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ABOUT THE JOURNAL

Surgery and Surgical Endoscopy is a fully open access, peer-reviewed journal that aspires to publish articles relevant to surgery, surgical oncology, and surgical endoscopy from researchers worldwide. The journal accepts research articles, review-articles, case reports, letters to the editors, study protocols and “How I do it” submissions. We also publish submissions that accompany educational videos which are published on [our official YouTube site](#).

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All manuscripts must be accompanied by a signed authorship declaration form. Instructions for authors, instructions for submitting videos, authorship declaration form and the description of the peer review process can be found below.

EDITORIAL CONTACT INFORMATION

tomaz.jagric@gmail.com

jan.grosek@gmail.com

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Editorial

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DEAR COLLEAGUES, SURGEONS, SCIENTISTS
AND FRIENDS,

The Clinical Department of Abdominal and General Surgery of the University Medical Center Maribor is organizing a 16th Congress of the Slovenian Association for Endoscopic Surgery (www.endokongres.si).

Therefore, we are pleased to invite you, on behalf of the Organizing Committee, to our traditional National Congress, which will be held from Wednesday, November 20th to Saturday, November 23rd, 2024, in Hotel Habakuk, Maribor, Slovenia.

Minimally invasive surgery (MIS) has dramatically changed over the past decades. As MIS has evolved, surgical outcomes have significantly improved, and rigorous assessment of our surgical performance has led to better and safer patient care. This honest evaluation of our current practice allows for the implementation of innovation in a thoughtful manner while protecting patients from harm.

This event will offer opportunities to share new knowledge, listen to the lectures of distinguished faculty members, meet new friends, and reconnect

with the old ones. Seventy-eight outstanding presentations from 14 different European countries (United Kingdom, Norway, France, Czech Republic, Slovakia, Austria, Hungary, Italy, Malta, Bulgaria, Croatia, Bosnia and Herzegovina, Serbia, and Slovenia), represent an excellent example of the importance of open dialogue and critical assessment of outcomes which accompany the implementation of a new complex surgical techniques.

This meeting will also offer an opportunity for residents, young surgeons, and emerging researchers to showcase their work, and we are looking forward to your presentations. It is also important to inform you that on the last day of the congress, on November 23rd, 2024, a hands-on introductory laparoscopic course will be organized for all interested residents.

We look forward to seeing you in Maribor and meeting you at our planned exciting social events, and we promise that it will be a memorable congress for all the participants.

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Review Article

Robotic resections of rectal cancer.

Grosek J^{1, 2}

1 Department for Abdominal Surgery, UMC Ljubljana; Corresponding author: Jan.grosek@kclj.si
Jan.grosek@mf.uni-lj.si

2 Faculty of Medicine, University of Ljubljana

Key Words: Rectal cancer, robotic surgery

INTRODUCTION

The gold standard for the surgical treatment of rectal cancer is total or partial mesorectal excision (TME or PME), which can be performed using traditional (open) surgery or minimally invasive techniques. This abstract presents and evaluates the fundamental aspects of the robotic approach by reviewing the modern literature.

Rectal cancer is a common malignancy. Surgical treatment aims to control the cancer locally and thus improve the patient's survival rate. Maintaining the sphincter function of the anus as well as urinary and sexual functions is critical to preserving the patient's quality of life. The fundamental goal is R0 resection, i.e. complete removal of the tumor while ensuring that all surgical margins are free of microscopic cancer cells.

Knowledge of the anatomy and physiology of the rectum and the pathways of cancer spread has led to developing a surgical technique that ensures adequate lateral and distal margins. This is achieved by a total mesorectal excision (TME) for cancers in the lower and middle third of the rectum and a partial mesorectal excision (PME) for cancers in the upper third, allowing a safety margin of at least 5 cm below the tumor.

Minimally invasive surgery offers patients numerous advantages, such as less post-operative pain and faster recovery. Post-operative wound infections and the development of hernias or adhesions are rare. Laparoscopic colorectal surgery is comparable to traditional open surgery. Despite initial skepticism, numerous studies have confirmed the minimally invasive approach's oncological equivalence.

The robotic system builds on laparoscopy, eliminates its limitations (limited instrument movement, tremor, ergonomics), and enables surgeons to perform complex, often lengthy operations. The improved three-dimensional imaging and tenfold magnification enable greater precision and a lower risk of damage to the surrounding tissue.

Numerous studies have confirmed that robotic rectal resections are associated with a low conversion rate to conventional open surgery, while they are oncologically equivalent to both laparoscopic and open resections. This equivalence is measured by lymph node yield, radicality (proximal, distal, radial resection margins), adequacy of mesorectal excision, and long-term survival. The primary disadvantages common to all robotic-assisted surgery, regardless of the type of procedure, are longer operating times and higher costs. However, most published

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studies (reviews, meta-analyses) have been based on non-randomized trials, likely to introduce patient selection bias [1-3].

Ohtani and colleagues analyzed 23 studies (4,348 patients) comparing robotic and laparoscopic rectal resections. They found a lower risk of conversion to open surgery in the robotic group. However, this group included more patients who had received neoadjuvant therapy and had deeper tumors than the laparoscopic group [4].

A meta-analysis, which included 4,805 patients from 25 studies, confirms a lower conversion rate as a major advantage of robotic resection compared to laparoscopic resection. Patients in the robotic group generally had a higher body mass index and deeper tumors, and more patients received preoperative therapy than in the laparoscopic group laparoscopic group. However, a sub-analysis based on only three randomized studies among the 25 included found no significant differences between robotic and laparoscopic groups [5].

Other authors have published similar results in their meta-analyses, focusing on whether robot-assisted resections are oncologically appropriate. Using robotic or laparoscopic methods, Lee and colleagues compared five studies of 510 patients who had undergone intersphincteric resection of the rectum. They found no differences in oncologic outcomes between the groups. However, the robotic group had a slightly lower number of removed lymph nodes but fewer affected radial resection margins than the laparoscopic group [6].

Wilder and colleagues came to similar conclusions when analyzing 685 patients from five studies who underwent robotic or laparoscopic surgery for rectal or colorectal cancer. Although slightly fewer lymph nodes were affected in the robot-assisted procedures, the numbers were in line with or even higher than the internationally recommended guidelines [7].

Several studies have also suggested that robotic resections may result in fewer genitourinary problems. Park and colleagues examined erectile function three and six months after robotic rectal resection and found better outcomes with robotic-assisted procedures [8]. Similar results have been reported by authors such as Broholm et al. [9]. Conversely, analyses focusing only on randomized trials suggest a slight deterioration in erectile function after robotic resections, as measured by the International Index of Erectile Function [10]. Kim et al. compared 39 patients prospectively enrolled in a robot-assisted group with a laparoscopic cohort of 30 retrospectively enrolled patients. Urinary function normalized earlier in the robot-assisted group ($p = 0.036$), although no differences were observed between the groups after one year [11]. Lee et al. reported similar results; patients measured by the International Prostate Symptom Score had fewer symptoms in the robotic group three months after TME. However, the differences were no longer significant at six and twelve months [12].

These results are significant compared to the most extensive international study involving 471 patients from 29 centers in 10 countries. Patients with rectal cancer were randomized into a robot-assisted and a laparoscopic group (ROLARR). Forty surgeons with different levels of experience in laparoscopic and robotic techniques participated. Overall, this study found no difference between the groups regarding conversion rate to open surgery (8.1% for robot-assisted vs. 12.2% for laparoscopic procedures, $p = 0.16$). However, subgroup analyses found a difference, suggesting that robot-assisted rectal resections were more beneficial to male patients ($p = 0.04$). Rates of intraoperative and postoperative complications, 30-day mortality, and urogenital function did not differ significantly between robotic and laparoscopic procedures [13].

The literature review on robotic rectal resections makes it clear that reducing the risk of conversion

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to open surgery is currently the most obvious advantage of the robotic system. However, the analysis of the available randomized studies does not consistently show this advantage. Furthermore, robotic resections may be particularly beneficial for patients with a high body mass index (BMI), as suggested by Harra et al., who found that robotic resections were associated with a lower risk of postoperative ileus than the laparoscopic approach in these patients [14].

In summary, the modern literature emphasizes that the robotic approach to rectal cancer is oncologically comparable to both laparoscopic and open surgery [15]. Finally, the ergonomic superiority of the robotic platform for the surgeon is also noteworthy. Robotic systems reduce the strain of long forced postures required in open and even more so in laparoscopic surgery. The instruments mimic, if not improve upon, the hand movements needed in open surgery without hand tremors. The surgeon operates from a console with instruments attached to the patient, closely simulating the open-surgery experience by preserving the natural eye-hand-instrument relationship and allowing intuitive instrument control [16].

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Original Article

Robotic-assisted complex hernia surgery.

Hubad A¹

¹ Department for abdominal surgery, University Clinical Center Ljubljana, Ljubljana, Slovenia.

Key Words: Robotic hernia surgery, complex hernia, learning curve, daVinci Xi, double docking

INTRODUCTION

Robotic complex hernia surgery with the daVinci Xi robotic platform has been successfully implemented at the Department of Abdominal Surgery of University Medical Centre Ljubljana over the past three years.

The increasing complexity of abdominal wall hernias necessitates innovative approaches to surgical repair. This study aimed to evaluate the effectiveness, safety, and outcomes of robotic-assisted surgery for repairing abdominal wall hernias with the robotic platform in our institution. The objective was to determine if robotic repair yielded acceptable outcomes and evaluate the progress of robotic hernia repair techniques and proficiencies at our institution.

