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Resident Paper Award

3D PRINTABLE DEVICE FOR 3D FACIAL SCANNING USING IPHONE TRUE DEPTH SENSOR: PRECISION ACCURACY AND APPLICABILITY TESTING

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Background: 3D scanning technology has become more affordable and easy to access. Even in our most popular computerized hand held device, an iPhone (Apple, Inc., Cupertino, Calif.), is already equipped with high precision and accuracy 3D scanner. But the usage in medical field is still lower than as it should be. One part of this may be due to user experience and understanding requirement of the process to obtain reliable result.

Objective: The purpose of this study is to build a reliable device that helps decrease human factor error while using iPhone for scanning 3D facial file which can be used by any level of user and also provide 3D printable file that reader cloud recreate and use in one's own setting.

Methods: 3 inexperience user (trainee) and 4 live subject (2 male, 2 female) underwent 3D facial scan with the iPhone and the iPhone with 3D printed device and also Artec spider as a reference device. Accuracy and precision was calculate by surface to surface root mean square distance error (RMSE). Total number of attempt, failure rate, and incomplete rate was also record and report.

Results: All methods show high precision with average RMSE of 0.59 mm (manually), 0.56 mm (with

3D printed device), 0.51 mm (Artec scanner) and high accuracy with average RMSE of 0.82 mm (manually), 0.84 mm (with 3D printed device). No significant in precision and accuracy was found between devices using iPhone in combination with the device decrease failure rate from 31% to 0%, incomplete rate from 22% to 0% and a faster time used from 57 to 42 sec. p value = 0.01, 0.03, 0.003, 0.0003 respectively.

Conclusions: iPhone true depth sensor with or without device is a capable 3D scanner with a great precision and accuracy, but with the helps of device most errors can be reduce to zero with a faster time. Therefore, a real potential clinical used may be achieved this way.

Disclosure: This is a self-experiment of Joe Areejunthawat, MD. The authors have no financial disclosures and no funding was received for this work and have no association with any of the mentioned companies.

ACCURACY OF 2019 ASGE GUIDELINE AND PREDICTIVE PARAMETERS FOR CHOLEDOCHOLITHIASIS BEFORE ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY

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Background: In 2019, the American Society for Gastrointestinal Endoscopy (ASGE) revised guideline of endoscopic management for common bile duct stone (CBDS). This study aimed to evaluate accuracy of 2019

ASGE criteria in evaluation of CBDS and to identify additional predictive parameters which might improve accuracy of criteria.

Methods: The study design was retrospective cohort study. The patients who suspected CBDS and treated with ERCP in service of Surgery Department of Thammasat University Hospital since January 2017 to January 2020 were enrolled. Clinical, laboratory, radiological and endoscopic data were retrospectively collected by chart review.

Results: Total of 565 patients were enrolled with 85.8% in high risk group by ASGE criteria. CBDS were found in 75.4% by ERCP. Overall high-risk criteria have sensitivity 90.6%, and accuracy 75.4%. CBDS on imaging was the most powerful criteria (odds ratio = 3.36, $P < 0.01$) with the highest sensitivity (68.1%), specificity (61.2%), and accuracy (66.4%). Post-cholecystectomy, age, and elevated alkaline phosphatase (ALP) level were significant factors in finding of CBDS by multivariate analysis. Newly proposed high-risk condition of “TB 1.8-4.0 and elevated ALP and CBD dilatation” had improved sensitivity (92.3%), accuracy (76.4%) and odds ratio (4.65) compared to original high-risk criteria (odds ratio = 3.90).

Conclusions: The high-risk criteria of ASGE 2019 guideline was the effective evaluation for patients with clinically suspected CBDS. Adding a new criterion of “TB 1.8-4.0 and elevated ALP and CBD dilatation” could make the high-risk criteria more sensitive to CBDS and also higher accuracy.

ACCURACY OF MIRROR IMAGE MAPPING OF LYMPHATIC TRACT FOR HIGH STAGE AND REDO LYMPHATICOVENULAR ANASTOMOSIS: INTRAOPERATIVE ANALYSIS

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Background: ICG lymphography (ICGL) generally has a non-linear pattern in advanced-stage lymphedema.

Despite the lack of ICGL, intraoperative lymphatic vessels have been discovered in several studies. The purpose of this work was to establish lymphatic mapping utilizing information from the contralateral limb and to illustrate the symmetry of lymphatic systems.

Methods: The data of 55 patients who underwent lymphaticovenular anastomosis (LVA) using contralateral mapping technique during 2018-2021 were retrospectively collected. The sensitivity, specificity, accuracy, negative predictive value, and positive predictive value of this technique were calculated and analyzed.

Results: Lymphatic vessels can be identified in 80.65% and 76.92% of the upper and lower limb presumed sites, respectively, using the contralateral mapping technique. The positive predictive value for successful one LVA anastomosis was 90.90% for the upper limb and 92.30% for the lower limb cases. This mirror image technique's accuracy was 91.67% and 93.55%, for upper limb and lower limb group, respectively. Between redo and new LVA cases, there was no statistically significant difference in the number of lymphatic vessels, type, diameter, or number of anastomoses.

Conclusions: For lymphedema patients with ICGL's non-linear pattern, LVA with contralateral mapping technique was an effective method.

Keywords: Lymphedema, Lymphaticovenular anastomosis, Lymphovenous bypass, Augmented reality

CORRELATION BETWEEN IMAGE-DEFINED RISK FACTORS AND SURGICAL COMPLICATIONS IN PATIENTS WITH NEUROBLASTOMA: A RETROSPECTIVE STUDY

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Background: Prognosis and treatment options of neuroblastoma (NB), the most common extracranial malignancy in children, depend on various factors used

for risk stratification. Currently, the International Neuroblastoma Risk Group classification system is used, which include tumor biology, pathology, and radiology called image-defined risk factors (IDRF). We speculated that anatomical evaluation by IDRF might be correlated with outcomes of surgery which meant surgical complications and the oncologic outcome.

Objectives: To investigate correlation between IDRF with surgical complications and oncologic outcomes in neuroblastoma patients.

Methods: The study retrospectively reviewed medical records and CT scans of neuroblastoma patients who underwent a surgery at Songklanagarind Hospital between 2002 and 2019. IDRF were analyzed for correlation with surgical complications, overall survival, progression free survival and local recurrence within 2 years. The study also analyzed for significance of IDRF change after neoadjuvant chemotherapy.

Results: There were 45 patients operated on in our institute during the study period, whose IDRF score at diagnosis ranged from 1-16 (median 8). For analysis, patients were divided into 2 groups according to the IDRF score: 16 (35%) in low IDRF (score 1-5) group and 29 (64%) in high IDRF (score 6-13) group. High IDRF group significantly had higher incidence of organ injury and more intraoperative blood loss. Upfront chemotherapy significantly reduced median IDRF score from 8 to 4 ($p < 0.01$). At post-chemotherapy, high IDRF was not only associated with higher operative complications, but also associated with 2-year overall survival and progress-free survival.

Conclusions: Neuroblastoma patients whose IDRF score, either at diagnosis or after neoadjuvant therapy, was 6 or higher had increased risk of surgical complication. In addition, IDRF score after neoadjuvant chemotherapy predicted oncologic outcomes. This evidence prompts pediatric surgeons to prepare more for safe surgery in this group of patient.

Keywords: Image-defined risk factors, Neuroblastoma, Surgical complications, Survival outcomes

DE NOVO HEPATITIS B VIRUS INFECTION AFTER LIVER TRANSPLANTATION FROM ANTI-HEPATITIS B CORE ANTIBODY POSITIVE DONOR: A 19-YEAR EXPERIENCE AT A SINGLE CENTER

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Background: Thailand is an endemic area of hepatitis B virus (HBV) infection, and there is a significant proportion of liver donors who were previously infected with HBV. These valuable organs are acceptable for liver transplantation to hepatitis B recipients. However, liver transplantation from anti-Hepatitis B core antibody (anti-HBc) positive donor to hepatitis B surface antigen (HBsAg) negative recipient is still controversial because there is currently no standard protocol in prophylaxis and long-term follow-up. The aim of this study is to evaluate the incidence of *de novo* HBV infection after liver transplantation from anti-HBc positive donor in non-hepatitis B recipient. Secondary outcome is to evaluate factors associated with *de novo* HBV infection in these recipients.

