Acta Chirurgica Croatica

SLUŽBENI ČASOPIS HRVATSKOGA KIRURŠKOG DRUŠTVA HLZ-A
OFFICIAL JOURNAL OF THE CROATIAN SOCIETY OF SURGERY, CroMA.

15. kongresa Hrvatskog društva za endoskopsku kirurgiju
s međunarodnim sudjelovanjem
08-11. lipnja 2022., Vodice, Hrvatska

15th Congress of Croatian Endoscopic Society
with International Participation
08-11 June, 2022, Vodice, Croatia

KNJIGA SAŽETAKA
BOOK OF ABSTRACTS

Vol. 19 Suppl. 1 Zagreb 2022

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SADRŽAJ / CONTENT

DOBRODOŠLICA

Poštovane kolegice i kolege, dragi prijatelji

osobito mi je zadovoljstvo zaželjeti Vam dobrodošlicu na našem15. kongresu Hrvatskog društva za endoskopsku kirurgiju s međunarodnim sudjelovanjem koji ćemo održati od 08 do 11. lipnja 2022. godine u Vodicama.

Na ovom kongresu sudjeluju i brojne kolege iz susjednih zemalja s kojima smo već uspješno surađivali na području endoskopske kirurgije.
Svatko od nas se u svom radu suočava s neželjenim događajima. Tema ovog kongresa je ¨Kako izbjeći komplikacije“. Držim da razgovorom i razmjenom iskustava pomažemo jedni drugima u izbjegavanju komplikacija i poboljšanju našeg kirurškog rada.

Ovaj skup će se odvijati u obliku plenarnih sjednica, edukacijskih „korak po korak“ video prezentacija, najnovijih spoznaja iz pojedinih područja, prikaza slučajeva, rasprava za okruglim stolom te oralnih prezentacija. Uvjeren sam da ćemo i ovaj put uz ugodno druženje obogatiti naše iskustvo i znanje.

Radujem se ponovnom susretu

Predsjednik Hrvatskog društva za endoskopsku kirurgiju (HDEK)
Predsjednik kongresnog odbora 15. Kongresa HDEK-a
Prof. prim. dr.sc. Igor Stipančić dr. med. FACS

WELCOME

Dear colleagues and friends,

It makes me honor to wish you a welcome to our 15th Congress of Endoscopic Surgery with international participation, that will take part in Vodice from 8th to 11th June 2022.
At this congress colleagues from countries in the region take part as well. During the years we have already collaborated successfully in the field off Endoscopic surgery.

Each of us must face up with the miscellaneous events in our everyday work. Therefore, the main subject of this Congress is „ How to avoid complications? ". I claim and believe that through conversation and experience exchange we can help each other in avoiding complications and improving our surgical practice.

This Congress will include plenary sessions, educational „step by step"video presentations, the presentations of „state of art" and „evidence based" literature reviews, case report and moderated discussions I am convinced that we would improve our knowledge and skills through this scientific and social program.

We are looking forward to meeting you again.

President of Croatian Endoscopic Surgery Society
President of the Congress Committee of the 15th Congress of Endoscopic Surgery
Prof. Igor Stipančić, MD, PhD, prim, FACS

ORGANIZATOR / ORGANIZER

Hrvatsko društvo za endoskopsku kirurgiju, Hrvatski liječnički zbor
Croatian Society for Endoscopic Surgery / Croatian Medical Association

MJESTO ODRŽAVANJA / CONGRESS VENUE

Hotel Olympia Sky
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https://olympiavodice.hr

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POZVANI PREDAVAČI / INVITED SPEAKERS:

Giusto Pignata (Italy), Miloš Bjelović (Serbia), Aleš Tomažić (Slovenia), Arpad Ivanecz (Slovenia), Bojan Krebs (Slovenia), Javed Raza (Cleveland Clinic Abu Dhabi), Blaž Trotovšek (Slovenia)

KONGRESNE TEME / CONGRESS TOPICS

1. GORNJI PROBAVNI TRAKT I BARIJATRIJSKA KIRURGIJA
   / Upper GI and bariatric surgery
2. KIRURGIJA JETRE, ŽUČNJAKA I ŽUČNIH PUTOVA, PANKREASA I SLEZENE
   / Hepato-pancreatic, gallbladder, bile duct and spleen surgery
3. KOLOREKTALNA KIRURGIJA / Colorectal surgery
4. HITNA KIRURGIJA/ ZANIMLJIVE TEME U LIJEČENJU APENDICITISA
   / Emergency surgery / Hot topics in appendicitis treatment
5. MINIMALNO INVAZIVNA (VIDEO ASISTIRANA) TORAKOSKOPSKA KIRURGIJA
   / Minimally invasive Thoracoscopic surgery
6. KAKO IZBJEĆI KOMPLIKACIJE
   / How to avoid complications
7. KIRURGIJA KILA TRBUŠNOG ZIDA
   / Abdominal wall hernia

SAŽECI / *ABSTRACTS*

Usmena izlaganja / Oral presentation

1. Gornji probavni trakt i barijatrijska kirurgija
/ Upper GI and bariatric surgery

DEVELOPMENT OF BARIATRIC SURGERY IN GENERAL HOSPITAL SLOVENJ GRADEC

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First bariatric procedure in our hospital was done in 2005 by dr.Breznikar. He performed Laparoscopic Adjustable gastric band operation. In that first year 10 of these procedures were done.

Next year number of procedures raised to 50. In 2007 first laparoscopic Roux en y gastric bypass and sleeve where done. All new procedures where at first adopted with experts from abroad.

From the very beginning dr. Breznikar had an idea to form a bariatric team of coworkers, not only doctors but also nurses, scrub nurses, psychologist, dietitian, … He saw that only small, dedicated team gives good long-term results.
His work was recognized in 2016 when we became European center of excellence for bariatric and metabolic surgery.

We are continuing dr. Breznikar work and his vision of constant evolving. Just before covid-crisis we performed more than 250 procedures per year. We did more difficult revisional surgeries and started with malabsorptive procedures.

HOW WE DO IT? VIDEO PRESENTATION OF PROCEDURES AND TECHNIQUES IN UPPER GI TRACT LAPAROSCOPIC SURGERY

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Randomized trials and meta-analysis have proven the efficacy and safety of laparoscopic surgery as well as numerous advantages regarding postoperative recovery. With the ever-increasing experience in laparoscopy, nowadays almost all surgical procedures can be performed laparoscopically.

In our department we perform various laparoscopic procedures in the upper GI tract and here we are presenting the procedures and techniques that we are using.

LAPAROSCOPIC SURGERY IN ESOPHAGOGASTRIC JUNCTION BENIGN CONDITIONS: OUR 5-YEARS EXPERIENCE

Mihanović J. [1,2], Bačić I. [1,2], Ćoza I. [1], Jović N. [1], Rakvin I. [1], Morović D. [1], Katušić Z. [1], Vukosav D.[1], Dijan E. [1]

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Experience in open access to the distal esophagus and esophagogastric junction both via thoracotomy and laparotomy coupled with expanding use of laparoscopy allowed an unimpeded transition to minimally invasive surgery in our surgical department. Herein we would like to present a retrospective study of the laparoscopic approach to the patients with benign pathology of esophagogastric junction including symptomatic hiatal hernia, recalcitrant reflux disease, and achalasia.

For 5 years (2016 - 2021), 26 patients had laparoscopic crural repair with Nissen fundoplication. Five patients had a simultaneous cholecystectomy due to symptomatic gallstones. One patient had simultaneous video-assisted thoracoscopic enucleation of a benign posterior mediastinal cyst. Two patients presented as emergencies with the clinical and CT signs of gastric obstruction (Borchardt's triad).
There were several complications: one patient had postoperative pneumonia requiring antibiotics and one patient had severe leukopenia as an adverse reaction to an unidentified drug treated with corticosteroids and hematopoietic agent filgrastim. During the early phase of our learning curve, three patients had iatrogenic capnothorax with respiratory compromise demanding chest tube insertion. One patient was converted to laparotomy because of uncontrollable bleeding from an inadvertently injured left inferior phrenic vein.
All patients had remarkable recovery with immediate mobilization, minimal analgetic consumption, and shortened mean length of stay (5.2 days compared to 8.9 days in the previous open cohort). In a follow-up, none had prolonged dysphagia nor there were recurrences.

In 2019 we did our first series of laparoscopic myotomy in four patients with achalasia after failed conservative/endoscopic dilation treatment. All of them had an uneventful recovery with a shortened mean length of stay (3.3 days compared to 7.4 days in the previous open cohort). Unfortunately, during the 2020/21 COVID pandemic, there was a significant lag due to cancellations of non-emergency, non-malignancy surgical cases.