A growing body of publications is studying the learning curve of robotic hernia repair implementation. While initial recommendations suggested 20-30 cases to overcome the initial learning curve of robotic inguinal transabdominal preperitoneal (rTAPP) hernia repair(1), newer publications suggest up to 43 cases to achieve 90% proficiency and significantly reduce operative time (2). It has also been postulated in the training programs to progress to more challenging procedures in a stepwise approach after graduating with 25 robotic inguinal rTAPP and robotic intraperitoneal onlay mesh repair (IPOM) plus cases to ventral hernia and after 25 ventral robotic cases to robotic transverse abdominis

release (rTAR) (3). It must also be taken into account that learning robotic surgery may mean learning two things – learning the procedure and learning the use of the robotic platform. In this way, previous experience with the procedure in laparoscopic or open way shortens the learning curve (4). Some publications also state that 12 cases are enough to overcome the learning curve with inguinal rTAPP surgery (5).

With our limited approach to the robotic platform, we could not adhere to traditional caseload recommendations before progressing to more complex cases. We performed a wide variety of robotic hernia repair procedures. Extensive experience with colorectal robotic surgery from a single surgeon performing robotic cases and support from other robotic surgeons had positively influenced our results with our single surgeon limited caseload robotic hernia repair implementation.

METHODS AND PROCEDURES

A retrospective analysis was conducted involving patients who underwent robotic-assisted repair for complex abdominal wall hernias over three years. Clinical data were collected on demographics, defect characteristics, operative time, postoperative complications, length of hospital stay, and recurrence rates. Due to the significant heterogeneity among hernia characteristics and operative procedures, a formal statistical analysis

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was not conducted, as the diversity would not yield meaningful comparisons or conclusions.

RESULTS

A total of 31 people received a robotic-assisted hernia repair. A wide variety of procedures have been performed. The first cases were rTAPP procedures and robotic transabdominal retromuscular umbilical prosthetic hernia repair (TARUP) cases. Then we progressed to robotic Rives-Stoppa procedures and rTAR cases with few rPauli operations, with newer cases being preperitoneal repairs of lateral hernias. Procedures requiring rTAR had an operative time of over 450 min. These cases were done early in the learning curve. We do not have recent TAR cases for comparison. Lateral hernia cases done in the later part of the learning curve have operative time shorter than 200 min. Only one patient was unnecessarily reoperated for suspected mesh infection during the third postoperative day. Other complications occurring in a single patient were as follows – operative ileal conduit injury, occipital hematoma, and Foley catheter-associated pneumaturia. No hernia recurrences have been observed. The median postoperative stay across all procedures was two days. Due to adhesions, three procedures required double docking of the robotic platform patient cart.

CONCLUSIONS

The findings might be interpreted as indicative of successfully implementing robotic-assisted surgery for abdominal wall hernias. It has become a well-established practice within our department. The reduction in operative times with more recent cases might also indicate our team's successful navigation through the learning curve, which can further be implied by the shorter hospital stays and the absence of complications observed in these recent cases.

STATEMENTS AND DECLARATIONS

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Consent for publication: Not applicable.

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Original Article

New aspects in esophageal cancer surgery.

Papp A¹

¹ Department of Surgery, Clinical Centre, Medical School, University of Pécs, Hungary.

Key Words: esophageal cancer, minimally invasive surgery

INTRODUCTION

The field of esophageal surgery has undergone significant transformation over the past few decades. As a leading center for esophageal surgery in Hungary, we have adapted our practices to align with these advancements.

Notably, there has been a shift in the prevalence of esophageal cancers, with adenocarcinoma now more common than squamous cell carcinoma. Emerging predictive factors, such as the roles of heat shock proteins and HPV, have enhanced our ability to forecast treatment responses. While a substantial number of patients now undergo surgery following neoadjuvant therapy, it has become apparent that complete remission once deemed a strong positive prognostic indicator, does not consistently correlate with improved survival outcomes. Advancements in radiation techniques and the introduction of immunotherapy have significantly improved treatment efficacy compared to traditional chemotherapy regimens. Surgical methodologies have also evolved; minimally invasive techniques have gained prominence, and robotic-assisted surgeries are now commonplace. The previously mandatory pyloromyotomy has been eliminated, and the integration of Enhanced Recovery After Surgery (ERAS) principles and prehabilitation has accelerated patient recovery. Centralized care

facilitates successful treatment through collaboration with allied specialties, such as plastic surgery, which enhances patient outcomes.

These developments allow us to provide a more individualized, patient-centered approach, centralizing surgical and oncological care, ultimately improving recovery prospects for patients facing this severe disease.

STATEMENTS AND DECLARATIONS

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Conflicts of Interest: None declared.

Consent for publication: Not applicable.

The results of laparoscopic surgery of the stomach and cardia.

Jagric T¹

¹ Department for General and Abdominal Surgery, University Clinical Center Maribor, Ljubljanska 5, 2000 Maribor, Slovenia.

Key Words: Laparoscopic, transhiatal, gastrectomy, distal esophagectomy, wristed instruments

INTRODUCTION

Minimally invasive surgery significantly benefits patients with SII GEJ (Siewert II gastro-esophageal) carcinomas. Meanwhile, the technical challenge of a high mediastinal anastomosis has led to a lack of enthusiasm for laparoscopy in these patients. Robotic surgery has emerged as a superior option because the articulated instruments allow a more straightforward reconstruction after tumor resection. An alternative method for reconstructing the lower esophago-jejunostomy in the high mediastinal region involves using laparoscopic articulated instruments. These instruments may be more challenging to master compared to robotic surgery. Still, an experienced laparoscopic surgeon is equipped with the skills to effectively utilize wristed instruments for complex reconstructions. In the present paper, we discuss the feasibility of Artisential wristed instruments as a cheaper alternative to robotic surgery and present the results of our laparoscopic gastrectomies.

METHODS

Artisential instruments were used for transhiatal esophageal mobilization, mediastinal lymph node retrieval, and the fashioning of the anastomosis. The lymph node dissection was performed according to Japanese standards for SII and III GEJ carcinomas and middle/proximal third gastric

carcinomas. Perioperative, short—and long-term results were presented in the paper.

RESULTS

A total of 137 patients were included in the analysis. From these, 108 were operated laparoscopically, while 22 patients were operated with Artisential instruments. The patients were predominately male (63.5%), with an average age of 69±10 years, and had significant comorbidity in 23.5% of cases (ASA >II). Proximal tumor location was operated on in 12.4% of patients. Advanced gastric cancer was found in 66.2% of cases. A D2 lymphadenectomy was performed in 84% of cases. An R0 resection was achieved in 94.1% of cases. The morbidity and mortality rates were 18.4% and 1.5% respectively. The cumulative 5-year survival was 60.4%.

CONCLUSION

Laparoscopic transhiatal total gastrectomy with distal esophagectomy using articulated instruments offers advantages over conventional laparoscopy and allows for a more confident reconstruction of a high esophagojejunostomy. While Artisential instruments are more challenging to master than robotic surgery, a skilled laparoscopic surgeon can achieve excellent results

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with sufficient dry-box training at a fraction of the total costs.

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Robotic gastrectomy at UMC Ljubljana.

Sever P¹, Horvat G¹, Salobir J¹

1 Department for Abdominal surgery, University clinical center Ljubljana, Ljubljana, Slovenia.

Key Words: Robotic surgery, gastric cancer

ABSTRACT

The paper discusses the implementation and outcomes of total and subtotal gastrectomy for gastric adenocarcinoma using the Da Vinci Xi robotic platform at UMC Ljubljana. The procedure is considered safe, reducing hospital stay and postoperative complications while providing good oncological results.

INTRODUCTION

Robotic gastrectomy has become a standard treatment for gastric cancer. Compared to open gastrectomy, it offers fewer intraoperative blood loss, shorter hospital stays, and fewer postoperative complications. Studies show higher lymph node yield and R0 resection rates with robotic gastrectomy.

PREOPERATIVE PREPARATION

Standard preoperative preparation includes anesthesiologist check-ups and optimization of medical therapy. There is an emphasis on nutritional status, with perioperative nutritional therapy for malnourished patients. In some cases, indocyanine green (ICG) is used to improve lymph node and tumor visualization.

OPERATIVE STEPS

A detailed description of the surgical procedure, including patient positioning, trocar placement, and the use of specific instruments. Steps include

dissection of the omentum, ligation of arteries, and lymphadenectomy. The procedure involves complex maneuvers to ensure thorough removal of cancerous tissues and lymph nodes.

POSTOPERATIVE CARE

Patients are monitored in a level 2 intensive care unit with various catheters and pain management protocols. Liquids and food are gradually reintroduced, with a contrast swallow test on the third postoperative day to check for anastomotic leaks. Criteria for discharge include the ability to tolerate soft food and stable biochemical parameters.

CONCLUSION

In UMC Ljubljana, Robotic gastrectomy has become a standard treatment for gastric cancer. Compared to open gastrectomy, it benefits from less intraoperative blood loss, shorter hospital stays, and fewer postoperative complications. Studies show higher lymph node yield and R0 resection rates with robotic gastrectomy.

STATEMENTS AND DECLARATIONS

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Consent for publication: Not applicable.

Review Article

Endoscopic therapy for early gastric cancer.

Stefanovič M¹

1 DC Bled, Pod skalo 4, 4260 Bled, Slovenia; e-mail: www.dc-bled.si.

Key Words: Early gastric cancer, diagnosis, endoscopic submucosal dissection, efficiency

INTRODUCTION

This paper highlights the clinical significance and identifies endoscopic therapy for early gastric cancer (EGC). In selected cases, endoscopic therapy is advantageous over conventional and minimally invasive surgical therapy. Intramucosal gastric cancer rarely presents a risk of regional lymph node invasion, which is less than the risk of mortality and morbidity due to surgery. A prerequisite for endoscopic therapy is an accurate assessment and staging before the scheduled procedure, where endoscopic evaluation is sufficient. Endoscopic submucosal dissection (ESD) is established as a standard therapy for early gastric cancer. Regular endoscopic follow-up after endoscopic treatment is essential for the timely detection of relapses or metachronous gastric neoplasms.