Methods: We retrospectively reviewed 388 patients who underwent liver transplantation between 2002 to 2020 at Siriraj Hospital. Among these, there were 67 HBsAg negative recipients receiving anti-HBc positive liver grafts. *De novo* HBV infection was defined as HBsAg positive detected after liver transplantation. Incidence of *de novo* HBV infection was calculated and associated factors, such as pre- and post-transplant hepatitis B immunoglobulin (HBIG) and antiviral, were evaluated.

Results: *De novo* HBV infection occurred in 11 recipients (16.4%). Median time to *de novo* HBV infection was 1,090 days. Post-transplant antiviral drug (lamivudine) was the only significant protective factor against *de novo* HBV infection ($p = 0.003$). There was no *de novo* HBV infection occurred in recipients who continuously received post-transplant lamivudine. While, 33.3% of recipients who did not receive and 27.8% of recipients who discontinued lamivudine during post-transplant period had *de novo* HBV infection. Recipients who received pre-transplant and post-transplant HBIG had a trend to have lower rate of *de novo* HBV infection (10.9% vs. 28.6%, $p = 0.070$ and 9.8% vs. 26.9%, $p = 0.065$, respectively). Pre-transplant anti-HBs and anti-HBc antibody status and pre-transplant antiviral were not significant factors related to *de novo* HBV infection.

Conclusions: Anti-HBc positive liver grafts are safe to be transplanted to HBsAg negative recipients

if they receive a suitable pre- and post-transplant prophylaxis especially post-transplant antiviral medication continuously.

Keywords: *De novo* hepatitis B infection, Anti-HBc positive donor, Liver transplantation

DEVELOPMENT AND VALIDATION OF AUTOMATED SUTURE QUALITY EVALUATION AND FEEDBACK GENERATION FOR END-PRODUCT IMAGES OF SUTURING PRACTICES

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Background: Onsite suturing skill teaching for medical student is fundamental and intelligible. During Covid pandemic, online teaching is adopted and applied to improve surgical skill.

Objectives: Self-training simple bench suturing model is an affordable method to improve suturing skill. An effectively progressive self-training requires objective feedbacks during the practice. Thus, this project aimed to develop an automated assessment tool of open wound sutures using a computer vision approach. This tool analyzed an image of the suture practice end-product and computed metrics relevant to suture quality.

Methods: Two datasets consisting of 240 images of suturing practice end-products were collected and annotated from both medical student and expert staff. A suture instance segmentation model, trained in this project, identified suture components (a wound, stitches, knots, and leftovers). Then a novel algorithm grouped components of a stitch together and computed the quality metrics. Both steps were evaluated for their precision at identifying suture components, and R^2 between the manually measured and predicted metrics, respectively.

Results: For the suture instance segmentation, 5-fold cross validation was conducted to obtain mean average precision. For both datasets, the best performing suture instance segmentation was the Mask R-CNN

with the ResNet50-FPN backbone, pre-trained using the COCO instance segmentation dataset. The medians of mean average precisions were 43:45 and 52:76 respectively.

Conclusions: Automated quality assessment of the suture practice is achievable by analyzing an image of the sutured model. The suture segmentation models can learn to segment on silk and surgical nylon thread. This automated assessment tool may support self-training suturing skill improvement of medical students and enable further large-scale analysis.

Keywords: Suturing skill, Online teaching, Self-training, Automated assessment

EFFECTIVENESS OF PROKINETIC AGENTS IN IMPROVING ABDOMINAL DISCOMFORT AT PRE- AND POST- COLONOSCOPY

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Background: Taking large volume of Polyethylene glycol-electrolyte lavage (PEG-EL) solution for bowel preparation possibly leads to unpleasant GI symptoms. Prokinetic agents are used to promote GI motility in order to decrease undesirable abdominal symptoms. The aim of this study was to examine the effectiveness of different type of prokinetic in alleviating abdominal discomfort in patients who undergo colonoscopy and evaluate the incidence of abdominal discomfort between 3 groups; only colonoscopy, with intervention and with esophago-gastroduodenoscopy (EGD).

Methods: This was a prospective randomized, double blind study conducted in Ramathibodi Hospital, Bangkok, Thailand between 1st March 2020 - 30th November 2021. All included patients were randomized into one of three trial arms (Placebo, Itopride or Domperidone). The patients were interviewed regarding the severity of abdominal discomfort during the preparation and post-colonoscopy period (at 1, 24, 48 and 72 hour) using a numeric pain rating scale (0-10 score).

Results: A total of 200 patients were included in the analysis (68 in Placebo, 77 in Itopride and 55 in Domperidone). The mean colonoscopy time was 18.46 minutes and most of the patients reported 0 pain score. The reported pain scores were comparable in all study

arms and different follow-up periods; preparation ($p = 0.206$), post-colonoscopy 1 hour ($p = 0.206$), post-colonoscopy 24 hour ($p = 0.837$), post-colonoscopy 48 hour ($p = 0.129$), post-colonoscopy 72 hour ($p = 0.324$). The incidence of abdominal discomfort at post-colonoscopy with intervention or EGD was higher but not statistically different from the other groups ($p > 0.05$).

Conclusions: Low incidence of abdominal discomfort during colonoscopy. Co-administration of prokinetic agents (Itropride or Domperidone) together with PEG-EL solution was not superior to the placebo in decreasing abdominal symptoms. The group of patients who underwent colonoscopy with intervention or EGD had higher incidence of abdominal discomfort but not statistically different. However, more sample size is needed in a further study.

EFFICACY OF USING MOSAPRIDE CITRATE WITH ORAL MECHANICAL BOWEL PREPARATION FOR COLONOSCOPY CLEANSING QUALITY IMPROVEMENT

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Background: Bowel preparation is an important factor for an optimal outcome of colonoscopy. Recently, polyethylene glycol (PEG) solution and sodium phosphate solution (SWIFF) has been in common use for bowel cleansing for colonoscopy, but some patients are intolerant of PEG or SWIFF because of taste or volume.

Objective: This study aimed to evaluate the efficacy and safety of adjunctive Mosapride citrate with oral mechanical bowel preparation for colonoscopy cleansing quality improvement.

Methods: We conducted a randomized, double-blind, Mosapride in addition to mechanical bowel preparation. Of 330 patients undergoing colonoscopy, 172 were randomized to an additional 10 mg of Mosapride citrate (Intervention group) to oral mechanical bowel preparation, and 158 received only oral mechanical bowel preparation (Control group). Patients completed questionnaires reporting the acceptability and tolerability of the bowel preparation process. The efficacy of bowel preparation was assessed by colonoscopists using a Boston Bowel Preparation Scale (BBPS).

Results: A total of 330 patients were included in the analysis. In the intervention group, optimal excellent bowel preparation rates were significantly higher compared with the control group (81.6% vs. 64.5%, $P < 0.05$). The incidence of adverse events was similar in both groups. Moreover, patients significantly favored Intervention group over control, reflected by less clinical symptoms of nausea, abdominal pain, abdominal distension and willingness to repeat the same regimen.

Conclusions: Mosapride citrate may be an effective and safe adjunct to oral mechanical bowel preparation for colonoscopy that leads to improve quality of bowel preparation and patient compliance.

Keywords: Mosapride citrate, Colonoscopy, Boston bowel preparation scale, Polyethylene glycol, Sodium phosphate solution

FACTORS AFFECTING AN ANASTOMOTIC LEAKAGE IN CURATIVE COLORECTAL CANCER SURGERY

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Background: Colorectal cancer is leading cause of cancer incidence and mortality in Thailand and worldwide. Surgery remains the mainstay treatment to achieved curative aim. Anastomotic leakage is the most dreadful complication following colorectal surgery because of increased risk of morbidity, mortality and overall impact in functional and oncologic outcomes. The etiology of anastomotic leakage is not clearly known; several factors were found associated with anastomotic leakage.

Objectives: This study aimed to find the incidence and factors affecting anastomotic leakage after curative colorectal surgery in Songklanagarind Hospital.