The minimally invasive approach proved beneficial for patients offering less pain, shortened length of stay, faster rehabilitation, and better cosmetic effect. With previous open surgery experience and appropriate laparoscopic skills, the laparoscopic approach can be safely and expeditiously implemented in routine practice.

LAPAROSCOPIC SLEEVE GASTRECTOMY: INTRODUCTION BY A MULTIDISCIPLINARY TEAM FOR THE TREATMENT OF MORBID OBESITY - A SINGLE-CENTRE EXPERIENCE

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Introduction: *The laparoscopic vertical sleeve gastrectomy is when compared to common bariatric procedures less technically challenging but equally effective in the long-term. Due to the above mentioned, there is a strong cause for the laparoscopic sleeve gastrectomy to be introduced in newly established centers for the treatment of morbid obesity.*
Aim: *The aim of this project was to introduce the laparoscopic vertical sleeve gastrectomy at a tertiary health care facility by a newly established multidisciplinary team for the treatment of morbid obesity and monitor its effects on body composition and the metabolic profile (lipidomic, oxidative stress).*
Materials and methods: *Patient recruitment was performed by general surgeons experienced in laparoscopic sleeve gastrectomy at the outpatient office. Inclusion criteria were body mass index (BMI) either over 40 kg/m2 or over 30 kg/m2 associated with comorbidities. Potential candidates were seen by the complete multidisciplinary team consisting of an anesthesiologist, endocrinologist, psychologist, and a psychiatrist who conducted the adequate preoperative work-up according to the newest guidelines. Body composition was measured on the day before the procedure, seven days and 14 days after the procedure Anthropologic measurements were taken by a body composition analyzer (MC-780, Tanita, Japan). For the analysis of the metabolic profile blood samples, taken perioperatively, and fat tissue samples, taken intraoperatively, were utilized.*
Results: *In the initial phase seven patients underwent the procedure. Patients were mostly middle-aged (median=43), predominantly female (n=5, 71.4%). Patients were heavily comorbid, mostly suffering from disorders of the glucose metabolism (n=4, 57.1%), vitamin deficiencies (n=3, 42.9%) and psychiatric diseases (n=2, 28.6%). Only one patient (14.3%) had undergone medical treatment for morbid obesity preoperatively. Postoperatively the median weight reduction was 8.42% of initial body weight, the BMI decreased for 8.25% and fat tissue for 4.55% respectively. No adverse events were registered. Results of the metabolic profile analysis are not yet available.*
Conclusion: *The vertical sleeve gastrectomy was shown to be an effective and safe treatment option for morbid obesity. The short-term results in the initial phase justify the expectations and confirm the quality of the newly established multidisciplinary team.*

VERTIKALNA RESEKCIJA ŽELUCA (SLEEVE GASTRECTOMY)-MDT ZA LIJEČENJE DEBLJINE

Đuzel A., Mamić J., Soldo M., Vergles D., Ćupurdija K., Kardum Pejić M., Matijaca A., Martinis I., Oreč I., Šporčić M., Pugelnik J., Radolović P., Lucijanić D., Rašić I., Vlajčić Z., Kolak T.

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Tijekom godina se vertikalna resekcija želuca (sleeve gastrectomy), iako zamišljena kao prvi akt barijatrijskog zahvata, etablirala u sigurnu i efektivnu barijatrijska proceduru. Za razliku od ostalih barijatrijskih kirurških zahvata, ona ne mijenja fiziološki put probavnog trakta i time omogućuje eventualno potrebite dijagnostičko-terapijske postupake na gornjem gastrointestinalnom traktu.
Ovim radom prikazujemo iskustva, te učinkovitost i komplikacije vertikalne resekcije želuca u našoj ustanovi.

Od siječnja 2014. godine do svibnja 2022. godine operirano je 49 bolesnika, 8 muškarca i 41 žena. Od navedenih operacija dvije smo izveli kroz medijanu laparotomiju (planirano), ostale laparoskopski. Kod jedne bolesnice je vađen SABG te učinjena „sleeve“ resekcija. U razdoblju od godine dana pratili smo vrijednosti ITM (indeks tjelesne mase) te utjecaj smanjenja vrijednosti ITM na šećernu bolest i arterijsku hipertenziju.

Prije samog kirurškog zahvata ITM je u prosjeku iznosio 47.2 kg/m2. Godinu dana nakon zahvata prosječni ITM je iznosio 30.7 kg/m2. U bolesnika sa šećernom bolešću, dovelo je do pada vrijednosti HbA1c te do smanjene potrebe za oralnim antidijabetskim lijekovima. Također, u bolesnika s arterijskom hipertenzijom, ista se održavala u fiziološkim vrijednostima s manjom količinom antihipertenzivnih lijekova. Kao komplikacije u dvoje bolesnika smo imali popuštanje resekcijske linije te u dvoje bolesnika krvarenje. Komplikacije su kirurški zbrinute, u tri bolesnika kroz laparotomiju te u jednog bolesnika laparoskopski.
Iz dobivenih rezultata možemo zaključiti kako se radio o kirurškom zahvatu niskog rizika i zadovoljavajućeg utjecaja na gubitak tjelesne mase te arterijsku hipertenziju i šećernu bolest, što se podudara sa rezultatima brojnih kliničkih istraživanja.

2. Kirurgija jetre, žučnjaka i žučnih putova, pankreasa i slezene/ *Hepato-pancreatic, gallbladder, bile duct and spleen surgery*

LAPAROSCOPIC SPLENECTOMY-OUR EXPERIENCE
LAPAROSKOPSKA KIRURGIJA-NAŠE ISKUSTVO

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Prva laparoskopska splenektomija učinjena je 1991.godine (Delaitre). S obzirom na dobro poznate prednosti laparoskopske u odnosu na otvorenu kiruršku tehniku, laparoskopska splenektomija kroz godine počela se nametati kao metoda izbora za mnoga oboljenja slezene. U Kliničkoj bolnici Dubrava prva laparoskopska splenektomija učinjena je 23.5.2003. Ovim radom želimo prikazati naša iskustva u vidu indikacija za laparoskopsku splenektomiju kao i komplikacije postupka.
Od 2003. do 2022. u našoj ustanovi učinjeno je 78 laparoskopskih splenektomija. 50 pacijenata imalo je slezenu normalne veličine, dok ih je 28 zadovoljavalo kriterije za splenomegaliju. Operirano je 26 muških bolesnika i 52 žene. Raspon godina operiranih bolesnika bio je od 18 do 81 (prosjek 49.6).
Od intraoperativnih komplikacija za spomenuti je lezija silaznog kolona u jednog pacijenta, koja je prepoznata odmah i zbrinuta laparoskopskim šivanjem.
Od postoperativnih komplikacija imali smo 2 slučaja krvarenja iz aa.gastrica breves, od kojih je jedno zbrinuto laparoskopskom tehnikom.
5 bolesnika postoperativno je razvilo trombozu vene porte, od kojih je 4 imalo asimptomatsku kliničku sliku.
Prosječno trajanje hospitalizacije bilo je 5 dana.
U zaključku možemo reći da je laparoskopska splenektomija sigurna i efektivna metoda liječenja malignih i nemalignih bolesti slezene, ali mora biti izvedena od strane iskusnog laparoskopskog kirurga, posebno u slučaju splenomegalije.

IS CHOLECYSTECTOMY INDICATED AFTER ERCP WITH PAPILOTOMY?

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Endoscopic retrograde cholangiopancreatography (ERCP) followed by laparoscopic cholecystectomy (LC) is the most common treatment strategy for common bile duct stones (CBDS). Studies have shown that LC following ERCP is technically more difficult than LC for uncomplicated cholelithiasis. However, the optimal time interval between endoscopic retrograde cholangiopancreatography and laparoscopic cholecystectomy is debatable. Common bile duct stones occur in 10-18% of patients with cholelithiasis and varies with age. Nearly 55% of patients are symptomatic and half of them experience complications. The usual indication for ERCP is CBDS with biliary pancreatitis which causes inflammation in pericholedochal region leading to fibrosis and adhesions. Moreover, ERCP contrast agent and sphincterotomy (papillotomy) also cause inflammatory reaction and scarring in the hepatoduodenal ligament leading to adhesions, difficult dissection of Calot`s triangle or so called frozen Calot`s triangle and wide cystic duct. Inflammation due to dis-

ease itself and ERCP sphincterotomy consequences makes surgery more difficult. LC is recommended for all patients with CBD stones and symptomatic gallbladder stones unless there are contraindications. Time interval between ERCP and LC affects conversion rates, perioperative complications and operative time. ERCP itself creates inflammation of the hepatoduodenal ligament making anatomy identification and Calot`s triangle dissection difficult in the following LC. Another mechanism is disease progression in the time between ERCP and LC, for example acute cholecystitis and additional CBDS. Systematic review data from observational studies and randomized control trials that compared different time delays between ERCP and LC report no significant difference in conversion rate when ERCP and LC were performed during the same session or within 24 hours. Increased conversion rate was reported as time increased between ERCP and LC, from 4.2% when operated within 24 hours to 14% when operated more than 6 weeks after ERCP.