Ethics approval: The study was approved by the local ethics committee.

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Original Article

Laparoscopic treatment of MALS.

Trogrlić B¹, Kovačić B¹

1 Clinical Hospital Center Osijek, Clinical Hospital Center Osijek.

Key Words: Laparoscopic, MALS

INTRODUCTION

Median arcuate ligament syndrome (MALS) is a clinical event associated with direct compression of the celiac artery by the median arcuate ligament. Unclearly defined pathophysiological mechanisms, variable symptoms, and unpredictable treatment results make MALS a controversial diagnosis. This retrospective study, including seven patients, presents our single-center experience in the laparoscopic treatment of MALS. Patients with MALS had symptoms and signs of upper abdominal ischemia that included postprandial epigastric pain, nausea, vomiting, exercise-induced pain, and weight loss. Currently, there is no consensus on the diagnostic criteria and treatment of MALS and no long-term results. We present the laparoscopic approach as one of the possible adequate solutions in a step-by-step procedure. The average duration of the procedure was 90 minutes, and the average stay in the hospital was 4 days. All 7 procedures passed without early or late complications. All patients underwent a CT angiography of the mesenteric circulation before surgery and a control CT angiography after 30 days. 71% of patients had relief of complaints immediately after the operation. We believe that laparoscopic surgery for MALS is a minimally invasive, safe, and efficient approach. Studies with more patients and long-term results are needed, but the laparoscopic approach has given promising results.

AIM

Currently, there is no consensus on the diagnostic criteria and treatment of MALS and no long-term results. We present the laparoscopic approach as one of the possible adequate solutions in a step-by-step procedure.

METHODS

We present the laparoscopic approach as one of the possible adequate solutions in a step-by-step procedure.

RESULTS

The average duration of the procedure was 90 minutes, and the average stay in the hospital was 4 days. All seven procedures passed without early or late complications. All patients underwent a CT angiography of the mesenteric circulation before surgery and a control CT angiography after 30 days. 71% of patients had relief of complaints immediately after the operation.

CONCLUSION

We believe that laparoscopic surgery for MALS is a minimally invasive, safe, and efficient approach. Studies with more patients and long-term results are needed, but the laparoscopic approach has given promising results.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

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Ethics approval: The study was approved by the local ethics committee.

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Robotic liver surgery in UMC Ljubljana.

Plešnik B¹, Grosek J¹, Trotovšek B¹, Tomažič A¹, Petrič M¹

¹ Department for abdominal surgery, University clinical center Ljubljana, Slovenia.

Key Words: Robotic surgery, liver

INTRODUCTION

Due to rapid technological development, minimally invasive techniques have been adopted in liver surgery. Major advantages of such an approach include less surgical trauma and blood loss, shorter length of hospitalization, and ultimately, faster recovery. In addition, the use of a robotic surgery platform provides enhanced three-dimensional vision along with the wristed instruments that offer a wide range of motion and tremor filtering, ensuring the necessary surgical freedom comparable to open surgery.

METHODS

As a high-volume liver surgery center equipped with the DaVinci Xi robotic platform and experience in laparoscopic liver surgery, we implemented a step-by-step approach to our robotic liver surgery program. All robotic resections were conducted by an experienced HPB surgeon who completed specialized robotic training in a high-volume center in Dallas, USA.

RESULTS

In the 22 months, we performed 35 robotic liver resections. According to the IWATE difficulty scoring system, minimally invasive liver resections are classified as low (L), intermediate (I), advanced (A), and expert (E) difficulty levels. We conducted two low, 14 intermediate, 15 advanced, and four expert difficulty level resections. Average operating time was 130 min (L), 177 min (I), 181 min (A) and

252 min (E). Average intraoperative blood loss was 125 ml (L), 155 ml (I), 171 ml (A), and 200 ml (E); only 3 patients (8,3%) required blood transfusion during hospitalization. There was one (2,8%) conversion to open procedure in a patient operated for a giant hemangioma. Median hospitalization length was 4 days (L), 5 days (I), 5 days (A), and 8,5 days (E). R0 resection rate was 86,1%. Four patients (11,4%) had Clavien-Dindo grade 3 complications, with no 90-day mortality.

CONCLUSION

Robotic liver resections proved feasible with low conversion rates and operating times comparable to open liver resections. Attentive procedure planning and standardization of robotic resections achieved an excellent safety profile. Combined with the ERAS protocol, the advantageous profile of minimally invasive robotic resections results in faster recovery without increasing complication or mortality rates.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

Funding: Not applicable.

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Enucleation of pancreatic neuroendocrine tumors – indications and rationale.

Badovinac D¹

¹ Department of Abdominal Surgery, University Medical Centre Ljubljana, Ljubljana, Slovenia

Key Words: Enucleation, NET, pancreas

INTRODUCTION

Pancreatic neuroendocrine tumors (pNETs) are a heterogeneous group of neoplasms that require individualized therapeutic approaches. Surgical resection remains the cornerstone of curative treatment. Among the surgical techniques available, enucleation is a minimally invasive procedure aimed at removing the tumor while preserving as much of the pancreatic parenchyma as possible. This approach is particularly relevant in specific clinical scenarios where conserving pancreatic function is paramount.

Enucleation is particularly indicated for small (≤ 3 cm), well-differentiated, non-invasive pNETs that are localized and have low malignant potential. The procedure is proposed when the tumors are ≥ 3 mm away from the central pancreatic duct to minimize the risk of ductal injury. Also, careful intraoperative assessment and imaging are critical to avoid leaving behind residual disease.

Postoperative mortality is extremely low, while postoperative morbidity is around 50%, predominantly due to pancreatic fistula formation (38%). Compared to standard resection, enucleation significantly reduces operation time, blood loss, length of hospital stay, and the incidence of both endocrine and exocrine insufficiency. Although the incidence of pancreatic

fistula is notably higher compared to standard resections, there is no difference in overall morbidity or reoperation rates. Additionally, minimally invasive enucleation offers advantages over open enucleation, including shorter operation times and reduced hospital stay.

Enucleation is a viable and effective surgical approach for select patients with pancreatic neuroendocrine tumors. Its primary advantage lies in its parenchyma-sparing nature, which is crucial for maintaining pancreatic function and, thus, a higher quality of life postoperatively. Proper patient selection based on tumor characteristics and precise surgical execution are critical to achieving optimal outcomes.

STATEMENTS AND DECLARATIONS

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Robotic surgery for PDAC.

Petrič M¹, Plešnik B¹, Grosek J¹, Trotovšek B¹, Tomažič A¹

¹ Department of abdominal surgery, UMC Ljubljana, zaloška cesta 7

Key Words: Robotic surgery, PDAC

INTRODUCTION

The robotic platform allows a safe and efficient minimal-invasive approach to surgical procedures in patients with malignant or premalignant pancreatic disease. Pancreatic ductal adenocarcinoma (PDAC) represents one of the most biologically aggressive diseases. Currently, there is still a lack of clear evidence of the role of a robotic minimally invasive approach to a patient with PDAC regarding short- and long-term oncological results. Our study aims to assess the safety of a robotic approach to a patient with PDAC.

METHODS AND PROCEDURES

We collected prospectively collected data from patients who had robotic-assisted resection due to PDAC between June 2022 and October 2024. All procedures were standardized and performed by two surgeons. For robotic distal pancreatectomy (RDP), we followed radical antegrade pancreatosplenectomy principles. Robotic pancreatoduodenectomy (RPD) and total pancreatectomy (RTP) were performed according to the standard operative protocol adopted from the UT Southwestern group.

RESULTS

From June 2022 to October 2024, we performed 20 RPDs, 12 RDPs, and one RTP. The median operative time in minutes was 331 (155-562) in RPD, 183 (127-220) in RDP, and 387 in RTP. CR-

POPF was present in 3 patients in the RPD (15%) and RDP (25%) group. Transfusion was needed in 8 patients (24,2%). Median hospitalization per day was 9 (5-42) in RPD, 7 in RDP (5-21), and 8 in RTP. Median lymph node retrieval was 22 (9-32) in RPD, 18 (4-32) in RDP, and 30 in RTP. Radical resection was achieved in 69,7% (23/33); in all cases, R1 was due to the posterior pancreatic margin. 3- day readmission rate was 12,1% (4/33). One patient died in the RPD group on postoperative day 30. 69,7% (23/33) of patients received systemic therapy after surgery.

CONCLUSION

Robotic-assisted pancreatic resections for PDAC are associated with comparable results to open procedures. There are some advantages of minimally invasive approaches compared to open ones, such as lower blood transfusion rates, early mobilization, and shorter hospitalization. However, in the case of CR-POPF development, advantages are less evident.

STATEMENTS AND DECLARATIONS

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Role of blood and peritoneal fluid markers in early recognition of anastomotic leakage.

Horvat G¹

¹ Clinical department for abdominal surgery, University Clinical Centre Ljubljana

Key Words: Markers, anastomotic leakage

INTRODUCTION

Anastomotic leakage after colorectal operations is one of the most important postoperative complications that greatly influence early postoperative morbidity and mortality. Moreover, it was also shown that it could negatively impact disease-free survival in patients who were operated on because of colonic or rectal cancer. In day-to-day clinical practice, the diagnosis of anastomotic leakage (AL) is usually made from the 6th to 9th postoperative day, when the patient shows signs of systematic inflammatory response with high values of inflammatory markers such as C-reactive protein (CRP) and procalcitonin (PCT). Different blood and peritoneal fluid markers were proposed as potential diagnostic tools to recognize patients that developed AL before it became clinically relevant. Inflammation markers, such as CRP and PCT, were proven to have a valid negative prediction value for the occurrence of AL. Still, they lack the sensitivity and specificity to establish the diagnosis. Other inflammatory biomarkers, such as serum calprotectin, were also proposed, but their usefulness was still not proven. Biomarkers of cell degradation such as carcinoembryonic antigen (in peritoneal fluid and blood), different types of metalomieloproteinases

in peritoneal fluid, and peritoneal amylase were also proposed as diagnostic tools, as there is cell degradation and spillage of their content at the site of anastomotic leakage. Biomarkers of ischemia, such as serum lactate and peritoneal lactate levels and pyruvate, could reflect ischemia at the anastomosis site. Different research groups proposed all of the biomarkers mentioned above as potential new diagnostic tools for early AL recognition, but no widely accepted conclusion has been made.