Methods: The retrospective cohort study was conducted, reviewed data from Hospital Information System (HIS). All patients who underwent curative colorectal surgery by a single colorectal surgeon between July 2003 and June 2021 were included. Patients who underwent emergency surgery and without a primary anastomosis, i.e. abdominoperineal resection, low anterior resection with end colostomy, total proctocolectomy with end ileostomy, transanal excision, were excluded. Clinical details in preoperative, intraoperative and postoperative period were recorded as risk factors. Primary outcome was an anastomotic leakage rate.

Results: In total, 968 patients were included in the study. The incidence of anastomotic leakage was 5.1%. To categorize by onset of leakage, there were 1.3% immediate leakage (positive air leak test), 2.6% early leakage (≤ 30 postoperative days) and 1.1% late leakage. By diagnosis, clinical leakage accounted for 3.2% and radiologic leakage for 0.5%. Among anastomotic leakage patients, there was 2.6% re-operation rate and 10% 30-day readmission rate. The factors significantly affecting anastomotic leakage were active smoking OR 2.77 (95% CI 1.34, 5.7), tumor location at rectum odd ratio (OR) 3.16 (95% CI 1.67, 5.98), distant metastasis OR 0.28 (95% CI 0.08, 0.91) and preoperative serum albumin < 3 g/dl OR 4.75 (95% CI 1.51, 14.97). Overall cancer-related survival (OS) with 5-year OS at 75.0% (95% CI 71.5%-78.2%) which is not different between those with and without leak (p -value by log-rank test 0.07).

Conclusions: This study, the incidence of anastomotic leakage was 5.1%. The factors affecting anastomotic leakage were active smoking, tumor location at rectum, distant metastasis and preoperative serum albumin < 3 g/dl. The adjustable factor was preoperative serum albumin which should be as assessed and improved to reduce risk of leakage.

Keywords: Anastomotic leakage, Factors, Colorectal surgery

PREDICTION SCORE FOR IN-HOSPITAL MORTALITY IN NECROTIZING FASCIITIS IN NAKORNPING HOSPITAL: DERIVATION AND INTERNAL VALIDATION

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Background: Necrotizing fasciitis (NF) is a rapidly progressive life-threatening skin and soft tissue infection. Currently, a risk score tool to predict in-hospital mortality in NF patients is not warranted.

Objectives: This study aimed to develop and internal validate a tool to predict in-hospital mortality in NF patients.

Methods: From January 2019 to December 2020, records of 293 NF patients were reviewed. Data including age, sex, location of lesion, laboratory results, comorbidity, pathogen organism, and in-hospital mortality were collected. Multivariable logistic regression was used to iden-

tify a set of prognostic factors. The results were weighed, assigned, and summed to a total risk score. Finally, three risk groups; low, moderate, and high for in-hospital mortality in NF patients were classified.

Results: A total of 293 patients with a diagnosis of NF, 8.4% ($n = 25$) died in hospital. From multivariable analysis, four factors were found significantly predicted in-hospital mortality including diabetic mellitus, cirrhosis, white blood cell count (WBC) $> 20,000/\mu\text{L}$, and blood lactate > 2 mmol/L. A total of risk score (possible range 1-12.5) explained 91.3% possibility of in-hospital mortality based on area under the receiver operating characteristic curve (AuROC) analysis. Likelihood ratio of positive among low risk (< 5), moderate risk (5-7), and high risk (> 7) were 0, 0.82 (95% CI 0.33-0.27, $p = 0.672$), 4.94 (95% CI 2.81-8.69, $p < 0.001$), respectively.

Conclusion: The proposed risk score groups contain simple-to-assess four prognostic factors with excellent performance to distinguish and can be applied to predict in-hospital mortality in NF patients in secondary to tertiary hospitals.

Keywords: Necrotizing fasciitis, Risk score of in-hospital mortality

PREVALENCE OF NONALCOHOLIC STEATOHEPATITIS AMONG PATIENTS UNDERGOING BARIATRIC SURGERY, A PROSPECTIVE DESCRIPTIVE STUDY

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Background: Obesity is one of the major health issues worldwide which has many consequences, including fatty liver. Diagnosis of nonalcoholic steatohepatitis (NASH) is crucial, since it harbors the risk of cirrhosis and ultimately, hepatocellular carcinoma. Non-invasive methods have proven to be useful despite depending on the liver biopsy to confirm the diagnosis. Little is known about the number of obese patients with NASH.

Objectives: This study primary aim is to find the prevalence of NASH in patients undergoing bariatric surgery. Secondary objective is to evaluate the utility of transient elastography (Fibroscan) as a screening test.

Methods: Data were prospectively gathered from 64 morbidly obese patients aged 18 to 60 years who undergoing bariatric surgery during 2019 and 2022 at Srinagarind Hospital. Patients with history of hepatitis from other causes were excluded. Transient elastography was performed and its values, Controlled attenuation parameter (CAP) and liver stiffness measure (LSM), were used to measure the hepatic steatosis and fibrosis respectively. If elastography is successful, intraoperative liver biopsy will be made. NASH is diagnosed based on the presence of hepatic steatosis (S) with lobular inflammation (L) or ballooning hepatocyte (B) on histology. Correlations between variables were calculated and displayed as Spearman's correlation coefficient (p). The accuracy of elastography was evaluated by using time-dependent receiver operating characteristic (ROC) curve.

Results: 64 patients were included in the study. Elastography was successfully performed in 48 patients and liver biopsy yielded in 46 patients. Lobular inflammation or ballooning hepatocyte were presented in 32 specimens, thus the prevalence of NASH in patients undergoing bariatric surgery was 50%. There was significantly moderate correlation between CAP and grading of steatosis ($p = 0.59, p < 0.001$). CAP cutoff points for S0 and S1-3 is 265.5 db/m (sensitivity 88.1%, specificity 50%, positive predictive value (PPV) 63.79%, and area under the receiver operating characteristic curve (AUROC) 0.87).

Conclusions: Patients with morbid obesity were presumed to have NASH. Transient elastography showed a promising result in screening for NASH. However, this study included only obese patients who were candidates for bariatric surgery.

Keywords: Obesity, Bariatric surgery, Liver biopsy, NASH, Elastography

RAMA. FACIAL LACERATION TOOLBOX

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Background: Facial laceration is one of the most common problems that brought patients to the emergency

room (ER) and many of them are simple lacerations. According to the literature review, there is no practical guideline for treatment of the facial laceration at the moment. And by our observations, sutures that are done by the non-facial trauma specialists (NFTS) are usually followed by unsatisfied results. In consequence, re-suturing by the facial trauma specialist (FTS) is likely required with the trade-off of the additional operations that may unnecessarily harm the patient once more. This study aims to create an application that contains guidelines for treatment of the facial laceration and analyze its efficacy whether it plays a role in improving the long term results of the wounds that are repaired by the NFTS.

Methods: The study consisted of two main phases, the application development (phase 1) and the research (phase 2). The application development was carried out from February of 2020 to May of 2021 in cooperation with MedEnsy Co., Ltd. After the application was firstly launched, it was applied into our institution's consultation protocol of facial laceration cases. The research started with the enrollment period which took place from May 21, 2021 to September 1, 2021. Patients with simple facial lacerations that were consulted by the emergency physicians (EP), using the application, were enrolled and randomized into 'ER' group (receive treatment from EP under the guidance of the application) and 'Plastic' group (receive treatment from plastic surgeons; PS). After treatment, the patients in both group were followed for 6 months. The patients who completed the 6-month follow-up in both group were compared. The primary outcome was the overall quality of the scar at 6 months after the suture. Secondary outcomes were early complication rate, patient satisfaction score, consult-to-approval time (CtA), consult-to-complete-treatment time (CtCT), and the user's review.

Results: A total of 27 patients with simple lacerations were enrolled and randomized. Eighteen patients gave their consent to join the research and had the application completed. A total of 9 cases in each group were followed and the same remaining 7 cases in each group completed the 6-month follow-up. Consult-to-approval time (CtA) and consult-to-complete-treatment time (CtCT) were lower in ER group (plastic, 24.4 min and 109.9 min, respectively; ER, 18.3 min and 86.9 min, respectively). Early complication rate on the 7-day follow-up was higher in ER group than in plastic group (plastic, 14.3%; ER, 42.9%). The final analysis at 6-month follow-up showed that the mean VSS score was slightly

lower in plastic group (plastic, 0.9; ER, 1.4) and the mean expert's rating score was slightly higher in plastic group (plastic, 4.5; ER, 4.2). However, the mean patient satisfaction score between 2 groups were the same (plastic, 9.6; ER, 9.6).