Conversion rate was lowest when LC was performed within 24 hours of ERCP and significantly increased to 7.6% with a 24–72 hours delay. Likewise, there was a significant increase in conversion rate when the delay increased from 24 to 72 hours to less than 2 weeks (p = 0.02). After that the conversion rate did not show any significant changes as delay between ERCP and LC increased. Moreover, data shows increased risk of recurrence of acute cholecystitis, disease progression and therefore technical difficulties with longer time interval between ERCP and LC more.

Early laparoscopic cholecystectomy is optimally performed within 24 to 72 hours after ERCP. Same session ERCP and LC increases operative time but offers decreased risk of perioperative complications and conversion to open rates with no significant increase in mortality, post-operative complications and length of stay. Routine postponing of LC after ERCP is not optimal as early LC reduces risk of recurrence and progression of disease.

MANAGEMENT OF ACUTE CHOLECYSTITITS: NATIONAL CROATIAN SURVEY

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Although the surgical management of acute cholecystitis is considered to be well defined in the setting of indications, preoperative assessment, timing, and technique there is still an impression that the practical aspects always do not go along with the guidelines. Therefore, we carried out a survey among the surgeons in our region to evaluate the appliance of the guidelines for the management of acute cholecystitis. The survey comprised questions refereed to clinical practice and questions about the surgeon that filled the survey. The questions dealing with the management of acute cholecystitis included issues about the technical details, diagnosis, indication, and the role of antibiotics. The results were generated anonymously without revealing the identity of the surgeon and the institution. The only published

personal data included the number of surgeons that took part in the survey, the years in active surgical service, the type of institution where they work, and the number of performed laparoscopic cholecystectomies per year. Guidelines usually suggest and do not obligate the pattern of the practice, especially in our region. However, their appliance may improve the practice and reduce the complication rate in the management of patients with acute cholecystitis.

NEAR-MISSED COMMON BILE DUCT INJURY DURING LAPAROSCOPIC CHOLECYSTECTOMY- THE IMPOTANCE OF ANASTOMOTIC LANDMARKS AND CRITICAL VIEW OF A SAFETY IN A HOSTILE GALLBLADDER-REPORT OF A CASE WITH SURGICAL VIDEO ANALYSIS

Mihanović J. [1,2] , Ćoza I. [1], Jović N. [1], Rakvin I. [1], Katušić Z. [1], Vukosav D. [1], Dijan E. [1], Bakmaz B.[1], Bačić I. [1,2]

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Bile duct injury during routine cholecystectomy is a nightmare for every general surgeon, especially when there is no hepato-biliary expert to help during the case.

A 60-year-old man was referred for elective surgery after conservatively treated acute cholecystitis in another hospital a month before. His laboratory tests were remarkable before surgery. Initial laparoscopy revealed thickened gallbladder almost completely covered in the omentum. After stripping the omental cap, a hostile-looking cystohepatic triangle (McElmoyle's shield) was encountered. Misidentification of the initial level of dissection led us to the isolation of a bile duct-looking structure mistaken for a cystic duct. Since further dissection could not provide Strasberg's critical view of safety, we changed our strategy and took the fundus down instead. This maneuver helped us to properly identify the anatomy and to confirm that the initially dissected structure was a common bile duct (CBD), along with the now dissected common hepatic duct and proper hepatic artery. Finally, true cystic duct and cystic artery were identified, clipped, and transected. The potential thermal damage spot on a CBD was reinforced with a 4-0 PDS suture. A drain was placed in a gallbladder bed. The patient was dismissed on postoperative day 2 with a drain that remained inactive until postoperative day 5 when it was removed. The patient had an uneventful recovery with control blood tests within reference ranges.

Careful intraoperative identification of anatomical landmarks such as Rouvier's sulcus, umbilical fissure, hilar plate, and proximity of duodenum as well as insisting on obtaining a critical view of safety can prevent inadvertent bile duct injury during laparoscopic cholecystectomy. In cases where surgeons find it difficult to identify the anatomy, one should bailout by either asking for an expert's help if available or performing subtotal cholecystectomy to prevent dreadful complications.

3. Kolorektalna kirurgija
/ Colorectal surgery

MINIMALLY INVASIVE RECTAL SURGERY: LAP-TME, NOSE, TAMIS, Ta-TME: WHEN AND WHY

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There has been a dramatic evolution of minimally invasive surgical techniques for rectal cancer. Total mesorectal excision (TME) has become the standard technique for the surgical treatment of rectal cancer with the shift from open to laparoscopic approach and other minimally invasive variations. Laparoscopic resection using the natural orifice specimen extraction (NOSE) was introduced in order to avoid minilaparotomy and reduce wound related complications. However, laparoscopic TME is difficult in obese, male and patients with low rectal cancer who require ultra-low sphincter-saving laparoscopic surgery. To overcome these technically complex cases the concept of transanal TME (Ta-TME) as "down-to-up" procedure has been proposed. Ta-TME as a modification of conventional transabdominal mobilization allows a better visualization of surgical planes of dissection and improved access to the distal rectum with resection following established oncologic principles. It was developed as a combination of skills acquired from laparoscopic, transanal endoscopic microsurgery (TEM), transanal minimally invasive (TAMIS) and natural orifices transluminal endoscopic surgery (NOTES). However, all above mentioned minimally invasive approaches for rectal cancer are technically demanding and have not been widely adopted. Moreover, it remains debatable whether the oncological and perioperative outcomes of Ta-TME and other minimally invasive procedures for rectal cancer offers comparable results to that of standard laparoscopic TME. Implementation of transanal minimally invasive procedures into practice is challenging but can be achieved by surgeons with advanced skills in minimally invasive TME. NOSE technique using transvaginal route for specimen extraction is a feasible alternative for laparoscopic resection in women with early-stage cancers of the low sigmoid colon and rectum. The use of transanal access (Ta-TME) in rectal cancer surgery is an alternative method to standard laparoscopic approach as it allows a longer rectal stump to be left below the resection border in cases of large tumors in the lower rectum, previous neoadjuvant chemoradiotherapy (CRT) and technically difficult male pelvis.
Recent data suggest that the emerging minimally invasive techniques are feasible and comparable to the results achieved with conventional laparoscopic surgery in hands of experienced laparoscopic surgeons. However, randomized prospective trials of each technique is mandatory to be able to determine their overall benefit and risk analysis in the short and long run. Moreover, adequate indication, surgeon experience and availability of instruments are crucial in choosing the right procedure for each individual patient.

TAMIS – PREDNOSTI I OGRANIČENJA

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Cilj: Transanalna minimalno invazivna kirurgija, koja se izvodi putem raznih transanalnih endoluminalnih kirurških platformi, razvijena je kako bi se olakšala endoskopska en bloc ekscizija rektalnih lezija kao minimalno invazivna alternativa radikalnoj proktektomiji. Iako je onkološka sigurnost transanalnih procedura u liječenju karcinoma rektuma područje kontroverzi tijekom posljednja dva desetljeća, transanalni pristup je trenutno prihvaćen kao onkološki siguran pristup za liječenje pažljivo odabranih ranih i površinskih karcinoma rektuma. TAMIS također može poslužiti kao dijagnostički i potencijalno kurativni tretman djelomično reseciranih nesumnjivih malignih polipa. U ovom su radu prikazane indikacije i kontraindikacije za transanalnu endoskopsku eksciziju ranih lezija karcinoma rektuma, kao i mogućnosti primjene TAMIS-a u liječenju drugih patoloških stanja rektuma.

Zaključak: TAMIS je izvediv i siguran postupak te se s njim mogu izbjeći nepotrebni radikalni kirurški zahvati. Stoga TAMIS bi trebao biti dio svakog kataloga kolorektalnih usluga.

TAMIS – CLOSING THE DEFECT OR NOT?