STATEMENTS AND DECLARATIONS

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Original Article

Oncological markers as an indicator of the quality of laparoscopic colorectal surgery.

Koprivica K¹, Perišić S¹, Šadl J¹

¹ General hospital Murska Sobota, Slovenia.

Key Words: Oncological markers, laparoscopic, colorectal cancer

INTRODUCTION

The study's purpose is to present the 4-year results of operative treatment of colorectal cancer after laparoscopic and open surgery at the General Hospital Murska Sobota. The primary goal is to analyze oncological markers as an indicator of the quality of the surgical procedures.

MATERIAL AND METHODS

We retrospectively analyzed the period from January 2018 to December 2021. We collected all data on the patient's characteristics, type of surgery, tumor location, histological characteristics, and complications. The oncological markers we analyzed are CRM (circumferential radial margin), the number of lymph nodes removed in total, and the number of positive lymph nodes. We divided the patients into two groups: laparoscopic and open. The laparoscopic group (LG) had 144 examinees; 160 were open (OG). A total of 47,6% of patients underwent laparoscopic surgery.

RESULTS

Tumor location was in 29.5% ascending colon, 13.8% transverse colon, 24.5% descending I sigmoid colon, and 32.2% rectum. The TNM classification was distributed as follows: T0 tumor had 3% (11), T1 7% (25), T2 15% (54), T3 47% (170), T4 28% (102). The percentage of conversions from

LG to OG was 13.6%. Circumferential radial margin (CRM) in the LG was + 2.08% (144/3) in OG + 2.5% (160/4). The average number of lymph nodes removed in the LG was 23.94 (min 13, max 92); in the OG, 25 (min 10, max 81). The number of positive lymph nodes removed in the OG was 1.83 or 7.32%. In the LG, there were 1.47 or 6.14% positive lymph nodes. There was no statistically significant difference between groups ($p > 0.05$). The 30-day postoperative morbidity was 13.2% in the LG and 14.5% in the OG. 30-day mortality was 2.4% in the OG and 1.3% in the LG. When we examined patients who had complications with surgical reintervention ($CD > 3$), the time of hospitalization in the OG was 8 days in the LG 5.5 days; the difference was statistically significant ($p < 0.05$).

CONCLUSION

Laparoscopic colorectal surgery at General Hospital Murska Sobota is a standard procedure with good oncological results.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

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Review Article

Management of Early Rectal Cancer: Definitions, Evaluation, and Treatment Strategies.

Gajsek U¹

¹ Department of General and Abdominal Surgery, University Clinical Centre Maribor, Maribor, Slovenia, e-mail: urska.gajsek@ukc-mb.si

Key Words: Early rectal cancer, local excision, transanal surgery

INTRODUCTION

The management of early rectal cancer, increasingly prevalent due to enhanced screening and awareness, emphasizes early detection and risk-adapted treatment strategies to improve patient outcomes while preserving quality of life. Early rectal cancer is typically defined as a tumor confined to the submucosa (cT1) or muscularis propria (cT2) without nodal involvement or extramural vascular invasion. Accurate diagnostic staging—using endoscopic evaluation, MRI, and endorectal ultrasound—is crucial for differentiating between low-risk and high-risk cases, guiding the choice between local excision and more radical surgical approaches. Local excision techniques, such as transanal excision and transanal endoscopic microsurgery, offer organ-sparing options for low-risk patients, leading to faster recovery and fewer postoperative complications. However, for high-risk cases marked by deeper invasion or adverse histological features, Total Mesorectal Excision (TME) and the adjunctive use of neoadjuvant or adjuvant chemoradiotherapy are often recommended to minimize recurrence risk. This article reviews diagnostic and staging methods, risk stratification systems, and tailored

treatment approaches for early rectal cancer, advocating a multidisciplinary approach to optimize oncological and functional outcomes.

STATEMENTS AND DECLARATIONS

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Original Article

Robotic colon surgery in General Hospital Celje.

Černi I¹, Polak D¹, Stefanovski O¹

¹ Department of abdominal and general surgery, General Hospital Celje, Slovenia.

Key Words: Robotic surgery, colon

INTRODUCTION

As the number of minimally invasive surgeries has increased, robotic surgery has gradually developed in various surgical fields. We present our initial observations and results of robotic operations of the large intestine with particular regard to the patient undergoing robotic surgery for colon and rectum cancer.

METHODS

Until now, we have performed more than 100 colorectal operations with a robotic system. Retrospectively, we analyzed 100 robotic operations (49% female, 51 % male). The average age was 63,6 years. 62 % of patients had ASA classification II, colorectal carcinoma was presented in 76 % of patients, and the others had diverticulosis and benign diseases. 62 % of patients had carcinoma of the rectum and rectosigma. The degree of differentiation of the tumor (gradus II) was presented in 68 % of robotic-operated patients. According to the TNM classification, stage, T3 was given in 46 % of robotic-operated patients. Stage N0 for lymph nodes was presented in 40 % of robotically operated patients, and T1 and T2 were presented in 26 %.

RESULTS

In all patients, radical resection was performed. Intraoperative blood loss was 50 ml to 150 ml. The average number of isolated lymph nodes was 18,5. The average hospitalization was 7,5 days. The share of conversions to the open method was 4.5%. Complications were 9 %. A seven-year follow-up of robotically operated patients showed a 10.3 % mortality rate (4 died due to disease progression, and the rest due to cardiovascular diseases).

CONCLUSION

Robotic-assisted surgery is a safe and wearable technique for the treatment of essentially all colorectal conditions requiring surgical intervention. It is important to recognize robotic surgery and present its benefits and limitations to determine a suitable minimally invasive surgical approach. The Da Vinci system was particularly useful in specific stages of the procedure, e.g., takedown of the splenic flexure, narrow pelvis dissection, and nervous plexus identification. The cost-effectiveness of the method still needs to be evaluated.

STATEMENTS AND DECLARATIONS

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Review Article

Gastric bypass or Duodenal switch?

Kunst G¹

¹ Department of General and Abdominal Surgery, Slovenj Gradec General Hospital, Slovenj Gradec, Slovenia.

Key Words: Gastric bypass, duodenal switch

INTRODUCTION

Roux-en-Y gastric bypass (RYGBP) and duodenal switch (DS) are effective bariatric procedures. RYGBP has been performed in our institution for almost twenty years, while DS has been performed for the last five years. We compared the results of RYGBP and DS in the previous 5 years, including weight loss, resolution of comorbidities, nutritional deficiencies, and perioperative complications. DS was reserved for compliant superobese patients with BMI over 50 kg/m² and patients with insufficient weight loss after sleeve gastrectomy. The weight loss rate and percentage were higher in patients with DS, and resolution in comorbidities was similar in both groups. No nutritional deficits were observed. The reoperation rate was higher in the DS group. For most patients, RYGBP brings good long-term weight loss, with minimal reoperation rate.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

Funding: Not applicable.

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Consent for publication: Not applicable.

Short- and long-term results of bariatric surgery in Slovenj Gradec.

Mynt J¹

¹ Department of General and Abdominal Surgery, Slovenj Gradec General Hospital, Slovenj Gradec, Slovenia.

Key Words: Bariatric surgery, results

INTRODUCTION

Gastric bypass surgery (GBS), particularly Roux-en-Y gastric bypass (RYGB), has been established as an effective long-term solution for morbid obesity and its associated comorbidities. While short-term benefits are well-documented, this study aims to evaluate the 10-year outcomes regarding weight loss, comorbidity resolution, and quality of life.

METHODS

A retrospective cohort study included patients who underwent GBS between 2012 and 2013. Data were collected on the percentage of excess weight loss (%EWL), resolution or improvement of obesity-related comorbidities (type 2 diabetes, hypertension, and sleep apnea), and complications or reoperations. Additionally, patient-reported outcomes on quality of life were assessed using validated surveys.

RESULTS

At the 10-year follow-up, the mean %EWL was 72%, with 70% of patients maintaining at least 60% excess weight loss. Type 2 diabetes remission was observed in 75% of patients, while hypertension and sleep apnea improved in 65% and 75%, respectively. However, late complications such as nutritional deficiencies and the need for revision surgeries were noted in 13 % of cases. Quality of

life scores indicated sustained improvements in physical and mental health.

CONCLUSION

GBS provides significant and sustained weight loss, improvement in obesity-related comorbidities, and enhanced quality of life 10 years post-surgery. However, the risk of long-term complications, particularly nutritional deficiencies, underscores the need for lifelong follow-up and management.

STATEMENTS AND DECLARATIONS

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Case Report

Life-threatening bleeding from duodenal ulcer after Roux-en-Y gastric bypass: a case report.

Ivanecz A^{1,2,3}, Turk Š², Sremec M, Čeranić D⁴, Potrč S^{2,3}, Skok P⁴

1 Clinical Department of Abdominal and General Surgery, University Medical Center Maribor, Ljubljanska 5, 2000 Maribor, Slovenia; corresponding author.