Conclusions: As far as our knowledge, "RAMA. Facial Laceration Toolbox" is the first application that provides practical guidelines of facial laceration management and may help equalizing the long term quality outcomes of the facial wounds between those that are repaired by the non-facial trauma specialists (NFTS) under the use of it and those that are repaired by the facial trauma specialists (FTS).

RESULTS OF TREATMENTS OF PELVIC RING FRACTURES WITH UNSTABLE HEMODYNAMICS IN THAMMASAT UNIVERSITY HOSPITAL, A RETROSPECTIVE COMPARISON STUDY

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Background: Patients with hemodynamic instability associated with pelvic ring fractures may have a severe hemorrhage. Emergent treatment included; pelvic external fixation (EF), angioembolization (AE), and preperitoneal pelvic packing (PPP). The mortality rate remained high at 30-40%. We aim to identify treatment results in pelvic ring fractures with hemodynamic instability in our institute. The result may reflect the quality of our treatment planning and guide us to create the best clinical practice guidelines in this condition.

Objectives: Evaluate the outcomes of treatments (mortality, length of hospital stays, length of ICU stays, ventilator days, disability after discharge), incidence of traumatic pelvic fracture with instability hemodynamics.

Methods: This study is a retrospective review of pelvic ring fractures with hemodynamic instability in patients admitted at our institute between 1st January 2014 to 31st December 2018. Age, sex, initial vital signs, laboratory data and imaging, mechanism of injury, organ-specific injury, abbreviated injury scales (AIS) and injury severity scores (ISS), operations, interventions,

and results of treatment were collected and analyzed. Comparison data of treatment modalities were conducted to identify which treatment gave a better result.

Results: There were 321 patients diagnosed with pelvic ring fractures in this period, and 294 cases were excluded by age < 18 years (42 cases), hemodynamic stability in the ED (163 cases), diagnosed outside of the ED (39 cases), and associated torso injuries (50 cases). Most patients were male (74.1%) with a mean age of 38.7 ± 14.7 years. The most common mechanism was motorcycle crashes (51.9%). The mean initial systolic blood pressure was 83.6 ± 3.6 mmHg with a mean pulse rate of 116 ± 8 bpm. There was no mortality rate, with the mean hospital LOS of 14.3 ± 8.9 days. Twelve cases were treated with emergency procedures; EF, EF with PPP, and AE. Most of the emergency procedures were EF alone (6 patients). Three cases were treated with EF with PPP. Comparison data revealed significantly shorter transferred time, lower initial SBP, higher ISS, less required PRCs, shorter ICU LOS, and more extended hospital LOS in the EF with PPP group. There were zero mechanical ventilator days in the AE group. However, there was no significant difference in disability after treatment among treatment modalities.

Conclusions: There were good outcomes in treating the pelvic ring fractures with hemodynamic instability in TUH (0% mortality). There were significantly better outcomes (less PRCs requirement and shorter ICU LOS) in the EF with PPP group compared to others. However, we cannot state that EF with PPP is preferred over others because of the multifactorial effect.

Keywords: Pelvic fracture, Hemodynamic instability, Pelvic external fixation, Angioembolization, Preperitoneal pelvic packing, Pelvic trauma

ROLE OF PHASE ANGLE AS A PREDICTOR FOR SURGICAL COMPLICATIONS IN CRITICALLY ILL PATIENT

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Background: Bioelectrical impedance (BIA) is one of the modern ways to analyzing body composition which reflects nutritional status, cell death and inflammation

process. These conditions are well known to have affect the surgical outcome. But the use of BIA in predicting surgical complication is not widespread. This study was conducted to study the relationship between BIA and surgical complication so that it might lead to a new way for predicting surgical outcome and eventually find a way to improve it.

Objectives: To study the relationship between of postoperative phase angle and 30 days postoperative complications. And studying the relationship between phase angle changes in post operative day 1 and severity of complication in patient underwent surgery, in Intensive Care Unit of Surgery Department, Maharaj Nakorn Chiang Mai Hospital.

Methods: This research was conducted in prospective observational Study. Conducted between 2019-2021. Using InBodyS10 to measure post operative BIA. The duration of follow up for surgical complications was 30 days or at discharge date. The study group was Patient underwent surgery, in intensive care unit of surgery department.

Results: From the study and follow up of 103 patients underwent surgery and admitted to intensive care unit. There were 47 patients (45.6%) with no complication, and 56 patients (54.4%) with complication. The most occurred complication was in Clavien-Dindo Class 3 and Class 2 (34.04% and 31.91%) respectively. Phase angle was significantly lower in group of patient with complication (4.6 (4.08-5.3) vs 3.75 (3.1-4.6) $p = 0.001$). But in complication group the decrease or increase in phase angle in post-operative day 1 was not shown to be significant factor in prediction of severity of complication. ($p = 0.028$). Other factors that shown to be statistically significant between groups are preoperative albumin (3.6 (2.9-4) vs 3.75 (3.3-4.2) $p < 0.001$) and APACHE II score (9.39 ± 4.61 vs 11.66 ± 4.45 $p = 0.016$). The optimal cutoff value for phase angle is 6.22.

Conclusions: Post operative Phase angle was a safe and useful parameter in predicting postoperative complications. Patients whose phase angle are likely to have post operative complication. 1 point decrease in phase angle will raise the CCI by 6.67. Low phase angle low should prompt evaluation and re-assessment for postoperative complications especially patient whose phase angle is below 6.22.

Keywords: Bioelectrical impedance, Phase angle, Post-operative complication, Critical care patient

SEXUAL DYSFUNCTION BETWEEN LAPAROSCOPIC AND OPEN INGUINAL HERNIA REPAIR: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Sexual dysfunction after inguinal hernia complication is considered rare, however, its consequences impact one quality of life inevitably. Laparoscopic and open inguinal hernia repair may comparable in terms of recurrent rate, overall complication and chronic pain. The sexual dysfunction complication is still questionable between these approaches. We to compare sexual dysfunction and related complication between laparoscopic and open inguinal hernia repair.

Methods: Systematic review and meta-analysis of randomized controlled trials (RCTs) compared laparoscopic and open inguinal hernia repair. Risk ratio (RR) and 95% confidence intervals (CI) were used as pooled effect size measures.

Results: Thirty RCTs (12,022 patients) were included. Overall, 6,014 (50.02%) underwent laparoscopic hernia repair and 6,008 (49.98%) underwent open hernia repair. Laparoscopic approach provided non-significance benefit on pain during sexual activity (RR 0.57; CI 0.18-1.76), vas deferens injury (RR 0.46; CI 0.13-1.63), testicular pain (RR 1.37; CI 0.81-2.31), orchitis (RR 0.84; CI 0.61-1.17), scrotal hematoma (RR 0.99; CI 0.62-1.60) and testicular atrophy (RR 0.46; CI 0.17-1.20). Meanwhile, open inguinal hernia approach reduced cord seroma complication (RR 1.79; CI 1.13-2.86)

Conclusions: There is no advantage of laparoscopic inguinal hernia repair over open approach in term of sexual dysfunction. On the contrary, there is increasing risk of cord seroma after laparoscopic inguinal hernia repair with statistical significance.

THE EFFICACY OF TRANEXAMIC ACID IN SUBCUTANEOUS ADMINISTERED FOR DECREASING BLEEDING AND INFLAMMATION IN UPPER BLEPHAROPLASTY: A DOUBLE BLINDED RANDOMIZED CONTROL TRIAL

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Background: Eyelid surgery is one of the top five aesthetic procedures that preformed to improve both appearance and function. Intraoperative bleeding is important factor that leading to adverse event which concerned the patients. This study purposes to demonstrate the efficacy of TXA when combined with epinephrine in decreasing intraoperative blood loss and post-operative inflammation.

