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A PROSPECTIVE, RANDOMIZED CLINICAL TRIAL COMPARING THE TREATMENT OUTCOME OF ANDROGRAPHIS PANICULATA EXTRACT SCRUB WITH CHLOREHEXIDINE SCRUB IN BURN WOUND HEALING

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Background: Though the Chlorhexidine solution has been used as standard cleansing burn treatment, its main disadvantage was pain. Andrographis and Perilla oil liquid soap is a new natural product for wound cleansing with a pain reliever effect. However, there are no published data on its efficacy in burn patients.

Objective: This study aimed to compare the clinical efficacy of using Andrographis and Perilla oil liquid soap in the healing of superficial second-degree burns with the standard cleansing 4% Chlorhexidine solution.

Methods: From 2019-2021, patients with age ≥ 18 years, ≥ 20% TBSA superficial second-degree burn, and admitted to the Burn Unit at Siriraj hospital within 24 hours after injury were included and randomized into 2 groups: Andrographis and Perilla oil liquid soap group (AP group) and 4% Chlorhexidine group (control group). Outcome parameters included % epithelialization, pain score during cleansing, itching score after wound cleansing, and the dry skin specified symptoms (scaling, roughness, redness, cracks; SRRC). All patients received daily dressing changes and the same standard care given to patients with burns in this center.

Results: There were 23 patients enrolled in the study (12 in the AP group and 11 in the control group). The median age was 38.5. There were no significant differences in age, %TBSA, and initial wound area between both groups ($p > 0.05$). Although the healing time was similar in both groups, (18.5 vs. 20.1, $p = 0.347$), the AP group had a significantly lower pain score than the control group (4.7 vs. 5.4, $p = 0.020$). Moreover, the AP group demonstrated significant improvement in itching score and SRRC score at 14 days than the control group (5.1 vs. 6.0, $p = 0.039$ and 1.08 vs. 1.55, $p = 0.020$, respectively). There was no adverse effect during the study.

Conclusion: The Andrographis and Perilla oil liquid soap resulted in a comparable healing rate as the 4% chlorhexidine solution with less pain and better moisturization. A future large prospective study is warranted.

Keywords: Andrographis Paniculata, Wound cleansing, Wound, Burn

ACCURACY AND CORRELATION OF PULL-BACK GRADIENT PRESSURE COMPARE WITH INTRAVASCULAR ULTRASOUND AND VENOGRAPHY IN DIAGNOSIS OF CENTRAL VENOUS RESIDUAL STENOSIS IMMEDIATELY AFTER ENDOVASCULAR TREATMENT IN VASCULAR ACCESS PATIENTS

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Objective: For diagnosis of central venous occlusion (CVO) in vascular access patients, the sensitivity of single plane venography is less than intravascular ultrasound (IVUS). According to availability and reimbursement of IVUS, its application is quite limited. Although the pullback gradient pressure (PBG) was mentioned in some literatures, there was no clear cut-off level. We studied the accuracy and correlation of PBG, venography and IVUS to analyze cut-point of gradient pressure across lesion for identifying acute elastic recoil.

Methods: Prospective cohort study was conducted. Symptomatic CVO patients with vascular access were included. Thirty-two sessions were examined. All patients underwent venography, IVUS and pullback pressure before and after angioplasty of the stenotic lesions. The reference of significant stenosis or acute elastic recoil was determined by the minimal luminal area (MLA) less than 30% measured by IVUS.

Results: Sixteen symptomatic CVO patients (mean age 62+15 years) were included. There were 14 (87.5%) brachiocephalic vein lesions and 3 (18.8%) subclavian vein lesions. Receiver operator characteristic (ROC) curve analysis identified a PBG of > 4 mmHg as the optimal cut-off level for the prediction of significant stenosis or acute elastic recoil (sensitivity 84.62% and specificity 65%, area under the curve 0.7808). PBG had more sensitivity, but less specificity than venography (sensitivity 53.8%, specificity 100%).

Conclusion: PBG > 4 mmHg can be used as an adjunct to venography in CVO when acute elastic recoil is suspected after percutaneous transluminal angioplasty.

Keywords: Central venous occlusion, Pullback gradient pressure, Intravascular ultrasound

ACCURACY OF SAGES, ASGE AND ESGE CRITERIA IN PREDICTING CHOLEDOCHOLITHIASIS

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Background: Recently, the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), American Society for Gastrointestinal Endoscopy (ASGE) and European Society of Gastrointestinal Endoscopy (ESGE) has published guidelines for the management of choledocholithiasis (CDL). According to these guidelines, patients with suspected CDL are classified as high, intermediate or low risk based on the presence of clinical, laboratory and imaging predictors. However, in the era of more accurate diagnostic modalities such as endoscopic ultrasound (EUS) and magnetic resonance cholangiopancreatography (MRCP), these risk stratification remains controversial.