2 Clinical Department of Abdominal and General Surgery, University Medical Center Maribor, Ljubljanska 5, 2000 Maribor, Slovenia

3 Department of Surgery, Faculty of Medicine, University of Maribor, Taborska ulica 8, 2000 Maribor, Slovenia.

4 Department of Gastroenterology, University Medical Center Maribor, Ljubljanska 5, 2000 Maribor, Slovenia.

Key Words: Bleeding, gastric bypass, duodenal ulcer

INTRODUCTION

Obesity is nowadays described as a global epidemic. Bariatric surgery has been identified as a safe and effective treatment possibility for morbid obesity and associated comorbidities. Roux-en-Y gastric bypass is a frequent surgical procedure for these patients; however, it bears a significant flaw of interrupted access to the bypassed stomach remnant by conventional endoscopy or contrast radiography. Severe complications in the area of gastric remnant have already been reported, although their incidence is very low. This case report describes the case of a 59-year-old patient who presented in an emergency setting with life-threatening bleeding from a duodenal ulcer two years after Roux-en-Y gastric bypass.

CASE REPORT

A 59-year-old man presented to the emergency department complaining of weakness, faintness, and melena. On admission, he was pale, normotensive, normocardic, and normopnoeic. His medical history included peptic ulcer disease and psoriatic arthritis. The patient underwent a successful bariatric procedure two years prior at another institution. However, the type of the procedure was unknown at the time. The patient was on nonsteroidal anti-inflammatory medication in combination with methotrexate, however, he had no prescription for any antiulcer drugs. Laboratory results revealed decreased levels of hemoglobin and coagulopathy. An emergency upper endoscopy was performed, which showed a typical gastrojejunal anastomosis and no evidence of active bleeding or clot. During the endoscopy, the patient fainted again and felt more muscular

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abdominal pain, but he continued to maintain normal blood pressure and pulse. A computed tomography was performed, which demonstrated a marked distention of a fluid-filled gastric remnant. The patient was taken to the operating room. A midline laparotomy was performed, which revealed a distended gastric remnant filled with blood. Clotted blood was evacuated through gastrotomy, followed by an intraoperative endoscopy, which showed a large ulcer in the duodenum with a bleeding branch of the gastroduodenal artery at the bottom. The bleeding ulcer was then over-sewn with stitches, and the artery ligated. The ulcer was excised with the first part of the duodenum and the remnant gastrectomy was completed. The patient was discharged on the 11th postoperative day, and three months later, he was in very good shape with normal hemoglobin values.

DISCUSSION

Acute bleeding duodenal ulcer after Roux-en-Y gastric bypass for morbid obesity is a rare, but life-threatening situation. Nevertheless, bariatric operations are frequently performed; thus, physicians should be familiar with its possible complications. In addition, the potential pitfall is not knowing initially which type of bariatric surgery has been performed. Another point of interest is the rarity of this late complication. Bleeding from marginal ulcers localized near the pouch-enteric anastomosis is not uncommon and could be easily diagnosed and managed. However, bleeding duodenal ulcers are rarely reported, and it is mainly limited to case reports only. Another issue is the difficulty of the diagnostic workup, as endoscopic access becomes very difficult after Roux-en-Y gastric bypass. Many different methods have been suggested for displaying the bypassed gastrointestinal tract; however, in our experience, it was impossible to visualize the duodenum, and a minimally invasive technique was unattractive in the patient, where highly emergent ongoing

bleeding was present. Finally, the variety of surgical management represents another point of interest. When the general and hemodynamic status of the patient is critical, surgical management should be limited to hemorrhage control. Surgical management can be extended only after prompt control of the bleeding, as in the presented case.

STATEMENTS AND DECLARATIONS

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Conflicts of Interest: None declared.

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Review Article

The role of OMM drugs and bariatric metabolic surgery.

Pintar T¹

1 UMC Ljubljana, Abdominal Surgery and MF Ljubljana, Katedra za kirurgijo. tadeja.pintar@kclj.si; tadeja.pintar@mf.uni-lj.si

Key Words: Metabolic and bariatric surgery, obesity management medications, treatment results, indications, metabolic disease

INTRODUCTION

Increasing solid evidence-based data and the interest in further generation of obesity management medications (OMMs) change the manner in which patients are treated and managed before, early after MBS, and in cases of weight regain and worsening of obesity-related diseases. Until now, there is limited knowledge about their impact on metabolic and bariatric surgery patients before, concurrent with, and after surgery. Due to the chronic nature of the disease, people living with obesity need long-term access to all evidence-based obesity treatments, including MBS and OMMs, as part of standard healthcare and understanding evidence-based obesity management. Access to OMMs and treatment adherence are critical elements of treatment, irrespective of the timing of drug introduction and treatment with MBK interventions. In terms of chronicity and complications of obesity co-occurrence, treatments with OMMs are within the range of safe use of the drugs, with acceptable treatment side effects, mostly in the gastrointestinal tract.

STATEMENTS AND DECLARATIONS

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Conflicts of Interest: None declared.

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Original Article

Major iatrogenic bile duct injuries during cholecystectomy: a Slovenian population-based study – a preliminary estimation.

Plahuta I¹, Turk Š², Magdalenič T², Ivanecz A²

1 Univerzitetni klinični center Maribor, Klinični oddelek za abdominalno in splošno kirurgijo, Ljubljanska ulica 5, 2000 Maribor, Slovenia; corresponding author: irena.plahuta@ukc-mb.si.

2 Univerzitetni klinični center Maribor, Klinični oddelek za abdominalno in splošno kirurgijo, Ljubljanska ulica 5, 2000 Maribor, Slovenia

Key Words: Major, iatrogenic, bile duct injury, Slovenia

INTRODUCTION

The incidence of bile duct injury during cholecystectomy is between 0.3 and 1.5%. The gold standard for the treatment of severe and complete bile duct transection is biliodigestive anastomosis. From the Institute for Health Insurance of Slovenia dataset, we wanted to obtain data on the number of all cholecystectomies in Slovenia from 2013 to 2023. Then, we would look for data on severe injuries of the bile ducts that were treated with biliodigestive anastomosis. Up to the time of writing this abstract, we have not received it. We estimate that between 2014 and 2023, at least 36,727 cholecystectomies were performed in Slovenia. From the internal file at our department, we found out that we treated 15 iatrogenic bile injuries of the bile ducts from northeastern Slovenia with biliodigestive anastomosis. 9 (60%) patients had no issues after the procedure, 4 (26%) had cholangitis, 1 (7%) needed a new anastomosis, and 1 (7%) died two months after the operation. We do not have data for other institutions, so we invite all Slovenian institutions that perform cholecystectomies to participate in this research.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

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Conflicts of Interest: None declared.

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Case Report

What to do with an ingrown biliary SEMS – is surgery the only solution?

Ocepek A¹

1 Department for Gastroenterology, Clinic for Internal Medicine, University Medical Centre Maribor, Ljubljanska 5, Maribor, Slovenia; e-mail address: andreja.ocepek@ukc-mb.si

Key Words: SEMS, biliary, ingrowth

INTRODUCTION

Self-expandable metal stents (SEMS) are constructed from metal alloys. They are engineered to have a larger luminal diameter than plastic stents to enhance stent patency over time. SEMS demonstrate a reduced risk of recurrent biliary obstruction in comparison to plastic stents. However, despite the application of partial or complete coverings along the stent's length, occlusion of SEMS may still occur through several mechanisms. These include (1) tissue in-growth through the stent mesh, (2) tumor overgrowth at the proximal or distal ends of the stent, (3) mucosal hyperplasia resulting from chronic inflammatory responses to the stent mesh, and less frequently, (4) the accumulation of biliary sludge. When SEMS occlusion occurs due to tumor or tissue in-growth or overgrowth, the stents can be challenging to reposition or remove (1).

CASE PRESENTATION

We present two cases of inadvertent tissue ingrowth of PC- and FC-SEMS in patients with benign biliary stricture. In both cases, the proximal end of SEMS was embedded in the bile duct tissue. Removal with forceps or snare was impossible, and the SEMS-in-SEMS technique failed (2). An attempt was made to retrieve SEMS using a long

guidewire and rescue mechanical lithotripter after a literature review (3-5). The method was finally successful, and the ingrown part of the SEMS was peeled away from the bile duct wall and removed. No complications ensued, and surgery could have been avoided by endoscopic removal of SEMS.

STATEMENTS AND DECLARATIONS

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Ethics approval: The study was approved by the local ethics committee.

Conflicts of Interest: None declared.

Consent for publication: Not applicable.

Case Report

Laparoscopic-assisted ERCP after gastric bypass surgery.

Mavc Ž¹, Kovač Myint J¹, Rožej B¹, Kunst G¹

¹ Department of General and Abdominal Surgery, Slovenj Gradec General Hospital, Slovenj Gradec, Slovenia

Key Words: Laparoscopic assisted, ERCP

INTRODUCTION

Gastric bypass surgery is considered the golden standard in bariatric surgery, alongside gastric sleeve resection. Gastric sleeve resection is a restrictive technique in contrast to gastric bypass, which is mainly a malabsorptive technique with an aspect of restriction. To achieve malabsorption, the gastrointestinal tract pathway must be altered to exclude a part of the small intestine, most commonly the duodenum and proximal jejunum. Following the surgical procedure, gastric remnants, duodenum, biliopancreatic ducts, and proximal jejunum are out of reach for any classical endoscopic approach. In case of a biliopancreatic emergency that requires ERCP, a hybrid procedure combining laparoscopic and endoscopic approaches is usually conducted. Laparoscopic-assisted ERCP (LA-ERCP) entails a laparoscope-assisted surgical port placement into the gastric remnant, followed by the introduction of the duodenoscope via the port into the duodenum. This facilitates the use of standard side viewing ERCP duodenoscope. In case of inaccessibility of gastric remnant, a small adjustment of the procedure can be made; a surgical port is then placed into the biliopancreatic limb of gastric bypass. In this case, a duodenoscope is introduced in a retrograde direction in contrast to the transgastric approach. Our institute has six recorded cases of LA-ERCP over ten years. A safe

laparoscopic-assisted approach to gastric remnant was achieved in all cases, followed by successful retrieval of gallstones from ductus choledochus. Perioperative treatment was uneventful in all six cases. Choledocholithiasis after gastric bypass is a relatively rare complication that can be resolved with LA-ERCP with a very high rate of success and, respectively, a very low complication rate. To provide the best postoperative care for our patients, it is in our interest that they return in case of any procedure-related complication since comprehensive treatment in bariatric patients is very important. Our teams are highly trained and experienced in both laparoscopic and endoscopic procedures, thereby capable of conducting safe LA-ERCP. In case of an unsuccessful LA-ERCP intervention, referral to a tertiary center must be considered.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

Funding: Not applicable.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the patient(s) to publish this paper."

