 34 patients were treated for diabetic foot infections who also had CT-Angiography performed and ABPI and TPI Index Measured.
**Results:** 19 (59%) of the patients had at least one episode of readmission due to another episode of infection in the same leg. From them only one had normal values of the TPI. 15 patients were not hospitalized again for the study period, 10 (29% of the study group) of which had normal values of TPI. From the rest of this subgroup three patients suffered a major amputation and one patient died from sepsis.
**Conclusion:** Measuring TPI, which can be easily done in outpatient and clinical settings can reliably be used to identify a group of patients with elevated risk for development of diabetic foot infection

**Key words:** TPI; Diabetic foot infection

## EFFECT OF PREOPERATIVE CHOLANGITIS AFTER BILIARY DRAINAGE PROCEDURE ON THE OCCURRENCE OF ANASTOMOTIC INSUFFICIENCY AFTER PANCREATODUODENECTOMY IN PATIENTS WITH PERIAMPULLARY TUMOURS

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**Purpose:** To investigate the effect of preoperative cholangitis after biliary drainage procedure on the occurrence of anastomotic insufficiency after pancreatoduodenectomy in patients with periampullary tumours.
**Methods:** A retrospective study for the period 1999 - 2021 was conducted in the Department of General Surgery at the University Hospital „Alexandrovska" - Sofia, including 334 patients undergoing pancreatoduodenectomy for periampullary tumours. The statistical analysis of the clinicopathological data was performed concerning the type of drainage procedure, identification of the risk factors for cholangitis and the frequency of general complications, and postoperative infections, including anastomotic insufficiency and mortality in the perioperative period.
**Results**: 109 patients underwent various biliary drainage procedures before surgery (operative, placement of various stents endoscopically or percutaneously). Significant prognostic risk factors for preoperative cholangitis are prolonged retention of high bilirubin levels

(p = 0.0136), extended time to surgery (p = 0.027) and hypoalbuminemia. Patients with preoperative cholangitis have a higher rate of postoperative complications, including anastomotic insufficiency (p = 0.001).

**Conclusions:** Prevention of preoperative cholangitis is essential to improve postoperative outcomes. To achieve them, the approach to these patients must be multidisciplinary, with effective collaboration between surgeons, gastroenterologists and oncologists.

**Key words:** cholangitis, pancreatoduodenectomy, anastomotic insufficiency, periampullary tumours, biliary stenting

## APPLICATION OF VIRTUAL REALITY SIMULATORS IN THE TRAINING OF LAPAROSCOPIC SURGERY

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**Introduction:** In the last decade, minimally invasive surgery has become widespread. In some surgical interventions, laparoscopic access is the gold standard. Due to the need to accelerate the acquisition of specific psycho-motor perceptions needed for laparoscopic operations, simulation training was created in a virtual environment. For the first time in Bulgaria in 2016, the Medical University of Varna introduced training with a laparoscopic simulator with virtual reality.

**Objective**: To evaluate the application of a virtual reality simulator in the training of laparoscopic surgery.

**Materials and methods:** The study covers the period from 2019 to 2021, during which 50 students and 12 doctors underwent specialized training. The training team consists of one specialist and two doctors with experience in laparoscopic surgery. The progress of the training was monitored in 9 main laparoscopic procedures. After the basic training, the participants performed a simulation laparoscopic cholecystectomy.

**Results:** Students significantly improved their response time, accuracy and horizontal maintenance when working with the camera. The trainees significantly improved the speed of performing various procedures. They performed significantly better than the students, with economical movements, with a tendency towards greater accuracy, speed of execution and precise retraction of objects.

**Conclusion:** Training in laparoscopic surgery with the use of a virtual reality simulator significantly improves practical skills. It is recommended that virtual reality simulators be integrated into the compulsory curriculum for surgery training.

**Key words:** simulation training, virtual reality simulator, trained in surgery

## COMPLICATIONS OF THE MINIMALLY INVASIVE CARDIO-ESOPHAGEAL RESECTIONS. ROLE OF THE INTERDISCIPLINARY APPROACH

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**Introduction.** With the development of laparoscopic surgical techniques, instruments, robotic platforms, nowadays, the minimally invasive approach in the treatment of cardio-oesophageal pathology has become the main and preferred. Esophageal and cardiac cancer is the eighth most common cancer and is on the rise. Combining the efforts of specialists in thoracic and abdominal surgery is associated with good perioperative and late oncological results. Despite all the advantages of the minimally invasive approach, complications after cardioesophageal surgery are severe. Early diagnosis and interdisciplinary approach in their management are key to a favorable outcome.
**Aim.** To analyze the frequency, structure and treatment of complications after minimally invasive cardio-oesophageal surgery in a group of 55 patients.
**Material and method.** For the period November 2016 - May 2022 in our hospital were operated 20 patients with conventional laparoscopy / thoracoscopy, 35 with robotic abdominal / thoracic access and fully transhiatal.
**Results.** The main minimally invasive techniques are cardioesophageal resections with intrathoracic anastomosis (Ivor-Lewis), cervical anastomosis (Mc Keown), transhiatal resection. Two patients died in the study group. The perioperative lethality amounts to 3.63%. Surgical complications have been reported in 10 patients. The total perioperative morbidity was 18.1%. In 9 patients, insufficiency was registered - 8 on the gastro-oesophageal anastomosis and 1 on the resection line of the esophagus after transhiatal resection of the epiphrenal diverticulum. In 4 patients it was necessary to perform total esophagectomy, cervical esophagostomy with food gastro / jejunostomy. Five patients underwent thoracoscopy, endoclipping, and esophageal stent implantation.
**Conclusion**. Minimally invasive cardio-oesophageal surgery is associated with the best results only if it unites the efforts of an interdisciplinary team of experienced abdominal and thoracic surgeons and is practiced in a multidisciplinary hospital with options for interventional endoscopy, resuscitation, invasive angiology.
**Key words:** esophageal cancer, laparoscopic, thoracoscopic, robotic resection, complication

## LAPAROSCOPIC APPROACH FOR TREATMENT OF COMPLICATED RECURRENT HIATAL HERNIA

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**Introduction**: Despite the surgical treatment of hiatal hernia is well standardized, the recurrence rate is observed in 15% -60% of cases and reoperation is technically difficult and challenging and should be used only in symptomatic patients whose symptoms are manifested by persistent reflux, dysphagia, pain behind the sternum, heaviness and constant discomfort, which leads to a noticeable change in quality of life.
**Aim:** To present our experience in the laparoscopic treatment of recurrent hiatal hernias using wide dissection of the esophagus and application of resorbable polyglactin mesh around the hiatal orifice to prevent early recurrence and provide the necessary conditions for repaired tissues to heal without tension.
**Materials and methods:** Our expirience include 36 patients with recurrence of hiatal hernia after laparoscopic Nissen funduplication. The mean age of the patients was 64 years (57 to 71 years). Recurrences are type III hernias with transposition of the proximal 2/3 of the stomach into the chest. For correction of recurrence, extended mediastinal dissection of the esophagus and crurography with polyglactin mesh in the area of the hiatal opening and subsequent Toupet funduplication are applied.
**Results:** The average operating time is 210 minutes without cases of conversion. No intra- and postoperative complications and perioperative mortality were reported. Patients started taking oral food on the second postoperative day and the average hospital

stay was 5 days. Before discharging, patients underwent contrast esophagogram with water-soluble contrast and no postoperative physiological and morphological abnormalities were found.

**Discussion:** Recurrent hiatal hernia is the most common complication after both open and laparoscopic treatment. Different types of recurrences have been described, such as slippage of the fundoplication; complete loosening of the fundoplication or herniation through the fundoplication. Complete relaxation of the fundoplication is the most common complication after open surgery of hiatal hernias with subsequent formation of a large recurrence. In some of the studies, perioperative mortality was reported in recurrent laparoscopic hernias with a frequency of 1% to 3%. The specifics of the intervention include both very precise dissection intrabadominally and intothoracically with an increased risk of lesion of adjacent structures, and the provision of techniques for prevention of recurrence by applying a prosthetic material - polyglactin absorbable mesh – "keyhole" shaped.

**Conclusion:** The laparoscopic approach in recurrent hiatal hernias is technically highly specialized, but effective, with patients with rapid recovery and low risk of intraoperative and postoperative complications.

## PERIOPERATIVE COMPLICATIONS AND RESULTS AFTER LAPAROSCOPIC SURGERY OF THE HIATAL HERNIA. EFFICACY AND SAFETY OF THE LAPAROSCOPIC APPROACH AS "GOLDEN STANDARD"

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**Introduction.** The laparoscopic approach to hiatal hernia surgery is considered as „gold standard". With the development of robotic platforms, more and more patients are being treated with robotic surgery. Despite all the advantages of the minimally invasive approach, some perioperative complications such as esophageal perforation, gastric fundus perforation, bleeding, postoperative stenosis, pneumothorax can be life-threatening and require reoperation. On the other hand, adult, comorbid patients may have difficulties to tolerate increased intra-abdominal pressure during surgery. There is still the question of whether all patients indicated for surgery can be operated minimally invasive and at what cost?

**Aim.** To analyze the perioperative results in a group of 71 consecutive patients with laparoscopic surgery for hiatal hernia.

Material and method. For a period of 9 years, a series of 71 consecutive minimally invasive operations on hiatal hernia were studied. There are no open operations in the group. All indicated patients were operated minimally invasively.

**Results.** The gender distribution is 17 men (23.9%) and 54 women (76.05%). The average age is 63.5 years (25-83 years). There are 25 patients (35.2%) aged> 70 years. The median hospital stay is 4.8 days. Perioperative mortality is 0%. Twelve perioperative complications (16.9%) were reported, of which 7 patients (9.8%) reported transient dysphagia that did not require rehospitalization or re-intervention. Relaparoscopy was performed in 2 patients due to port hemorrhage and foreign body (textile band of the esophagus). Thoracentesis was performed in 2 patients with evidence of postoperative partial pneumothorax. No perforations of the esophagus, stomach or other life-threatening complications were reported. There are no conversions in the group.

**Conclusion.** Based on the results in the study group, the experience gained, it can be concluded that the minimally invasive approach is the „golden standard" in the treatment of symptomatic hiatal hernia and GERD. Elderly age, previous surgery, obesity, comorbidity are not even relative contraindications. In

challenging cases, the surgeon‘s experience is crucial.
**Key words:** miniinvasive, laparoscopic, hiatal hernia, complication

## LAPAROSCOPIC SURGERY FOR HIATAL HERNIA

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**Introduction:** Hiatal hernia is one of the most common anatomical defects of the gastrointestinal tract and benign diseases of the cardio-oesophageal connection, and is often accompanied by gastro-oesophageal reflux disease. Laparoscopic fundoplication is accepted as the gold standard in the treatment of the disease and is widely used. The analysis of the results would lead to the improvement of the method and the reduction of the complications.
**Objective**: to conduct a study on the application of laparoscopic fundoplication in hiatal hernia.
**Material and methods:** The study covers 362 patients who were diagnosed and operated on in the First Clinic of Surgery at the University Hospital „St. Marina ”for the period 2005 - 2022. The perioperative results, morbidity, mortality, complications, specific complications, as well as pre- and postoperative data according to the follow-up protocol were analyzed in the patients.
**Results:** The distribution of the total group of patients by sex was 30.5% and 69.5%, respectively. The mean age of the patients was 62.0 years, with 59.1 years for men and 62.9 years for women. Patients are dominated by mixed hiatal hernia (type III) (36.8%), followed by type IV (27.9%), type I (15.4%) and paraesophageal hiatal hernia (n = 19.9%). The most commonly performed operative method for fundoplication was Nissen. Collis gastroplasty was also performed in 45 patients with evidence of brachioesophage. Postoperative complications were considered according to the Dindo-Clavien classification. The recurrence rate is 11.1%. Statistical analysis found that after each intervention there was a significant change in the value of the GILQI quality of life index. Data on specific complications and behaviors are presented. **Conclusion:** Laparoscopic fundoplication is a method that is being improved. Functional outcomes with low mortality and morbidity ensure a good quality of life for patients.
**Key words:** hiatal hernia, gastroesophageal reflux, laparoscopic fundoplication,

## LAPAROSCOPIC SURGERY IN GASTRIC CANCER

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**Background:** Nowadays laparoscopic techniques in gastric cancer surgery gain more popularity, because of the advantages of the minimal invasive surgery. There are a lot of published trials comparing open versus laparoscopic method, and they prove the advantages of the laparoscopic surgery in terms of postoperative trauma, systemic inflammatory response, postoperative hospital stay, estimated blood loss, early recovery and others, with similar harvested lymph nodes and oncologic efficacy. The only disadvantages of the laparoscopic

method are the need of specific instruments, the dependency on mechanical sutures and the longer learning curve, none of which are harmful for the patient.

**Aim:** The current study has the aim to present the experience of First clinic of abdominal surgery at MMA and to analyze the results after total and subtotal gastrectomy, combined with D2 lymphadenectomy in the abdominal malignant diseases.

**Materials and methods:** We present 31 patients (16 women, 15 men) avg. age – 64.65 years, treated at First clinic of abdominal surgery at MMA between 01.2019 and 05.2022. In 48.4% of the cases a total laparoscopic gastrectomy with intracorporal anastomosis was conducted and in the other 51.6% a subtotal laparoscopic gastrectomy was performed. The surgical intervention in all patients included an extensive D2 lymphadenectomy. In three of the cases the surgical intervention was conducted after a neoadjuvant chemotherapy and in one a block resection gastrectomy with distal splenic pancreatectomy.

**Results:** The mean surgical intervention duration is 303 minutes (60 - 580) with no significant blood loss recorded. The mean hospital stay is 10 days. No insufficiency of the oesophago-jejunoanastomosis was observed. Th final pathologic examination shows presence of gastric cancer in 24 patients (77.4%), multifocal NET in 3 patients, gastrointestinal stromal tumor in 3 patients an intraepithelial neoplasia in one patient. The mean number of the isolated lymph nodes is 27 (6 – 58).

**Conclusion:** Laparoscopic resection in the malignant abdominal formations goes with less operative trauma and faster recovery without compromising the oncological effectiveness of the intervention.

**Key words:** laparoscopic gastrectomy, gastric cancer

## LAPAROSCOPIC SURGERY FOR GASTRIC CANCER- RECOMMENDATIONS BASED ON EVIDENCE AND PERSONAL EXPERIENCE

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**Aim:** Summary of the available evidence and own experience of the role of laparoscopic surgery in the surgical treatment of gastric cancer (GC).

**Introduction:** Open gastrectomy is associated with significant postoperative stress, high morbidity (9.1% -46%). Several meta-analyzes have shown significant benefits of laparoscopic distal gastrectomy (LDG), including in advanced gastric cancer. There is evidence of the benefits of LH in adult patients.

**Material and method:** We analyzed meta-analyzes of the benefits of laparoscopic surgery for gastric cancer, published from 2010 to 2021. For the period from 2015 to March 2022 we performed 125 LH, the results of which we debate in the context of world experience.

**Results:** In resectable distal GC, it is recommended to perform LDG to have better surgical results and reduce the incidence of postoperative complications (PC). In resectable distal GC, it is appropriate to perform a total laparoscopic distal gastrectomy (TLDG) compared to laparoscopically assisted distal gastrectomy (LADG) in view of better postoperative surgical results. In patients with GC, laparoscopic total gastrectomy (LTG) may be considered to reduce PC and improve postoperative surgical outcomes. In patients with locally advanced GC, the use of LTGD2 lymph dissection may be considered to improve surgical outcomes with reducing the incidence of PC. In adult patients with GC, the use of LG is recommended to reduce blood loss, faster postoperative recovery, and reduction of PC.

**Conclusion.** LG is a safe and generally accepted procedure for the surgical treatment of GC. The performance of LG is recommended due to the improved postoperative results and the

reduced frequency of PC with the same long-term oncological results and according to the experience of the surgical team.

**Key words:** Gastric cancer, Laparoscopic gastrectomy, Lymph node disection

## ANALYSIS OF POSTOPERATIVE OUTCOMES AND COMPLICATIONS AFTER LAPAROSCOPIC APPENDECTOMY IN PATIENTS WITH ACUTE APPENDICITIS

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**Objective:** The aim of the study was to analize individual profile, outcomes, and complications after laparoscopic surgery of patients with acute appendicitis in the Department of General Surgery in UMHATEM „Pirogov.

**Material and Methods:** Data from a study of a patient's group in the Department of General Surgery of UMBALSM „H. I. Pirogov „ for a 6-month period (1.1.2021 до 1.7.2021) was collected. With acute appendicitis were selected 107 patients who underwent laparoscopic appendectomy. Indicators characterizing basic clinical and pathological features (epidemiology, demography, degree of pathological impairment), surgical approach and its outcomes (postoperative complications, postoperative duration), influence of concomitant factors were studied.

**Results:** This study includes 107 patients. The majority of patients were women - 56 (52.34%), men were 51 (47.66%). The mean age of male patients was 34.7 years and female sex-31.9 years respectively. Hospitalization times were usually short - most of the patients were discharged up to 48 hours (85-79.44%). Complications were verified in 10 patients (9.35%) - postoperative ileus, wound suppuration, hemorrhage from mesoappendix, and abscess.

**Conclusions:** The laparoscopic appendectomy was verified as an optimal and safe operating procedure. The laparoscopic approach reduces post-operative pain, shortens hospital stay, reduces complication rates, and thereby reducing treatment costs.

**Key words:** acute appendicitis, laparoscopy, outcomes, complications.

## THE CHALLENGES OF COVID-19 POLYPANDEMIA IN GENERAL SURGERY

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**INTRODUCTION:** As a result of globalization, technological development and the free movement of people, goods and services, COVID- 19 has affected people around the world, becoming a polypandemic threatening health services worldwide.

The rapid spread of the epidemic has changed the global health care system, including in the field of surgery - many hospitals are forced to stop or postpone planned surgical interventions, and emergency surgical services have decreased significantly.

**OBJECTIVE:** Clarify the institutional gaps in surgical treatment policies during the Covid 19 polypandemic and summarize recommended actions to optimize the surgical strategy for such a pandemic

**MATERIALS AND METHODS:** The available literature provides us with sufficient data on the significant global damage to socio-economic life, health care and surgery caused by Covid 19.

In the surgical setting, asymptomatic and oligosymptomatic patients with COVID- 19 could potentially expose staff and patients to infection with the virus through surgical and anesthetic procedures and cause outbreaks. Patients with

COVID -19 had poorer postoperative outcomes, with 3 times higher morbidity and mortality, reaching 44% admission to intensive care units and 20.5% deaths. Despite these risks, there are no consistent opinions on the surgical guidelines for perioperative screening and / or treatment of patients with COVID- 19 in current surgical practice.

We offer an analysis of patients treated with Covid 19 in May 2021 and April 2022, when the First Clinic of Surgery was transferred with 50 beds for treatment of patients with Covid 19, as well as a 2-year analysis of surgically ill patients during the polypandemic, from March 2021 to May 2022.