Objectives: To evaluate the diagnostic accuracy of the SAGES, ASGE and ESGE criteria, and their variables in predicting CDL.

Methods: A retrospective cohort study of 280 patients with suspected CDL was conducted at Surin hospital from January 2019 to December 2020. The patients were classified into three risk categories according to the SAGES, ASGE and ESGE criteria.

Results: In the high-risk patients, the diagnostic accuracy were 78.93% (81.13% sensitivity, 72.06% specificity), 75% (75.47% sensitivity, 73.53% specificity) and 70% (66.04% sensitivity, 82.35% specificity) for SAGES, ASGE and ESGE criteria, respectively. The positive predictive value (PPV) and negative predictive value (NPV) were 90.05% and 55.06%, 89.89% and 49.02%, and 92.11% and 43.75%, respectively. In the intermediate-risk patients, the diagnostic accuracy was 22.50% (16.98% sensitivity, 39.71% specificity), 25% (24.53% sensitivity, 26.47% specificity), 30.00% (33.49% sensitivity, 19.12% specificity) for SAGES, ASGE and ESGE criteria, respectively. The analysis of individual component predictors showed that, the common bile duct stone (CBDS) on initial imaging plus ascending cholangitis has the highest specificity of 97.06%, followed by CBDS plus total bilirubin (TB) > 1.7 mg/dL (94.12%), and CBDS on imaging and CBDS plus dilated common bile duct (CBD) (92.65% each).

Conclusions: The current SAGES, ASGE and ESGE criteria lack accuracy in predicting CDL and there is still need for more accurate risk stratification in the future. When there is no absolute indication for endoscopic retrograde cholangiopancreatography (ERCP), the confirmatory testing with EUS or MRCP in patients with suspected CDL should be considered prior to ERCP.

Keywords: Biliary tract disease, Common bile duct stone, Endoscopic retrograde cholangiopancreatog-

raphy, Magnetic resonance cholangiopancreatography, Endoscopic ultrasound

CAN SANITARY NAPKIN IMPROVE HEALING OF CHRONIC VENOUS LEG ULCER COMPARED WITH CONVENTIONAL GAUZE COVERING?: A RANDOMIZED CONTROLLED TRIAL

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Background: Venous leg ulcers (VLUs) are the most common lower extremity ulcers which characterize by long period of treatment, high recurrent rate and interfere to quality of life. The pathophysiologies of VLUs are venous hypertension and chronic inflammation. The active inflammatory cells produce proteolytic enzymes such as matrix metalloproteinases (MMPs), collagenase and elastase, resulting in delay wound healing. The sanitary napkin consists of super absorbent polymers (SAPs) which can reduce concentration of proteinase, inhibit bacterial growth and absorb excessive fluid. We aimed to evaluate whether the sanitary napkin improve wound healing.

Methods: A randomized controlled trial was conducted at vascular wound clinic, Ramathibodi Hospital between January 2019 and December 2020. The VLUs participants were randomized wound dressing into sterile sanitary napkin group (intervention) and gauze group (control). Wound healing rate, PUSH score, frequency of dressing change, pain, odor, patient satisfaction and adverse events were compared between the two groups.

Results: There were 31 patients included in this study which 16 patients were in sanitary group and 15 patents were in control group. Baseline wound area in sanitary napkin group trended to be larger than gauze (6.98 vs 2.25 cm^2, $P = 0.093$). Overall complete healing in sanitary napkin group and gauze group in 12 weeks were not significantly different (23% vs 29%, $P = 0.366$). There was no statistically significant difference in wound area reduction, PUSH score, frequency of dressing change, pain, odor, patient satisfaction and adverse events.

Conclusion: Sanitary napkin and gauze dressing were not different in wound healing of VLUs.

Keywords: Venous leg ulcers, Sanitary napkins, Venous ulcer healing, Super absorbent polymers, Matrix metalloproteinases

COMPARISON BETWEEN EARLY BREAST CANCER PATIENTS WHO UNDERWENT SENTINEL LYMPH NODES EXAMINATION BY ONE-STEP NUCLEIC ACIDS AMPLIFICATION AND CONVENTIONAL PATHOLOGICAL EXAMINATION IN TERM OF BREAST CANCER TREATMENT AND SURVIVAL OUTCOME

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Background: Sentinel lymph node biopsy (SLNB) is a standard axillary staging for early breast cancer. One-step nucleic acid amplification (OSNA) is a new molecular technique for intraoperative examination to measure the copies of cytokeratin 19 (CK19) mRNA. More proportion of micrometastasis detected by OSNA has been reported. However, the impact on treatment planning and survival outcome is still inconclusive.