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Ethics approval: The study was approved by the local ethics committee.

Conflicts of Interest: None declared.

Consent for publication: Not applicable.

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Case Report

Perfect technique for Transabdominal preperitoneal inguinal hernia repair.

Kunst G¹

1 Department of General and Abdominal Surgery, Slovenj Gradec General Hospital, Slovenj Gradec, Slovenia

Key Words: Hernioplasty, minimally invasive

INTRODUCTION

Video presentation of perfect technique for Transabdominal preperitoneal (TAPP) inguinal hernia repair. A step-by-step description of operation stages: patient positioning, surgical port placements, choice of optimal optics and laparoscopic instruments, peritoneal dissection line determination, dissection of preperitoneal space with landmarks visualization, mesh placement, and peritoneal flap closure. The average surgical time for a unilateral hernia in our institution averages from 15 to 25 min, with an in-hospital stay of 16 to 24 hours.

Operation time is significantly shorter than in open surgery, and hospital stays are shorter with fast and satisfactory patient recovery. Transabdominal preperitoneal (TAPP) inguinal hernia repair is a feasible, secure, and arguably superior surgical method compared to the open approach. However, statistical analysis of our long-term results should be conducted before any conclusions. High-quality surgical training under mentors' supervision with complete hand-down of knowledge is a top priority in our institute.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

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Conflicts of Interest: None declared.

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Original Article

Minimally invasive hernioplasty in Austria, what can we learn from our neighbors?

Gorjanc J¹

¹ Klinikum Klagenfurt am Wörthersee, Feschnigstrasse 11, 9202 Klagenfurt am Wörthersee, Austria.

Key Words: Hernioplasty, minimally invasive

INTRODUCTION

Minimally invasive hernia surgery refers to surgical techniques used to repair a hernia through smaller incisions, often with specialized instruments and cameras. This approach typically involves laparoscopic surgery but also involves some other concepts.

Key characteristics include:

- **Small Incisions:** Unlike traditional open surgery requiring a larger incision, minimally invasive techniques use incisions usually less than 2-3 cm long.
- **Reduced Recovery Time:** Patients often experience shorter hospital stays and quicker returns to normal activities.
- **Less Pain and Scarring:** Smaller incisions generally lead to less postoperative pain and minimal scarring.

Overall, minimally invasive hernia surgery aims to effectively repair the hernia while minimizing the impact on the patient's body and facilitating a faster recovery.

METHODS AND PROCEDURES

A comprehensive analysis of the Herniated registry data was performed. Additionally, literature research has been conducted using Austria's minimally invasive hernia repair search code to verify the facts.

RESULTS

There are currently 265 active hospitals in Austria (Oct. 2024). One hundred fifty of them offer minimally invasive surgery. Only 32 are included in the herniated registry for Hernia Quality Control.

An analysis of the last ten years of Herniated data in 2 hospitals in Carinthia was performed. It shows an equal proportion of laparoscopic inguinal hernia operations (TAPP) compared to the Lichtenstein method (48% vs. 52 %) for the St. Veit/Glan hospital and a predominant proportion of laparoscopic operations at the Klinikum Klagenfurt. For incisional hernias, this proportion is 90% vs. 10% for St. Veit and 70% vs. 30% for Klinikum Klagenfurt.

In other hospitals, this ratio varies considerably, depending on many factors.

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CONCLUSIONS

The ratio of minimally invasive hernia surgery in many hospitals in Austria is variable. It depends on registry involvement, the proportion of junior surgeons in the ward, the size of the department, the number of hernias handled by the department, the proportion of acutely operated patients, surgical expertise and surgical experience, and last but not least, the presence of a robotic platform.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

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Original Article

Laparoscopic approach to inguinal hernia in UKC Maribor.

Hazabent M¹, Plahuta P², Jagrič T², Ivanecz A², Krebs B², Potrč S²

1 Department for Abdominal and General Surgery, University Clinical Centre Maribor, Ljubljanska 5, Maribor, Slovenia; corresponding author.

2 Department for abdominal and general surgery, University Clinical centre Maribor, Ljubljanska 5, Maribor, Slovenia

Key Words: Hernioplasty, minimally invasive, development

INTRODUCTION

The laparoscopic approach to inguinal hernia repair was introduced over 30 years ago. However, most inguinal hernias still operate with the standard open anterior approach. The evolution of the technique was slow until very recently, which can be attributed to the emergence of a robotic approach to inguinal hernia repair.

METHODS

We searched the literature for relevant articles about the laparoscopic approach to inguinal hernia repair. In particular, we focused on the critical view of the Myopectinial orifice.

PATIENTS

We present data of our 56 patients that we laparoscopically operated on during four years from the introduction of the method in our establishment.

CONCLUSION

Laroscopic inguinal hernia repair has steep learning curve. Knowing and understanding the anatomy of the posterior groin is essential in this

procedure. The consistency of a high number of procedures per surgeon in a given time is also very important.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

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Review Article

Umbilical hernia repair – when should we use a mesh?

Miklavčič M¹

1 Kirurgija Bitenc, Vilharjev podhod 1, 1000 Ljubljana, Slovenia.

Key Words: Umbilical hernia

INTRODUCTION

Mesh is recommended in umbilical hernia repair for defects greater than 1 cm in diameter, as it significantly reduces recurrence rates compared to suture repair. For defects smaller than 1 cm, the use of mesh remains beneficial, although it is associated with higher readmission and reoperation rates. Therefore, a sutured repair can be considered in shared decision-making with the patient for smaller defects. The preperitoneal plane is often preferred for mesh placement. Patients with higher BMI and larger hernia defects benefit most from mesh use, with significantly improved long-term results. However, comorbidities such as ascites, liver disease, diabetes, and smoking can contraindicate mesh use due to increased risk of complications and recurrence. An endoscopic approach may be considered for patients with large umbilical hernias or those at increased risk of wound infection.

STATEMENTS AND DECLARATIONS

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Original Article

Extraperitoneal (TEP) versus transabdominal preperitoneal (TAPP) laparoscopic techniques for hernia inguinal repair.

Perišić S¹, Koprivica R¹, Šadl J¹

¹ General Hospital Murska Sobota, Slovenia.

Key Words: Laparoscopic hernia inguinal repair, TEP (total extraperitoneal repair), TAPP (transabdominal preperitoneal repair), recurrent inguinal hernia, chronic pain

INTRODUCTION

Totally extraperitoneal (TEP) and transabdominal preperitoneal repair (TAPP) are standard techniques for laparoscopic groin hernia repair. Many studies compare the clinical efficacy of TEP and TAPP techniques. Which is the best approach? The choice of technique for hernia inguinal repair is still controversial.

AIM

To compare our results in the last two years in laparoscopic hernia inguinal repair.

MATERIAL AND METHODS

This study is a retrospective analysis of patients' database with TEP and TAPP hernia inguinal repair between January 2021 and December 2023. Patients' demographic profiles, hernia characteristics, and clinical outcomes are included in the database. We performed two groups of patients: TEP groups and TAPP groups. The primary endpoint included mesh and peritoneum fixation, operative time, intra and postoperative complication, hospital stay, and conversion rate.

The secondary outcomes were recurrence rates and acute and chronic pain. The follow-up time was 6 months. Classical statistic analysis methods processed the results. The significance level was 0,05.

RESULTS

A total of 278 patients were divided into two groups: the TEP group had 128 patients, and the TAPP group had 150. There were 255 men and 23 women. The average age is 52 years. The American Society of Anesthesiologists Physical Status Classification System (ASA) had ASA I 157, ASA II 105, and ASA III 16 patients. There were 138 right and 140 left inguinal hernias. Bilateral hernias were 110, unilateral 168. There were 20% (56) recurrent hernias after Lichtenstein hernioplasty. The hernia size measured according to the European Hernia Society (EHS) criteria was L1/M1 106 or 38,1 %, L2/M2 114 or 41 %, and L3/M3 58 or 20,9%. There was no statistically significant difference by groups for age, ASA classification, hernia size, and location. We fixed the mesh in 87,3% (216) with glue; in 11% (30), we gave a self-fixing mesh, and in 11,7% (32) cases, we did not fix

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the mesh. We used lightweight titanium mesh in all cases. There was no statistically significant difference between the TEP and TAPP groups in the method of mesh fixation ($p > 0.05$). In the TAPP group, we closed the peritoneum in 50,7% (76) cases with glue; in 38,7% (58), it was sutured, and in 10,6% (16), suturing and gluing were done. The operative time of unilateral hernia surgery in the TEP group is 48 min, and in the TAPP, 59 min. In bilateral hernia, the operation time of the TEP group is 73 min, and the TAPP group is 110 min. The difference was statistically significant between the groups in both cases ($p < 0.05$). The hospitalization time is the same in both groups and is one day. Intraoperative complications were similarly distributed in both groups, without statistical significance (hemorrhage TEP 4, TAPP group 4, peritoneal lacerations TEP 13, TAPP 9). There were two (2) 0,72 % conversions to another type of operation in both groups (TEP 1, TAPP 1). Postoperatively, we had groin seroma in 3,7% (10) of cases (TEP group 5, TAPP 5), testicular hematoma in 3,7% (10) of patients (TEP 4, TAPP 6), and acute pain up to 30 days after surgery in 3,24% (9) patients (TEP 4, TAPP 5). There was no statistically significant difference in the occurrence of these postoperative complications ($p > 0.05$). Chronic pain was present in TEP group 3 and TAPP group 4 patients, a total of 7 or 2,52 %, with no statistically significant difference. Hernia recurrence was present in 5 patients, or 1.8 %, without statistical difference by groups (TEP 3, TAPP 2) ($p > 0.05$).