Methods: This study is prospective randomized control trial performed in 15 patients with 30 side of eyelids who undergo upper blepharoplasty. In each patient, his/her eyes were randomly divided into two groups. The first group (TXA group) were given 2% lidocaine with epinephrine (1:100000) mixed with TXA (50 mg/ml) in 1:1 mixture subcutaneously as local anesthetic drug and the second group (control group) received 2% lidocaine with epinephrine (1:100000) diluted with normal saline in 1:1 mixture. Intraoperative blood loss and post-operative swelling was evaluated and compared between two groups.

Results: Intraoperative blood loss was significantly higher in TXA group [4.86 (1.83) ml] compared with control group [2.53 (1.49) ml] ($p < 0.001$). There is no statistically significant difference in operative time ($p = 0.645$), pain score ($p = 0.498$), Lid crease ($p = 0.548$) and MRD1 ($p = 0.626$) between two groups. There is no difference in 7-day post-operative lid crease ($p = 0.879$), MRD1 ($p = 0.463$), pain score ($p = 0.934$) and ecchymosis ($p = 0.976$) between two groups.

Conclusions: TXA in lidocaine with epinephrine was found to increase intra-operative bleeding compared to lidocaine with epinephrine alone but no difference in postoperative swelling and ecchymosis. TXA combined with lidocaine and epinephrine injected subcutaneously should be avoided until additional relevant data are obtained. Further drug interaction study is needed.

THE PROPERTIES OF BIOCELLULOSE DRESSING IN VITRO STUDY AND CLINICAL SAFETY TEST IN HEALTHY VOLUNTEER: CLINICAL TRIAL PHASE I

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Background: Biocellulose wound dressing, wound dressing that had the flexibility and water-retained properties that lead to coolness and painless dressing but is limited due to high cost. In 2020, PTT Research and Development Department developed “Innaqua[®]”, a Thai national biocellulose wound dressing with low cost for the Thai population that could assess.

Objectives: “Innaqua[®]” passed 2 preclinical studies in an animal model. But never studied in humans and never report In vitro studies compare with the original biocellulose product. This study aims to compare the property of Innaqua[®] with other wound dressings and to reassure that Innaqua[®] was safe for humans.

Methods: This study had 2 parts, In vitro studies which compare the capacity of the fluid absorption, desorption, wound dressing surface, and moisture analysis of Innaqua[®] with other dressings; Bactigras[®] and Bluribbon[®]. The clinical study was carried out on 63 healthy volunteers and applied both Innaqua[®] and Bactigras[®] on each side of the upper arm after randomization. Skin irritation and an allergic reaction were observed and evaluated using Acute Dermal Irritation/Corrosion GRADING OF SKIN REACTIONS from Organization for Economic Co-operation and Development 2015 and Modified scale for reading repeated open application test results from European Society of Contact Dermatitis PATCH TEST GUIDELINE 2015.

Results: Innaqua[®] and Bluribbon[®] had statistical significant higher fluid absorption ($p = 0.003$, $p = 0.001$) and desorption ($p = 0.039$, $p = 0.003$) than Bactigras[®]. From the scanning electron microscope, smaller non-homogenous pore sizes and morphologies of innaqua[®] and Bluribbon[®] were seen. Innaqua[®] had the most significant moisturization. In clinical safety studies showed non-inferior of erythema (4.8% vs 4.8%; $p = 0.012$) and allergic reaction (3.2% vs 4.8%; $p = 0.004$) in Innaqua[®] compared with Bactigras[®]. No oedema occurs in both wound dressings.

Conclusions: Innaqua[®] is biocellulose wound dressing which produce in Thailand, created an appropriate environment for wounds because of the small pore at the contact surface of wound dressing, high absorptive quality, and desorption which encourage moisturization for the wound as shown in moisture analysis. From in vivo study, it showed the safety of this wound dressing in human skin. Innaqua[®] was the new choice of biocellulose wound dressing, and come at a low price for population.

Keywords: Biocellulose, Innaqua, Allergy, Irritation, Safety

THE VERSATILITY OF ATHEROSCLEROTIC CARDIOVASCULAR DISEASE (ASCVD) RISK SCORE IN DETERMINATION OF POPLITEAL ARTERY BRANCHES PATENCY IN COMPUTED TOMOGRAPHY ANGIOGRAPHY

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Background: The atherosclerotic cardiovascular disease (ASCVD) risk score is commonly used for risk estimation of developing coronary artery disease and stroke. However, the atherosclerosis changes involve arteries throughout the body including the blood supply of legs, which are seen as peripheral arterial disease. The popliteal artery branches are affected by atherosclerosis and leads to luminal stenosis, which are crucial for operative decision among clinical practices such as vascular bypass procedure, intravascular surgery, and reconstruction of lower limb.

Objectives: To investigate the relationship between the ASCVD risk score and degree of stenosis among popliteal artery and its branches.

Methods: The data regarding all patients, who un-

derwent computed tomography angiography (CTA) of the legs during 2016-2021 with complete data for ASCVD risk score assessment, was recruited. The 10-year and lifetime ASCVD risks were calculated, and association between ASCVD risk score and luminal stenosis from CTA was analyzed.

Results: There were 117 males and 81 females, and the average age was 66.5 years. The common comorbidities including hypertension (84.3%), diabetes mellitus (61.1%), and chronic kidney disease (34.3%). The average 10-Year ASCVD risks in $\geq 50\%$ stenosis group of popliteal artery, anterior tibial artery, and posterior tibial artery were significantly higher than those $< 50\%$ stenosis ($p < 0.01$). The peroneal artery had no significant difference in 10-Year ASCVD risks between stenosis groups. For the Lifetime ASCVD risks, the popliteal artery had significantly higher ASCVD risks in $\geq 50\%$ stenosis group ($p < 0.01$) but the anterior tibial artery, posterior tibial artery, and peroneal artery showed no statistically significant difference between stenosis groups.

Conclusions: The 10-year ASCVD risks showed significant higher values in $\geq 50\%$ stenosis group of popliteal artery, anterior tibial artery, and posterior tibial artery. These findings can establish the further study on how ASCVD risks can be applied to predict the stenosis of popliteal artery and its branches, and guide the rationale of preoperative leg CTA for FFF harvest.

Keywords: Atherosclerotic cardiovascular disease (ASCVD) risk score, Luminal stenosis, Popliteal artery

VDO Award

CONVERSION TO ROUX-EN-Y GASTRIC BYPASS WITH HIATAL HERNIA REPAIR AS THE TREATMENT OF INTRATHORACIC GASTRIC SLEEVE MIGRATION

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Background: Laparoscopic sleeve gastrectomy (LSG) is standard bariatric surgery. There is ongoing controversy regarding the potential of worsening and de novo gastrointestinal reflux disease (GERD) postoperatively. The altered anatomy of the esophagogastric junction and conversion to a high-pressure system makes LSG patients more likely to develop GERD symptom. The reported incidence of de novo GERD after LSG is up to 35%. There is little published data on diagnosis of hiatal hernia (HH) after LSG and its potential as the cause for the worsening or new-onset GERD symptoms. Current standard of care for intractable GERD status-post LSG indicates conversion to laparoscopic Roux-en-Y gastric bypass (RYGB).

Methods: This video presented the morbid obesity patient who underwent LSG and subsequently developed severe reflux symptom which not response to medication treatment. And concurrent hiatal hernia with intrathoracic gastric tube migration. Laparoscopic hiatal hernia repair with conversion sleeve to Roux-en-Y gastric bypass was performed.

Results: Laparoscopic hiatal hernia repair with conversion sleeve to Roux-en-Y gastric bypass can be done safely and was the treatment of choice.

Conclusions: The development of intractable GERD after laparoscopic sleeve gastrectomy (LSG) is a major concern as it affects the quality of life of the patients and potentially exposes them to the complications of GERD. Laparoscopic hiatal hernia repair with conversion sleeve to Roux-en-Y gastric bypass was the treatment of choice.