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TAMIS is the procedure first described in 2010 as a replacement for the TEM procedure. TAMIS proved to be a very useful method and the number of procedures grew over time. The further increase in the number of institutions and surgeons performing TAMIS was limited by the demanding process of defect suturing after excision. Over the years, it has been observed that suture disruption occurs very often due to tension, but without a significant impact on the outcome of the operation. Problems with defect suturing and outcomes of the procedure have been occupying the professional literature since 2015, and the discussion on the necessity of suturing defects after excision is still very tempestuous today. This lecture seeks to present a review of the literature and current attitudes related to suturing defects after excision.

R1 NAKON RESEKCIJE KARCINOMA REKTUMA

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Cilj: Zadnjih nekoliko desetljeća liječenje bolesnika sa adenokarcinomom rektuma je standardizirano gotovo do najmanjeg detalja. TME popularizirana od Healda i Ryala predstavlja osnovu liječenja karcinoma rektuma koja se može upotpuniti onkološkim liječenjem ovisno o stadiju bolesti. Ono što nije standardizirano je situacija u kojoj imamo R1 resekciju. Resekcija rektuma se izvodi neposredno u ekstrafascijalnom prostoru ili prošireno u slučaju potrebe za enblock odstranjenjem tumora koji probija mezorektalnu fasciju s ciljem izbjegavanja R2 resekcije.
Međutim tijekom resekcije nije moguće razlikovati R0 i R1 resekciju. Resekcija karcinoma rektuma može se smatrati R1 na osnovu tri kriterija: ako je tumorom zahvaćen distali rub, ako je u cirkumferencijskom rubu tumor na manjoj ili jednakoj udaljenosti od 1 mm i kad je u cirkumferencijskom rubu pozitivni limfni čvor na udaljenosti manjoj od 1 mm od samog ruba. Iako patološki nalaz dolazi nakon resekcije on osim procjene kvalitete resekcije može utjecati i na nastavak liječenja u smislu indiciranja adjuvantnog zračenja samostalno, u kombinaciji sa kemoterapijom ili ponovnog kirurškog zahvata.

Zaključak: R1 resekcije su povežane sa lošijom prognozom, ali stopa loklanih recidiva nije značajno veća od onih sa R0 resekcijom. Međutim značajna razlika se nalazi u postotku udaljenih metastaza, osobito u plućima. Zbog toga se favorizira kemoterapija i jače praćenje osobito pluća. U svjetlu multidisciplinarnog i individualnog pristupa preporuča se procijeniti svakog pacijenta ponaosob sa izborom najbljeg modaliteta liječenja.

ANASTOMOTIC FAILURES: AIR LEAK, INCOMPLETE DONUTS, STAPLER FAILURES, WHAT TO DO?

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Despite recent advances in colorectal surgery, anastomotic leakage after colon and rectal resections is still a one of the critical and most formidable complications, resulting in overall increased morbidity and mortality.
The group of potential risk factors for anastomotic leak that is studied in literature is generally quite similar and contains mechanical bowel preparation (MBP), prophylactic drainage (PD), ASA-score, prolonged operating time, use of corticosteroids, anastomotic configuration, hand-sutured vs. stapled anastomosis, neoadjuvant radiotherapy, laparoscopic vs. open surgery and male gender.
However , the most significant risk factor for anastomotic leak remains the site of the anastomosis, with leak rates of 2–4% in intra- vs 8–12% in intraperitoneal anastomoses.
In order to reduce the risk of anastomotic leak, there are several ways to check the integrity of an colorectal anastomosis and one of the most commonly used anastomotic leak

assessment method is an air leak test. Air leak test is a safe, easy to perform intraoperative method left sided colon and rectal anastomosis integrity assessment which allows the anastomotic leak to be repaired before the procedure is completed.
Sometimes technical difficulties such as incomplete donuts and stapler failure can contribute to the higher anastomotic leak incidence. It is imperative to be aware of this and have an approach in solving these complications.

TaTME PROCEDURA (TRANSANAL TOTAL MESORECTAL EXCISION) KOD NISKOGKARCINOMA REKTUMA-ISKUSTVO JEDNOG CENTRA

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Operativni pristup niskom karcinomu rektuma (srednja i donja trećina) predstavlja izazov za kirurga osobito u situacijama kada se planira formiranje postresekcijske anastomoze kod prethodno visoko selektiranih bolesnika. U nekim situacijama kontrola distalnog resekcijskog ruba te pristup u dno zdjelice abdominalnim putem, poštivajući onkološke principe TME (totalne mezorektalne ekscizije), zna biti otežano, osobito u situacijama uske (muške) zdjelice, većeg tumora, blizine sfinkternog kompleksa. U navedenim situacijama od osobite koristi može biti TaTME procedura (transanal total mesorectal excision).
TaTME procedura kombinira transabdominalni pristup (laparoskopski ili otvoreni) te perinealni akt (transanalni pristup) uz očuvanje sfinkternog kompleksa. Transanalnim pristupom kontrolira se ne samo resekcijski rub uz prezervaciju sfinkternog kompleksa nego i distalni rub resekcije poštivajući onkološke principe negativnog resekcijskog ruba. U ovoj tehnici od izuzetne je važnosti poštivati princip TME zbog izbjegavanja potencijalnog pozitivnog dubokog ruba resekcije.
U KBC-u Rijeka prvu takvu operaciju napravili smo u rujnu 2019. godine. Do svibnja 2022. ovom tehnikom operirano je 28 bolesnika koji su prethodno visoko selektirani. Ovisno o slučaju koristi se ili pristup sa jednim operacijskim timom ili dva tima (two team approach) Prikazati ćemo naše rezultate te početno iskustvo sa TaTME tehnikom.

HAEMORRHAGIC SHOCK FOLLOWING A RIGHT HEMICOLECTOMY IN A JEHOVAH`S WITNESS

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Bleeding is a common surgical complication. Severe and unrecognized cases may lead to hemorrhagic shock. Complex surgeries have an increased bleeding risk. Preoperatively, each patient should be familiar with possible complications and their management. However, patients who refuse treatments due to religious beliefs are not rare.
A 57-year-old female patient, a Jehovah's Witness, underwent a right hemicolectomy. The indication for surgery was a hepatic flexure tumor, and previous medical history noted

hypertension and hypothyroidism. A latero-lateral ileotransverse anastomosis was made with a stapler. No intraoperative complications were noted. On the second postoperative day, the patient's general condition worsened. A significant drop in red blood cells (erythrocytes 2,06x1012/L, hemoglobin 58 g/L, hematocrit 0,169) was noted. Intraabdominal bleeding was suspected. Due to her religious beliefs, the patient refused to receive a blood transfusion and was immediately reoperated. During the revision operation, bleeding was found in the area of the stapler anastomosis, which was further sutured. A protective bipolar ileostomy was formed. The further postoperative course was uneventful. On the twelfth postoperative day, the patient was discharged.
Religious beliefs should always be discussed with a patient preoperatively to ensure no conflict between the patient's beliefs and medical procedures. Alternative fluid expanders should be considered in some cases. Hemodynamic instability warrants an immediate reaction and management.

ICG IMAGING: TREND OR GOLDEN STANDARD?

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In the age of modern surgery, where we are working every day to improve surgical techniques for better treatment outcomes, and especially in laparoscopic surgery, more and more methods are available that allow us to better assess the outcome of surgery. One of these methods is ICG fluorescence imaging. ICG fluorescence imaging allows us to evaluate the perfusion of the target tissue through fluorescence, and thus we can further assess the quality of the tissue and thus the outcome of the operation. Indocyanine green is non-toxic, it binds to albumin which means it is ideal for angiography as it remains within vascular structures. It is removed from bloodstream by the liver and has a half-life time of four minutes which means it can have repetitive use. Its most common clinical use is the evaluation of tissue perfusion, imaging of lymphatic and anatomical structures. Numerous meta-analytical studies have been completed over the past two years, indicating that there is a statistically significant difference in reducing the number of complications in ICG-treated patients compared to non-ICG-treated patients. ICG imaging allows us a very simple method of assessment that does not increase the duration of surgery, does not significantly affect the patient's recovery and reduces the number of complications, especially in laparoscopic colorectal surgery. Therefore, the use of ICG imaging as a standard method in both laparoscopic and open surgery should be considered.