**RESULTS:** The results of studies by the World Association of Emergency Surgery for COVID-19 are alarming. The combination of a projected reduction in the number of emergency surgical patients and an observed increase in more severe septic diseases may be the result of patients‘ fear of COVID- 19 infection and consistent delayed hospital admission and diagnosis. Global data assess the impact of the SARS -CoV- 2 pandemic on emergency surgical care as strong or very strong. Leading are structural problems with logistics in hospitals, delays of more than 2 hours in the time of diagnosis and another 2 hours before the intervention, reduction of the total number of emergency operations, more severe septic abdominal diseases, especially perforated appendicitis and severe septic cholecystitis.

We share two years of our experience with the treatment of surgical patients, for the period March, 2020 - May, 2022 and a two-month period of hybrid treatment of patients with Covid 19, simultaneously with urgent surgical patients at the peak of the pandemic.

**DISCUSSION:** Surgery is rapidly adapting to deal with the COVID- 19 pandemic, introducing changes to both procedures and responsibilities for protecting patients and medical teams. These changes, however, place new demands on surgeons and increase the likelihood of improper communication, gaps in judgment and medical errors in the hospital and operating room. New safeguards and guidelines for the treatment of patients have led to rapid changes in the guidelines for proper communication, stress reduction and increased cohesion of surgical teams. Pragmatic guidance based on risk stratification and resource use will help ensure optimal surgical care and emergency preparedness.

„Surgeons have experienced a year of challenges on many fronts, including overcoming the emotional and volatile financial impact of COVID 19, but international databases show that they are able to change rapidly to meet the needs of patients in these extremely difficult times.

**CONCLUSION:** The current pandemic shows that despite all our medical advances, we remain incredibly vulnerable to infections for which we have no treatment. However, if we are motivated enough, we can make huge changes in the short term.

There is no doubt that COVID- 19 is currently the most obvious and urgent problem for global health security, and the world is rightly focused on tackling this pandemic.

Recognizing that surgery is an „integral and indispensable part of healthcare,“ with the unreserved support of the surgical community and resources, we can help surgeons and patients in the coming waves of this pandemic.

Governments and the global community must begin to actively implement effective plans to promote and improve managerial preparedness with a focus on COVID- 19.

## EMERGENCY SURGICAL DISEASES AND COVID-19 INFECTION

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**Background:** The Covid-19 pandemic infection affected the entire health care system, significantly changing the criteria of admission to surgical wards - reducing the number of planned surgeries at the expense of emergency and neglected poly-morbid patients. Additional problems were created by treating surgical patients with concomitant covid-19.

**Aim:** To evaluate the impact of the Covid-19 pandemic on the morbidity, mortality, complications and bed turnover in the treatment of surgical patients.
**Methos and Materials:** Retrospective and prospective study of patients with Covid-19 treated in the surgical clinics of UMBAL Dr. Georgi Stranski-EAD for the period from March 2021 till April 2022, compared with those treated in the period 1.01.2019-31.12.2019. Comparative analysis of the structure of morbidity, operations, mortality, complications, days in intensive care, bed turnover.
**Results:** 79 patients were treated, of which 33 women and 46 men. Of these, 16 patients recovered, 50 patients discharged with improvement and 13 patients died (16.5%).
Of the 79 patients who tested positive, 42 had a complication of Covid-19 infection – mostly were pneumonia, unilateral or bilateral. 46 patients underwent emergency surgery and 33 were conservatively treated. For this period the total number of days spent are 978 or an average of 12.3 per patient.
**Conclusion:** Covid-19 infection affected and worsened the condition of the patients and for their treatment many resources were used both to protect the staff and for expensive drugs for their treatment.
**Key words:** Covid-19, Surgery in Covid-19, Emergency surgery.

## SURGICAL PROCEDURES IN PATIENTS WITH COVID -19 ASSOCIATED INFECTION

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**Purpose**: COVID-19 is associated with high morbidity and mortality in patients undergoing surgery. Despite that, there are medical conditions requiring emergency surgical treatment
Goal is to determine profile and results of patients, who were subject of emergency or planed procedure in Military medical Academy.
**Methods:** There was performed retrospective analysis of data from treatment of patients with COVID-19, undergoing planed or emergency procedure between the period from 09.03.2020 to 31.03.2022.
Patients are grouped in three groups: 1. With primary COVID-19 and secondary developed emergency surgical disease or primary with both COVID-19 and surgical disease;
2. emergency surgery and secondary COVID-19;
3. Planed oncological surgery and afterwards with COVID-19.
**Results:** The hypothesis was confirmed for high mortality in patients undergoing surgery – form 93 surgically treated, mortality is 38% (35 pts.). 17% from surgically treated (16 pts) or 46% of deaths, in course of treatment for COVID-19, and another associated disease it was necessary to perform thoracostomy due to pneumothorax. The reasons of pneumothorax are complex. 95% (88 pts) from surgically treated patients have comorbidities – cardiovascular, oncological (in 15pts or reason of surgery – 10 pts.), diabetes, traumas and etc.
**Conclusions:** Morbidity and mortality are much higher in patients, passed through surgery with COVID-19 and developed respiratory failure. It is still not predictable who is going to have respiratory failure and who's not. Comorbidities lead to severe COVID -19, with higher mortality. Treatment of those patients is a challenge in front of teams which are taking care of them. It's better to have multidisciplinary approach in treatment.

## ONCOLOGY AND COVID-19 - CHANGES, MANAGEMENT AND COMPLICATIONS

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The COVID-19 pandemic has led to serious challenges to the world and all health systems. It has affected to the whole society and to one of the most vulnerable groups - patients with oncological diseases.
**Aim:** The aim of this study is to present the impact of the COVID-19 pandemic, including changes, management and complications, which are related to the organization, treatment and potential long-term outcomes of cancer patients.
**Methods:** In this prospective comparative study, we investigated data from cancer patients registered in the Bulgarian National Cancer Registry before the pandemic (2017, 2018 and 2019) and those registered during COVID-19 (2020 and 2021). We analyzed the most common mallignances - breast cancer(BC), colorectal cancer (CRC), lung and prostate cancer. As an addition, we compared patients treated with BC at the Thoracic Surgery Department in University Hospital of Oncology, Sofia before and during COVID-19 pandemic.
**Results:** There were a significant decrease in the number of registered patients during the COVID-19 pandemic compared to the previous period (BC - 3588 patients in 2017 and 2981 in 2021; CRC - 4270 in 2017 and 2442 - 2021 d.). We found a difference in mortality, which has increased even in the smaller number of registered patients (BC: in 2019 - 19.3%, 2020 - 20.6%; CRC: in 2019 - 38.8% , 2020 - 38.5%;). It could be due to the advanced stage of primary diagnosis and the malignancy's adression as a combination with COVID-19.
**Conclusion:** Discussing the problems and standardizing the management of patients with malignant diseases, taking into account the affect of COVID-19 pandemic, is the key for the development of Oncology and Surgery in Bulgaria. It would lead to improved recommendations and strategies for the diagnosis, treatment and follow-up of these patients.

**Key words:** oncology, COVID-19, morbidity, mortality

## EFFECT OF THE COVID-19 PANDEMIC ON THE TNM-STAGE IN PATIENTS WITH COLORECTAL AND GASTRIC CARCINOMA

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The COVID-19 pandemic affected all areas of people's lives worldwide. The healthcare system was put under the enormous challenge of limiting the spread of the virus and providing adequate care for the infected. This called for the creation of wards for treatment of COVID-19 and redistribution of hospital resources and staff. The aforementioned measures led to a halt in planned hospitalizations and limited the diagnostic and treatment of numerous diseases, including colorectal and gastric carcinoma.
**Aim:** To assess the impact of the cessation of planned hospitalizations and reluctance for hospital visits during the COVID-19 pandemic on the Joint Committee on Cancer (AJCC) TNM stage in patients undergoing surgery.
**Material and methods:** We performed a retrospective analysis of 282 patients undergoing surgery for colorectal and gastric cancer in the department of surgery of MHAT „Doverie", Sofia, during a four-year period. Cases were distributed in two groups, before and after the first „lockdown" in Bulgaria – the studied group included 140 patients and the control group had 142 cases of both cancers. All are staged according to the 8th edition AJCC classification.
**Results:** An increase in the number of advanced cancers and less early diagnosed ones during COVID-19 pandemic is observed.
**Conclusion:** In the long term, the limits on planned hospitalizations and the reluctance for hospital visits will probably lead to a worse

prognosis in patients with colorectal and gastric cancer.

**Key words:** COVID-19, colorectal cancer, gastric cancer, AJCC TNM staging.

## ACUTE APPENDICITIS DURING COVID-19 PANDEMIC LOCKDOWN

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**Background:** Patient attendance at emergency department (EDs) in our institution during the COVID-19 pandemic outbreak has decreased dramatically under the "stay at home" and "lockdown" restrictions. By contrast, a notable rise in severity of various surgical conditions was observed, suggesting that the restrictions coupled with fear from medical facilities might negatively impact non-COVID-19 diseases.

**Aim:** To compare the incidence and severity of acute appendicitis (AA) before and during the COVID-19 pandemic.

**Methods:** A retrospective study comparing the rate and severity of AA cases in our institution during March and October 2019 (Group A) to the corresponding period in 2020 (Group B) was conducted. Patient data included demographics, pre-ED status, surgical data, and postoperative outcomes.

**Results:** A total of 159 patients were identified, 97 in Group A and 62 in Group B (61% vs. 39%). The incidence of AA during COVID-19 period (Group B) decreased by 36.1% ($p = 0.02$). The rate of complicated appendicitis cases was significantly higher during the COVID-19 Lockdown with 45.1% (28 patients) vs. 25.7% (25 patients), respectively ($p < 0.01$). The average delay in ED presentation between Group B and Group A was 4.2 vs. 3 days ($p = 0.03$). The length of stay was 2.8 days in Group B vs. 2.5 days in Group A ($p = 0.4$), and the readmission rate was 14.5% (9 patients) vs. 5.2% (5 patients), $p = 0.17$, respectively.

**Discussion:** It is essential to state that none of the patients in this cohort suffered from the COVID-19 disease during their hospitalization. The limitations of this study lay in its retrospective nature and a single-center relatively modest size cohort, which may allow for a particular bias of the data. In addition, one should be careful to extrapolate conclusions to other regions in the world where the natural history of the pandemic might have evolved differently compared to Israel.

**Conclusions:** The significant decrease in the number of patients admitted with AA during the onset of COVID-19 possibly represents successful resolution of mild appendicitis treated symptomatically at home. On the other hand delayed presenting other patients with AA to the ED, causing a delay in diagnosis and treatment, which might have led to a higher rate of complicated appendicitis cases and a heavier burden on health care systems.

**Key words:** Acute appendicitis– Appendicitis management – Complicated cases – COVID-19 pandemic – Lockdown

## COVID-19 INDUCED COAGULOPATHY WITH SURGICAL COMPLICATIONS

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**Introduction:** The novel 2019 coronavirus disease (COVID-19), which is caused by infection with the severe acute respiratory syndrome coronavirus 2, has spread rapidly around the world and has caused many deaths. COVID-19 disease predominantly affecting the

respiratory tract, about 20–43% patients also present with extrapulmonary manifestations such as coagulation disorders with systemic hypercoagulable state and arterial/venous thrombosis which induces unfavorable prognosis.

**Aim:** To evaluate role of coagulopathy induced by COVID-19 which cause arterial and venous thrombosis of multiple organs and lead to poor patient outcome.

**Material and methods:** In this report we present our experience in the field of this topic through two cases of colon perforation and a case of acute superior mesenteric artery occlusion, all three with severe COVID-19 pneumonia during their hospital stay and two cases with portal vein thrombosis without COVID-19 pneumonia but PCR test-positive. The five cases passed through our institution for a period of two years in between March 2020 to March 2022. Patient data included demographics, preoperative status, surgical data, and postoperative outcomes.

**Results:** Two patients with portal vein thrombosis was treated symptomatically and received therapeutic anticoagulation. Two patients with colon perforation (transverse and sigmoid colon) were operated immediately after CT examination and they underwent emergency colon resection. Patient with acute superior mesenteric artery occlusion also underwent emergency bowel resections. To date, all patients are alive and in good health condition.

**Discussion:** This severe medical situations may cause exhaustion of medical staffs and inhibit cooperation between infectious disease specialists and abdominal surgeons. It took about 24 h from the onset of abdominal pain to the diagnosis as thrombosis / occlusion. In case that acute onset of severe abdominal pain occurs in patient with COVID-19, physicians should consider the possibility of arterial/venous thrombosis and examine the patient by contrast CT immediately. Furthermore, it is important to collaborate between infectious disease and abdominal surgeons to save their lives from this lethal disease.

**Conclusions:** We reported few cases complicated with coagulopathy induced by COVID-19. This complications are not common like COVID-19 pneumonia, it can be a differential diagnosis when a patient develops secondary sepsis.

**Keywords:** Coagulopathy–COVID-19–Arterial/Venous thrombosis–Surgical complications

## SPONTANEOUS HEMATOMAS IN PATIENTS WITH SARS-COV-2 INFECTION, RECEIVING PROPHYLACTIC ANTICOAGULANT THERAPY

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**Purpose:** Anticoagulant therapy plays key role in preventing blood clots in patients with Covid-19. Despite their unarguable effect they still can cause life threatening bleeding.

**Methods:** We present a retrospective analysis of 20 patients with SARS- Cov-2 infection and spontaneous hematoma with different location in human body. They were managed conservatively or with a surgical procedure. We collected data for the period of January 2021 to March 2022 from the Covid department of Alexandrovska University Hospital. Polymerase chain reaction ( PCR) was used for the diagnosis SARS- Cov-2 infection. The hematomas were found with CT of abdomen. We analyzed the laboratory tests, radiological findings, treatment and the achieved results.

**Results:** 20 patients out of 1967 for this period (1.02%) had a spontaneous hematoma while treated with anticoagulants. Six patients had a retroperitoneal hematoma (30%) and 14 had a rectus sheath hematoma (70%).

**Conclusion:** our analysis proves that patients should have an anticoagulation therapy in certain dose because the risk of thrombosis exceeds the risk of bleeding

## SEVERE COMPLICATIONS IN PATIENTS WITH COVID-19 INFECTION: PNEUMOTHORAX AND PNEUMOMEDIASTINUMV

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**Introduction:** There are limited data about the incidence of pneumothorax in patients with COVID-19 infection and about its impact on patient outcome.
**Methods:** A single-site retrospective study was conducted which included patients from all COVID-19 wards in the Military Medical Academy – Sofia as well as medical documentation for the period October 2021 – February 2022. The presence of pneumothorax and/or pneumomediastinum was detected by chest X-ray or CT scan. In patients with prolonged air leak demographic and clinical characteristics were recorded.
**Results:** From October 2021 – February 2022, 1504 COVID-19 patients were hospitalized, 406 of them with severe illness. Overall incidence if pneumothorax and/or pneumomediastinum in patients with severe disease was 5.2% (21 of 406). Ten patients had pneumothorax, 6 had pneumomediastinum, and 5 had both. Six patients (29%) developed the complication during spontaneous breathing, and 15 (71%) were on mechanical ventilation. In 15 of the patients thoracostomy were conducted with insertion of intercostal catheter F22-F26. In 3 of them the procedure were conducted bilateral. Three VATS procedures were conducted due to complicated non-resolving pneumothoraxes (resection of blebs/adhesions/wedge resection). Overall mortality in this cohort was 74% in comparison with 16% in patients without pneumothorax. The incidence of this complication was more frequent in males than in females. (3:1)
**Conclusion:** Pneumothorax and pneumomediastinum are typical and relatively frequent complication in COVID-19 patients and are poor prognostic factors. In patients with severe disease it is preferably to use protecting lung ventilation strategy.

## SPONTANEOUS HEMATOMAS IN PATIENTS WITH COVID-19 INFECTION - FEATURES AND MANAGEMENT

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Anticoagulant prophylaxis is part of the standard treatment in patients with COVID-19. Despite adequate thromboprophylaxis, 1/3 of the patients with COVID-19 and pneumonia develop pulmonary embolism. The high rate of thrombotic complications leads to higher doses of anticoagulants, which could increase a risk of hemorrhagic complications.
**Aim:** The aim is to analyze the frequency, characteristics and management to patients, hospitalized with COVID-19 who have been diagnosed with spontaneous hematomas as a complication during their hospital stay.
**Methods:** In this retrospective study, we investigated data from 825 patients hospitalized with COVID-19 for the period of April, 2021 to April, 2022 at "Lozenetz" University Hospital.
**Results**: 3,4% (28 patients) were diagnosed with spontaneous hematomas: retroperitoneal hematomas - 13; hematomas of the abdominal wall - 8; pectoral hematomas - 2; intra-abdominal hematomas - 3; hemophthalmos - 1; intracranial hematomas - 1. All patients

received anticoagulant therapy. Hematomas were proven by CT with intravenous contrast. Selective angiographies were performed in some patients. 57.1% (16 patients) underwent surgical treatment.

**Conclusion:** Clinical management of patients with COVID-19 and spontaneous hematoma, as a life-threatening complication, is a challenge for any clinician. That's why it is necessary more clinical studies on risk factors and characteristics of the at-risk patients, which can use for making a treatment algorithm.

**Key words:** hematoma, COVID-19, management

## SPONTANOUS ILIOPSOAS HEMATOMA IN PATIENTS WITH SARS-COV-2-ASSOCIATED PNEUMONIA – SERIES OF 8 CASES

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**Background:** Coagulation disturbances in COVID-19 cases result from micro- and macrovascular endothelium damage. Pathophysiology of SARS-CoV-2 infection is characterized by many phenomena including hypercoagulation and thrombotic-inflammatory reactions. Antithrombotic prophylaxis is an integral part of treatment standard. This increases the risk of bleeding of different severity and clinical presentation.

**Material and methods:** A total of 3437 patients with COVID-19 have been treated in Acibadem City Clinic University Hospital Tokuda, Sofia between March, 2020г. - November, 2021. Spontaneous iliopsoas hematoma (SIPS) was diagnosed in 8 cases, all of them with clinical, laboratory and diagnostic imaging data for pneumonia. Low-molecular-weight heparin had been administering subcutaneously in 7 cases. One patient had been receiving Clopidogrel and Aspirin on an outpatient basis. The median patients' age was 63.0 years. SIPS was diagnosed after lab tests deviations and CT-scan. The latter detected homogenous collections ranging in size from 2.0/1.0 cm to 15.0/10.0 cm. The treatment approach depended on several criteria: size, general condition, comorbidity and severity of pulmonary infection.

**Results:** Three patients received surgery and 4 were treated conservatively. Adequate intensive treatment was initiated in 1 case but patient's general condition was worsening progressively and fatal outcome was registered 6 hours after the diagnosis had been established.

**Conclusions**: SIPS is a rare but life-threatening complication in the course of COVID 19. The lack of specific symptoms leads to diagnostic difficulties. The choice between surgical or conservative treatment is often a challenge.

**Key words:** iliopsoas hematoma; COVID 19

## MESENTERIC THROMBOSIS DURING COVID-19 PANDEMIC

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**INTRODUCTION:** Mesenteric thrombosis (MT) is with staggering frequency despite modern anticoagulant and antiplatelet treatment. The current epidemic situation in Bulgaria and the growing thromboembolic complications associated with Covid-19 further elaborate this already fatal diagnosis.