Objectives: To compare the adjuvant systemic treatment in the patients who underwent SLNB examined by conventional pathological examination and OSNA assay and to compare survival outcome between these two groups.

Methods: A retrospective review of 236 patients with early breast cancer who underwent SLNB from 2014-2018 was performed. Post-operative adjuvant systemic treatments were compared between the two groups by Chi square statistics. Survival outcome was analyzed by Log-rank test.

Results: There were 119 and 117 patients in OSNA and conventional groups, respectively. The OSNA group had more proportion of positive SLN than conventional group (37.8% vs 18.8%; $p < 0.001$). There was no significant difference in adjuvant chemotherapy, radiotherapy or hormonal therapy (61.3% vs 53.8%, $p = 0.244$; 27.7% vs 38.5%, $p = 0.097$; and 76.5% vs 78.8%, $p = 0.811$, respectively), but difference in Anti-HER-2 therapy (12.6% vs 3.4%; $p = 0.01$). There was no difference in axillary

recurrence, disease free survival or overall survival.

Conclusions: Utilization of OSNA technique resulted in more proportion of positive SLN. However, the impact on survival outcome could not be demonstrated. Long-term follow-up and larger sample size are needed.

Keywords: Breast cancer, One-step nucleic acid amplification, Sentinel lymph node biopsy, Survival outcome

COMPARISON IN QUALITY OF LIFE BETWEEN SURGICAL INSIDE-OUT TECHNIQUE AND CONVENTIONAL FEMORAL APPROACH FOR TUNNELED CUFF CATHETER PLACEMENT IN CENTRAL VENOUS OCCLUSION PATIENTS

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Background: Femoral tunneled cuff catheters are required for long-term hemodialysis access in patients who have exhausted upper extremities access due to central vein occlusion. However, using femoral catheter had been reported higher infection rate, malfunction and discomfort. An inside-out technique facilitated and established chest placement tunneled cuff catheter by reversely endovascular access from lower extremities vein with sharp recanalization throughout the upper body. The aim of this study is to compare quality of life between 2 groups.

Methods: This is a randomized controlled trial conducted in Ramathibodi Hospital during May to Dec 2020. Twenty-two long term hemodialysis patients who had exhausted access proven by CTV or failure canalized via upper extremities access were included. Patients were randomized into surgical inside-out (S-inside-out) and femoral catheter groups (FV).

Results: There were 10 and 12 patients in S-inside-out and FV groups, respectively. All patients had successful catheter placements. EQ-5D utility score was significantly better in S-inside-out group (p-value = 0.008). EQ-5D measurement quality of life was tended to be favored in inside-out group. There was significantly higher catheter survival function in inside-out group compared to FV group (100% VS 50%, p-value = 0.017). Four catheters infection presented in FV group whereas no catheter infection was found in S-inside-out group. There was one hemothorax as a procedural related complication.

Conclusion: The S-inside-out technique was feasible for exhausted access patients to establish upper chest tunneled cuff catheter placement for hemodialysis. This technique provides better outcomes of quality of life, catheter survival function and lower infection rate compared to FV catheter.

Keywords: Inside-out, Femoral catheter, Tunnel cuff catheter, Hemodialysis, Quality of life

COMPARISON OF THE FECAL MICROBIOTA IN NORMAL SUBJECTS AND COLONIC POLYP AND COLORECTAL CANCER PATIENTS (CRC) IN SOUTHERN THAILAND

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Background: Correlation between microbiome from stool samples and colorectal cancer patients had significantly shown increased amount of the microbiome as well as decline in gut microbiome diversity. These present researches helped identify appropriate biomarkers which could be used for potential colorectal cancer assessment among the unexplored Thai population.

Objective: To compare fecal microbiota in normal subjects and patients with colorectal cancer in Southern Thailand.

Methods: This cross-sectional study collected the stool specimens in patient older than 50 years who appointed for elective colonoscopy. All stool specimens were divided into 3 groups (colorectal cancer, colonic polyp and normal group). All stool specimens were sent to analyze with 16s Metagenomic sequencing. All microbiome data was analyzed with Duncan's multiple

range test.

Results: Stool samples were collected from 17 normal subjects, 17 colonic polyps, 10 colorectal cancer patients. Phylum-level investigations demonstrated relative proportion of the phylum Euryarchaeota, Verrucomicrobia, and Synergistetes were higher significantly in colorectal cancer group than in normal group. Genus-level and species-level investigations revealed that the genus *Christensenella, Oscillibacter, Odoribacter, Ruthenibacterium, Comamonas, Anaerotignum, Hungatella,* and *Alistipes* elevated significantly in the colorectal cancer group compared with the normal group. Species-level analyses identified two bacterial species *(Kineothrix alysoides, Lactobacillus rogosae)* that were significantly different between colorectal cancer when compared with both normal and colonic polyp subjects. 8 bacterial species elevated significantly different between colorectal cancer and normal subjects.