RECTAL PROLAPSE-LITERATURE REVIEW,CASE REPORT

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Background: *Rectal prolapse is defined as a protrusion of all layers of the rectum through the anus, manifesting as concentric rings of rectal mucosa with prevalence . prevalence of 0.25 to 0.42 % in adult population. It is associated with abdominal discomfort, incomplete bowel evacuation, mucus and/or stool discharge associated with altered bowel habits, a “mass” that prolapses through the anus- reduce spontaneously or require manual reduction. There are a number of surgical options for treating rectal prolapse, which to choose depends on the patient’s age and general condition as well as understanding the patient’s symptoms, habits and expectations after surgery. Preoperative workup includes physical examination, radiographic studies, colonoscopy and pelvic physiology studies.*
After preoperative workup adequate surgical approach (transabdominal vs. perineal, open vs. minimally invasive, anterior vs. posterior rectal mobilization, suture vs. mesh rectopexy eetc.)can be selected.

Case presentation: *A 67-year-old female presented to the proctology office with protruding mass at anal verge for 15 years and fecal incontinence. Biofeedback therapy was performed, but without success.*
We performed laparoscopic ventral mesh rectopexy procedure. Surgery and postoperative course proceeds without complications. Wounds heal without signs of infection. She was discharged on the 6th postoperative day from the hospital.
Conclusion: Laparoscopic ventral mesh rectopexy procedure can be an appropriate surgical procedure in rectal prolapse treatment.

SLOW TRANSIT CONSTIPATION-WHEN IT BECOMES A SURGICAL PROBLEM?/ „SLOW TRANSIT“ KONSTIPACIJA-KADA POSTAJE KIRURŠKI PROBLEM?

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Uvod: Konstipacija je učestao problem modernog doba. O funkcijskoj konstipaciji govorimo kada pacijent bez jasnog opstruktivnog faktora ima probleme s crijevnim pražnjenjem, a ponajprije u smislu neredovite i tvrde stolice. Uzroci poremećaja su multifaktorijalni (npr. starost, prehrana, nedovoljna fizička aktivnost, lijekovi, psihijatrijski poremećaji itd.). Ekstremno mali postotak pacijenata pati od tako teške, tvrdokorne konstipacije, refraktorne na sve linije konzervativnog tretmana sa značajnim narušenjem kvalitete života da postanu kandidati za kirurško liječenje koje prema današnjim smjernicama predstavlja totalna kolektomija s ileorektalnom anastomozom.

Prikaz slučaja: Prikazujemo slučaj 39-godišnje pacijentice koja boluje od dugogodišnje teš-

ke konstipacije refraktorne na konzervativni tretman. Klinička slike te dijagnostička obrada koja je među ostalim uključivala i kolonoskopiju, „colon transit time“, MSCT kolonografiju i manometriju anorektuma ukazala je na inerciju kolona. Na temelju mišljenja multidisciplinarnog konzilija koji je uključivao i psihologa, te uzimajući u obzir aktualne smjernice o liječenju tvrdokorne konstipacije donesena je indikacija za kirurško liječenje. Učinjena je laparoskopska totalna kolektomija s ileorektalnom anastomozom. Operacija kao i poslijeoperacijski oporavak su prošli uredno. Nekoliko mjeseci nakon operacije broj stolica se stabilizirao na 1-2 dnevno te je postignut zadovoljavajući klinički uspjeh.

Diskusija: Funkcijska konstipacija je iznimno rijetko indikacija za operacijsko liječenje. S obzirom na izrazito mutilirajući i ireverzibilni zahvat totalne kolektomije kod donošenja indikacije za operaciju potreban je izraziti oprez te strogo praćenje aktualnih smjernica jer se jedino u tim slučajevima može postići zadovoljavajući uspjeh operacije.

ULOGA FISTULOSKOPIJE U SFINKTER POŠTEDNIM TEHNIKAMA KOD LIJEČENJA ANALNIH FISTULA

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Kompleksne analne fistule predstavljaju problem za kirurga i bolesnika. Ne postoji zlatni standard u liječenju ove patologije.
U poslijednjem desetljeću pojavilo se više tehnika liječenja koje za cilj, osim liječenja same fistule, imaju i zadatak čuvanja sfinkternog mehanizma i očuvanja kontinencije. Fistuloskop se inicijalno koristio u sklopu VAAFT tehnike, međutim zahvaljujući heterogenosti patologije, sve se više koristi i kao alat komplementaran ostalim sfinkter poštednim tehnikama. Prednost ovakve hibridne tehnike je iskorištavanje prednosti direktne vizualizacije fistule u kombinaciji sa različitim metodama zatvaranja unutarnjeg otvora i zbrinjavanja patologije intersfinkteričnog prostora. Također, vizualizacija fistule iznutra omogućava i precizno uništavanje zidova fistule naročito kod dugačkih i razgranatih fistuloznih kanala što pridonosi cijeljenju i smanjuje broj rekurentnih odnodno perzistentnih slučajeva. Najvažniji aspekt ovakvog pristupa je očuvanje sfinkternog aparata kako bi se izbjegla inkontinencija. Fistuloskopija je vrijedan alat u liječenju analnih fistula te bi se kao takav trebao koristiti u kombinaciji sa ostalim sfinkter poštednim tehnikama.

4. Hitna kirurgija / Zanimljive teme u liječenju apendicitisa */ Emergency surgery / Hot topics in appendicitis treatment*

INTERVAL APPENDECTOMY IN COMPLICATED APPENDICITIS: YES OR NOT?

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The decision of whether to perform urgent or interval appendectomy in complicated appendicitis presents an issue that still must be optimized and standardized. Appendicular abscess and phlegmon are clinical presentations where surgeons fall apart in deciding on whether to perform an urgent or delayed appendectomy. The literature review was conducted, and the perioperative course was evaluated. The urgent appendectomy was accompanied by a longer operative time and a higher rate of conversion to bowel resection. On the other hand, according to some updated studies the rate of surgical site infection, intraabdominal postoperative abscess, hospital stay, and mortality rate were found comparable. Some even suggest a lower rate of wound infection and pelvic abscesses in interval appendectomy. Although the urgent appendectomy has become a routine operative procedure even in cases of complicated appendicitis it can be associated with higher operative time and conversion rate to unplanned procedures. Therefore, the interval appendectomy presents a practical and realistic treatment solution in patients with complicated appendicitis.

LAPAROSCOPIC APPENDECTOMY BETWEEN 1ST JANUARY 2021 AND 31ST DECEMBER 2021 AT UNIVERSITY HOSPITAL CENTRE OSIJEK- RESIDENTS VS EXPERT SURGEONS

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Laparoscopic appendectomy is one of the first laparoscopic procedures performed by resident surgeons. The scope of comparison convers operations performed by expert surgeons and those performed by residents within a one-year period. Between 1 January 2021 and 31 December 2021 there were 57 patients with acute phlegmonous appendicitis that underwent laparoscopic appendectomy. The patients were divided into two groups: those operated on by experienced surgeons (38 patients) and those operated on by residents (19 patients). For the purposes of comparison, the duration of surgery in minutes and the length of hospital stay in days were considered. There was no statistically significant difference between duration of surgery and length of hospital stay between expert surgeons and surgery residents. Furthermore, positive correlation (Rho=0,305, P=0,02) was found between duration of surgery and length of hospital stay in overall sample while significant positive correlation (P=0,01) was found in group of expert surgeons.
To conclude, early education of surgery residents in laparoscopic appendectomy supervised by experienced surgeon results in shorter duration of surgery as well as hospital stay, and thus, better outcome for patient.

RARE COMPRESSION SYNDROMES IN ABDOMINAL SURGERY AND MINIMALY INVASIVE SURGICAL TREATMENT:REPORTS OF SUPERIOR MESENTERIC ARTERY SYNDROME AND MEDIAN ARCUATE LIGAMENT SYNDROME

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There are several rare syndromes in abdominal surgery that are notoriously difficult to diagnose but have devastating effects on patients, therefore they deserve wider attention. Superior mesenteric artery syndrome (SMAS) is the result of compression of the horizontal duodenum between the aorta and the superior mesenteric artery leading to chronic, intermittent duodenal obstruction. It affects young people, especially after cervical spine injury with quadriplegia, after scoliosis surgery, and anorexia. Symptoms are mainly postprandial pain, early satiety, nausea, vomiting, and progressive weight loss.
Median arcuate ligament syndrome (MALS) is compression of the celiac trunk below the ligament due to an anomaly or variation of origin of the artery. It similarly affects young patients, especially females, manifesting with postprandial pain, hiccups, belching, bloating, weight loss, and even extraintestinal vagal symptoms such as tachyarrhythmias, palpitations, and coughing.