**OBJECTIVE:** To observe cases of mesenteric thrombosis in patients with ongoing anticoagulant therapy and the impact of the emerging Covid-19 pandemic. We analyze the causes, clinical course and results of treatment in selected patients.

**METHODS:** 25 patients were studied at the University Hospital „Dr. Georgi Stranski" EAD - Pleven at First Surgical Clinic for the period 01.01.2016. to 15.01.2022

**CONCLUSION:** The available anticoagulant therapy should not exclude MT from the differential diagnostic plan. MT in patients

with Covid-19 is a severe complication with high mortality rate. Early detection and timely treatment are essential for a favorable outcome of the disease.

**Key words:** mesenteric thrombosis, Covid-19, complications, antiocoagulants, antiplatelet agents

## SKIN CRURIS NECROSIS AS LATE COMPLICATION OF COVID-19 PNEUMONIA

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**Aims:** To present a patient who had vasculitis wounds and skin necrosis of both cruris, as late complication of COVID-19 pneumonia. Case is followed-up as treatment tactics and medication. We present photos.

**Clinical case:** Patient of 75 years after suffering COVID-19 pneumonia, appered with vasculitis and later with skin necrosis of left cruris.

Wound management periods – 1st – Necrosis cleansing; 2nd– Skin regeneration and wound healing.

Treated for COVID-19 pneumonia in our hospital 04-16.02.2021, when he exhibited ischemic heart disease. Admitted 14-17. 03. 2021 in Cardiology in other hospital for CF IIFC. RV dysfunction. Rhythm dysfunction. Then he exhibited petechial erythematous skin eruption–Vasculitis purpura.

Patient is sent home without distinct diagnostic and treatment directions. Consulting Vessel surgeon-without Doppler signs for DVT or arterial thromboembolism. In the end of April 2021 appeared widely spread dry skin necrosis with purulent discharge. Similar on small area of right cruris.After refused admission to several hospitals, patient was admitted to our hospital on 14.05.2021г

Local status In the lateral and anterior sides of left cruris and foot a necrotic wound is seen – black necrosis 25 x 15cm, well demarcated from the surrounding tissues, but is not separated from the underlying tissues. Purulent discharge.

Microbiology exam-variety of bacteria–all sensitive to Amikacin. Blood tests–anemia; increased urea (24.0mmol/l) and creatinine (232.0mmol/l)Slight fever.Local therapy with HydroClean achieved necrosis moisturing,which became suitable for necrectomy–full thickness skin and subcutaneous. Characteristic strong pain, extreme durin wound dressing, even at tender touch. Throughout Second period-Prontosan, Idrosoil, Rigenoma. Antibiotics – Unasin; Metronidasol later Amikacin.

Uremia was explained with renal dysfunction associated with the main disease. However, BPH was found. Urinary catheter inserted. Patient was unwilling to have skin plastics and was discharged from hospital on 09.07.2021. Ambulatory treatment continued with the same therapeutic scheme. In the course of wound treatment in September 2021 was performed prostate TUR.Wound healing ceased at 5x5cm because of Staphylococcus . After Augmentin и Ciprofloxacin; and Atrauman Ag dressings faster wound healing was achieved.

**Conclusions:** The treatment of widely spread necrotic skin wounds is extraordinary slow process, even at some stages the healing process might be backed.

Therapy should comply at every stage with the patients' local and general state and should change respectively in order to achieve optimal curative effect.

**Key words:** vasculitis, skin necrosis, necrotic wounds, wound healing

## COVID-19 AND SURGICAL EMERGENCIES „CAN IT CAUSE OR NEGATIVELY AFFECT PROGNOSIS?"

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**Introduction:** the evolution of the pandemic caused by Covid-19 has put the surgeons in new and unknown situations which they have to deal with so they were forced to work in threatening conditions for both the health team workers and the patients.
**Aim:** The aim of this publication is to describe the surgical complications that have occurred in association with Covid-19 infection, their diagnosis and treatment.
The subject of study are patients who have been admitted with surgical diagnose and have experienced Covid-19 symptoms during their hospitalization.
**Material and methods:** The object of study are 30 patients with Covid-19 infection admitted and treated in the First Surgical Clinic of the University Hospital "Dr. G. Stranski" - Pleven for a period of 14 months /03.2020 - 04.2021/.
The patients are divided into two groups:
Patients admitted with a surgical diagnosis and developed symptoms of Covid-19 infection during their hospitalization in the surgical department; /16 patients /53.3%/.
Patients who were treated for Covid-19 infection and developed surgical complications, which required transfer to a surgical department / 14 patients / 46.7%.
The total number of operated patients is 16 /53.3%/. While the mortality rate was 9 patients /30% /.
**Conclusion:** Mortality in this group of patients was analysed, focusing on the group of patients treated in the department for surgical complications developed during Covid-19 infection.
The indications for surgical treatment and its results are discussed.
**Key words:** Pancreatitis, Haemorrhage from the gastrointestinal tract, Covid-19

## DIFFICULT LAPAROSCOPIC CHOLECYSTECTOMY – AN EASY RECOGNIZED CHALLENGE?

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**Background:** Laparoscopic cholecystectomy (LC) is the second most common surgical procedure in general surgery. According Eurostat, for 2018 in Bulgaria are performed 48/100 000 LC. Difficult laparoscopic cholecystectomy can shorten the life of both the patient and the surgeon. Preoperative determination of the patients with forthcoming difficult LC is not always easy and straightforward process. This determination helps for the physical, mental, technical and logistic preparation of the surgical team.
**Aim:** Preoperative determination of the patients with expected difficult laparoscopic cholecystectomy. Statistical determination of difficult LC predictors.
**Materials and methods:** Prospective trial with 150 consecutive LC patients (55 males, 95 females) for the period 10.2018 – 05.2021 operated by single surgeon. The influence of certain predictors of the difficult LC is studied and their importance for the factors operative time, spillage of bilium/stones, conversion to open operation, biliary/arterial trauma. The material was processed with Chi-square test or Fisher`s exat test, ANOVA test, Independent samples t-test, Mann – Whitney test and Tukey HSD test.
**Results:** The results obtained showed that from the factors determining difficult LC of major importance are: age, complicated forms of cholelithiasis, mainly acute cholecystitis (as

well as related leukocytosis and pathological ultrasound), diabetes mellitus as an accompanying pathology, as well as the intake of antiplatelet / anticoagulant agents. Male gender, obesity and liver cirrhosis are additional factors that increase the risk of intraoperative spillage of bile and stones, but have no statistical significance regarding the operative time.

**Conclusion:** Preoperative identification of patients with which the surgeon may have technical difficulties in performing LC is important in terms of proper preparation of the surgical team and reducing the risk of complications. This task is not easy, but it is completely feasible with the application of a relatively simple preoperative evaluation algorithm.

**Key words:** Difficult laparoscopic cholecystectomy, Predictors.

## ADVANTAGES OF THE LAPAROSCOPIC APPROACH IN ELDERLY PATIENTS WITH DESTRUCTIVE FORMS OF CHOLECYSTITIS

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**AIM:** Due to the increasing frequency of operations for destructive forms of acute cholecystitis in elderly patients, we set ourselves the goal to analyze comparatively the results of open and laparoscopic surgical approaches.

**MATERIAL AND METHOD:** We analyzed retrospectively and non-randomized a 5-year period (2016-2021) and a total of 84 patients above 80 years operated laparoscopically or with open approach for destructive forms of acute cholecystitis. We divided the patients in two cohorts: laparoscopic one of 51 cases and a second one of 33 patients operated with open access. We analyzed the patients by age and sex, concomitant diseases and preoperative assessment of ASA, duration of surgery and reported intraoperative complications, necessity of postoperative intensive care, morbidity and postoperative complications, total postoperative hospital stay and mortality.

**RESULTS:** Comparing the data in both cohorts with destructive cholecystitis in the elderly, we found: shortened duration of operative procedure and general anesthesia in the laparoscopic group, fewer patients in intensive care unit, reduced morbidity, earlier mobilization and feeding of patients and shortened hospital stay in the same group. This had reflected in the reduction of indirect (cardiac, pulmonary, renal, neurological, etc.) postoperative complications and manifestations of psycho-somatic syndromes with cognitive impairment in this risk category of elderly patients.

**CONCLUSION** : Based on this analysis and the literature review, we believe that the laparoscopic approach in this category of patients is not contraindicated, but recommended, but after evaluation and individual approach for each case.

**Key words:** destructive cholecystitis; laparoscopic cholecystectomy; elderly patients

## THE PLACE OF LAPAROSCOPY IN THE COMPLICATED CASES OF BILIARY OBSTRUCTION – CHOLEDOCHOLITHIASIS AND CHOLANGITIS

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The biliary obstruction can be provoked by many benign and malignant causes. The most common cause are gallstones stuck in bile duct, resulting in biliary obstruction and bile stagnation. This is a life threatening condition with serious impact on the different organ systems. It needs urgent diagnosis and treatment. Endoscopic retrograde cholangiopancreatography (ERCP)
is the most common intervention today performed

for the treatment of obstructive jaundice. The first laparoscopic common bile duct exploration was performed about 30 years ago and extend its application. Today the laparoscopic approach is considered a safe and effective method for the removal of common bile duct stones, comparable to the results of ERCP.

During our study of 29 patients with choledocholithiasis, all of them are operated laparoscopically. 6 critically ill patients with cholangitis were treated preoperatively by percutaneous biliary drainage. The laparoscopic resolution of choledocholithiasis is achieved for all patients. Post-surgical complications occurred in 3 cases, 1 bile leakage and one death.

**Key words:** obstructive jaundice, biliary obstruction, choledocholithiasis, acute obstructive cholangitis, laparoscopic common bile duct exploration.

## MINIMALLY INVASIVE TRANSABDOMINAL PREPERITONEAL REPAIR OF INCISIONAL LUMBAR HERNIA

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**Introduction:** A lumbar hernia is a rare type of abdominal wall defect by anatomic location. It can be primary in origin over the lumbar triangles that can be categorized into superior (Grynfeltt) and inferior (Petit), or secondary as a result of trauma or surgery. Lumbar abdominal wall hernia in which clinical presentations may vary from an asymptomatic bulge in the lumbar area to a symptomatic lumbar mass with back pain. Anatomical location makes challenging diagnosis and repair. Individual approach for every patient is a key for successful surgical treatment. In this paper, we present a minimally invasive approach to the treatment of incisional lumbar hernia.

**Case presentation**: A 75-year-old patient from Pazardzhik town, admitted to our unit at the Military Medical Academy for swelling in the left lumbar region at the site of an old surgical scar from a previous nephrectomy (2020) caused by nephropathy. The swelling has a one-year history and causes periodic local pain and discomfort during physical exercise. CT-scan show us incisional left site lumbar hernia, 10cm defect diameter with descending colon and spleen as a hernia contents. We conducted preoperative preparation and consultations with an anesthesiologist, cardiologist and nephrologist. The patient underwent minimally invasive transabdominal preperitoneal lumbar hernia repair with a prosthesis. The postoperative period went smoothly and the patient was discharged on the fourth day. Three months later, he feels well and there is no evidence of recurrence.

**Conclusions:** Preoperative CT-scan of the abdomen with contrast in lumbar hernia patients is a mandatory requirement for proper diagnosis and selection of an appropriate surgical approach. Minimally invasive transabdominal preperitoneal incisional lumbar hernia repair provides optimal view in operative field, minimal tissue trauma, fast recovery and good cosmetic results. This is a new method, but a feasible, useful and safe alternative to conventional surgical techniques for incisional lumbar hernia repair.

**Key words:** Incisional lumbar hernia – Preperitoneal repair – Hernia with rare location.

## COMMON HEPATIC ARTERY APPROACH IN TECHNICALLY DIFFICULT DISTAL LAPAROSCOPIC PANCREATECTOMIES

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**Introduction:** Laparoscopic distal pancreatectomy is the gold standard procedure nowadays. The tumor infiltration of the splenic artery (SA) near its origin, as well as the engagement of the splenic vein (SV) near its confluence with the superior mesenteric vein (SMV), or even location on the body in front of the celiac trunk, could be a reason for technical difficulties. In such cases the most easily accessible major landmark is the common hepatic artery (CHA). Transection of the pancreatic neck and the ventral retraction of the pancreas are main steps for reaching the dorsal aspect of the splenic artery.
**Aim:** The aim of the current presentation is to demonstrate the advantages of our approach and to describe steps to facilitate retroperitoneal access of the SA.
**Materials and methods:** We present 10 cases of laparoscopic distal pancreatectomy (pancreatic body carcinoma – 5 cases; NET of the pancreatic body – 3 cases; pseudocyst of the body – 1 case; IPMN in one patient). Mean age of the presented patients is 65.7y.
**Results:** All ten cases were finished laparoscopically. In three of the patients spleen-preserving subtotal distal pancreatectomy a m. Kimura was done. Peripancreatic invasion near the origin of the SA was confirmed in five cases and infiltration of SV just to its confluence in one. The pancreatic transection was performed stepwise at the pancreatic neck, followed by transection of the splenic vein, as vascular stapler was used. The mean operative time was 212 minutes (160-280) and the blood loss was insignificant. All patients had uneventful hospital stay and were discharged on the 7.8th postoperative day.
**Conclusionss:** Laparoscopic distal pancreatectomy can be a difficult procedure, that is why our opinion is that our approach could facilitate the technical performance of the procedure. Identification of common hepatic artery could guide surgeons for safety performance.
**Key words:** distal pancreatectomy, common hepatic artery, retroperitoneal approach

## MORBIDITY AND MORTALITY IN PATIENTS WITH LIVER CIRRHOSIS UNDERGOING NON-HEPATIC SURGERY

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**INTRODUCTION:** Non-hepatic abdominal surgery in cirrhotic patients has nearly 45% mortality and results in increased postoperative morbidity and mortality compared to similar surgery for non-cirrhotic patients. The extremely high perioperative risk in this population leads to elective surgery avoidance, higher rate of emergency procedures, higher morbidity, 7-fold higher mortality and longer hospital stay. which requires a good perioperative risk assessment in this population. About 10% of all cirrhotic patients will require surgery, both elective and emergency in the last years of their life which requires a good perioperative risk assessment in this population.
**AIM:** Risk assessment in patients with liver cirrhosis undergoing non-hepatic abdominal surgery and analyzing the relation between perioperative morbidity and mortality and Child-Pugh-Turcotte class, MELD and MELD-Na scores, ASA class, serum-ascites albumin gradient (SAAG).
**MATERIAL AND METHODS:** Literature review; analysis of patients cohort
**DISCUSSION:** The present study includes 16 patients with liver cirrhosis undergoing elective or emergency surgery for the past twelve months. A comparative study has been performed analyzing the Child-Pugh-Turcotte class, MELD and MELD-Na scores,ASA class and the presence of portal hypertension as an independent risk factor for higher mortality rate, expressed by the serum-ascites albumin gradient (SAAG).
**CONCLUSION:** Postoperative morbidity and mortality in patients with liver cirrhosis depends on the severity of the liver disfunction, type and timing of the surgical procedure. Predictors of

morbidity and mortality are Child-Pugh-Turcotte class, MELD, MELD-Na score systems. Portal hypertension and surgery in an emergency setting are associated with extra increased mortality and morbidity rates. Most of the surgical prcedures could be safely performed in patients with CPT A class and lower MELD score with no signs of portal hypertension.

**Key words:** chronic liver disfunction, liver cirrhosis, nonhepatic surgery

## ENDOSCOPIC INTERVENTIONS FOR TREATMENT OF WALLED-OFF PANCREATIC NECROSIS

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**Background and Aim:** Walled-Off pancreatic necrosis is a late local complication of acute pancreatitis. Since an infected WON is associated with high mortality, it may require interventional drainage or debridement. During the last decade, endoscopic drainage has emerged as a more favorable approach than surgical and radiological methods, with lower mortality rates and a shorter length of hospital stay.

We aim to present our initial experience with endoscopic ultrasound-guided drainage of infected WONs with a new model of metal stents and direct endoscopic necrosectomy (DEN).

**Methods:** We present two clinical cases of patients with infected WON who underwent endoscopic ultrasound-guided drainage followed by direct endoscopic necrosectomy.

**Results:** The patients were both males, aged 72 and 57 years, approximately 4 weeks after an episode of acute pancreatitis, in severe condition, with persistent abdominal pain and fever. In the first case, transgastric drainage with a metal stent was initially performed. A significant reduction in the size of the collection was reported from the control computed tomography scan (CT). Due to clinical deterioration and new onset of fever, two sessions of endoscopic necrosectomy with excellent clinical results were performed on the 5th and 6th post-procedure day. The second patient initially underwent endoscopic ultrasound- guided transgastric drainage with double pigtail plastic stents. Due to the lack of improvement, a second drainage intervention („dual-gate modality“) was performed on the third day with the placement of a specialy designed metal stent. Fifteen days later, due to clinical deterioration, DEN was performed with excellent effect. In both cases, complete resolution of necrotic collections, improvement of the general condition, and no complications related to the procedure were reported.

**Conclusion:** Endoscopic treatment of infected necrotic collections using new specially designed metal stents and direct endoscopic necrosectomy is highly effective and safe and can be considered in the complex treatment of patients with necrotic pancreatitis.

**Key words:** Acute pancreatitis; WON; EUS-guided drainage; LAMS, direct endoscopic necrosectomy

## LAPAROSCOPIC APPROACH IN NECROTIC PANCREATITIS

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**Introduction:** Severe acute pancreatitis is a disease that is often complicated by a complex pathological process, difficult to manage and associated with high morbidity and mortality. Approximately 80% of patients have a mild form of the disease, while the remaining 20% develop a severe life-threatening form of the disease. These patients are at high risk of infection, multisystem organ failure and death. Necrotizing or infected pancreatitis requires a multimodal approach and often offers surgery. Over the last few decades, great advances have been made in

the treatment of patients with acute pancreatitis, and in particular necrotic pancreatitis. However, morbidity and mortality remain high.

**Aim:** To present our experience in the treatment of necrotic pancreatitis through pre-drainage, laparoscopic necrectomy, outlining the clear prerequisites and benefits of the recovery process of patients.

**Method:** 32 cases operated on for necrotic pancreatitis were examined for the purpose of the study. The mean age of the patients was 50.5 years (37 to 64 years). Patients were followed by ultrasound examinations.

**Results:** The examined data were compared regarding the postoperative stay (17.5 days); mortality (0%); operative approach - one-stage and two-stage - depending on the genesis, as well as the severity of the general condition and vital signs. Cholecystectomy, revision of the biliary tract with Kerren drain, and subsequent necrectomy were used in 11 cases. In 5 cases it was necessary to make a double-barreled small intestinal protective anus. In 7 of the cases, due to the severe general condition of the patients, initial drainage of the collection was required. In 10 of the cases, laparoscopic exploration and necrectomy were performed directly. All patients show good tolerance to treatment and good response to pain syndrome. Early removal of the nasogastric tube and started feeding (4-5 days). Outpatient follow-up of cases.