Keywords: Hiatal hernia, Intrathoracic gastric migration, De novo GERD, Sleeve gastrectomy, Conversion Roux-en-Y gastric bypass

HOW TO DEAL WITH SMALL BOWEL OBSTRUCTION CAUSED BY A PLUM SEED

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Background: Adhesive band is the most common cause of small bowel obstruction. However, an unusual cause as a foreign body has been rarely reported. Normally, this obstructed foreign body could pass through the gastrointestinal tract without further management. Nevertheless, some patients who have this issue need to be operated either open or minimally invasive approach. Although the latter approach carries more benefits to the patients, its technique is quite challenging. We demonstrated a small bowel obstruction caused by a plum seed which was treated successfully by minimally invasive approach.

Objectives: To demonstrate the technique of laparoscopic enterotomy and foreign body removal. Also, how to prevent the contamination during the surgery.

Methods: A 71-year-old Thai male who unintentionally swallowed a plum seed for 2 days. After that, he developed abdominal distension and obstipation. Abdominal CT scan showed diffuse small bowel dilatation and a 2.8-cm. impacted foreign body at distal ileum causing proximal small bowel dilatation. Surgical intervention

as laparoscopic foreign body removal was planned. The video contained the operative room setup, port sites, and the step-by-step procedures, including how to prevent contamination and suture small bowel.

Results: The operative time was 1.30 hours with minimal blood loss. Postoperatively, the patient tolerated oral diet well and had regular bowel movement. He could be discharged home uneventfully on postoperative day 4. No early complication could be detected upon the postoperative follow-up.

Conclusions: A plum seed causing small bowel obstruction is a rare condition which probably requires surgery. Minimally invasive approach to fix this issue is safe and feasible in selected case. Standardization of surgical steps is crucial in order to prevent complications.

LAPAROSCOPIC TRANSABDOMINAL PREPERITONEAL REPAIR FOR LEFT FEMORAL HERNIA CONTAINING BLADDER DIVERTICULUM

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Femoral hernia is a protrusion of peritoneum into femoral canal which incidence is only 2-8% and more common in female. According to its rigid space, patient often presents with strangulation and requires emergency repair. Elective surgery remains only 14% in female. Operative approach could be performed by laparoscopic technique. Nowadays, we have the novel concept of critical view of myopectineal orifice. Following this concept would provide proper exposure of anatomy that must be achieved before mesh placement to reduce complication and recurrence. Our video demonstrated surgical procedure of laparoscopic transabdominal preperitoneal repair (TAPP) in a 93-year-old female who had chronic incarceration of left femoral hernia for 20 years. Abdominal computed tomography was requested to confirm diagnosis which revealed an outpouching lesion from bladder herniated into left femoral canal. The patient never complained any lower urinary tract symptom over the past 20 years. Operation was scheduled as elective setting. Under general anesthesia with indwelled urinary catheter, laparoscopic ports were placed as usual TAPP operation. We also used intravenous indocyanine green to enhance visualizing the nearby vascular structures to prevent injury during dissection.

After peritoneal flap creation, hernial sac and its content were reduced back to abdominal cavity. We followed all technical steps to accomplish the critical view of myopectineal orifice before mesh placement. Polypropylene mesh was placed to cover the myopectineal orifice including femoral defect properly and fixed by tacker. Peritoneal flap was closed by intracorporeal sutures. No postoperative complication happened. The patient was discharged uneventfully on postoperative day 2. No recurrence was observed at 6 months after surgery.

LAPAROSCOPIC VENTRAL RECTOPEXY WITH PELVIC FLOOR SUSPENSION: LEFT-SIDED APPROACH

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Pelvic floor descended disease has multifactorial etiology including aging, pelvic floor relaxation, sigmoid redundancy, rectal mobility, and deep cul-de-sac, which eventually cause obstructive defecation. Laparoscopic ventral rectopexy (LVR) has been reported for treatment of pelvic floor descended. The right-sided peritoneal dissection approach for rectal mobilization has been standardized, however there are some technical challenges in obesity, deep cul-du-sac, redundant sigmoid, and redo LVR. The aim of this study is to demonstrate the left-sided approach of rectal mobilization to overcome the redundant sigmoid and previous pelvic operation.

A case of 50-year-old woman presented with obstructive defecation symptom. She previously underwent pelvic organs suspension using a trans-sacral approach. The MRI defecography showed pelvic floor descended, anterior rectocele, and mucosal recto-rectal intussusception.

This video demonstrated a step-by-step approach of LVR and pelvic floor suspension using a novel left-sided rectal mobilization approach. The operation started at peritoneal dissection on the left side of rectosigmoid colon. The dissection continued downward to the rectovaginal space and the pelvic floor using mesorectal plane dissection. All pelvic autonomic nerve bundles was preserved. Superb visualization facilitated by gravity was the great advantage of the left-sided approach. The pelvic floor suspension was performed using prolene mesh sutured fixed to the pelvic floor muscle and tacked

to S3-S4 with permanent fasteners. The ventral rectopexy was done using prolene mesh sutured to the anterior rectal wall and posterior vagina wall then the mesh was tacked to S3 with permanent fasteners. The peritoneum was closed with vicryl 3-0. This patient had an uneventful recovery and discharged on postoperative day 2.

The postoperative functional outcome was excellent. She reported dramatic improvement of obstructive defecation symptoms as well as an improvement in urinary symptom.

PERINEAL PROCTOSIGMOIDECTOMY WITH POSTERIOR LEVATORPLASTY (ALTEMEIER) PROCEDURE FOR RECTAL PROLAPSE

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Background: Altemeier's procedure is one of well-known perineal operations to treat full-thickness rectal prolapse; it removes the prolapse without a pexy and performs only a partial reconstruction of the pouch of Douglas. However, high recurrence rates relegate the procedure to a back-up role for elderly or other high-risk patients who are not candidates for an abdominal operation.

Objectives: To demonstrate perineal proctosigmoidectomy with posterior levatorplasty (Altemeier) technique for rectal prolapse.

Methods: This is a case of a 91-year-old woman with underlying of DM, HT and parkinson's disease who presented with persistent rectal prolapse about 10 cm in length. The rectum had been reducible itself for 20 years. The rectal prolapse was exteriorized and the dentate line was identified. A circumferential line, 2 cm proximal to the dentate line, was scored on the rectal mucosa with electrocautery. Full thickness rectal wall dissection was began anteriorly then laterally and finally posteriorly until peritoneum was divided. After complete disconnection, posterior levator ani was identified and levatorplasty was performed with interrupted 2-0 prolene. the rectum and distal sigmoid were exteriorized and skeletonized the mesorectal fat and its vessel. Colostomy was started anteriorly and hanging suture of colon to anus was performed quadrant by quadrant. Coloanal anastomosis was performed with interrupted 3-0 vicryl.

Results: The patient was discharged home safely without complications. Her defecatory function improved without recurrence after 1 month follow-up.

Conclusions: Perineal proctosigmoidectomy with posterior levatorplasty (Altemeier) procedure is safe and feasible in elderly and comorbid patient.

POSTERIOR RETROPERITONEOSCOPIC ADRENALECTOMY: A NOVEL APPROACH FOR PATIENTS WITH PREVIOUS INTRA-ABDOMINAL SURGERY

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This video describes how we have performed the posterior retroperitoneoscopic right adrenalectomy in order to avoid abdominal adhesions in a 70 year old female with a history of whipple procedure for metastatic duodenal cancer. After the induction of general anesthesia the patient was placed in the prone position. The camera and working ports were created along the tip of 12th rib. The posterior retroperitoneal space was accessed through Gerota's fascia. The perinephric fat was identified and dissected until the kidney was visualized. Dissection was performed along the superior boarder of the kidney. The tumor was noted to abut the renal capsule. Subcapsular dissection of the kidney was accomplished. The right renal artery was visualized beside the kidney. A small adrenal vein close to the renal artery was identified and ligated. Further dissection was carried beyond the renal artery until the IVC was located. Dissection of all the tissue surrounding the IVC and the tumor was performed. A peritonectomy was performed due to the adhesion of the tumor to the peritoneum. After the peritoneum was incised, the retroperitoneal and the intraperitoneal spaces became one continuous space. The tumor was then gently dissected along the IVC. From the upper lateral side, the falciform ligament was partially dissected to encircle it and achieve the resection margins. Then, the tumor was dissected medially and upwardly from the paraspinal muscle to the crus of diaphragm. A regional lymph node was incidentally encountered, and it was dissected altogether with the tumor. The superior aspect of the tumor was dissected from the diaphragm to complete the en bloc dissection. The specimen was removed via the endo bag in one piece. The camera was reinserted to check for

bleeding before closing the patient. The pathology results showed metastatic adenocarcinoma into nearly entire adrenal gland with extensive extracapsular soft tissue extension. The patient received adjuvant chemotherapy. A repeat CT scan one year after surgery showed no signs of local recurrence. In conclusion, In order to avoid adhesions, the posterior retroperitoneoscopic adrenalectomy is an ideal approach for the patient with a history of previous abdominal surgery.