CONCLUSIONS

TEP and TAPP have similar complications, acute and chronic pain, and recurrence rates. TEP and TAPP are excellent laparoscopic inguinal hernia repair techniques with acceptable complications. TEP has the advantage that the peritoneal cavity is not breached. However, it is more difficult to master than TAPP. In conclusion, the choice of the

technique should be based on the surgeon's skills, hospital practice, education, and experience.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

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Ethics approval: The study was approved by the local ethics committee.

Conflicts of Interest: None declared.

Consent for publication: Not applicable.

Original Article

Surgical Resection as the First Choice Treatment for Early Crohn's Disease.

Krebs B¹¹ Clinical Department of Abdominal and General Surgery, University Medical Center Maribor

Key Words: Crohn's disease, surgical resection, early surgery, ileocecal Crohn's, laparoscopic surgery, medical therapy

INTRODUCTION

Crohn's disease (CD) is a chronic inflammatory condition of the gastrointestinal tract, with varying treatment strategies. While drug therapy has significantly advanced, the role of surgical resection remains a crucial consideration for disease management. The presentation explores surgical resection as a primary treatment option in early-stage Crohn's disease.

OBJECTIVE

To evaluate the effectiveness of early surgical resection compared to medical therapy in patients with ileocecal Crohn's disease and to assess the long-term outcomes of primary resection.

METHODS

A review of historical and current studies was conducted, focusing on early versus delayed surgical resection for Crohn's disease. Retrospective analyses, including those by Aratari et al. (2007), Latella et al. (2009), and Poisionen et al. (2017), were considered. The presentation highlights key findings from clinical trials comparing early surgery with medical management, particularly infliximab therapy.

Results: Surgical resection, particularly early intervention, is associated with a reduced likelihood of clinical recurrence and may decrease the need for postoperative medical therapy. Studies suggest that primary resection patients often experience fewer reoperations and a lower dependency on anti-TNF agents postoperatively compared to those treated with infliximab or other medical treatments. Laparoscopic surgery has become the preferred technique, with studies supporting side-to-side anastomoses for lower postoperative complications.

CONCLUSION

Early surgical resection offers comparable, if not superior, outcomes to medical therapy in isolated ileocecal Crohn's disease. Primary resection is associated with long-term benefits, including reduced recurrence rates and medication use. Laparoscopic techniques, particularly the Kono-S anastomosis, further optimize surgical outcomes.

STATEMENTS AND DECLARATIONS

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Perianal Crohn's disease - the complex management.

Podmanický D¹

1 Pentahospitals – Nemocnica Bory, Bratislava, Slovakia.

Key Words: Perianal Crohn's disease

BACKGROUND:

In population studies, about 25% of patients with CD develop complications of perianal fistulae within the first two decades of diagnosis. Perianal fistulae can be the initial manifestation of CD in about 10% of patients. The presence of perianal fistula in CD tends to denote an aggressive phenotype. Complex Crohn's perianal fistula (pCD) is a difficult-to-treat condition mainly because its pathogenesis is not fully understood. Failure of wound repair and dysregulated inflammation are considered to play a key role in the persistence of the fistula tract.

Seton placement for drainage in combination with antibiotics is a standard initial treatment for complex perianal fistulas. Anti-tumor necrosis factor (anti-TNF) agents, such as infliximab, have been recommended in the 2019 European Crohn's and Colitis Organisation (ECCO) Guidelines on Therapeutics in Crohn's Disease as a first-line medical therapy following adequate drainage, and efficacy up to 30% of cases has been demonstrated in several clinical trials. However, there is a high fistula recurrence rate once treatment is stopped after one year. Surgical procedures to close the fistula include advancement flaps and ligation of the intersphincteric fistula tract. Surgery can be performed as a complement to, or after failure,

medical therapy. However, surgical intervention carries an increased risk of fecal incontinence.

Novel strategies are therefore needed. Adipose-derived mesenchymal stem cells have anti-inflammatory and immunomodulatory potential and are an attractive option for treating complex perianal fistulas in CD. Initially, promising results of applying allogeneic, expanded, adipose-derived stem cells (Darvadstrocel) in the Admire-CD trial were not confirmed in the additional study Admire-CD II. Assessing the efficacy and safety of Alofisel® (darvadstrocel) for treating complex Crohn's Perianal Fistulas (CPF) did not meet its primary endpoint.

Few preliminary reports suggest that autologous platelet-rich plasma (PRP) can enhance wound repair and may be effective in treating pCD, but conclusive results are lacking. Therefore, our study aimed to determine the efficacy and safety of autologous PRP in the treatment of pCD.

METHODS

A prospective, uncontrolled, single-center study in a referral IBD center was conducted between November 2017 and December 2020. Adult Crohn's disease patients with pCD who failed on antibiotics, immune suppression, and biologics were eligible for the study. All patients had non-cutting setons for a minimal period of 6 weeks

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before the study intervention. Autologous PRP was separated by centrifugation of 60 ml of peripheral blood in the Harvest SmartPrep© System at the time of operation. After the seton removal, a PDS 2/0 single suture closed internal openings, and PRP was injected close to internal openings and fistula tracts. Patients were examined at the outpatient clinic at week 1, months 1, 3, 6, and 12. Any suspected side effects of the treatment were noted. Primary end-points were the efficacy (necessity of any perianal disease-associated intervention was defined as failure of treatment), periprocedural and postprocedural safeties of treatment, and efficiency of PRP preparation. The secondary end-points were the clinical assessment of healing by perianal Crohn's Disease Activity Index (PCDAI assessed at baseline, weeks 1, 5, 16, 26) and van Assche MRI score (assessed at baseline and months 6 and 12).

RESULTS

In total, 26 patients (pts) with pCD were included (mean age 36 years, range 21-61; 16 men). Most pts were using antiTNF biologics (9 adalimumab, 10 infliximab), 4 pts were treated by ustekinumab, one by vedolizumab, and two by immunomodulators.

18 out of 25 patients (80%) reached the primary end-point of complete healing at month six. All but one patient with complete healing had persistent complete healing at 12 months' follow-up.

None of the periprocedural complications were noted. The average concentration of thrombocytes in PRP was 5.23 times higher than in blood count (median 5.14; range 3.46-7). The treatment was well-tolerated; the only side effects were minor local pain and perianal sweating at the injection site for a maximum of seven days following the intervention.

In responders, the baseline PCDAI ($5,3 \pm 0,4419$) decreased significantly as early as week 1 ($2,300 \pm 0,5287$; $p < 0,0001$), at week 5 ($1,300 \pm 0,3171$;

$p < 0,0001$) at week 26 ($0,7000 \pm 0,2724$; $p < 0,0001$) and remained further stable over 12 months. In responders of both groups, Van Assche's MRI score decreased significantly from $10,55 \pm 1,137$ at baseline to $6,850 \pm 0,6969$ at month 6 ($p = 0,0006$) and in group 2 from $9,438 \pm 1,204$ to $5,875 \pm 0,6250$ at 6. month ($p = 0,0048$) and to $6,188 \pm 0,8022$ at month 12. ($p = 0,0434$); respectively.

CONCLUSION

Local application of autologous platelet-rich plasma leads to rapid healing of difficult-to-treat Crohn's perianal fistulae in 80% of patients, and this effect is sustained for up to a minimal period of one year.

STATEMENTS AND DECLARATIONS

Competing Interests: Not applicable.

Funding: Not applicable.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the patient(s) to publish this paper."

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Conflicts of Interest: None declared.

Consent for publication: Not applicable.

Score-matched study. Langenbecks Arch Surg, 2021. Doi: 10.1007/s00423-021-02283-w.

November 2024

Review Article

Pillars of anal health – from self-examination to preventive proctoscopy.

Mlakar B¹¹ Private clinic ZDRAV SPLET, Mejna ulica &, Maribor, Slovenia.**Key Words: Prevention, anal health**

INTRODUCTION

The term anal health can be understood as all the activities performed by doctors and other health professionals in the context of counseling, diagnostics and treatment of the end part of the digestive tract, especially the part that is accessible to a digitorectal examination. Better anal health also requires the active participation of each individual, just as it is understood for oral/dental health. The purpose of the article is to present the initiative on self-examination of the anus/anal canal as one of the pillars of anal health and the presentation of the brochure "Let's take care of anal health, instructions for self-examination." The pillars of anal health can be divided into two groups. The first group includes measures taken by the individual to establish regular and painless defecation, proper anal hygiene, exercises to strengthen the muscles of the pelvic floor, observation of the skin of the anal area, and self-examination of the anal canal with a finger. The second group of pillars of anal health includes activities carried out by doctors or other health professionals, i.e., counseling on proper nutrition that ensures regular digestion, explaining how to perform anal hygiene and care, learning self-enemas, learning Kegel exercises, performing anal cytology, testing for STIs and performed preventive and diagnostic proctoscopies, functional and radiological diagnostics and, of

course, non-operative and operative methods of treatment in this area.