**Conclusion:** The mini-invasive approach of this life-threatening disease and resolution of his complications in nearby pancreatic organs are primary goals in the treatment of necrotic pancreatitis. This should be referred to an interdisciplinary team of radiologists, pain specialists, gastroenterologists and surgeons. Nowadays, surgical treatment of necrotic pancreatitis aims to sustainably reduce pain and significantly improve quality of life.

**Key words:** acute pancreatitis, necrotic pancreatitis, neuropathic pain, infected necrotizing pancreatitis, minimally invasive treatment, transluminal endoscopic drainage, necrectomy, Wolled-off necrosis

## ENDOSCOPIC ULTRASOUND-GUIDED BILIARY DRAINAGE-READY FOR PRIME TIME?

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**Background and aims:** Endoscopic ultrasound-guided biliary drainage (EUS-BD) is a relatively new and promising technique, performed in cases where endoscopic retrograde cholangiography (ERCP) has failed or is not possible, with several advantages over percutaneous biliary drainage (PTBD). Several procedures are available and could be adapted to the specific anatomical situation- endoscopic ultrasound- guided hepaticogastrostomy (EUS-HGS), endoscopic ultrasound-guided choledochoduodenostomy (EUS-CDS), endoscopic ultrasound- guided antegrade stenting (EUS-AS), endoscopic ultrasound- guided rendezvous- procedure (EUS-RV). Our aim was to evaluate the efficacy and safety of EUS-BD procedures performed in our unit over a two-year time period.

**Methods:** A retrospective study, analyzing all EUS-BD procedures performed in our department over a two-year period (March 2020-March 2022).

**Results:** 88 patients were included- in 93% for malignant and in 7% for benign indications. 29,5% were with surgically altered anatomy, 25% with duodenal stenosis, 5,68% had duodenal stents, 14,77% were with tumor infiltration of the distal common bile duct precluding antegrade canulation. In one patient ERCP was unsuccessful due to large duodenal diverticulum. Mean procedure time was 69 min. Mean hospital stay was 5 days. EUS-HGS was performed in 49 patients, EUS-CDS in 13, EUS-AS in 12, EUS-RV in 10 and transgastric

gallbladder drainage as only possible biliary drainage modality in one. The technical success was 96,6% and the clinical success was 91,8%. Intraprocedural complications occurred in 6 cases, postprocedural adverse events were noted in 12,5%- all managed conservatively. No cases required emergency surgery or intensive care.

**Conclusions:** EUS-BD is highly effective and save intervention and is a procedure of choice in cases where ERCP is unsuccessful or impossible with many advantages over PTBD. The procedure needs to be performed by well trained team, mastering all nonsurgical biliary drainage modalities.

**Key words:** biliary obstruction, endoscopic ultrasound- guided biliary drainage, endoscopic retrograde cholangiopancreatography, percutaneous biliary drainage

## POSTCHOLECYSTECTOMY SYNDROME - DIAGNOSIS AND THERAPEUTIC STRATEGY

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**Abstract:** Postcholecystectomy syndrome (PCS) is defined as a complex of heterogeneous symptoms consisting: pain in the right upper quadrant and the epigastrium, dyspepsia which repeat or persist after cholecystectomy. This term is inaccurate because it includes both biliary and extra biliary symptoms and is not always associated with previous cholecystectomy. The increased number of laparoscopic cholecystectomies worldwide led to increased number of patients with PCS, which requires new approach on this problem. The biliary manifestations of PCS: iatrogenic bile duct injuries (IBDI) and bilomas, or in the early postoperative period – stones in the cystical duct or unrecognized choledocholithiasis.

**Aim:** To study, analyze and apply modern diagnostic and therapeutic strategies and methods of treatment in patients with postcholecystectomy syndrome, in order to optimize the final results and reduce complications and mortality rate in these patients.

**Results:** For the period 2011-2021 in Second Department of Surgery were operated 1124 p. with gallstone disease and its complications. The imaging methods we applied were US, CT and MRI. The reasons for PCS were IBDI-75; residual choledocholithiasis – 64; stenosing papillitis – 12; pyogenic liver abscess – 5; remnant cystical duct – 4.

**Conclusions:** Laparoscopic cholecystectomy has become the gold standard in the treatment of gallstone disease and gave the begging of the laparoscopic era. This changed and expanded the concept of PCS, which now includes complications due to laparoscopic cholecystectomy.

Diagnosis and treatment of PCS requires an interdisciplinary approach and should be performed in centers specializing in the treatment of biliary pathology.

**Key words:** Gallstone disease, postcholecystectomy syndrome, laparoscopic cholecystectomy, iatrogenic bile duct injuries.

## PANCREATODUODENAL RESECTIONS – THREE-YEAR EXPERIENCE OF FIRST CLINIC OF ABDOMINAL SURGERY – MILITARY MEDICAL ACADEMY

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**Introduction:** During the past several years there is progress in the evolution of surgical techniques and new innovative technologies were involved, which aim to reach larger amount

of R0 resection lines and to improve the overall survival rate in malignant pancreatic diseases.
**Aim:** To present the experience of First Clinic of Abdominal Surgery in the management of patients indicated for pancreatoduodenal resections (PDR) in the period between 01.01.2019 – 01.06.2022.
**Materials and methods:** We present clinical and histopathological characteristics of 91 patients with PDR who were operated in our clinic. Index of complications, 30-day mortality and overall survival rate were determined.
**Results:** Mean age of the presented patients is 60.57 years (27-77). Fifty nine percent of the surgical interventions are pylorus-preserving pancreatoduodenectomy (PPPD), 18.3% are Whipple procedures, 4.5% are total PDR and 17.5% are combined with other interventions. Vascular resection is performed in 17.2% of the patients. Laparoscopic PDR are performed in three patients. The main indication for performing PDR is malignant pancreatic disease (74.7%). Sixty one percent of the patients are managed after endoscopic retrograde cholangiopancreatography (ERCP) and biliary stent is placed. Mean operative time is 335 minutes (260-480). The mean number of isolated lymph nodes is 20 (6-52), with mean number of positive lymph nodes – 3 (0-27). The in-hospital morbidity rate is 40.9% (Clavien-Dindo I-II grade – 36%, III-IV grade – 67%). Perioperative mortality rate is 7.6%. In 18.3% of the patients relaparotomies are performed. The mean observational period is 15 months (1-30). Because of the short period of observation (50.5% of the patients), we observe one-year survival rate of 67.7%.
**Conclusion:** Duodenopancreatic resections are the right therapeutic approach when performed by surgeons with experience, in large hepatopancreatobiliary centers in adequately selected patients.

## TREATMENT OF PATIENTS WITH LIVER ABCESS

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**Introduction**: Liver abscess and its complications are one of the common problems in surgical practice. In 1938, Ochsner and DeBakey described the treatment and mortality of patients with pyogenic liver abscess and recommended surgery as the primary treatment. At this time, liver abscess is the most common complication of acute appendicitis and is associated with high mortality. Surgery remained the treatment of choice until the mid-1980s, when percutaneous drainage was routinely introduced. The introduction of new antimicrobials and advances in diagnostics and minimally invasive procedures have significantly improved the treatment of liver abscess.
**Material and methods:** During the period 2019 - 2021 in the Second Department of Surgery of the University Hospital „St. Marina "- Varna 26 patients with liver abscess were treated, of which 11 women and 15 men.
**Discussion:** The main symptoms found in patients are fever, pain in the right upper abdominal quadrant, upper dyspeptic syndrome, jaundice, general weakness. The methods of treatment are except antibiotic therapy, drainage under ultrasound or computer tomographic control and surgical treatment - laparoscopy and conventional surgery.
**Conclusion:** the right choice of surgical tactics, good knowledge of the problem and anatomical features, as well as the presence of a highly qualified team are the main preconditions for favorable therapeutic results.
**Key words:** liver abscess; drainage; laparoscopy

## TYPE OF RESECTION OF MUCINOUS CYSTIC NEOPLASMS OF LIVER

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The incidence of the cystic tumors of the liver gradually rises due to the broader implementation of high-definition imaging modalities in diagnostics and surveillance of different nosological entities in general population. Mucinous cystic neoplasms have malignant potential and the main option of treatment is surgical resection.
Six patients with MCN of liver for the period of January 2018- November 2021 were operated on in two clinics of Military medical academy, Sofia – First clinic of abdominal surgery and Clinic of hepato-pancreatic surgery and transplantology. All of them were women, mean age of 44 years (30-69). The mean size of lesion was 12.78 cm (6.5-12) and 100% were localized in Sg 4-8 of the liver. No carcinoma was defined in these patients. Eight operations were performed – partial and radical excision, drainage, two-staged hepatectomy. There was one recurrence, treated with re-resection. Biliary fistula was registered in three (26 %) of the cases, surgical site infection – in one (12.5%). There was no early postoperative mortality.
The high recurrence risk and the likelihood of malignant transformation defines the radical excision of the mucinous cystic liver neoplasm as the main option of treatment. Patients with such a pathology should be referred to specialized high-volume centers with multidisciplinary team of diagnostics, treatment and surveillance of such a rare disease.
**Key words**: mucinous cystic liver neoplasms, excision

## SURGICAL KNOT TYING IN THE EXPERIMENTAL-EDUCATIONAL STAGE

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**Introduction:** Surgical knot tying is the most complex basic surgical technique. The earlier and correctly mastered, the more favorable the path to major surgery.
**Objective:** We set a goal to develop an optimal version of a training course in experimental conditions, achieving the correct education in two forms of training - present theoretical and practical classes and absentee training.
**Materials and methods:** We organized a training course consisting of two in-person trainings of three hours, within one week, combined with daily, absentee training for two hours during the same. The degree of mastery and the quality of the knots is determined by inputstage and outputstage tests.
**Results:** For a period of one month, 5 medical students from fourth and fifth year passed through the training course. All participants reported an improvement in the technique of knotting through the applied tests.
**Conclusion:** Through the course developed by us, a good theoretical and practical basis for proper knotting is achieved in one week.
**Key words:** Nodulation, training in surgery

## LYMPHOPROLIFERATIVE DISEASES AS A CAUSE OF ACUTE ABDOMEN IN CHILDREN. INDICATIONS FOR SURGICAL TREATMENT AND EXTENT OF THE OPERATION

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Oncologic (specifically lymphoproliferative diseases) are rather small part of pediatric pathology. Despite the progress in treatment, they are still the second cause of death in the pediatric population preceded only by trauma. They can often lead to emergent conditions some of which are indicated for surgical treatment.

Life-threatening emergency might occur in one of three mechanisms – as a result of progression of the disease, complications from the ongoing treatment, or in rare cases this may be the first presentation of the pathology. Oftentimes clinical presentation is unclear, and delay in diagnosis and treatment might have a negative effect in the course of time.
We present the most common emergency conditions in pediatric abdominal surgery, in comorbidity with lymphoproliferative disease. We suggest a diagnostic algorithm for a fast and certain diagnosis as well as therapeutic options according to contemporary guidelines for treatment of these diseases. We have selected clinical cases to illustrate the above-mentioned. We emphasize that given the complexity of these types of patients treatment need always be done in collaboration with a pediatric oncology specialist.
**Keywords:** Lymphoproliferative diseases, acute abdomen, oncology

## GIANT CONGENITAL LYMPHATIC MALFORMATIONS IN CHILDHOOD

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**Introduction:** Lymphatic malformations (LM) are benign lesions from the group of congenital vascular malformations. Most of them are located in the head and neck area and are asymptomatic, but the giant ones can cause impaired breathing and swallowing and are a serious treatment challenge.
**Material and methods** : For a period of 5 years (2017-2022) in the Clinic of Pediatric Surgery - University Hospital „St. Georgi "- Plovdiv 5 children with facial and cervical localization of giant lymphatic malformations were operated. Diagnostic, in addition to physical and ultrasonographic methods, CT and MRI were performed.
**Results:** In five children - three boys and two girls, preoperative preparation was performed with Doxacycline, partial operative resection - three times in 2 of the children. One of the children underwent local application of Bleomycin. Three of the children underwent temporary tracheostomy. Three of the patients had macrocystic lesions, the other two were microcystic or mixed. Complete surgical excision was achieved in two of the children, while in the other three multi-stage surgical interventions were performed.
**Discussion:** Cervicofacial lymphatic malformations in children are subject to a multidisciplinary approach and treatment. Surgical excision is the method of choice in the treatment of giant, life-threatening lesions.
**Key words:** Congenital vascular malformations, Lymphatic malformation

## LATE DIAGNOSIS OF ANORECTAL MALFORMATIONS

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**Introduction:** Congenital anomalies of the anus and rectum are relatively common anomalies. There are about 1: 3000 live newborns, and they are slightly more common in boys. Fistulae that do not cause intestinal obstruction immediately after birth are sometimes diagnosed late when there are incontinent manifestations.
Material and methods : In the last two years (2021 - 2022) in the Clinic of Pediatric Surgery - University Hospital "St." Georgi "- Plovdiv, 4 children (3 boys and 1 girl) with anorectal malformations were diagnosed and operated on. For diagnosing Both physical examination and ultrasonographic methods were used.
**Results:** In 3 children aged respectively: 4 months. 8 months and 11 months anal atresia is diagnosed with perineal fistula, as in the

latter incomplete membranous atresia was found in a 1-year-old child. Anterior sagittal anoproctoplasty sphincterolevator plastic was performed in 3 children, with one excision of the membrane with anoplasty.
**Discussion:** In recent years, there has been a tendency to delay the diagnosis of fistula forms in anorectal malformations. The age of the child combined with the late diagnosis does not affect the surgical treatment, but could affect the physiological state of the child and the emotional state of the parents.
**Key words:** Anorectal malformations, anoplasty, children

## ABDOMINAL RETAINED TESTIS - TACTICS AND BEHAVIOR

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**Introduction:** Normal testicular descendance can be influenced by many factors. Some authors divide the anomaly into palpable and non-palpable testicles. True non-palpable testicles (abdominally located) are not very common - from 5 to 25% in affected children. Unilateral congenital testicular absence is found in 1-11% of all children operated on for cryptorchidism, while bilateral cryptorchidism is about 1%.
**Material and methods:** For a period of 5 years (2017-2022) in the Clinic of Pediatric Surgery - University Hospital "St. Georgi "at the Medical University of Plovdiv, 8 children with abdominal testicles were diagnosed and operated on. Diagnostic, in addition to physical and ultrasonographic methods, CT had been made for 3 children, in the remaining 5 - diagnostic laparoscopy was done.
**Results:** In 5 of them laparoscopy was performed with Gross orchidopexy , and in one of the children - laparoscopic orchiectomy, in 2-funiculolysis was achieved through high inguinal access according to the method of Gross, Fowler - Stepfens orchidopexy was performed to one child with Pfannenstiel access .
**Discussion:** Depending on the surgeon's preference for unilateral non-palpable testicles, it may be approached either by inguinal access or diagnostic laparoscopy. In many cases, inguinal access does not reach the testis and this requires laparoscopy or laparotomy. Many authors recommend the minimally invasive procedure as the first choice for non-palpable testicles.
**Key words:** Laparoscopy, testis, orchidopexy.

## APPLICATION OF ERAS PROTOCOLS IN EMERGENCY ABDOMINAL SURGERY

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**Aim:** To analyze the results of the application of modified ERAS protocols in emergency abdominal surgery based on studies in the medical literature and our experience.
**Methods:** Prospective study of 85 patients who underwent emergency surgical treatment, in which elements of the ERAS protocols were applied, treated at the University Hospital „Dr. Georgi Stranski" in Pleven for the period from January 2020 until March 2022.
**Results:** Shorter hospital stay compared to the control group. The most commonly used components of the ERAS protocols: prevention of nausea and vomiting, early feeding, early mobilization, early removal of nasogastric tube and urethral catheter. Observing a lower incidence of postoperative complications and mortality.
**Conclusion:** The application of components of the ERAS protocols in emergency abdominal surgery is safe with encouraging results. More research is needed on their application.
**Key words:** ERAS, emergency abdominal surgery.

## APPLICATION OF A SELF-ADHESIVE PROGRIP ® MESH IN TAPP HERNIA REPAIR

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**INTRODUCTION:** Inguinal hernia repair is one of the most frequent surgical procedures worldwide in general surgery. The transabdominal laparoscopic (TAPP) approach in hernia repair is going to be a suitable alternative to classical open inguinal hernia repair and in the last few years, it tends to become the standard practice for 1 day surgery. TAPP repair offers the possibility of anatomic dissection with implantation of the mesh and the possibility of non-invasive fixation of the implanted self adhesive mesh.

**MATERIALS AND METHODS:** Data analysis encompassed all patients who underwent inguinal hernia surgery in First Surgery Clinic of the University Hospital "St. Marina" Varna within the period from January 1, 2020 to June 30, 2022 and our study includes hospitalised patients who underwent surgery for all types of inguinal hernia. We used the standard TAPP surgical technique.

**RESULTS:** There were 81 patients, from 18 to 67 years old, (80 males and 1 woman), in our group and there were 95 inguinal hernias repaired in total. Standard follow-up was 12 months, and was evaluated in 68 patients (83.95%). All patients were controlled in first month after operation. The mean follow-up was at 12 months. At the 1-year assessment, mild discomfort was reported in the groin in 2 patients (2.47%) [1-3 on the visual analogue scale (VAS)]. Post-operative pain lasting over 6 months in the groin of moderate degree (4-6 VAS) was reported in one case (1,23%) and in 0 patient (0.00%) in 12 months after operation. There was no recurrence and no chronic post-operative pain of severe degree reported.

**CONCLUSION:** TAPP is a high effective method for treating groin hernia associated with low rate of postoperative morbidity and recurrence. Our study demonstrates that TAPP technique with the implantation of a self-fixation mesh is fast, effective, reliable and economically advantageous method and, according to our results, reduces the occurrence of post-herniorrhaphy inguinal pain.

**Key words:** laparoscopic hernia repair, self-gripping mesh, transabdominal preperitoneal laparoscopic approach, TAPP.

## SURGICAL MANAGEMENT IN COMPLEX VENTRAL HERNIAS – RESULTS

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**Introduction:** In 2014, leading global experts in the field of anterior abdominal surgery created a consensus document with a defined concept of „complex ventral hernia", to determine which use the following criteria: size and location of the defect, patient history and risk factors, contamination and tissue condition, clinical scenario.