Keywords: Laparoscopic surgery, Adrenal gland, Metastatic cancer, Previous abdominal surgery, Retroperitoneoscopic adrenalectomy

ROBOTIC ASSISTED VATS BILATERAL ESOPHAGEAL DIVERTICULECTOMY WITH LONG MYOTOMY

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Background: Epiphrenic diverticulum is a rare type of pulsion esophageal diverticulum that occur in distal esophagus. The prevalence is varying ranging from 0.015 – 2%. Two esophageal diverticula had a little data, only in case reports. Most common etiology is an increase in intraluminal pressure, which associated with underlying esophageal motility disorder. Symptomatic patients are indication to operation. Surgical approaches can be transabdominal or transthoracic, depending on distance from diverticulum to esophagogastric junction. Minimally invasive procedure includes laparoscopic and robotic surgery had advantage in reducing postoperative pain, shorter length of hospital stay and lower rate of mortality. Robotic-assisted surgery may offer better visualization than traditional laparoscopic/thoracoscopic approaches. Due to high association of underlying motility disorders, routine myotomy should be performed to reduce postoperative leakage and recurrence.

Objectives: To demonstrate the surgical technique of transthoracic approach in case of bilateral epiphrenic diverticula.

Methods: This video demonstrate the operative steps of transthoracic bilateral epiphrenic diverticulotomy. Starting from preoperative preparation with EGD and enteral tube placement for improve nutrition and diverticulum irrigation, especially in patients who had food retention.

How to localize and identify diverticulum safely. Combined intraoperative gastroscopy can give information to perform the procedure confidently. Finally, is the key step in long myotomy.

Results: Patient's clinical outcomes are improved, and can be discharged without any complication. Esophagogram demonstrates good passage, without leakage or stenosis.

Conclusions: Thoracoscopic approach in case of epiphrenic diverticulum can be performed safely. Knowing in operative steps and attention in surgical tricks can reduce the difficulty and avoid complications during the operation.

Keywords: Robot, VATS, Epiphrenic, Diverticulectomy

STEP-BY-STEP APPROACH WITH ANATOMICAL HIGHLIGHT IN SMV-FIRST LAPAROSCOPIC RIGHT COLECTOMY

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The concept of complete mesocolic excision (CME) and central vascular ligation (CVL) is consisted of the dissection between the mesocolic fascia and the retroperitoneal fascia, with ensuring an adequate lymph node harvesting at the vascular origins. This concept has been reported to have significant better oncological outcomes in many studies. However, laparoscopic right-side colectomy is technically challenge due to highly right-side vascular anatomy variations. Therefore, clearly understanding laparoscopic anatomy in right-side colon is essential to minimized serious complications and achieve better oncological outcomes.

The SMV-first approach aims to identify superior mesenteric vein (SMV) then dissects along the anterior surface of the SMV. This provides a clearer vascular origins identification, thus facilitates better lymphadenectomy. This video demonstrates the step-by-step approach with anatomical highlight in SMV-first approach laparoscopic right colectomy in locally advance hepatic flexure colon cancer with massive nodal metastasis. The procedure includes intra-abdominal set up for a good exposure, SMV identification, CME/CVL, lateral dissection, specimen extraction and anastomosis creation.

Keywords: Complete mesocolic excision, Central vascular ligation, Superior mesenteric vein, Right-side colon cancer, Laparoscopic

THE LAPAROSCOPIC HIATAL HERNIA REPAIR

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Background: Hiatal hernias occur when there is intrathoracic herniation of abdominal contents through the hiatal orifice of the diaphragm. Its pathophysiology remains unknown, stressors, such as obesity, chronic cough, and gastroesophageal reflux, may cause weakening of the hiatus and results in widening of the hiatal aperture, allowing for movement of the GEJ and herniation of abdominal contents into the thoracic cavity. The surgery for hiatal hernia is mandatory in the patients whose symptoms can't be controlled medically, or presented with complications. The laparoscopic approach has become preferred worldwide, since it has demonstrated to decrease postoperative pain, and enhance recovery when performed.

Objectives: To present the laparoscopic technique for hiatal hernia repair

Methods: This laparoscopic hiatal hernia repair was performed in 70-year-old female, who presented with dyspepsia which is not responded to medications. She underwent the physical examination, laboratory and imaging studies and the diagnosis was confirmed. The treatment options were discussed with the patient, and laparoscopic transabdominal hiatal hernia repair was planned. The patient was in supine position. After the generalized exploration, the liver was retracted upward. The herniated contents were reduced, and the hernial sac was carefully dissected. Right and left crura were identified, and the Penrose drain was used to hang around the esophagus, helping in sac dissection. When the sac was fully dissected and the 3-cm length of intra-abdominal esophagus was achieved, the hiatal defect was closed inferiorly and posteriorly. Then gastric fundus was mobilized to perform Nissen fundoplication, and the anterior gastropexy was done.

Results: Satisfactory repair using laparoscopic techniques was achieved. The patient experienced no postoperative complication. In the 4-week follow up appointment, she had no dysphagia, and could eat normally.

Conclusions: The laparoscopic approach is a safe and beneficial alternative for the surgeon in the treatments of hiatal hernia. The training and implementation of this technique would be useful for the patients with this condition.

Keywords: Hiatal hernia, Laparoscopic surgery, Surgical technique, Fundoplication

THE LAPAROSCOPIC STEP OF PEDICLED PERITONEAL FLAP VAGINOPLASTY IN MALE TO FEMALE GENDER AFFIRMATION SURGERY

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Background: In today's society, gender diversity is becoming more accepted globally, including in Thailand. Gender-affirming surgery is consistently evolved to produce a better outcome and to decrease complications. Peritoneal vaginoplasty (Davydov-procedure) has been used for the reconstruction of vagina in females borned with congenital vaginal agenesis. The advantages of using the peritoneum for vaginal reconstruction are its abundant availability, the proximity to vagina, the mucosal-type surface and its self-lubricating property. Pedicled peritoneal vaginoplasty was adapted from Davydov-procedure. In male-to-female reassignment surgery, penile skin inversion (PSI) vaginoplasty remains the standard

technique. This peritoneal flap technique has become an exciting procedure for augmenting neovaginal length and postsurgical transgender women who are unable to undergo the standard PSI.

Objectives: To present the technique of laparoscopic step in pedicled peritoneal flap vaginoplasty.

Methods: The procedure was contained in 2 steps; laparoscopic step and perineal step. In the laparoscopic step, the peritoneum, including transversalis fascia, was dissected down from abdominal wall to create the flap based on left inferior epigastric artery. The size of the neovaginal flap, mostly 12 cm for the circumference and 15 cm for the depth. Musculocutaneous perforators to the rectus abdominis were ligated and divided. The peritoneal branches of left inferior epigastric artery were preserved. Peritoneal flap was totally constructed (rolled and sewn) in peritoneal cavity, then delivered through the tunnel between rectovesical space toward the perineum. At last, in the perineal step, the flap and perineal skin were conjoined with the neovaginal opening by plastic surgeon.

Results: All wounds were healed within 3-4 weeks. The neovaginal depth was 13 cm at 6-month visit. The vaginostomy revealed good neovaginal surface and its self-lubrication.

Conclusions: Laparoscopic pedicles peritoneal flap vaginoplasty is a minimal invasive procedure that can effectively reduce limitation of neovaginal depth in gender reassignment surgery.