Herein we present cases of two patients who both had extensive medical workup including complete endoscopy, neurology status, psychological evaluation, and radiology imaging including computed tomography angiography (CTA). Even after comprehensive testing, only CTA provided the key to the correct diagnosis. Patients were finally referred to the surgeon and scheduled for laparoscopic surgery. In the case of SMAS, we did laparoscopic duodenojejunostomy. In the case of MALS, we did laparoscopic decompression of the celiac trunk and resection of the celiac plexus.
Recovery was uneventful in both cases and patients went home on postoperative days 6 and 3 respectively.
SMAS and MALS should be part of differential diagnosis in a workup of young patients with postprandial epigastric pain, food fear, unintentional weight loss, and normal upper gastrointestinal endoscopy finding.

5. Minimalno invazivna (video asistirana) torakoskopska kirurgija */ Minimally invasive thoracoscopic surgery*

ANESTHESIA FOR VATS

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VATS is now widely used approach for many thoracic operations.
The advantages of VATS are less postoperative pain, fewer analgetics requirements, less pulmonary complications and shorter hospital stay and enhanced recovery.
With the introduction of VATS in our hospital, convectional goals of anesthetic management – satisfactory surgical field and oxygenation during OLV was not enough anymore.
Now we have new goals: faster recovery and earlier return to normal activity.
Can anesthesiologist make a difference?

VATS SEGMENTECTOMY- INDICATIONS AND LIMITATIONS

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VATS segmentectomy carries surgical, oncological, and physiological advantages; however, there are still areas of controversy, particularly regarding oncological outcomes.

The indication of VATS segmentectomy include treatments for early-stage lung cancer, metastatic lung tumors, and a variety of nonmalignant diseases.
In this presentation, we will present our experiences and our views on VATS segmentectomy and we will discuss the present state of VATS segmentectomy, with a focus on past studies, literature review and ongoing trials.

ANESTHESIA AND VATS THYMECTOMY

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Even in the 1990's the thoracoscopic surgery imposed itself as an ideal alternative to thymectomy by sternotomy and transcervical approaches for thymectomy. Anesthetic approach to thymectomy itself had changed during the years and it modified according to modern surgical techniques. Today, thymectomy is the standard of curing thymoma, with thymoma found in 15 % of patients with myasthenia gravis but also an integrated part of therapy of patients with seropositive myasthenia gravis. There are no existing precisely defined anesthesia procedures during the VATS thymectomy. It is a great challenge to the anesthesiologist, especially in cases of underlying myasthenia gravis. Since the disease is mainly affected in neuromuscular junction, the main role of anesthesia is to regulate intraoperative neuromuscular blockade and reversal at the end of surgery. Postoperative complication, to be avoided, is a myasthenic crisis which would require prolonged mechanical

ventilation. Other features of anesthesia: need for DLT and OLV, monitoring of neuromuscular function, avoiding of triggers of illness, good postoperative pain control. Good clinical preoperative assessment of the patient in accordance with neurologist, determination of timing of surgery, and having in mind all the above, we can avoid most complication. In the period from 2014. to 2022. at Zadar General hospital 20 VATS thymectomies were successfully performed.

THE EVOLUTION OF MINIMALLLY INVASIVE THORACIC SURGERY IN UNIVERSITY HOSPITAL SPLIT

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Video-Assisted Thoracoscopic surgery (VATS) is a safe and effective surgical approach for great majorities of thoracic surgical procedures. Nowadays, VATS can be accomplished with only a single incision, resulting in less postoperative pain and paresthesia, better cosmetic results, and greater patient satisfaction. The learning curve of more complex endoscopic thoracic procedures is extremely long, and continuous education of thoracic surgeons in this area is necessary.
This single centre retrospective review shows the progress of the introduction of minimally invasive techniques in the treatment of surgical diseases of the thorax.
In the period from 1994 to the present, we have introduced most minimally invasive procedures in the treatment of diseases of the lungs, mediastinum, diaphragm, pleura, pericardium, esophagus, and GERD. All the knowledge and skills learned around the world have been transferred to a relatively small number of treated patients, which required considerable effort and teamwork. We are also proud of the fact that we have transferred and continue to transfer all the knowledge and skills of complex procedures to our colleagues in the country and the region.
Our aim is to look for even less invasive approaches in the surgical treatment of patients by including them in the ERAS protocols and using even more innovative approaches.

RUPTURED GIANT PULMONARY CYST-VATS TREATMENT

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A cystic pulmonary lesion is a round circumscribed, well-defined air-containing space which refers to the presence of an area of low density of 1 centimeter or more in diameter. Cysts may be seen in patients with different pulmonary disorders, such as honeycombing, pneumonia (pneumatoceles), and cystic bronchiectasis. They may be also associated with lungs of the elderly, or they may also be related to trauma with laceration or parasitic infections. The diagnosis should be based on the number, shape, size, morphology, and distribution of cysts within the lung and should always be related to the clinical history of the patient, to provide the most helpful diagnostic clues for diagnosing specific cystic lung diseases. Pneu-

mothorax is a frequent manifestation of cystic lung disease and may be the initial event calling attention to its presence. An 85-year-old man was referred to our specialist clinic with severe dyspnea, subcutaneous emphysema and radiological confirmation of total right pneumothorax. He was a lifelong non-smoker, with known exposure to asbestos. There was no family history of chronic obstructive pulmonary disease or emphysema. Chest tube placement was performed in the ED and massive air-leak (3000 ml/min) was measured on our negative pressure device. Postoperatively, a high-resolution CT scan of showed numerous, thin-walled cysts in both lungs with one giant perforated cyst measuring 5x6 cm on the anterior surface of the left upper lobe. Two port VATS atypical resection of the upper lobe was performed the next day and the air-leak was measured 10 ml/min on the first postoperative day. and it felt down to 0 ml/min on the second postoperative day. Control CXR showed full lung expansion and chest tube was removed on day 3 after the operation, and the patient was discharged the next day without symptoms. In conclusion, VATS procedure is a feasible method for treatment of ruptured lung cysts, especially in elderly population.

VATS IN TREATMENT OF COVID-19 PATIENTS WITH TENSION PNEUMOMEDIASTINUM

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Aim: *Tension pneumomediastinum is a rare but potentially lethal condition in critically ill patients. We are presenting six patients with SARS-Cov-2 infection and tension pneumomediastinum treated by sub-xyphoid VATS decompression.*
Patients and method: We have treated 6 (4 males, 2 females) patients with SARS-Cov-2 infection and tension pneumomediastinum from January to October 2021th. Patients were at age of 65 to 79 years. All patients were intubated and on mechanical ventilation. The first signs of tension pneumomediastinum were subcutaneous emphysema followed by haemodynamic instabillity untreatable by conservative treatment. Diagnosis was confirmed by MSCT that revealed diffuse subcutaneous emphysema with massive pneumomediastinum and Earth-Heart sign. Emergency mediastinal decompression was indicated. We approached into the mediastinum through 2-3 cm long subxyphoid incision. Blunt dissection of entire retrosternal space was performed under visual control of 10 mm endoscope. Thoracic drain 24 Fr was postioned below the sternum to the manubrium and connected to negative suction of – 1.8 kPa . Check up MSCT was done on the first postoperative day.

Results: *Operative time was 11-16 minutes. Pneumomediastinum resolved rapidly after the operation, followed with haemodynamic recovery in all the patients and this was confirmed by MSCT. One patient was discharged on 10th POD but returned with increased swelling of the chest and neck. CT scan revealed massive tension pneumomediastinum. He was reoperated but died 10 days later. Four patiens died due to other Sars-Cov-2 complications, and two were discharged after complete clinical and radiographyc resolution.*
Conclusions: VATS subxyphoid mediastinal decompression is safe, simple, efficient and fast treatment od tension pneumomediastinum in patients with Covid 19 infection. Mortality still remains high due to other complications of Covid 19 infection.

ECTOPIC PARATHYROID ADENOMA-LEFT SIDED VATS

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Ectopic mediastinal parathyroid adenomas are rare, but present potentially life threatening condition. If the patient has hypercalcemia, usually accompanied with high blood pressure, complete resection is indicated. Most of these patients are young, with no other comorbidities. Mediastinal parathyroid adenomas can usually be removied via cervical approach, but in some cases when the adenoid tissue is located deep within the thoracic cavity, transthoracic approach is indicated. We describe the case of 34 year old male with parathyroid adenoma located in the left superior mediastinum, between the common carotid artery and left subclavian artery, superiorly to the aortic arch. Patient had previously undergone right lower parathyroid gland extirpation for hyperparathyroidism, but his parathyroid hormone levels stayed intact. He presented with bilateral facial paresis and high serum calcium (2.76 mmol/L) and parathyroid hormone levels (9.8 pmol/L). MRI revealed the above mentioned intrathoracic mass, and left-sided VATS was indicated for complete excision. During the operation, the recurrent laringeal nerve, vagal nerve and phrenic nerve were preservated, and complete resection of the mass was achieved. The postoperative course was uneventful and the patient was discharged on 4th POD without any problems. The immediate postoperative serum PTH and calcium levels were the same, but had decreased to 5.8 pmol/L and 2.38 mmol/L respectively before the discharge. In conclusion, VATS procedure is feasible method for the excision of symptomatic mediastinal parathyroid adenomas.