**Objective:** To present our experience and results from the surgical treatment of complex ventral hernias.

**Material and methods:** For the last three years we have operated on 399 patients with

ventral hernias. Patients were monitored and analyzed prospectively and retrospectively by demographics, ASA, BMI, comorbidity and risk factors, size and location of ventral hernias, tissue contamination, clinical scenario. For the surgical treatment of complex VH we have used different types of component separations of the anterior abdominal wall. We used the EuraHSQoLScale questionnaire to determine the quality of life of the operated patients. Based on all this, we recommend certain behaviors in complex IHs.
**Results:** Of the 399 patients with VH operated, 197 (49.4%) had complex VH. The operative techniques used by us for their treatment are: anterior component separation (Ramirez) -37 patients; posterior component separation (Rives-Stoppa) -96 patients; TAR (Novitzky) -64 patients. The resulting postoperative complications are divided into early and late. Out of all 197 patients with complex VH, 107 (54%) were examined for QoL using the mentioned questionnaire preoperatively and in the first, third and sixth month after the operative intervention.
**Conclusions:** The surgical treatment of complex VH is a challenge for patients and surgeons with its diversity and complexity. The evolution of complex abdominal wall reconstruction shows a tendency to apply more and more posterior CS, especially TAR. Postoperative analysis of the QOL after an appropriate period of time is the best option for quality control of the operation.
**Key-words**: complex ventral hernia, abdominal wall reconstruction

## EMERGENCY SURGERY FOR POSTOPERATIVE HERNIAS

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**Introduction:** Thirty percent of all cases of intestinal obstruction are due to incarcerated hernias. Surgical interventions performed for incarcerated defects of the anterior abdominal wall are associated with an increased incidence of postoperative complications and poor prognosis. Accurate planning of the time of the operation and the improvement of the operative tactics are crucial for the improvement of the results and the reduction of the postoperative mortality.
**Material and methods:** In the period 2014-2021, 52 patients with incarcerated primary and incisional ventral hernias were operated in the clinic in emergency conditions and we noticed a slight predominance of the female gender - 56% of the patients.
**Results:** Almost half of the patients were presented with incarcerated primary ventral hernias, most often umbilical, while incisional hernia were slightly prevalent - 51.9%. The largest group of patients was in the age group 60-80 years - 53.9%. Postoperative mortality in the study group was 6.57% (5 patients) due to the significant concomitant comorbidity of patients and the longer duration from the onset of complaints.
**Conclusion:** As the most common complication in herniology, incarceration significantly worsens postoperative results, increases mortality and increases medical costs.
**Key words:** Postoperative hernias, emergency surgery, incarcerations

## THE ENHANCED VIEW IN INGUINAL HERNIA REPAIR

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Inguinal hernia repair remains as one of the most common surgical procedures. Traditional techniques such as tension-free open surgery approach are still widely used, especially for large inguinoscrotal hernias. However, minimally invasive preperitoneal techniques have established themselves as the golden

standard. Their development has gone far through a number of conditional constrictions to nowadays - the necessity to implement Enhanced View (e-TER), eliminating many of said constrictions. Albeit being a technique introduced back in 2012 by Jorge Daes, there are still no satisfactory comparative studies of the two preperitoneal techniques. The main limiting factors in standard preperitoneal technology (TEP) - limited working space, collision of instruments and difficulties in placing the mesh are largely eliminated by creating a significantly larger work space in e-TEP. The technique allows a better triangulation of the used instruments, especially needed for larger inguinal hernias. In case of a pneumoperitoneum, the collapse of the surgical field is insignificant, which shortens the operative time and reduces the risk of conversion to another surgocal technique. A number of authors also describe a shorter learning curve in e-TEP compared to TEP and much easier perception of anatomical markers in this area.

**Conclusion*:*** Extensive knowledge of inguinal anatomy, as well as the mastery of basic surgical techniques allow for an individualized patient approach and minimize the frequency of intra and postoperative complications. The application of enhanced view significantly reduces the limitations of the standard preperitoneal technique, and together with the shortened learning curve implies and implores its widespread use in the future. More comparative studies of the aforementioned techniques are needed.

**Key words:** Inguinal hernia, TEP, enhanced view, E-TEP

## PREPERITONEAL RIVES STOPPA RETROMUSCULAR REPAIR OF UMBILICAL HERNIA COMBINED WITH ABDOMINAL RECTUS DIASTASIS

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**Background:** Following the concept to avoid intraperitoneal mesh placement during abdominal wall reconstructive surgery, enhanced-view totally extraperitoneal (eTEP) procedure gain popularity in surgeons' society. The advantages of the procedure are related to the avoidance of intraperitoneal mesh placement, adequate abdominal wall repair and fast postoperative recovery of the patient.

**Material and Methods:** We present a case of a 59-year-old male with umbilical type hernia, with size of 4/3 cm and abdominal rectus diastasis with maximum dimension of 5.5 cm measured by CT scan. The patient has arterial hypertension, Type2 diabetes and obesity (BMI-32). For primary repair of the defect, it was used Endoscopic totally extraperitoneal preperitoneal retromuscular Rives Stoppa technique.

By using an optic port placed in left subcostal space medially to the linea semilunaris we proceed to the retrorectus space. After $CO_2$ insufflation, we placed the second 5mm ports under direct vision. The procedure is continued as it was described by Igor Belyansky.

When the hernial sac is reached its contents is pushed back into the abdominal cavity. Dissection continues to the level of the xiphoid process cranially and to the space of Retzius caudally. Linea alba is sutured, using PDS 0 Stratafix. The mesh 30/24 cm was placed without fixation avoiding any folds and rotation. The procedure is finished with tube drain on active suction.

**Results:** Postoperative period was without any complication and patient was discharged on the third postoperative day. No recurrence was noticed during the follow up period.

**Conclusion:** We found this novel approach very feasible and effective for laparoscopic closure of ventral defects. Proper identification of anatomical landmarks and early performed cross over seem to be most important performing the procedure.

**Key words:** E-tep, Rivas Stopa, ventral hernia.

## LAPAROSCOPIC TRANSDIAPHRAGMATIC OMENTOPLASTY TECHNIQUE IN A PATIENT WITH PERSISTENT BRONCHIAL FISTULA

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**Absctract:** In cases of lung abscess indicated for surgical treatment, we face a number of challenges, the main of which is the treatment of the residual cavity and bronchial fistula. Omentoplasty is a method for treatment of various intrathoracic complications but its use in the filling of cavity defects and bronchial fistula is not much represented. We present case of a 33-year-old patient with a severe form of COVID-19 infection who developed a massive lung abscess complicated by bronchial fistula and empyema during mechanical ventilation. Surgical intervention was performed with evacuation of the purulent collection and management by the open pleural drainage technique described by Clagett et al. The possibilities for treatment of the residual cavity left from the drained abscess and persistent bronchial fistula are described by applying omentoplasty method using minimally invasive techniques as laparoscopic transdiaphragmatic omental transposition.

**Key words:** pulmonary abscess, bronchial fistula, omentoplasty, laparoscopy

## MULTIDISCIPLINARY APPROACH IN DIAGNOSIS AND TREATMENT OT SMALL BOWEL DIEULAFOY LESION- A CASE REPORT

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Dieulafoy lesion, also knows as caliber persistent artery is a rare clinical entity consisting only 2% of all cases of gastrointestinal bleeding. Only 2% of Dieulafoy lesions are localized in the small intestine.

Probably due to the difficult diagnosis of small intestine, the incidence of Dieulafoy lesion in small intestine is so low. Proper diagnosis of such lesions require multidisciplinary team of radiologist, gastroenterologist and surgeon. So far there are not established guidelines for the diagnosis and treatment of Dieulafoy lesion, as much of the available research is case reports only. According to the available publications the recommended modalities for proper diagnosis include angio-CT and small intestine endoscopy- including capsule endoscopy, double balloon and intraoperative one. The method of hemostasis is also variable among different publications, including endoclip or resection.

A patient with severe gastrointestinal bleeding is reported. The patient had extravasation of contrast in small intestine during angio CT, and no seen source of bleeding in stomach or colon during upper and lower endoscopy. The patient underwent intraoperative small intestine endoscopy in which a Dieulafoy lesion of small bowel was found and resected.

**Key words:** gastrointestinal bleeding, intraoperative endoscopy, angio CT

## CONVENTIONAL AND MINI-INVASIVE APPROACH FOR PERFORATED STOMACH AND DUODENAL ULCERS.

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**Aim and objectives:** to compare the results of laparoscopic and conventional surgical interventions for peritonitis due to perforated gastric and duodenal ulcers. To present the benefits of mini-invasive approach in selected patients and compare the incidence of postoperative complications in both groups.
**Materials and methods:** the study included all patients with the pathology with the specified pathology at the Clinic of Surgery at UMHATEM "Pirogov", Sofia for a period of 2.5 years. The data was collected and synthesized from the History of the disease, the sample from the operative protocols and the control examinations. A retrospective statistical analysis was used to summarize the results.
**Results:** for the specified period in the clinic were performed 144 surgical interventions for peritonitis of the specified genesis, of which 123 (85%) were conventional and 21 (15%) - laparoscopic. The gender distribution is as follows: men 83 (58%) and women - 61 (42%). The mean age of the patients was 57 years and the mean hospital stay was 5 days. Postoperative complications, requiring reoperation were observed in six of the conventional group (4.87%) and one of the laparoscopic (4.8%). Wound infections requiring long-term treatment were reported in 14 patients (11%) operated on conventionally.
**Conclusion:** laparoscopic interventions in selected patients with peritonitis due to perforation of gastric and duodenal ulcers are a reliable method of treatment with an advantage in terms of hospital stay and wound complications. Limiting factors are the preoperative duration of the condition > 24 h, septic shock and severe concomitant cardiovascular and pulmonary pathology.
**Keywords:** peptic ulcer, laparoscopy, conventional interventions, complications.

## LAPAROSCOPIC REPAIR OF GIANT DIAPHRAGMATIC HERNIA OF MORGAGNI

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Morgagni hernias are congenital defects that occur in the retroxyphoid region and account for approximately 1-3% of surgically treated diaphragmatic hernias. Traditional treatment for this type of hernia involves repair through a transabdominal or transthoracic approach. We present the case of a 41-year-old male patient that is admitted through the Emergency Department with a history of progressive shortness of breath and upper gastrointestinal bleeding. The etiology was giant diaphragmatic hernia with incarcerated transverse colon and great omentum, which was subsequently treated with laparoscopic approach. For the repair, we used prosthesis made of PTFE to secure the suture line. The patient recovered uneventfully and was followed for 6 months postoperatively and had no evidence of recurrence or new complaints. Significant improvement in spirometric parameters and improved quality of life of the patient postoperatively were established. The use of a PTFE prosthetic patch to strengthen the repair of the Morgagrni hernia defect may be proposed as a suitable method for repairing large diaphragmatic hernias.
**Key words:** laparoscopy, diaphragmatic hernia, Morgagni hernia

## ENDOSCOPIC ULTRASOUND IN GASTRIC ADENOCARCINOMA STAGING

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Gastric cancer is one of the leading causes of cancer-related mortality worldwide. The need for more individualized and stage-dependent treatment calls for accurate preoperative staging to select the optimal treatment.

A multitude of imaging modalities, like computer tomography (CT), magnetic resonance imaging (MRI) and endoscopic ultrasound (EUS), are used in clinical practice for the evaluation of the T-stage of gastric cancer. CT is the most widely used imaging technique, but it has relatively low specificity for evaluating T-stage, especially in early gastric adenocarcinoma. MRI demonstrates better results with high image resolution, but the relatively high cost and longer scanning time limit its wider adoption. EUS is often used for staging gastric adenocarcinoma due to its high sensitivity, while its invasive nature and the tendency to overstage T2 cancer are its main shortcomings. The modality has better accuracy in N-stage and in diagnosing locally advanced cancers. It allows to perform biopsy under endosonographic guidance for definite confirmation of lymphogenic dissemination and, in some specific cases of distant metastases. The combination of CT and EUS improves the diagnostic accuracy of the methods compared to their individual use. Contrast-enhanced EUS (with specialized ultrasound contrast agents) is a new development of the technique that can improve its sensitivity and specificity.

Endoscopic ultrasound is a valuable tool for the accurate diagnosis and staging of gastric adenocarcinoma, especially with other imaging modalities.

**Keywords:** endoscopic ultrasound, EUS, gastric adenocarcinoma

## PROTOCOL FOR PREPARATION OF PATIENTS PLANNED FOR BARIATRIC SURGERY

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**Introduction:** Metabolic syndrome and obesity are one of the most common diseases in Europe with a tendency to increase in frequency. Surgical treatment of obesity by bariatric surgery leads to optimal low-risk outcomes, which is why it is increasingly used.

**Objective:** To present a protocol for the preparation of patients for whom metabolic surgery is planned, as well as the initial results of this type of surgery after its introduction in the general surgery clinic of a university hospital.

**Materials and methods:** A literature review of the specialized literature for the preparation of patients planned for metabolic surgery was performed, on the basis of which a protocol was prepared and introduced, and then followed in all patients. For the period from January to May 2022, the number of patients with metabolic syndrome selected for surgical treatment, who were prepared and operated in the same clinic, was reported. The type of operation, early surgical results such as frequency and degree of complications, hospital stay were reported.

**Results:** For the indicated period, 10 patients with metabolic syndrome were prepared and operated on. Roux-en-Y gastric bypass was performed in 3 patients and minigastric bypass in the remaining patients. Complications occurred in two patients. The average hospital stay was 3 days.

**Conclusion:** Our proposed algorithm is applicable and safe for the patient. The clinical results obtained after the introduction of metabolic surgery in our center are optimal and close to the world.

**Key words:** Metabolic surgery, nursing care, perioperative period

## MODERN APPROACH IN THE TREATMENT OF PATIENTS WITH MESENTERIC ISCHEMIA. APPLICATION OF INDOCYANINE GREEN FLUORESCENCE TO DETERMINE OPERATIVE TACTICS

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**Introduction:** Despite the advent of new accessible and informative imaging studies and invasive vascular procedures, mesenteric ischemia still causes high mortality due to many factors. Optimal results of the treatment require timely diagnostics, good organization of the individual units, provision of the medical institution with a variety of modern equipment and highly qualified medical staff.
**Objective:** The objective is to present an algorithm for behavior in patients with mesenteric ischemia, which includes assessment of tissue vitality by visualization of intestinal perfusion with indocyanine green in real time.
**Materials and methods**: We present a clinical algorithm for consulting patients with clinical focus on acute mesenteric ischemia, the interaction of different units and specialists and clinical cases from the practice of a surgery clinic at the Heart and Brain Hospital, Pleven.
**Results:** For a period of one year in the General Surgery Clinic 5 patients with mesenteric thrombosis were operated. The algorithm introduced in the clinic was followed in all patients. All patients underwent laparotomy with intraoperative angiography to assess intestinal vitality.
**Discussion:** The characteristic features of clinical - organizational nature in the diagnosis and treatment of this disease place increased demands on treatment teams and the implementation and use of all possible means to improve the ability to diagnose and treat patients and interaction between units.
**Key words:** mesenteric thrombosis, surgical protocol, immunofluorescence

## EXTENDED SMALL BOWEL AND COLON RESECTION FOR MESENTERIC THROMBOSIS IN THE SET OF SEVERE COPD AN PNEUMONIA COMPLICATED WITH BILATERAL PNEUMONIA AND LEFT-SIDED ATELECTASIS AND SARS WITHOUT COVID 19

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**Clinical case**
We present 63 years old patient, admitted on 14.01.2020 for subsequent time to Pulmonology Clinique of our hospital with chronic obstructive pulmonary disease (COPD) and pneumonia. CPF IIIrd grade. AH IIIrd grade. CCF IIIFC. Chronic hepatitis HCV/+/positive. Bilateral AFS stent. Saturation of O2– 64.1 to 73.3.
On the third day of stay exhibited abdominal pain and was referred to First Surgical Department for urgent surgery for suspected mesenteric thrombosis .
On-table on 17.01.2020: Necrosis of small bowel; cecum, ascending colon to the proximal transverse colon; only the first 60cm of jejunum were vital with markable demarcation. No perforations or fluid collections. Performed right hemicolectomy with subtotal small intestine resection and on-hand Side-to-Side jejuno-transverso anastomosis with single serous-mucosal sutures.
Postoperatively severely complicated. Remained in the ICU for 10 days with tracheal tube on a mechanic ventilator. Treatment with infusions,

Ceftriaxone, Metronidazole, Amikacin, Quamatel, Nivalin, Degan, painkillers, Fraxiparine, Cordarone.

On 6th postoperative day exhibited gastrointestinal bleeding. Transfusions of blood, plasma and platelets, Remestyp, Dicynone, Vitamin K. X-ray shows bilateral pneumonia. Antibiotics changed-Meronem, Vancomycin.

Gastrointestinal bleeding ceased. Tracheal tube removed on 10th postoperative day at Saturation of O2-94,4. Nasal-gastric tube remained for feeding- removed next day and started oral food. Patient has almost normal defecations three to four soft stools daily.

Last X-ray: Left-sided pneumonia, suspected pleural fluid collection. Pulmonologist suggested left lung atelectasis. Bronchoscopy was performed with aspiration of purulent exudation from left main bronchus and Gentamycin instillation.

On 30.01.2020 patient was transferred from ICU to First Surgical Department, continuing therapy, including O2-mask. Patient feeds orally and defecates.

Unfortunately the patient passed away on 31.01.2020 with Acute Cardiac and Pulmonary Failure at the set of CCF III-IVFC and CPF III-IV grade.

**Conclusions:** Severe pulmonary pathology and respiratory distress syndrome were present before COVID 19, caused by variety of other agents.

Complicated pulmonary status shouldn't be an obstacle for the surgeon to perform extended operations for vital indications.

The short small intestine length is not always an obstacle to restore absorption. So, perspective of life with short small intestine versus the refusal for resection.

**Key words:** mesenteric thrombosis, small bowel and colon resection, chronic obstructive pulmonary disease (COPD), pneumonia, SARS

## INITIAL FEMORAL CLINICAL MANIFESTATIONS OF COMPLICATED APPENDICITIS - A CLINICAL CASE

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**Introduction:** Acute appendicitis remains one of the most common causes of surgical treatment in abdominal surgery. The clinical presentation of this disease can be extremely notspecific, which complicates the diagnosis, delays the patient's treatment and thus increases the risk of adverse treatment outcomes.

**Objective:** To present a clinical case of an extremely unusual clinical manifestation of complicated acute appendicitis with purulent infection descending to the thigh and systemic inflammatory response syndrome.

**Clinical case:**

The admission to the clinic of a 62-year-old patient was due to a severe inflammatory process of the thigh with clinical and imaging data for necrotizing fasciitis. The patient reported mild abdominal pain two weeks before admission, which required examination by a surgeon who found no evidence of acute abdomen. At admission to the clinic, the patient had no abdominal symptoms of intra-abdominal inflammatory process.

A computed tomography examination in search of a primary focus revealed a retroperitoneally developing drained to m. ileopsoas abscess from perforated appendicitis, as well as developing psoasinfiltrate with abscesses.

Simultaneous appendectomy, drainage of the psoic purulent process and incision and drainage of the femoral phlegmonous structures were performed simultaneously. Femoral incisions and drainage continued postoperatively in the catching-up plan.

**Conclusion:** This clinical situation, which is rare for clinical practice, confirms the literature data on the variety of clinical manifestations and complications of acute appendicitis and the appropriateness of routine application of diagnostic methods in abdominal symptoms, which increases diagnostic accuracy.