Keywords: Gender reassignment, Sex change, Peritoneal flap, Neovaginal depth

Young Investigator Award

CLINICAL APPLICATION OF SIRIRAJ MOLECULAR NOMOGRAM FOR PREDICTION OF NON-SENTINEL LYMPH NODE METASTASIS: FINE TUNING OF ACOSOG Z0011

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Background: Axillary staging is an important prognostic factor that is frequently used to determine the

course of treatment for breast cancer. To avoid unnecessary axillary lymph node dissection (ALND), a nomogram for predicting non-sentinel lymph node (NSLN) status using one-step nucleic acid amplification (OSNA) was developed.

Objectives: To evaluate clinical application of the nomogram for prediction of NSLN status using OSNA technique.

Patients and Methods: Breast cancer patients with clinical T1-T2 and negative axillary lymph node who underwent sentinel lymph node biopsy (SLNBx) at Siriraj Hospital were enrolled. Sentinel lymph nodes (SLNs) were examined by OSNA technique and the probability of positive NSLN was calculated. The patients who had

more than 2 positive SLNs or probability of positive NSLN > 20% underwent ALND while in the patients with probability $\leq 20\%$, ALND was omitted. Clinicopathological data was compared between the patients with negative and positive NSLN.

Results: There were 192 SLNBx performed and 54 patients had positive SLN. ALND was performed in 45 patients. NSLNs were negative in 23 patients and positive in 22 patients. In the patients with 1-2 positive SLNs, 21 (47.7%) out of 44 patients had positive NSLN and 29.5% had advanced disease in the axilla (N2-N3).

Conclusions: Determination of omitting ALND using Siriraj Molecular Nomogram for prediction of NSLN status identified the patients with NSLN involvement. This nomogram might be utilized to select the patients who suitable for omitting ALND.

Keywords: Axillary lymph node dissection, Breast cancer, One-step nucleic acid amplification, Sentinel lymph node biopsy

INSULIN RESISTANCE OUTCOMES FOLLOWING PREOPERATIVE ORAL CARBOHYDRATE LOADING IN BARIATRIC SURGERY PATIENTS: A RANDOMIZED CONTROLLED TRIAL

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Background: Enhanced Recovery After Surgery (ERAS) protocol in bariatric surgery is well-accepted worldwide. Preoperative oral carbohydrate loading is one of the components of ERAS protocol which has scarce data in bariatric patients. Preoperative fasting increases insulin resistance and inflammatory stress responses which can be reduced by preoperative oral carbohydrate loading.

Objectives: This study aimed to evaluate the ef-

fect of preoperative oral carbohydrate loading on insulin resistance and inflammatory outcomes compare with conventional fasting protocol.

Methods: We conducted this study between October 2021 to February 2022. Morbidly obese patients underwent bariatric surgery, either sleeve gastrectomy or Roux-en-Y gastric bypass were randomized to intervention group and control group. The intervention group received 2 doses of oral carbohydrate loading, the night before and 3 hours prior to surgery. In control group, patients received 2 doses of water in the same fashion as intervention group. Primary outcome was insulin resistance, measured by homeostasis model assessment-estimated insulin resistance (HOMA-IR) index. Secondary outcomes were interleukin-6 (IL-6) and C-reactive protein (CRP) level. We measured HOMA-IR index, IL-6 and CRP level at preoperative, postoperative day 1, 3 and 14.

Results: 20 patients were enrolled in this analyzes (10 patients in intervention group, 10 patients in control group). The median difference of HOMA-IR index from preoperative was 8.83 in intervention group and 8.32 in control group ($p = 0.36$) in postoperative day 1. In postoperative day 14, 5.52 in intervention group and 2.09 in control group ($p = 0.082$).

Conclusions: Preoperative oral carbohydrate loading has no difference in insulin resistance and inflammatory outcomes in bariatric surgery patients. Increasing in number of patients may alter the results. Further studies should be conduct for other clinical outcomes.

Keywords: Bariatric surgery, Oral carbohydrate loading, Insulin resistance

PATHOGENIC GERMLINE MUTATION IN 13 HEREDITARY CANCER-RELATED GENES IN BREAST CANCER PATIENTS: A CASE SERIES IN NARATHIWAT PROVINCE

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Background: Approximately 27% of breast cancer are hereditary, and germline pathogenic variants in *BRCA1* and *BRCA2* genes are known genetic causation as a carrier of the mutations have increased lifetime risk of breast cancer at 10–20 folds. Identification of inherited patients potentially reduce the risk of breast and/or ovarian cancer through early detection of the disease which may decrease the mortality rate. Three southern border provinces of Thailand have distinct population characteristics. Although a majority of the population is Thai-Malays trait, the area has population admixture. Genetic test for hereditary cancers is not common in the area.

Objectives: This study explored the frequency and distribution of genetic variants in unselected cases of breast cancer patients in Narathiwat province.

Methods: Non-selected consecutive 64 breast cancer patients undergoing treatments in two general

hospitals in the province between 2021 and 2022 (12 cases from Sungaikolok Hospital and 52 cases from Naradhiwas Rajanagarindra Hospital). Molecular genetic study is performed using a whole exome study platform. Moderate to high penetrance variants recommended by National Comprehensive Cancer Network (NCCN) guidelines 2022 were annotated (*ATM*, *BARD1*, *BRCA1*, *BRCA2*, *CDH1*, *CHEK2*, *NF1*, *PALB2*, *PTEN*, *RAD51C*, *RAD51D*, *STK11*, *TP53*) and filtered for Pathogenic, Likely pathogenic, or High-impact variants.

Results: Of 64 cases pathogenic germline variants were found in 8 cases (12.5%) which included *BRCA1* in 3 (4.7%), *BRCA2* in 4 (6.3%), *ATM* in 1 (1.6%) and *PALB2* in 1 (1.6%). One patient had two concomitant germline mutations: in *BRCA2* and in *ATM*.

Conclusions: This is the first study on the frequency of germline mutations in *BRCA1/2* and other breast cancer predisposing genes in breast cancer in the southernmost borders of Thailand. In unselected breast cancer patients, at least one pathogenic germline mutation was identified in 12.5%, which suggested that genetic testing in this population has a high potential to provide benefit.

Keywords: Breast cancer, Germline variants, Hereditary cancer

American College of Surgeons Chapter Award

APPENDICITIS IN COVID-19 ERA

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Background: For more than two years since the COVID-19 pandemic, human lives have been changed worldwide, including in the health care system. Management of acute appendicitis, the most common emergency surgical disease, has been inevitably affected by the COVID-19 pandemic. This study aimed to assess the effect of the COVID-19 pandemic on the management of acute appendicitis, the incidence of complicated appendicitis, treatment outcome, and complications.

Objectives: The primary objective was to compare the incident rate of complicated appendicitis pre COVID-19 and during COVID-19 pandemic. The secondary

objectives were to compare complication rate, length of hospital stay, time to surgery, and cost between pre COVID-19 and during COVID-19.

Methods: This study was a retrospective cohort study comparing 574 patients diagnosed with acute appendicitis before the COVID-19 outbreak (pre COVID-19) and 434 patients diagnosed with acute appendicitis during the COVID-19 outbreak (during COVID-19). Patient demographic data, type of appendicitis, type of treatment, time to surgery, length of hospital stay, cost and complications were collected and analyzed by multivariate regression analysis.

Results: During the COVID-19 pandemic, the number of patients diagnosed with acute appendicitis was reduced. CT scan usage for diagnosis was increased compared to pre COVID-19 (45.39% vs 32.75%, p -value < 0.001). Most patients diagnosed with acute appendicitis received operative treatment in both groups. Median time to surgery was significantly longer during

the COVID-19 pandemic, 11.93 hours compared to 9.62 hours pre COVID-19, p -value < 0.001 (relative risk 1.5, 95% CI 1.29-1.76, p -value 0.041). The incidence of complicated appendicitis was not higher during COVID-19. Compared to pre COVID-19, ICU admission rate, the use of a mechanical ventilator, length of stay and cost were increased in the univariate analysis but not statistically significant in the multivariate analysis. Other treatment

complications had no statistically significant difference.

Conclusions: The incidence of complicated appendicitis did not increase during the COVID-19 pandemic. The operation waiting time significantly increased but did not increase the rate of treatment complications in a well-prepared hospital system.

Keywords: Acute appendicitis, Complicated appendicitis, Outcome, Coronavirus 2019, COVID-19