VATS TREATMENT OF MEDIASTINAL TUMORS

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Since introduction of video-assisted thoracoscopic surgery (VATS) surgeons have mastered thoracoscopic approach for treatment of different lung diseases and have seen its benefits. Once minimally invasive treatment becomes the preferred daily routine, surgeons naturally tend to expand VATS indications. In general VATS is a safe and effective method to evaluate, biopsy, and in most cases resect benign lesions of the anterior and posterior mediastinum. It poses a challenge with regards to complete malignant tumor resection and many thoracic surgeons are reluctant to perform VATS resection. However, with the advancement in equipment and experience, it is now appropriate to say that surgeons should try to use VATS to remove some resectable malignant tumors with a curative intention.

5. Kako izbjeći komplikacije
/ How to avoid complications

OPIOID FREE ANAESTHESIA IN LAPAROSCOPIC SURGERY: HAS THE TIME COME FOR A PARADIGM SHIFT?

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Opioids have been a first-line therapy for surgical pain control throughout history. They were the mainstay of balanced anesthesia, but recently, concerns about their side effects have been raised. Opioid mechanism of action is achieved by binding to specific opioid receptors, of which three principal classes are μ, κ and δ which have variable affinity for endogenous (synthesized in the central nervous system) opioid-like molecules - endorphins, enkephalins and dynorphins.
Most common adverse events due to opioid use in the perioperative period are opioid induced hyperalgesia, respiratory depression which can cause respiratory failure and arrest due to alveolar hypoventilation and postoperative nausea and vomiting (PONV). They are more common in specific populations, some of which are already at an increased risk for perioperative complications such as elderly, obese and those with opioid abuse history receiving substitute therapy. These groups of patients are primary targets for opioid-free anesthesia (OFA), but its benefits are present in all patient groups.
In obese patients, chronic recurrent hypoxia and sleep disruption appear to enhance sensitivity to pain and hypoxia may potentiate opioid analgesic effect, while elderly patients are at risk for opioid induced respiratory depression due to altered pharmacokinetics.
Opioid free anesthesia (OFA) is an alternative approach in which various classes of drugs with different antinociceptive mechanism of action (NMDA antagonism - ketamine; calcium and sodium channel blockade - magnesium and lidocaine; α2 adrenergic receptor activation - clonidine and dexmedetomidine; inhibition of pain related neurotransmitter release - pregabalin and gabapentin; blockade of inflammatory pathways - dexamethasone and NSAIDs) provides similar levels of intraoperative analgesia with reduced incidence of perioperative opioid-related adverse events and potentially lower incidence of malignant disease recurrence.
In patients undergoing laparoscopic procedures, OFA is associated with statistically significant decrease in VAS score, postoperative pethidine consumption and incidence of PONV compared with patients which received opioids during surgery.
University hospital Dubrava OFA protocol is based on intraoperative administration of dexmedetomidine, ketamine and lidocaine as general anesthesia adjuvant drugs, with infusion rate or intermittent bolus frequency rate adjusted according to EEG derived indices of depth of sedation and nociception. With this protocol, satisfactory analgesia is achieved during the postoperative period, with reduced risk of postoperative anesthesia related complications linked to administration of opioids.

6. Kirurgija hernija trbušnog zida
/ Abdominal wall hernia

USPOREDBA TEP PROCEDURE I LICHTENSTEIN METODE KOD LIJEČENJA INGVINALNIH HERNIJA - NAŠE PETOGODIŠNJE ISKUSTVO

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Operacija ingvinalnih hernija je jedan od najčešćih operacija u digestivnoj kirurgiji. Kako je za trajanja Covid pandemije veliki broj elektivnih operacija odgođen, ista sudbina je zadesila i bolesnike koji boluju od ingivnalne hernije te su zbog toga u nemogućnosti obavljati svoje svakodnevne poslove te se baviti fizičkom aktivnošću kao i sportom. Brzi oporavak poslije operacije je pacijentima jedna od najbitnijih stvari kao i povratak na posao.
Laparoskopska hermnioplastika metodom TEP je procedura koja se primjenjuje već desetljećima, ali se zbog specifičnosti prostora u kojemu se obavlja operacija, njena popularnost među kirurzima nije velika. TEP proceduru izvodimo unatrag 5 godina te je obavljena na više od 150 pacijenata, prvenstveno kroz jednodnevnu kirurgiju.
Prikazat ćemo naše rezultate te ih usporediti sa rezultatima Lichtenstein tehnike na globalnoj razini. Također ćemo pokazati neke savjete i postupnik kako bismo olakšali i približili tehniku kolegama.

CLOSURE VS NON CLOSURE OF HERNIA DEFECT DURING LAPAROSCOPIC VENTRAL HERNIA REPAIR WITH MESH

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Background: *With the development and increased experience in laparoscopy, incisional and ventral hernia repair is shifting more to minimal invasive laparoscopic surgery. Intraperitoneal on-lay mesh technique (IPOM) has been widely used to perform a tension-free repair but several studies reported high incidence of visible postoperative cough impulse and seroma formation.*
Rationale for closure of hernia defect is reducing seroma formation and mesh bulging and more overlapping of defect with on-lay intraperitoneal mesh (IPOM plus). The late can be performed by percutaneous and intracorporeal closure of the defect.
The aim of this review was to compare these two approaches to see whether there are advantages of certain technique. Also, we have showed two own cases with a very good results.

Methods: *Review of the literature was performed searching PubMed data base. We retrieved and analyzed articles, using key words: laparoscopic ventral hernia repair, defect closure.*

Results: *There are several studies, but not many meta-analyses or high-volume randomized control trials regarding this issue. Majority of studies emphasize some advantages of IPOM plus technique such as fewer adverse events, lower rate of seroma and shorter duration of*

hospital stay as well as lower recurrence rate. On the other hand, longer operating time is reported for IPOM plus.

Conclusions: *IPOM and IPOM plus technique are feasible, safe and evolving. Although majority studies show advantages of late technique, as well as some meta-analyses, not to many reach statistical significance. Large volume randomized trials with narrow criteria for hernia size on well-defined population would be appropriate. Nevertheless, for individual patient approach, both techniques should be well appreciated.*

DOES TYPE OF MESH FIXATION LEAD TO RECURRENCE?

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Background: *laparoscopic hernia repairs are being more and more conducted year after year around the world due to their minimally invasiveness. Main benefits include early return to everyday activities, less postoperative pain, lower incidence of chronic groin pain and favorable cosmetic results.*

Aim: *to investigate does type of mesh or mesh fixation/no fixation has an impact on recurrence rates*

Materials and methods: *a review of major databases (PubMed, Cochrane Library, Springer) has been conducted and most relevant articles on topic of fixation/no fixation and types of mesh have been analyzed. Search terms included "TEP", "TAPP", "mesh fixation", "type of mesh", "recurrence after tep".*

Results: *8 articles were singled out for the purpose of this review. 3 articles compared mesh fixation methods (fibrin glue and staples) in laparoscopy. Their pooled results indicated no difference in postoperative complications, but fibrin glue groups had an earlier start of daily activities as well as less pain scores. 3 studies analyzed no fixation of mesh in TEP herniorrhaphy and pooled results showed no difference between fixation and no fixation of mesh. At last, 2 studies analyzed different mesh types used in laparoscopic hernia repairs and their impact on recurrence and pain. One of them showed no difference in recurrence rates in different prosthetic materials while the other one concluded that lightweight mesh increased the risk of recurrence after TEP hernia repair in comparison to heavyweight ones.*

Conclusion: *TEP without fixation of mesh is safe and does not cause higher recurrence rates. Two large, randomized studies are currently in progress to assess the impact of biological, lightweight, and heavyweight meshes on recurrence rates.*

CHRONIC GROIN PAIN AFTER HERNIA REPAIR

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Treatment of chronic groin pain after hernia repair is challenging. Numbers differ, but if we combine the percentages after different methods of herniorrhaphy, almost every sixth patient develops chronic groin pain to a certain degree. Assessing the degree of pain is still a problem because there are no universally accepted scales. A couple of percent of patients develop disabling pain, but since there are over 20 million of hernia repairs worldwide annually, that percentage presents a significant problem. Pain is usually caused by operative injury to nerves (by fixation of meshes during laparoscopic repairs or stuck in sutures during open repairs). There is also a possibility of nerves being entrapped in mesh after it has shrunk, this sometimes being referred to as “meshoma”. There are several options of pain management, surgery being the last one. The first step should be analgesics, first line being nonsteroidal anti-inflammatory drugs, proceeding to gabapentinoids, tricyclic antidepressants etc. Second step should be blockages of nerves, using corticosteroids and lidocaine combinations, as well as different methods of ablation. As said earlier, surgery is the last step in treating these patients, and the type of surgery depends on the approach. If chronic pain occurred after anterior approach, mesh removal and triple neurectomy is advised. If posterior approach was used, laparoscopic mesh removal is advised, along with fixating staples, or, in high volume centers, laparoscopic retroperitoneal triple neurectomy.