**Key words:** Acute appendicitis, clinical cases

## ILEOCECAL LOCALIZATION WITH ILEOOSIGMOID FISTULA AS A COMPLICATED FORM OF CROHN'S DISEASE - A SURGICAL TACTIC

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**Introduction:** Internal fistulas are a sign of aggressive disease and in one-third of cases are not diagnosed preoperatively. The choice of surgical tactics for complicated ileocecal localization and synchronous involvement of the sigmoid colon is not always easy - whether to perform resection of the sigmoid or suture the fistula opening, as well as one or two-stage surgery.
**Results:** A total 65 operations on 52 patients were performed for 2014-2022. Of these, 10 (19.2%) had ISF with a mean age of 33.2 years and a mean disease duration of 7.1 years. All patients had a weight reduction of 15.2 kg (5-45), mean serum albumin of 33.5 g/l (26-43), and mean hemoglobin of 124 g/l. 40% were operated in emergency setting. Preoperative diagnosis was set in only 50% of cases.
Patients underwent ileocecal resection (n = 6), right hemicolectomy (n = 2) and small bowel resection (n = 2). Segmental resection of the sigmoid colon was performed in four, while in six excisions of the fistula opening and suture. Due to risk factors in 50% of cases, a two-stage operation was performed. In patients with sigmoid resection, two had two synchronous anastomoses performed (right and left), and the other two underwent ileoascendostomy.
**Conclusion:** ISFs occur in up to 20% of operated patients. Accurate preoperative diagnosis is possible in only 50% of them. A two-stage operation is recommended in case of risk factors - ileoascendostomy, as it is easier to reverse by local laparotomy than restitution after Hartmann resection.
**Key words:** Crohn's disease, enterosigmoid fistulas, suture or resection of the sigma, one-stage/two-stage operation.

## MECHANICAL OBSTRUCTION CAUSED BY SMALL BOWEL, ILEOCECAL AND RECTAL ENDOMETRIOSIS MISDIAGNOSED AS CROHN'S DISEASE MANAGED BY SYNCHRONOUS ILEOCECAL AND RECTAL RESECTION.A CASE REPORT AND REVIEW OF THE LITERATURE

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**Introduction:** The rate of intestinal endometriosis varies between 22% and 37%. The bowel obstruction occurs only 2.3%, or roughly 2/100 000 women from the general population, but few series reported acute obstruction. In most cases, it affects the rectosigmoid, whereas bilateral intestinal lesions occurred in only 2.4% of the cases.
**Case report:** A 42-year-old woman was referred to our clinic with obstructing Crohn's disease based on abdominal computed tomography with oral contrast showing a thickened terminal ileum with stenosis, compression of the caecum, and proximally dilated small bowel loops. Simultaneous ileocaecal resection and segmental resection of the upper rectum with handsewn end-to-end anastomosis between the sigmoid colon and rectum were performed. Owing to the advanced bowel obstruction and significant weight loss, a double-barrelled ileoascendostomy was created. The patient had an uneventful recovery. Histological examination revealed transmural endometriosis with involvement of the pericolic fat in both specimens.

**Conclusion:** Although IE causing acute bowel obstruction is rare, it should be a part of the differential diagnosis in young women with recurrent abdominal pain, intermittent diarrhea, and constipation without a family history of inflammatory bowel disease or cancer. The bleeding synchronous with menstruation is not typical for IE. The right side IE more frequently causes acute bowel obstruction, in most cases due to intussusception.

**Key words:** intestinal endometriosis, ileus, triple localization, treatment.

## A CASE OF INTESTINAL MALIGNANT MELANOMA

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Primary gastrointestinal melanoma is quite rare and extremely aggressive. Most gastrointestinal melanomas are metastatic from a primary skin lesion and most commonly the nervous cells of APUD (amine precursor uptake and decarboxylation) are transformed into melanocytes, which have further malignant transformation. Often, gastrointestinal melanoma is without symptoms but may exhibit with chronic abdominal pain, bleeding, weight reduction, bowel obstruction and perforation with symptoms of acute abdomen. Diagnostics is difficult but definitive diagnosis may be obtained after surgery and histopathology exam. The treatment of choice still is extended bowel resection, including mesentery resection of the relevant lymph node collector. Metastatic disease is submitted to chemotherapy, immunotherapy and target therapy, while radiotherapy is used mostly as palliation. The short life prolongation is a result of the few symptoms exhibited, late diagnostics and the implied treatment.

We present a clinical case of a patient with a primary intestinal melanoma. In 2014 a mucosal rectal resection was performed for a rectal polyp-like lesion. Histopathology exam revealed malignant melanoma – epithelioid cell variant.

After surgery the patient did not follow the prescribed adjuvant therapy. In 2020 the patient is with clinical, ultrasound and CT scan data for multiple different sized abdominal lesions and bowel obstruction. Patient underwent surgery aiming to resolve bowel obstruction – small bowel resection together with the metastatic tumor and stapled Side-to-Side duodeno-jejunal anastomosis. Because of the presence of other metastatic lesions found unresectable, the case was assessed as radically inoperable and incurable.

**Key words:** malignant melanoma; gastrointestinal tract

## NEUROENDOCRINE TUMORS OF COLON AND RECTUM

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**Abstract:** Neuroendocrine tumors (NET) are a heterogeneous group of diseases with various and complex clinical presentation. Most of them are localized in the pancreas and GIT. The incidence of NET of the colon and rectum has increased significantly over the last decade, partly as result of improved diagnostic procedures. Mostly they are highly differentiated tumors, with small size and good prognosis. In the recent years due to some aspects of NET is introduced three degree staging system. The most important for exact diagnosis are: endoscopic procedures, abdominal sonography, CT and MRI of the abdomen. Endorectal sonography is useful for the assessment of the size and depth of invasion of tumor preoperatively.

**Results:** A retrospective analysis of 32 patients with NET was performed, operated in Second department of Surgery for the period from 2010-2021(19 women and 13men) localized colon and rectum - 9p, small intestine - 6p, stomach 4p., pancreas - 7p., adrenal glands - 2p., metastases

in other organs 4p.
**Conclusion:** The therapeutic algorithm is based on the localization, size, degree of differentiation of the tumor and possible complications. Surgical treatment is the only definitive decision. The main goal is R0 resection and lymph node dissection. Highly differentiated rectal tumors (<2 cm) are indicated for endoscopic resection. The best results in the treatment of NET are achieved in highly specialized centers, with multidisciplinary team. Elderly patients with concomitant lymphatic and vascular invasion have poor predictive prognosis.
**Key words:** neuroendocrine tumors, surgery

## ESTIMATION OF THE VOLUME OF LYMPHATIC DISSECTION IN RESECTIONS OF THE LEFT COLON

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Understanding the drainage of lymph, as well as proper staging, according to the importance of the application of modern methods of surgical treatment of colon cancer.
The presence of metastatic lymph nodes in the disease is known to be one of the most important prognostic factors for long-term outcomes.
To investigate and compare the role of lymph dissection volume in left-sided hemicolectomies and sigmoidectomies.
Retrospective study, literature review on the topic and comparative analysis, including patients who underwent resection of the left colon, for a period of 3 years in the „The Clinic of General Surgery - 1st Surgery, University Hospital" Alexandrovska „
The analysis of patients with resection of the left colon reveals evidence of an association between the disease-free period after surgical treatment and high survival rate with the number of isolated lymph nodes from the performed dissection.
The small number of patients included in the study is insufficiently reliable for significant statistical processing, but meets the global trends for total mesocollic dissection and central vascular ligation, or D3 lymphadenectomy. The literature review on the topic revealed a lack of consensus on the issue, which requires in-depth and involving a large number of patients, studies.
**Key words:** lymph dissection; left column; resection;

## THE ROLE OF PROTECTIVE ILEOSTOMY IN PATIENTS AFTER LOW ANTERIOR RESECTION FOR RECTAL CANCER

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The incidence of colorectal cancer has been steadily increasing in the recent years. Thanks to medical and technologic progress, numerous studies and advances in oncology, the combination of neoadjuvant radi- and chemo-therapy with surgical treatment, remains the gold standard in the treatment of rectal cancer. That's why development and achievements in the last two decades allowed more frequent application of sphincter-preserving operations to abdominoperineal resection.
To investigate the role of the protective ileostomy and its relationship with the frequency of anastomotic insufficiency in patients after low anterior resection.
Retrospective study, literature review on the topic and comparative analysis, including 86 patients who underwent low anterior resection, for a period of 3 years in the "Clinic of General Surgery - First Surgery" at the University Hospital "Alexandrovska".
From the analysis of 86 patients with low anterior resection for rectal carcinoma, 6 patients with bicuspid ileostomy and 3 patients with Witzel ileostomy were identified. No anastomotic insufficiency was observed in all 9 (10.47%) patients with ileostomy.

The small number of patients with ileostomy - 9 included in the study is insufficiently reliable for significant statistical processing. The literature review on the topic revealed a lack of consensus on the issue, which requires in-depth and involving a large number of patients, studies.

**Key words:** protective ileostomy, low anterior resection, rectal carcinoma

## THE IMPORTANCE OF COMPLEX COLOPROCTOLOGICAL EXAMINATION IN RECTAL CANCER AND METHODS FOR ASSESSING THE FUNCTION OF THE ANAL SPHINCTER COMPLEX - LITERATURE REVIEW

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Colorectal cancer is the second most common cancer in men and the third most common in women. According to some authors, the violation of the normal function of the anal sphincter in patients undergoing low anterior resection reaches 90%. These conditions are classified as Low Anterior Resection Syndrome (LARS).

Knowledge of the various methods for complex coloproctological examination, including: questionnaires, rapid systems, anomanometry, ultrasound, rectoscopy, MRI, can be used to accurately assess tumor development, as well as the morphology and function of the anal sphincter complex, pre- and postoperatively.

The comparison and analysis of different diagnostic methods regarding the tumor process and the function of the anal sphincter complex will contribute to more accurate predictive assessment and postoperative functional outcomes, helping to determine an adequate therapeutic strategy, including surgical methods, medication, transanal irrigation, rehabilitation of pelvic floor muscles, neuromodulation to improve quality of life, postoperatively.

Key words: low anterior resection syndrome (LARS), coloproctological examination, anal manometry

## LOCAL EXCISION IN EARLY RECTAL CANCER - MINIMALLY INVASIVE AND APPROPRIATE MODERN APPROACH

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**Introduction:** The treatment of rectal carcinoma is complex and depends mainly on the location and stage of the disease. Total mesoerctal excision is the gold standard in the surgical treatment of this disease, but there is a risk of early and late postoperative complications. For this reason, the benefits of local excision in carcinomas in stage T1-T2 N0 are being studied more and more intensively.

**Aim:** The aim of this study was to investigate the clinical benefits and oncological risks of treating patients with early colorectal cancer with only local excision of the tumor.

**Materials and methods:** A literature review of articles examining surgical and oncological outcomes in patients with early rectal cancer was performed. The criteria for selecting patients suitable for this type of surgery have also been studied. We also report our results in local excision of patients with T1 rectal cancer.

**Results**: According to the set criteria, 23 articles were found and analyzed. The incidence of local recurrences after tumor excision alone averaged 9.4% in T1 and 25% in T2 tumors. Postoperative radiation chemotherapy reduces the frequency of local recurrences after tumor excision.

**Conclusion**: Local excision of rectal cancer has

a significantly lower incidence of complications, but proper selection is essential in terms of cancer outcomes.
**Key words**: Rectal carcinoma, local excision

## COMPLICATIONS AFTER RADICAL COLO-RECTAL CANCER PELVIC SURGERY

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**Aims:** To analyze radical colorectal operation patients for 2013-2021 - postoperative morbidity, relapses and survival, regarding localization, surgical technique and stage.
To compare these aspects with the ones from our prior survey for 2001-2010.
To compare postoperative morbidity for 2013-2019 and 2020-2021–before and after COVID-19.
**Methods and patients:** For 2013-2021 we operated 439 colorectal cancer patients. Aged from 32 to 89. Performed were: right hemicolectomy – 111; transverse colon resection-14; left hemicolectomy – 41; sigmoid hemicolectomy – 26; anterior rectal hemicolectomy (ARR) – 131; Miles procedure – 45; Hartmann procedure – 59; colectomy – 12. Anastomosis after ARR until 2016–E-to-E-A; from 2005 also performed S-to-E-A, from 2017-S-to-S-A stapled-in 82 patients.
Through 2001-2014 we brought out protective stoma only in high-debit prolonged discharge fistula, or in septic complications.
Since 2014 we bring out protective stoma in low or ultralow ARR or in bowel obstruction cases–transversostoma, constructed for total fecal diversion.
**Resusts:** Staging: TNM I-26%, II-36%, III-26%; IV-12%. Histopathology adenocarcinomas 95,3%. Removed lymph nodes-5 to 42, found metastatic-1 to 18.
Postoperative complications (early and late): Gastrointestinal (5-20%). Anastomotic leaks are most important. After right hemicolectomy / sub/ total colectomy – single cases. For 2001-2010 for RRA–13,7%. Proximal stoma was brought out later in 29,6% of patients with fistula or in 4% of all patients. Rest treated conservatively. For 2013-2021 leaks after ARR with protective stoma – 0,5 %., without protective stoma – 5%.
Complications regarding anastomosis type after ARR – after E-to-E– 13,7% (14%); after S-to-E – 4,7% (5%); after S-to-S-0,5% with and 5 % without protective stoma.
Bowel obstruction – 1%, radiation colitis and enteritis post radiotherapy–1%, stercoral fistula abdominal or perineal - 1%; necrosis or stoma failure – 1%,
Urinary complications (1-10%) – ureter lesion - 23 patients, urethra lesion – 3 patients, bladder lesion - 7 patients – due to removal of infiltrating carcinoma. Pyelonephritis – 7-10%.
Pelvic floor complications (2-7%) are associated with mesh implants – pelvic cavity infection – 5% - discharge ends in 25-65 days, leakage of the implanted mesh in pelvis – 2%).
Abdominal wall infection – 12-25%
Complications associated with soma repair: abdominal wall infection – 35%; bowel obstruction – 5%; anastomotic leaks – 1%.
Management of complications: Conservative treatment resolves 80-84% of them. Operative: percutaneous nephrostomy – 1%; bowel stoma correction – 1%, bowel suture - 1% or segmental resection - 2%, transversostoma - 4%, repair of pelvic floor reconstruction - 2%.
Intraoperative mortality – 0%. Postoperative mortality – 5%-cardio-pulmonary reasons.
Local relapses for sigmoid-rectal cancers-18%-due to advanced tumors. Survival -3-years 69%; 5-years 56%. Postoperative follow-up comprises ultrasound, CT, PET-CT; MRI, markers CEA and CA19-9, colonoscopy.
Regarding COVID-19 postoperative pneumonias increased twice. More than half of patients with prior COVID infection had postoperative cardio-

pulmonary complications.

**Discussion:**The increased possibilities to perform low ARR results in decrease in number of stoma patients, but increases potential for postoperative morbidity. Compared to the prior study period , we changed 1/ Rectal anastomosis technique: Side-to-Side and sometimes Side-to-End, versus End-t-End before. 2/ Tactics for bringing out protective stoma– in all low and ultralow ARR and in bowel obstruction. 3/ Technique for bringing out protective stoma – prefer transversostoma , constructed for total diversion.

Stoma repair is a procedure that may be a source of new morbidity including leaks, bowel obstruction and rarely– mortality. We have few complications related with this rate.

**Conclusions:**The changed rectal anastomosis technique, tactics and technique for bringing out protective stoma, and the methods for pelvic floor reconstruction, lead to decrease in colorectal surgery complications.

Regarding COVID-19 postoperative complications increased.

**Key words** - complications; colorectal surgery; mortality

## NUTRITIONAL STATUS AND NUTRITIONAL SUPPORT OF PATIENTS WITH MALIGNANT INTESTINAL OBSTRUCTION BY COLORECTAL CANCER

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**BACKGRAOUND:** Patients with malignant intestinal obstruction usually have malabsorption and varying degrees of enteric insufficiency with subsequent malnutrition. The nutritional status of patients with CRC complicated by colorectal carcinoma is essential for treatment outcome. In malignant cachexia with preoperative loss of 20% body weight, postoperative mortality reached 33%, compared to 3.5% in normal nutritional status. The energy support of the enterocyte is provided by the nutrients located in the intestinal lumen. Enteral nutrition is essential for the normal functioning and regeneration of the intestinal epithelium.

**AIM:** To analyze the effect of gelatien 20 on the proteinogram in patients with colorectal cancer complicated by malignant intestinal obstruction.

**METHODS:** Prospective monocentric study covering a one-year period. A patient team of 25 patients with colorectal cancer complicated by malignant intestinal obstruction was analyzed. Gelatien 20 treatment was administered to 5 patients compared to a control group of 20 patients.

**RESULTS:** Parenteral therapy aimed at correcting the proteinogram was the same in the analyzed patient team. In patients with specialized enteral nutrition with gelatien 20, a faster increase in total protein and albumin levels was observed compared to patients in the control group. We have not found differences in hospital stays and postoperative complications. The registered mortality for the six months was 4% (1 patient died)

**CONCLUSION:** Enteral nutrition in patients with colorectal carcinoma reduces endogenous intoxication, normalizes the intestinal microbiome, reduces the incidence of nosocomial infections, reduces hospital morbidity and mortality and is mandatory even in patients with MIO. Selective administration of gelatien 20 may suppress or block the body‘s systemic inflammatory response to varying degrees and accelerate convalescence.