The brochure "Let's take care of anal health, instructions for self-examination" was published by the Association of Oncology Patients in Slovenia. The publication first explains why it makes sense to perform self-examination, what we gain from self-examination, and to whom self-examination is recommended. The second part describes in detail how we prepare for the self-examination and how we perform it. The self-examination is divided into two phases; in the first phase, we look at the outside of the anus by either squatting over the mirror or taking a picture of the anus with our phone. There is also explained the second phase of the self-examination, where a finger palpates the entrance into the anal canal and then also entering my finger inside the anal canal. Sketches are added for a better idea of the different positions of the body that can be chosen for anal fingering. The brochure also answers the questions: How often and when should you self-examine? In which cases should you consult a doctor after self-examination? To whom is an examination recommended by a proctologist, even though no specifics were noted during the self-examination?

STATEMENTS AND DECLARATIONS

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Conflicts of Interest: None declared.

Consent for publication: Not applicable.

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Sestava Ena filmsko obložena tableta vsebuje 500 mg metamizola v obliki natrijevega metamizolata monohidrata. **Terapevtske indikacije** Akutne hude bolečine po poškodbah ali operaciji. Kolike. Bolečine zaradi tumorjev. Druge akutne ali kronične hude bolečine, če so drugi terapevtski ukrepi kontraindicirani. Močno zvišana telesna temperatura, pri kateri drugi ukrepi niso bili učinkoviti. Zdravilo Algominial je indicirano pri odraslih in mladostnikih, starih 15 let ali več. **Odmerjanje in način uporabe** **Odmerjanje** Odmerek se določa glede na intenzivnost bolečine ali zvišano telesno temperaturo in bolnikov odziv na zdravilo. Izbrati je treba najmanjši odmerek, s katerim je mogoče obvladati bolečino in zvišano telesno temperaturo. Odrasli in mladostniki, stari 15 let ali več (težji od 53 kg), lahko s posameznim odmerkom vzamejo do 1000 mg metamizola, in sicer do 4-krat na dan v presledkih na 6 do 8 ur, kar ustreza največjemu dnevniemu odmerku 4000 mg. Opazen učinek je mogoče pričakovati 30 do 60 minut po peroralnem vnosu. **Pediatrična populacija** Zdravilo se ne priporoča pri otrocih, mlajših od 15 let, ker je količina 500 mg metamizola, ki jo vsebuje ena tableta, fiksna. **Starejša populacija, oslabei bolniki in bolniki z zmanjšanim očistkom kreatinina** Odmerek je treba zmanjšati, saj je lahko izločanje presnovnih produktov metamizola pri teh bolnikih podaljšano. **Okvara jeter ali ledvic** Ker se ob okvari jeter ali ledvic hitrost izločanja zmanjša, se je treba izogibati večkratnim velikim odmerkom. Pri kratkotrajni uporabi odmerka ni treba zmanjšati. Do sedaj še ni dovolj izkušenj z dolgotrajno uporabo metamizola pri bolnikih s hudo okvaro jeter ali ledvic. **Trajanje zdravljenja** Odvisno je od vrste in resnosti bolezni. Med dolgotrajnim zdravljenjem je treba redno preverjati krvno sliko, vključno z diferencialno krvno sliko. **Način uporabe** Filmsko obložene tablete je treba pogoltniti cele, z dovolj tekočine (npr. s kozarcem vode). **Kontraindikacije** Preobčutljivost za učinkovino, druge pirazolone ali pirazolidine (to vključuje tudi bolnike, pri katerih se je po uporabi teh učinkovin pojavila npr. agranulocitoza) ali katero koli pomožno snov v zdravilu. Bolniki z znanim sindromom analgetične astme ali znano intoleranco za analgetike urtikarijskega ali angioedemskega tipa, to je pri bolnikih, pri katerih se pojavi bronhospazem ali druga anafilaktoidna reakcija na salicilate (npr. urtikarija, rinitis, angioedem), paracetamol ali druge neopioidne analgetike, kot so diklofenak, ibuprofen, indometacin ali naproksen. Motnje delovanja kostnega mozga (npr. po zdravljenju s citostatičnimi zdravili) ali hematopoetske bolezni. Prirojeno pomanjkanje glukoza-6-fosfat-dehidrogenaze (tveganje za hemolizo). Akutna intermitentna jetrna porfirija (tveganje za napad porfirije). Tretje trimesečje nosečnosti. **Posebna opozorila in previdnostni ukrepi** Zdravilo Algominial vsebuje pirazolonski derivat metamizol in je povezano z redkim, vendar smrtno nevarnim tveganjem za pojav šoka in agranulocitoze. Pri bolnikih, pri katerih se pojavi anafilaktična ali druga imunološko posredovana reakcija na zdravilo Algominial (npr. agranulocitoza), obstaja zelo veliko tveganje, da bodo podobno reagirali tudi na druge neopioidne analgetike, pirazolone in pirazolidine in obratno. Tveganje za anafilaktoidne reakcije na zdravilo Algominial, ki so lahko hude, je znatno večje pri bolnikih s sindromom analgetične astme ali intoleranco za analgetike urtikarijskega ali angioedemskega tipa, pri bolnikih z bronhialno astmo, zlasti pri bolnikih s sočasnim rinosinuzitisom in nosnimi polipi, pri bolnikih s kronično urtikarijo, bolnikih z intoleranco za barvila ali konzervanse in bolnikih z intoleranco za alkohol. Če se pojavijo znaki trombocitopenije ali pancitopenije, je treba uporabo zdravila nemudoma prekiniti in spremljati krvno sliko. Pri zdravljenju z metamizolom so poročali o hudih kožnih neželenih učinkih, vključno s Stevens-Johnsonovim sindromom, toksično epidermalno nekrolizo in reakcijo na zdravilo z eozinofilijo in sistemskimi simptomi (DRESS), ki so lahko življenjsko nevarni ali smrtni. Zdravilo Algominial lahko sproži hipotenzivne reakcije, ki so lahko odvisne od velikosti odmerka. Pri parenteralni uporabi je verjetnost za pojav teh reakcij večja kot pri enteralni uporabi. Pri bolnikih, ki so jih zdravili z metamizolom, so poročali o primerih akutnega hepatitisa s prevladujočim hematoceličnim vzorcem, ki so se pojavili nekaj dni do nekaj mesecev po začetku zdravljenja. Večina bolnikov je po prekinitvi zdravljenja z metamizolom okrevala, kljub temu pa so poročali o posameznih primerih napredovanja bolezni v akutno odpoved jeter, zaradi česar je bila potrebna presaditev jeter. Mehanizem z metamizolom povzročene poškodbe jeter ni popolnoma pojasnjen, podatki pa kažejo na imunsko-alergijski mehanizem. **Medsebojno delovanje z drugimi zdravili in druge oblike interakcij** Metamizol lahko inducira presovne encime, vključno s CYP2B6 in CYP3A4. Sočasna uporaba metamizola in bupropiona, efavirenza, metadona, valproata, ciklosporina, takrolimusa ali sertralina lahko povzroči zmanjšanje plazemskih koncentracij teh zdravil in posledično zmanjšanje klinične učinkovitosti. Sočasna uporaba zdravila Algominial in klorpromazina lahko povzroči hudo hipotermijo. Uporaba metamizola sočasno z metotreksatom lahko poveča hematotoksičnost metotreksata, zlasti pri starejših bolnikih. Metamizol lahko pri sočasni uporabi z acetylsalicilno kislino oslabi delovanje acetylsalicilne kisline proti strjevanju krvi. Prav tako lahko zmanjša koncentracijo bupropiona v krvi. Med zdravljenjem z metamizolom so pri laboratorijskih testih, ki temeljijo na Trinderjevih ali podobnih reakcijah, poročali o vplivu na laboratorijske izvide (npr. pri določanju kreatinina, trigliceridov, holesterola HDL ali serumskih koncentracij sečne kisline). **Plodnost, nosečnost in dojenje** Na voljo je malo podatkov o uporabi metamizola pri nosečnicah. Na splošno se metamizol v prvem in drugem trimesečju ne priporoča. Uporaba v tretjem trimesečju je povezana s fetotoksičnostjo (okvara ledvic in konstrikcija arterioznega dukta), zato je kontraindicirana. Razgradni produkti metamizola v pomembnih količinah prehajajo v materino mleko, zato se je treba izogibati zlasti ponavljajoči se uporabi metamizola med dojenjem. Pri enkratnem odmerku metamizola materam svetujemo, da mleko zbirajo 48 ur po odmerku in ga zavrzajo. **Vpliv na sposobnost vožnje in upravljanja strojev** Ni znano, da bi zdravilo v priporočenem odmernem območju zmanjšalo koncentracijo ali odzivnost. Kljub temu je iz previdnostnih razlogov vsaj pri večjih odmerkih treba upoštevati možnost poslabšanja, bolnik pa se mora izogibati upravljanju strojev in vozil ter drugim nevarnim dejavnostim. To še posebej velja v kombinaciji z alkoholom. **Neželeni učinki** Občasno se lahko med jemanjem zdravila ali po prenehanju jemanja pojavijo hipotenzivne reakcije, ki so lahko po izvoru farmakološke in jih ne spremljajo drugi znaki anafilaktoidne ali anafilaktične reakcije. Občasno se lahko pojavi fiksni medikamentozni eksantem. Ostali neželeni učinki so redki, zelo redki ali neznanе pogostosti. **Imetnik dovoljenja za promet z zdravili** Krka, d. d., Šmarješka cesta 6, 8501 Novo mesto, Slovenija. **Način izdajanja zdravila** Samo na zdravniški recept. **Oprema** 30 in 100 filmsko obloženih tablet po 500 mg metamizola. **Datum zadnje revizije besedila** 9. 6. 2022

Samo za strokovno javnost. Celoten povzetek glavnih značilnosti zdravila je objavljen na www.krka.si.

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