TESTICULAR AND SEXUAL FUNCTION AFTER TEP, TAPP AND LICHTENSTEIN INGUINAL HERNIA REPAIR

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Background: *Although largely used, the impact of inguinal hernia mesh repair both open and laparoscopic, on testicular and sexual functions is still not clear. These issues are becoming more important as parameters of surgical outcome. The use of prosthetic mesh leads to chronic foreign-body fibroblastic scar tissue in order to improve strength of abdominal wall, but long-term effects regarding testicular and sexual function/fertility are still not well known. Incidence rates of sexual dysfunction and pain with sexual activity after inguinal hernia repair in males vary considerably. Even less is known regarding testicular function/fertility.*

Methods: *Review of the literature was performed searching PubMed base. We retrieved and analyzed articles using key words: inguinal hernia repair, sexual, testicular and function.*

Results: *Sexual function is generally assessed by different questionaries exploring comple-*

tion of intercourse, pain with erection and ejaculation, groin pain and quality of life. Testicular functions are tested by testicular perfusion, testicular volume, serum level of antisperm antibodies and reproductive hormones and semen analyses. Majority of studies showed that mesh hernia repair improves quality of life, sexual function and testicular perfusion but can also lead to similar symptoms as a long-term complication of the operation, although in far less group of patients.

Conclusions: *Review of literature shows that there are no hard proofs that mesh inguinal hernia repair is a cause of significant clinical impairment on sexual and testicular functions, with no major differences between two laparoscopic techniques. Some differences were noticed between open and laparoscopic techniques regarding sexual function, but not in a long term.*

NOVE METODE LIJEČENJA DIJASTAZE RAVNOG TRBUŠNOG MIŠIĆA

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Dijastaza ravnog trbušnog mišića osim estetskog problema može biti i značajan zdravstveni problem. U slučajevima kada ne nalazimo prisutnu viseću kožu indicirana je rekonstrukcija minimalno invazivnim tehnikama endoskopske kirurgije. Uz istodobnu pristupnost hernijacije, indikacija za operacijsko liječenje dijastaze ravnih trbušnih mišića je i klinički značajna dijstaza, koja se ponaša kao velika hernija te onemogućava urednu funkciju trbušnog zida. Tehnike liječenja možemo podijeliti na ekstraperitonealne metode i epifascijalne metode liječenja. Ekstraperitonealne tehnike se temelje na rekonstrukciji trbušnog zida u prostoru ispod razine ravnog trbušnog mišića, dok se epifascijalne temelje na rekonstrukciji trbušnog zida u prostoru iznad gornje fascije ravnog trbušnog mišića. Ekstraperitonealne metode su eTEP, TAPP, eMILOS, epifascijalne su ILAR, ELAR, TESLAR, REPA i SCOLA.
Izbor metode izbora ovisi o tehničkim dostupnostima operatera te mogućoj istodobnoj prisutnosti hernijacije. S obzirom na broj prisutnih novih tehnika te mali ukupni broj liječenih bolesnika još se ne može sa sigurnošću tvrditi koja je od navedenih optimalna za liječenje dijastaze ravnih trbušnih mišića.

TRANSABDOMINAL PREPERITONEAL INGUINAL HERNIA REPAIR AS A DAY SURGERY PRACTICE

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Introduction: *Inguinal hernia repair is probably the most commonly performed general surgery procedure worldwide. TAPP surgery can be considered a gold standard in inguinal hernia repair. According to European guidelines, inguinal hernia surgery should be considered*

as a day-case surgery whenever possible. Up to 300 hernia operations are performed each year in Iatros Medical Center. In our clinic the standard TAPP laparoscopic technique as a day surgery is performed. Since May 2020, we have been actively collaborating with the Hernia med registry to follow up results of hernia repair.

Methods and patients: *Between Sept 2020 and Feb 2022, according to data entered in Hernia med registry, 72 patients (69 male and 3 female) were operated, using the TAPP technique. 21 to 86 years old underwent 100 hernioplasty (44 unilateral inguinal hernias and 27 bilateral inguinal hernias), 35 hernias were direct (medial), and 65 hernias were indirect (lateral), 92 primary and 8 recurrent hernias. Prophylactic antibiotics were given as a single preoperative dose. Patients were operated by three experienced surgeons. All the patients were operated on under general anesthesia as day surgery cases. A Strict clinical protocol is followed for day surgery practice. Results. The median age of patients was 53 years old, ASA 1-3. Participants were followed-up at 7 days and 12 mounts. There was no recurrence during follow- up of 2 to 17 months. Subsequent follow- up will be five years after the surgery. One patient was diagnosed with postoperative dysesthesia in the right leg- dermatome L3, managed conservatively. Seven patients was diagnosed with acute pain (VAS 1-3) 7 days after surgery, two patients had a postoperative seroma and five patients had a hematoma around the ports, managed conservatively. Conclusion. Our experience and practice from abroad (UK, France and USA) show us that day-surgery is as safe as an overnight stay in laparoscopic hernia repair under a strict clinical protocol of a day surgery practice. Low postoperative complications rates were found in our series.*

LAPAROSKOPSKE HERNIOPLASTIKE: ISKUSTVA 2018.-2022.

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Uvod: Na našoj klinici se godišnje napravi skoro 200 hernioplastika i to su najčešće operacije po Lichensteinu, koje su jednostavne za izvođenje, lako i brzo se uče, operacija često kraće traje, a troškovi operacije su manji. Na Klinici smo prvu laparoskopsku hernioplastiku napravili 1993.g., a do svibnja 2022. učinili smo više od 1260 laparoskopskih hernioplastika.

Metode i materijali: Učini se retrospektivna studija o učinjenim laparoskopskim hernioplastikama u našoj ustanovi. Analizirani su tip hernije (recidiv/lokalizacija), kirurški pristup, fiksacija mreže, postoperativne komplikacije te incidencija recidiva.
Rezultati: Od početka 2018. do svibnja 2022. napravljeno je 196 laparoskopskih hernioplastika od strane 4 kirurga. Velika većina hernija je bilo obostrano (n=182, 92.9%), a tek manjina je bila recidivna (n=24, 12.2%). Kod svih hernioplastika primjenjen je ekstraperitonealni pristup (TEP), iako smo povjesno laparoskopske hernioplastike radili transabdominalnim pristupom (TAPP). Mrežica nije fiksirana u nijednoj operaciji, što smo prestali na razini Klinike već 2000. godine. Tijekom navedenog perioda nismo imali većih komplikacija a zabilježeno je dva slučaja recidiva (1.0%). Našim radom potvrdili smo kako fiksacija mreža ne utječe na razvoj recidiva hernija.

Zaključci: Smatramo kako sve recidivne preponske kile treba operirati laparoskopski. Dug

krivulja učenja, te nešto veća cijena glavni su razlozi zašto mali broj kirurga ne koristi endoskopsku hernioplastiku kao metodu izbora kod liječenja preponskih kila.

EXTENDED TOTALLY EXTRAPERITONEAL REPAIR (eTEP) FOR VENTRAL HERNIAS

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Conventional and popular surgeries for ventral hernias are open on-lay mesh hernioplasty, open retromuscular mesh hernioplasty (Rives-Stoppa procedure) and laparoscopic intraperitoneal mesh hernioplasty (IPOM). Evidence seems to suggest that retromuscular mesh hernioplasty has advantages over other procedures regarding recurrence rate. A minimally invasive approach has been developed for this setting where a mesh is placed in retromuscular space called extended Totally Extraperitoneal approach (eTEP). Our short-term results suggest that the eTEP technique can be adapted with the careful patient selection.

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