**Keywords:** Enteral nutrition; malignant intestinal obstruction; gelatin 20

## SURGICAL APPROACH TO ACUTE DIVERTICULITIS

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**Introduction:** Acute diverticulitis is an urgent surgical condition and a reason for acute abdomen, with the most common localization being colon sigmoideum, although it can affect other parts of the colon as well. Because of the overlapping clinical symptoms, the worldwide guidelines don't make a distinction in the managing of right sided and left sided perforated diverticulitis. The goal is to analyze the postoperative results from the treatment of patients with acute diverticulitis within the surgical department at UMBALSM "N. I. Pirogov" from 01.01.2016 to 17.06.2021.
**Materials and methods:** Retrospective analyzing from the period between 01.01.2016 until 17.06.2021. The surgical department at UMBALSM "N. I. Pirogov" has performed 133 surgical interventions (110 being left sided and 23 being right sided) on patients with acute diverticulitis.
**Results:** In total 133 surgical interventions have been performed, in which 34 (25.5%) being laparoscopic. The surgical interventions have been: peritoneal lavage and drainage -29, resection and primary anastomosis- 40, Hartmann- 64. With postoperative lethality being 17.2% (23).
**Conclusion:** Left sided diverticulitis is associated with a more severe clinical course due to its occurrence in older patients. However, with diagnosing acute diverticulitis preoperatively, there is a possibility for conservative treatment. The prospects of conservative treatment in right sided diverticulitis however are limited, due to the overlap of the clinical picture with acute appendicitis and the diagnosis is seen intraoperatively.
**Key words:** Acute diverticulitis, acute abdomen, surgical approach

## DEEP VEIN THROMBOSIS IN BULKY PELVIC CANCER PATIENTS

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**Introduction**
Deep venous thrombosis (DVT) is common complication for cancer patients.
DVT might be result of:
1/ coagulation disorders, trauma etc.;
2/ cancer related, due to:
– coagulation disorders or in course of chemotherapy.
– bulky pelvic cancer (BPC).
**Purposes:**
To study DVT in patients with BPC – origin, course and therapy, mortality.
To set questions about management and survival of these patients.
**Materials and methods:** We analyse all malignancies for 2017-2021, treated in First and Second Surgical departments of our hospital, found related with DVT. BPC group is a portion of all cancer related DVT patients. BPC are relapse or primary gynecologic, rectal, bladder cancers or metastatic pelvic or inguinal nodes.
**Results:** We analyse totally 1013 DVT patients. Cancer related DVT patients were 28%. The BPC group comprises 16% of all DVT patients and 55% of cancers related patients. We present list of malignancies of cancer related DVT patients having prior surgery. Response to therapy in BPC patient with DVT–no or poor-75%; partial-25%. Mortality for BPC patients: in-hospital 27%; within 30 days-45% which is totally 73%; within 2 months-15% and within 4 months-12%. The other cancer related DVT survived 6 or more months. No data for DVT patients increase after COVID-19.
**Discussion and Conclusions:** The work up of a DVT patient always should set some questions – Is this a cancer related DVT ? Is there any present or persisting tumor ? Is this BPC or not ? BPC are 55% of cancer related DVT. Mortality 73% of

BPC patients (in-hospital; within 30 days) is due to cancer progression The anticoagulant therapy is not very effective for DVT due to BPC. The low or no therapy response and mortality due to cancer disease progression open questions for changing the therapy strategies of BPC patient with DVT. More questions than answers

**Key words:** deep venous thrombosis; bulky pelvic cancer; mortality

## MAMMOGRAPHIC DENSITY - METHODS OF MEASUREMENT AND CLINICAL IMPORTANCE

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Breast density is an independent risk factor that assesses the ratio of radiologically dense connective and epithelial tissue to adipose tissue. It provides important information regarding risk assessment and predicting the development of breast cancer.

**The aim** of the present study is to compare different methods for estimating mammographic density.

**Materials and methods:** the subject of a prospective study are 94 patients established by digital mammograms and treated at the Clinic „Thoracic Surgery" of the Military Medical Academy-Sofia for the period 2018-2020. Initially, the density was estimated according to the analog scale of Ansel Adams for gray, and then the study was conducted with the programs Image J and Adobe Photoshop CS6. The mammographic density is categorized according to the instructions of ACR - BI-RADS from D1 to D4, respectively: D1 <25% dense tissue; D2 - from 25% to 50%; D3 - from 50% to 75%; D4> 75%.

**Results:** the average values of mammographic density, calculated visually, are significantly higher - 33% (from 10% to 75%) than the computer-generated results - 20.1% on average (from 0% to 80%). The most significant difference is in the D2 group, which accounts for nearly half of the patients evaluated visually, and only 28% in the computer study.

**Conclusion:** the use of software products improves accuracy and has a more objective assessment than the classic visual examination, which requires an experienced radiologist. Image J offers a combination of a free license, an easy-to-use interface and multi-platform compatibility, which is why we recommend it as a method of choice when assessing mammographic density.

**Key words:** mammographic density; Ansel Adams analog scale; Image J; Adobe Photoshop CS6.

## THE ROLE OF THE SURGEON IN NON-PUBERTY GYNECOMASTIA

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Gynecomastia is a benign enlargement of the male breast due to the proliferation of ductal, strumal and/or adipose tissue. Although it is a common condition, not all cases require surgical treatment.

**The aim** of the study is to assess the location of surgical treatment for non-puberty gynecomastia.

**Materials and methods**: the subject of a prospective study are 28 patients with pathological gynecomastia, operated at the Clinic „Thoracic Surgery" - MMA-Sofia for the period 2018-2020. The distribution of cases is: 9 with II-A degree, 16 - II-B and 3 with grade III disease according to Simon's classification. In 5 of the cases the gynecomastia is bilateral. Subcutaneous mastectomy with periareolar incision was performed.

**Results:** in general, surgical treatment gives good cosmetic results, is well tolerated by patients, complications after it are rare /hematoma, partial necrosis of the areola/.

**Conclusion:** in recent years the introduction of new, less invasive methods allows for individualization of treatment tactics, smaller incisions and faster recovery.
**Key words**: non-puberty gynecomastia; subcutaneous mastectomy.

## PROTOCOL FOR THE PREVENTION OF POSTOPERATIVE LYMPHEDEMA IN PATIENTS AFTER AXILLARY LYMPH DISSECTION FOR BREAST CANCER

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**Introduction:** Lymphedema of the upper limb is one of the most common postoperative consequences in patients treated for breast cancer. The risk of its development varies according to the stage of the disease, the algorithm of treatment, as well as the individual characteristics of the patients. Prevention has a leading role in reducing both the incidence and severity of upper extremity lymphedema.
**Objective:** The aim of the study was to present the benefits of the protocol introduced in the clinic for the prevention of postoperative lymphedema of the upper limb in patients treated surgically for breast cancer.
**Materials and methods:** For the period from March 2021. until March 2022. in all patients operated on for breast cancer, a protocol for the prevention of postoperative lymphedema was applied, which includes - performing a sentinel biopsy in the absence of contraindications; in patients with indications for axillary dissection, prophylactic lymphatic-venular anastomosis is performed under a microscope; early rehabilitation and compression of the limb with elastic bandages is applied to all patients. Postoperative follow-up for lymphedema was performed by measuring the diameter of both upper limbs at three-month intervals.
**Results:** For the determined period, 43 patients with breast cancer were included, meeting the set criteria. In ten of them axillary dissection was performed, while in the others - sentinel biopsy. Manifestations of lymphedema were found in a total of three patients.
**Conclusion:** The presented protocol for the prevention of lymphedema is applicable and safe, as the initial results indicate that there is a potential to reduce its incidence. Further research is needed in this direction.
**Key words:** Lymphedema, Lymphovenular anastomoses, Microsurgery

## IMPROVING THE OUTCOMES OF BREAST CANCER TREATMENT WITH PRELIMINARY ASSESSMENT OF HIGH RISK LESIONS

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**Introduction:** Breast cancer (BC) is the most common oncological disease in Bulgaria with between 3,500 and 4,000 new cases diagnosed annually. The incidence rate is not among the highest, but the 5-year survival rate of patients with BC in Bulgaria is one of the lowest in Europe.
**Aim:** The aim of this study is to present an approach for improving treatment outcomes of patients with BC applied in the Clinic of Surgery at Alexandrovska University Hospital.

**Materials and methods:** During the period from January 2020 to December 2021, 94 patients with BC were diagnosed at the Clinic. The initial diagnosis was made by performing a core-needle biopsy. The subsequent approach to treatment was determined by a decision of an oncological commission. 18 patients were referred for neoadjuvant systemic therapy.
**Results:** Of all 94 patients, 22 were classified as luminal A subtype, 58 as luminal B subtype, 6 as HER2-enriched subtype, and 8 as triple-negative receptor subtype. Of the 18 patients receiving neoadjuvant systemic therapy, a pathologic complete response (pCR) was achieved in 3 (1 with luminal B subtype, 1 with HER2-enriched subtype and 1 with triple-negative subtype), partial in 12 (1 with luminal A subtype, 8 with luminal B subtype and 3 with HER2-enriched subtype) and 3 patients (2 with triple-negative subtype and 1 with luminal B subtype) had stable disease.
**Conclusion:** Achieving pCR is a proven factor in better survival in patients with BC. Neoadjuvant therapy in patients with aggressive tumor biology is a standard approach set in the European guidelines and applied in Bulgaria.
**Key words:** breast cancer, neoadjuvant, therapy

## EVOLUTION OF AXILLARY LYMPH NODE DISSECTION – CLASSIC COMPLETE VERSUS SENTINEL IN PATIENTS WITH EARLY BREAST CANCER AT THE DEPARTMENT OF SURGERY, UNIVERSITY HOSPITAL "TZARITZA JOANNA – ISUL" – PAST, PRESENT AND FUTURE

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**Introduction:** The conception of a predicted model of consecutive breast cancer (BC) spreading as a localised disease initially, which advances in a regular manner to the regional lymph nodes is first described by Sir William S. Halsted. This fact puts a focus on the lymph nodes as an important predictive factor, which has brought out the "en bloc"- lymph node dissection as a leading surgical principle. Based on this hypothesis of a predicted dissemination from level I to level II and III a new method of assessment and biopsy of sentinel lymph nodes was developed.
Axillary lymph node dissection– classic complete (ALND) and sentinel (SLND) seek to surgically remove the metastatic lymph nodes and to obtain maximally adequate and histologically verified information about the degree of spreading for achieving final staging and defining prognosis and type of the following therapy.
The aim of the study is to assess the results and tendency of ALND de-escalation in patients with early BC in the last 10 years.
**Material and methods:** The study is conducted over 1258 patients with early BC (staged up to IIA) with median age of 56,5 years (from 24 to 103 years), who were treated at the Department of Surgery of University Hospital "Tzaritza Joanna – ISUL" during the period from April 2012 through April 2022. A retrospective analysis was made of the preferred ALND technique according to the stage of the disease and introduction of improved imaging modalities in the routine practice.
**Results:** The results from our research show the absence of differentiated approach in determining the level of ALND in accordance with the stage of the disease in the first 5 year of the study, when SLND was performed only in few cases – 102 versus 461 classic ALND (22,12%). This resulted in unnecessary complete dissection in patients with minimal or non-invasive BC. After the introduction of SLND in the routine practice for the first time in 2012 a lasting tendency has

been established of increasing the rate of this dissection with relative decrease of the classic ALND in patients with invasive early BC – 299 versus 396 (75,5%). In non-invasive forms of BC the number of surgical interventions, combined with any type of ALND has been distinctly reduced due to the precise pre- and intraoperative diagnosis.

**Discussion:** The American College of Surgeons Oncology Group Z0011 trial doesn't detect statistically significant differences in patients with early BC regarding 5-year overall survival (91.8% for ALND / 92.5% for SLND), disease-free survival (82.2% for ALND / 83.9% for SLND) and recurrence-free survival (95.7% for ALND / 96.7% for SLND). The authors conclude that the routine use of classic ALND should not be recommended anymore, because SALND grants excellent loco-regional control and survival compared to the one in complete ALND in patient with T1 or T2 BC with metastatic sentinel lymph nodes, treated with whole breast radiotherapy and system adjuvant therapy.

Based on the data from ACOSOG Z0011 trial, The 12th St. Gallen International Breast Cancer Conference (2011) and After Mapping of the Axilla: Radiotherapy Or Surgery (AMAROS) trial (2014), the current guidelines of the American Society of Clinical Oncology and National Comprehensive Cancer Network recommend limitation of ALND in patients who complete the criteria of ACOSOG Z0011 trial.

**Conclusion:** The nodal status is one of the most researched and established prognostic factors in BC**.** The present study demonstrates the current tendency of reducing the level of classic ALND in patient with early BC, illustrated by significant growth of SLND rate, achieving less morbidity without compromising the long-term oncological results.

## CURRENT SURGICAL APPROACHES IN EARLY BREAST CANCER AT THE DEPARTMENT OF SURGERY, UNIVERSITY HOSPITAL "TZARITZA JOANNA – ISUL"

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**Introduction:** Breast cancer (BC) continues to be the most frequent oncological disease in women worldwide, including in Bulgaria. The annually reported statistical data for increasing incidence is due to the technological progress in early diagnosis and prophylaxis, which results in more newly diagnosed cases with early BC – up to stage IIA. The optimal surgical approach in these patients remains a topic of discussions.

The aim of this paper is to present and analyze the current different surgical options as a part of the complex treatment in patients with early BC.

**Material and methods:** The research included 1258 patients with early BC (stage up to IIA), aged between 24 and 103 years (median age of 56,5 years), who were treated at the Department of Surgery of University Hospital "Tzaritza Joanna – ISUL" during the period from April 2012 through April 2022. The type of the surgical intervention was defined after precise and individual patient's assessment based on developed at the Department therapeutical algorithm, which includes physical exam, number of imaging methods and biopsies and evaluation by multidisciplinary oncological team. The surgical management for the 10-year period of the study involved the following surgical options: mastectomies (radical modified, total and subcutaneous with simultaneous reconstruction) and different breast-conserving surgeries (BCS) with axillary lymph node dissection - classical (ALND) or sentinel

(SLND). After 2015 the application of BCS and SLND with simultaneous intraoperative radiotherapy (IORT) was introduced in the routine practice in strictly chosen patients.

**Results:** During the cohort study of 1258 patients were performed 528 mastectomies and 730 BCS with ALND or SLND. In 337 patients the respective surgical treatment (mastectomy or BCS) was carried out after neoadjuvant chemotherapy. The results from the comparative analysis of two equal 5-year intervals unequivocally point out a predominate number BCS over mastectomies for women with early BCS in the second half of the research. The data demonstrates that the relative survival rate during the first 5 years of the study is equal to 92,4% with decrease in the overall survival on the 10th year – 82,9%. Likewise, there was reduction of the metastasis-free survival observed from the 5th to the 10th year, respectively 87,3% and 80,5%.

**Discussion:** The surgical treatment is a fundamental component of the multicomplex management of early BCS as it gradually evolves from the radical mastectomy, performed for the first time in 1882 by Sir William Halsted to more conservative one in the face of different BCS with ALND or SLND in well-selected patients without statistic impact on the survival rate parameters. According to the EUROCARE-5's analysis the 5-year survival rate in Europe for the period of time between 2000 and 2007 varies between 62,8% and 74,4%. The estimated results for overall survival from our study are similar to the reported ones from the leading statistical institutes American Cancer Society and National Cancer Institute's Surveillance Epidemiology, and End Results (SEER) for 2019 for early invasive BC - 89.9% on the 5th year and 83% on the 10th. The data from the research of Baeyens- Fernández (2018) shows that the 5-year overall survival varies between 81% and 84% in Europe with the exception of Eastern Europe where it equals around 69%. We achieved results which significantly exceed the officially registered percentages by the National Cancer Register for 5-year relative survival rate (72,6%) in patients with BC, diagnosed between 2000 and 2007.

**Conclusion:** The results from our study verify that the stage of the disease determines the choice of a surgical approach. In early stage the type of surgery (BCS or mastectomy) doesn't play a significant role over the survival indices. In the era of personalized medicine and thanks to the advantage in imaging modalities as well as the use of different oncoplastic techniques a stable trend of increased number of BCS in women with early BC was observed compared to mastectomies. The growing rate of subcutaneous mastectomies with immediate reconstruction performed reflect the pursuit of a combination between oncologically safe approach and maximally desired cosmetic results achieved.

## SENTINEL LYMPH NODE BIOPSY WITH INDOCYANINE GREEN IN BREAST CANCER - A NEW ERA IN MINIMALLY INVASIVE AXILLARY SURGERY

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**Introduction:** In patients with breast cancer, axillary lymphatic status is one of the most important prognostic factors related to staging and subsequent treatment. Sentinel axillary lymph node biopsy with indocyanine green in meta-analysis shows very good success in obtaining sentinel lymph nodes.

**Aim:** The aim of our study is to present the modern aspects of the application of sentinel lymph biopsy in breast cancer and to present our initial experience with axillary lymph biopsy with indocyanine green.

**Materials and methods:** We analyzed the literature data and in the period June 2020 to May 2022 in the Clinic of Oncological Surgery at the University Hospital "G. Stranski" we performed sentinel lymph biopsy in 35 patients using the indocyanine green method. Mean age of patients is 46.2 years.

**Results:** In 94.3% of the patients we have specified sentinel lymph node. No sentinel lymph node was detected in 5.7% of the patients and axillary lymph node dissection was performed. 28.6% of them did not have drainage. 71.4%

of patients did not report significant pain in the shoulder or forearm and currently there are none with severe lymphedema. No cases with evidence of allergies and infection.
**Conclusion:** Sentinel lymph node biopsy has its advantages over axillary lymph dissection, mainly related to upper limb pain, lymphedema and related infections, so it is acceptable to apply it in all appropriate cases.

## OZONE THERAPY AS PART OF THE COMPLEX TREATMENT OF SEVERE SOFT TISSUE INFECTIONS

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**Introduction:** Ozone therapy is a treatment method for dealing with soft tissue purulent or necrotic wounds, used since 1902. The mechanism of local action of ozone is realized by the release of oxygen molecules that act on the inflammatory process by reducing bacterial colonies, stimulating regeneration and reducing tissue damage by reducing proinflammatory cytokine synthesis. Ozone also has a local immunomodulatory effect.
**Purpose:** The aim of the present study is to analyze the results of the application of ozone therapy in the complex treatment of soft tissue infections and to analyze the results in terms of regeneration rates, hospital stay and days of antibiotic treatment.
**Materials and methods:** A retro and prospective analysis of patients treated at the First Surgical Clinic of university hospital "Dr. G. Stranski" EAD - Pleven with soft tissue infections, which received local ozone therapy and the results of treatment were compared with the results of patients who underwent standard treatment of soft tissue infections without ozone therapy.
**Results:** Preliminary results indicate that in the group of patients undergoing local ozone therapy have histologically and clinically verified positive results in terms of tissue regeneration, faster normalization of laboratory markers of infection, have a shorter hospital stay and a shorter course of antibiotic treatment compared with the group of patients treated without local ozone therapy.
**Conclusion:** Topical ozone therapy can find a place in the complex treatment of soft tissue infections.
**Key words:** fasciitis, severe soft tissue infection, ozone therapy

## RESULTS IN TREATMENT OF WOUNDS WITH DIFFERENT ORIGIN

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**Introduction:** Patients with soft tissue defects, acquired after chronic diseases, different trauma wounds and complications after surgical interventions often are treated at the department of Plastic and reconstructive surgery at UMHAT "Dr. Georgi Stranski". The treatment approach of the soft tissue defects should be corresponding with the mechanism of the disease, the presence of bacterial contamination, level of exudation and the indications for administration of the products such as dressings.
**Aim:** The aim of the study is to present the audience with different wound cases, treated with a set of surgical and non-surgical methods. Using the compiled medical documentation of the treatment process and the photographic documentation, we will introduce a broad spectrum of soft tissue lesions with different localization and depth.
**Results:** We present patients with wounds, acquired as complications of cardiothoracic

procedures, thermic trauma, necrotic ulcers with different origin, penile paraffinoma, conditions after Fournier's gangrene. During the observation of the results and the steps in the treatment plan, rendering on account the using of VAC therapy under certain circumstances, in combination of plastic surgery methods of restoring defects, the treatment outcome is significantly improved.

**Conclusion:** The options used for wound treatment should be conformed with patient's general condition. Using VAC therapy additionally helps for clearing the wound from excess exudate and also contributes for the growing of the fresh granulation tissue. VAC could be used also on the step of performing split thickness skin grafting, which could help in certain cases, for better results. Another condition for success of the split thickness skin grafting in complicated wounds is the absolute clearing of the bacterial flora of the soft tissue wound bed.

**Key words**: wound, split thickness skin graft, defect

## NEGATIVE PRESSURE WOUND THERAPY FOR SURGICAL SITE INFECTION IN THE ABDOMINAL SURGERY

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**Introduction:** The application of negative wound pressure therapy (NWPT) for acute and chronic wounds has been in application since the 90s' and a fair amount of research has been done on treatment of surgical site infections (SSI).

**Aim:** The aim of the current study is to focus on our initial experience of indications and effectiveness of NWPT in treatment of SSI.

**Materials and method:** We focus on the first 4 cases treated with NWPT in the Surgical department of Kaspela University Hospital, Plovdiv, Bulgaria.

**Results:** In our study we present 2 male and 2 female patients with average age of 63,2 years (range 41-81years). Two of the cases are SSI following a postoperative hernia repair on the19th and 17th day after surgery, one umbilical hernia repair with SSI 24 days after surgery and one abdominoperineal resection with SSI of the perineal wound on the 31th postoperative day. Wound closure by secondary intention was the choice in 2 patients and the other 2 patients had undergone secondary suture after 11 and 7 days of NWPT respectively.

**Conclusion:** Our short clinical observation on the initial cases treated with NWPT in patients with SSI after abdominal surgery is consistent with the promotion of the wound healing described in the literature.

**Key words:** negative wound pressure therapy, surgical site infection, abdominal surgery

## DELAY IN SURGICAL TREATMENT IN PATIENTS RECOVERING FROM COVID-19

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COVID-19 is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The mean time from onset of symptoms to clinical recovery is approximately 2 weeks for mild cases and 3 to 6 weeks for severe and critical cases. However, many patients continue to have residual symptoms after their recovery period despite their recovery from acute infectious disease.

With careful resumption of planned operations, it is important to consider the potential chronic health problems of patients who have recovered from COVID-19 but may still be hiding an unexpected or hidden / smoldering / disease that

may affect surgical outcomes.
Therefore, **this rapid review aims** to identify current evidence on the following two issues:
1. What are the long-term pathophysiological and functional consequences of COVID-19 in patients who have recovered from SARS-CoV-2?
2. What is the effect of COVID-19 in postoperative patients?
A **rapid review methodology** was used to evaluate the relevant published literature, identified through a comprehensive search of the Medline and MedRxiv databases, various international health networks, surgical and anesthesia companies and websites with reliable and up-to-date medical records.
**Key words**: COVID-19, SARS-CoV-2, postoperative complications after KOVID-19, surgery in patients with COVID-19

## SURGICAL COMPLICATIONS IN PATIENTS WITH COVID-19. GASTROINTESTINAL PERFORATIONS

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**Background:** Coronavirus or Covid-19 is an acute viral infection caused by (SARS-CoV-2). The latter is characterized by high contagiousness and severe course .There are serious gastrointestinal complications associated with its treatment with high-dose steroids and interlvkin-6 (IL-6) inhibitors. Even that, they have been reported rarely. The most serious are the perforations of the digestive system.
**Methods:** We present a patient with a clinic of acute peritonitis based on perforation of a duodenal ulcer, in the course of complex drug therapy for active Covid-19 infection.
**Result, cases:** A patient admitted to the Covid Unit with severe intoxication and bronchopulmonary syndrome, with a Covid -19 positive antigen test and a positive PCR test after hospitalization. Complex drug therapy was started, including parenteral administration of broad-spectrum antibiotics, corticosteroids, antiplatelet agents, LMWH, and ventilation. During the hospital stay the patient had clinical and imaging data for acute peritonitis (perforation of gastric ulcer), which necessitated our first emergency surgery performed in a covid patient. During first procedure perforating area was sutured and omental patch was placed aboveq the abdominal cavity was left open covered by mesh. Because of subsequent leakage of the suture line in the next abdominal cavity wash out procedures gastric resection was done but unfortunately with total anastomotic dehiscency of the stapler lines.
**Results, literature:** In the current literature, just over 20 cases involving upper and lower gastrointestinal perforations have been reported in patients with active Covid-19 infection..
**Conclusion:** Gastrointestinal perforations are a rare but dangerous complication of Covid-19 infection. The use of interleukin-6 (IL-6) inhibitors and steroids increases the risk of their occurrence.The outcome of surgical treatment is often unfavorable due to the exhausted reparative capabilities of the body from the infection and the therapy.
**Keywords:** COVID19, complications, gastrointestinal perforations, steroids, interleukin-6 (IL-6) inhibitors

## COVID- 19 INFECTION WITH MANIFESTATIONS OF ACUTE NECROTIC PANCREATITIS WITH MULTIPLE ORGAN FAILURE

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**BACKGRAOUND:** Covid 19 pandemic

invaded Bulgaria in March 2019. From the very beginning, it was noted that this respiratory virus affects not only the lungs, but also the digestive, excretory, cardiovascular, and the nervous systems. The extrapulmonary complications, become so common that they have become a major cause of death. The subject of this publication is one of the first abdominal complications, which is acute pancreatitis.

**AIM:** The aim of the this study is to present a case of patient with COVID - 19 infection complicated by acute necrotic viral pancreatitis, leading to intra-abdominal and extra -abdominal changes, which determine the subsequent lethal outcome.

**METHODS:** A retrospective analysis of a clinical case of a patients with COVID 19 infection was performed. Information from the history of the disease was collected, as well as data from the hospital system Gamma Code master, virological , pathological and autopsy protocols, as well as a review of available articles on this issue in the international databases PuBMed .

**RESULTS:** Of the 23 patients with surgical emergencies and 19 Covid infections, 4 (16.6%) had clinical and laboratory evidence of acute pancreatitis. One patient needed surgical intervention and two patients died.

**CONCLUSION:** Acute pancreatitis is a rare but severe abdominal complication in the course of covid infection. This leads to a decrease in the mobility of the diaphragm, which in turn leads to a deterioration of lung status. The direct lymphatic connection between the retroperitoneum and the chest is also important, which further worsens the prognosis

**Keywords:** Acute pancreatitis, Covid 19, complications, treatment

## CLINICAL CASE OF A PATIENT WITH PRIMAL PNEUMOSCROTUM AND PHLEGMON OF ABDOMINAL WALL

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**Introduction:** The first case of pneumoscrotum was reported in 1912 by Keyes. This first report involved 2 cases of pneumoscrotum that occurred following nephrostomy. Between 1972 and 2013, 59 cases of pneumoscrotum were described in the literature. As first reported by Keyes, pneumoscrotum also describes scrotal emphysema and scrotal pneumatocele. Scrotal emphysema is described as palpable and presenting with such clinical signs as swelling of the scrotum and palpable crepitus. Pneumatocele is described as not palpable due to the fact that the air is in the tunica vaginalis of the testicle.

**Material and methods:** A clinical case of a patient with primal pleumoscrotum and phlegmon of the abdominal wall, from a testicular infection.

**Goals ot the investigation:** Research of the perioperative and postoperative data of a patient with pneumoscrotum and phlegmon of the abdominal wall.

**Conclusion:** In cases of pneumoscrotum, correct evaluation is needed. Some conditions such as torsion, neoplasms, hydrocele, hernia must be considered. Despite the benign course of most of the clinically evident pneumoscrotum cases, this condition should never be underestimated. A careful medical history that considers any thoracic or abdominal trauma or surgery, and recent endoscopic procedures is strongly suggested, due to surgical treatment.

## TREATMENT OF COMPLICATED GOUT TOPHI LESIONS BY LOCAL OZONTHERAPY- A CLINICAL CASE

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**Introduction:** Gout is a metabolic disease of uric acid metabolism. In chronic conditions with long-term deposition of uric acid crystals on the connective tissue elements of the joints and tendons, gouty tophi are formed. Te are formed in 12-35% of patients with chronic gout.
**Aim:** The purpose of the present study is to present a patient with a gout complication with the formation of massive gouty tophi, some of which are in decay, and to present our experience in the treatment of wound surfaces formed after tophi decay.
**Materials and methods:** Retrospective analysis and presentation of a clinical case of a patient with gout and complicated gouty tophi, treated in the First Surgical Clinic of "UMBAL" Dr. G. Stranski" with the help of local ozone therapy
**Results:** A male patient, age 72, with a history of gout over 20 years, is undergoing regular therapy and monitoring uric acid levels. Systemic treatment with a broad-spectrum antibiotic and local treatment with ozonoids was carried out.
**Conclusion:** Complications of gout tophi require surgical treatment. The presented method of treatment with local ozone therapy is innovative and gives good final results when it is combined with adequate medical control of hyperuricemia.
**Keywords:** Goiter, gout tophi, local ozone therapy

## INTRAVASCULAR TREATMENT OF ANASTOMOTIC LESIONS AFTER ILIO-FEMORAL BYPASS AND CONTRALATERAL STENOSIS OF THE COMMON FEMORAL ARTERY

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**Introduction:** In patients requiring a Re-Do procedure due to a critical limb ischemia there are two options – a conventional surgical treatment or an endovascular procedure. The advantages of endovascular treatment include a minimized perioperative risk and multiple lesions treatment at the same time.
**Clinical case:** 57-year-old polymorbid patient admitted for a re-thrombosis of the reconstructed left ilio-femoral segment and a concomitant stenosis of the right superficial femoral artery.
There are two previous surgical interventions:
Endarterectomia Arteria Iiliaca Externa sinistra. Insertio stent 7/59 Arteria Iiliaca Externa sinistra. Transpositio biffurcatio Arteria Femoralis Comunis sinistra. Patch plastica Arteria Femoralis Comunis sinistra. in October 2019
Left side ilio-femoral bypass in April 2020.
The angiography shows common iliac artery thrombosis above the anastomosis and left sided stenosis of the distal anastomosis and right common femoral artery stenosis. A brachial approach due to the bilateral multifocal lesions was preferred and we performed a common iliac artery stent insertion and a proximal anastomosis on the left side; balloon angioplasty of the distal anastomosis; balloon angioplasty of the right common femoral artery.
**Discussion:** The advantages of the preferred method of treatment are the minimal trauma and the possibility for a simultaneous treatment in different vascular levels.
**Key words:** Ileo-femoral bypass thrombosis; Interventional redo; brachial access.

## CURRENT ASPECTS OF MODERN SURGICAL CARE

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The aim of this communication is to analyze contemporary surgical nursing care and identify current aspects of surgical patients.
**Methods:** The study is based on a systematic analysis of scientific publications and peer-reviewed journals and magazines.
**Results:** The specificity of classical surgical care is mainly determined by surgical pathology, duration of surgical intervention, pain syndrome, and the presence of a surgical wound.
The focus is on care in the preoperative, operative, and postoperative periods, individual approach to and active monitoring of patients for possible complications, as well as on providing information and advice to patients and relatives.
Contemporary surgical care is comprehensive and rapidly evolving in both inpatient and outpatient care. It is problem-oriented, patient-centred, and multidisciplinary.
According to data from the National Institute of Statistics, surgical interventions increased between 2015 and 2019, indicating that the need for surgical nursing care is also growing. Surgical patients discharged in 2015 were 599 357 and in 2019 – 629 45.
New organizational forms are available for surgical interventions that require adequate nursing care. The rapid development of robotic surgery is a prerequisite for specialized training of nurses working with this new technology.
**Conclusion:** Modern surgical nursing care requires specific qualifications and competence. Continuous training is necessary to improve professional training to promote the quality of nursing care in surgery and raise patient satisfaction levels.
**Key words:** surgical nursing care, patient, specificity, classification

## BASIC DUTIES OF THE OPERATING NURSE WHEN CARRYING OUT HEMORRHOIDS TREATMENT WITH THE Wi-3 HAL-RAR SYSTEM

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**Introduction:** The HAL-RAR technique is a minimally invasive surgical procedure that offers patients a safe and gentle alternative to the classic excisional surgical methods for the treatment of haemorrhoids III and IV stage. The HAL (haemorrhoid artery ligation) method minimizes arterial inflow to hemorrhoidal plexuses by ligating hemorrhoidal arteries accessible through the rectum. The RAR (recto-anal repair) method eliminates hemorrhoidal prolapse by mucopexy of the anal mucosa done one or many times. The HAL-RAR device is a high-tech system with all the benefits for safe and effective surgery in the ampulla recti area - new Bluetooth technology, improved light sources for better visibility, a clearer Doppler signal for easier artery detection and larger workspace.
**Objective:** To clarify the role of the operating nurse in surgical intervention with the Wi-3 HAL-RAR system and to specify its responsibilities.
**Materials and methods:** In the Clinic of General Surgery of the University Hospital “Alexandrovska” Wi-3 HAL-RAR is the latest hardware system for minimally invasive surgical treatment of haemorrhoids. It consists of several parts that allow the detection of hemorrhoidal arteries by enhanced Doppler signal, their manual ligation with maximum control of the depth of stitching and if needed mucopexy of the prolapsed hemorrhoidal tissue. All actions are performed via the Wi-3 HAL-RAR latest generation device, through a special proctoscope with integrated Bluetooth interface, LED lighting and excellent visual and auditory control at every step of the surgical intervention.
**Results:** After a detailed acquaintance with

the equipment and the type of the surgical intervention, an algorithm was developed for arranging the instruments table, the assisting of the nurse during the operation, cleaning and sterilization of the specific instruments and maintenance of the HAL-RAR system.
**Conclusion:** The new generation of HAL-RAR equipment combines modern technology in a small and easy to handle device and provides a higher level of working comfort during operation. Advantages for patients are minimal postoperative pain, no incisions, excisions and open wounds, fast recovery and excellent aesthetic result, fewer intraoperative and postoperative complications.
**Key words:** haemorrhoids, surgical treatment, operating room nurse, HAL-RAR system

## CLINIC OF LIVER-PANCREATIC SURGERY AND TRANSPLANTOLOGY OF SOFIA MIA UNDER THE „SIGN“ OF COVID-19

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**Aim:** Are the methods implemented to prevent the spread of COVID infection in the HPB and Transplant Surgery Department (HPBT) effective.
**Methods, analysis:** Before admission to the clinic, patients are given a rapid antigen test. On the floor in front of the HPBT in a special room, patients were given PCR test, CBC, biochemical profile+LDH and ferritin, D-dimer haemostasis and epidemiological history. Distance is maintained, staff work with PPE, frequent disinfection is done. In the last 2 years, during the pandemic period, 2814 patients have been through HPBT. Out of these, 25 patients were PCR/+/, after rapid antigen test was done registered/-/- non-operated, operated with later manifestations of COVID symptoms and with PCR /+/ test registered were 7. They were transferred to COVID structures under the continuous supervision of the surgeons of the CHPBT. The number of patients with a registered PCR/+/ test but requiring urgent surgical intervention and operated on by the team of HPBT, was 4. During the pandemic, in this limited period, 10 transplants were performed, and transplantation did not proceed if the donor or recipient had a positive PCR /+/ test.
**CONCLUSION:** The current algorithm and anti-epidemic measures put in place in the HPBT are correct and show good results, and we continue to face new challenges.
**Keywords:** HPBT, COVID 19, PCR test, methods

## CARE AND PREVENTION OF DECUBITAL WOUNDS - CHALLENGE AND OPPORTUNITIES IN THE NURSING PROFESSION

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**Introduction:** Decubital wound are soft tissue infections that occur as a result of compression of the affected area, characterised by hypoxia and and impaired circulation due to prolonged lying down, in patients with nervous system diseases, trauma, amputation and in terminally ill patients in severe stages of the disease.
Decubital wounds vary in severity, depending on the degree of damage to the skin, subcutaneous tissue and underlying structures. They can be superficial, affecting the skin, affecting the epidermis, the presence of superficial necrosis, the presence of ulcers with extensive necrosis and deep necrosis reaching muscles, fascia, tendons and bones.
**Purpose:** To analyse the severity of decubitus ulcers treated in DCPSS of UMHAT «Dr. G. Stranski» - Pleven and the result of complex treatment.
**Materials and methods:** A retrospective study covering a 2-year period 2020-2021. Chemical, biological and surgical debridement, rehabilitation and vacuum therapies were applied.

**Results:** 4 patients cured, 7 chemical, 1 biological, 7 surgical debridements and 4 drainage procedures were performed. Lying days - 17, mortality - none, improved 4.
**Conclusions:** Early diagnosis, treatment and proper nursing care are essential.
Early diagnosis and timely care significantly affect patients' health.
Prevention of the development of this complication is efficient, cheap and successful, depending on the training, professionalism and skills of the health care specialist.

## NOSOCOMIAL INFECTION – THE ROLE OF HEALTH CARE SPECIALISTS IN DIAGNOSTICS AND PREVENTION

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**Background:** There is a standard regulation of activities and measures for prevention and control of nosocomial infections (NI). Health-care specialists (HCS) have a significant role in these processes.
**Aim:** To share the institutional experience about the role of HCS for prevention and control of NI
**Material and methods:** We performed a retrospective study on the structure and dynamics of NI in our clinic from Jan., 2019 till Dec., 2021 taking in account number, percentage, clinical severity and affected site. According to the latter criteria NI were classified as: surgical site infection; lower respiratory tract infections; urinary infections; primary sepsis. Prevention measures were analyzed in 3 aspects: hand hygiene; personal protective equipment; aseptic and antiseptic steps in manipulations.
**Results:** A total of 6729 patients have been hospitalized in department with median hospital stay of 3.81 days and 95.8% surgical activities. Postoperativ e mortality rate was 0.4%. NI varied between 1.8-4.6% which significantly differs from the mean value for surgical departments (10-15%). That low NI rate could be explained by several facts: (1) Strictly following the rules for NI prevention in the three aspects mentioned above; (2) Some cases of NI had been misdiagnosed because of lack of microbiological test; (3) Other cases of NI probably appeared after discharging due to the relatively short hospital stay.
**Conclusions:** The health-care staff must participate in the diagnostics, supervision and implementation off all measures against infections related to medical services. This aims reduction of the risk of preventable complications.
**Key words:** In-hospital infection = nosocomial infections (NI); prevention and control of NI; health-care specialist (HCS)

## THE ROLE OF THE NURSE IN PLAN OF CARE FOR A PATIENT WITH LUNG CANCER - CLINICAL CASE REPORT

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**Summary:** Lung cancer is a leading cause of cancer-related deaths worldwide so in country of Bulgaria too. Timely surgical treatment and follow-up care can be life-saving for the patient, increase survival and quality of life. The aim of the study was to monitor and assess the status of a patient with a lung cancer and develop plan of care, adequate to the vital needs of the patient.
**Material and methods:** Literature analysis, documentary and monitoring methods were used to describe a clinical oncology surgical case. An interview with the patient and his relatives was held. The study was conducted at Univercity

Hospital „G. Stranski“ – Pleven in Department of Chest Surgery. Results and discussion: In the period from November 2021 to December 2021 was conducted monitoring of 57 year old man with Adenocarcinoma. Based on monitoring the process of treatment and care for the patient, from the moment of his admission to discharge from the hospital, real and potential problems have been identified, nursing interventions are planned and a model for nursing care has been proposed. Care for patients with oncology surgical diseases is a specific area of competence in nursing. The patient need constant, timely and continuous care. The nurse, as part of the interdisciplinary team, has an essential role in organizing, planning, implementing and evaluating the results of patient care in hospital.
**Key words:** lung cancer, plan of care, nurse, cancer patient, surgical treatment

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