Conclusion: Gut microbial quantities differ between normal subjects and colorectal patients in southern Thailand populations by next-generation sequencing analysis. This research rarely showed statistically significant differences in gut microbiota between normal and colonic polyps. *Akkermansia muciniphila* was candidate of bacterial biomarker for colorectal cancer in this study, *Kineothrix alysoides* was candidate probiotic for inhibiting colorectal cancer.

Keywords: Stool, Microbiota, Colorectal cancer, Colonic polyp

DEVELOPMENT OF THE NOVEL MODEL TO PREDICT NODAL METASTASIS MORE THAN 3 NODES (N2/N3 STAGES) IN BREAST CANCER PATIENTS WHO UNDERWENT SENTINEL LYMPH NODE BIOPSY WITH INTRA-OPERATIVE OSNA ASSAY

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Axillary lymph node dissection (ALND) is standard procedure for patient with tumor-involved sentinel lymph nodes (SLN). One-Step Nucleic acid Amplification (OSNA) assay is one of accepted technique used to evaluate SLN status intra-operatively. Selective patients with positive SLN could omit ALND according to ACOSOG Z0011 trial while ALND could improve survival in patient with extensive nodal involvement (N2/N3 stage). The objective was to develop model using clinicopathological parameters combines with OSNA assay to predict N2/N3 status. Female patients over 18-year-old with T1-T3 invasive breast cancer without clinical lymphadenopathy underwent sentinel lymph node biopsy (SLNB) with positive OSNA assay results were recruited. Correlations between clinicopathological parameters, total tumor load (TTL) and axillary status were analyzed by Chi square statistic and logistic regression. Model discrimination was evaluated using receiver-operating characteristic (ROC) analysis. Total number of positive SLN patients was 196. There were 151 patients with N1 status and 45 patients with N2-3 status. Tumor size, histologic type, lymphovascular invasion (LVI), estrogen receptor (ER) and log TTL were independent factors that predict N2-3 staging. Those different parameters were used to develop two models which were pre- and post-operative models. The pre- and post- operative models could predict N2-3 status with area under the ROC curve of 0.773, 95% CI 0.693-0.853 and 0.853 95% CI 0.799-0.916, respectively. In conclusion, models that utilized clinicopathological parameters and TTL by OSNA assay could predict N2-3 axillary status in patients with positive SLN and might be used for ALND planning.

Keywords: Breast cancer, Nodal metastasis, Model, One-step nucleic acid amplification, Sentinel lymph node biopsy

DOES CONCOMITANT VASCULAR INJURY HAVE AN IMPACT ON THE OUTCOME AFTER SURGICAL REPAIR OF IATROGENIC BILE DUCT INJURIES

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Background: Effect of concomitant vasculobiliary injury (VBI) and timing for surgical repair remains

debatable in case of iatrogenic bile duct injuries (IBDI). Results from previous studies are difficult to compare because of diference in definition of patency. This study evaluates outcome of surgical repair for IBDI with or without VBI using standards for reporting outcome proposed by Starsberg et al. in 2018.

Methods: A retrospective study of 78 patients with IBDI treated with surgical repair from 2010- 2019 was conducted to compare the patency between VBI and non-VBI patients. We also analyzed patency in VBI patients with immediate, early and late repair.

Results: Twenty-four and 54 patients were categorized into VBI and non-VBI groups respectively. The most common vascular injury was right hepatic artery (22/24). Follow-up ranged from 7-120 months (median 36 months). Hepaticojejunostomy is the most common procedure, which was performed in 90% of the patients. Primary repair with T-tube was performed in 10%. There was no difference in the grading of patency after the primary treatment between VBI and non-VBI patients ($p = 1.00$). Both methods of repair result in similar Grading of patency. In VBI group, subgroup analysis of the timing of repair showed no difference in patency rate [Immediate vs. early vs. late repair ($p = 0.338$)].

Conclusion: Our study results indicate that VBI and timing of the repair are not associated with poor long-term treatment outcome. Based on our findings, an attempt to repair concomitant vascular injury does not need to be delayed.

EFFECT OF CARVING PLANES ON COSTAL CARTILAGE WARPING

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Background: Autogenous costal cartilage becomes favorable choice for nasal reconstruction due to ease of harvest, large volume and less adverse effects such as infection or extrusion. Despite many techniques have been developed over years, warping remains major disadvantage of costal cartilage graft. Our study focuses on which carving plane result in least warping and provide maximum amount of cartilage.

Methods: Two hundred and five costal cartilage grafts were carved from 10 fresh cadavers in 3 major planes, anteroposterior, cephalocaudal and parallel to synchondrosis. These 3 major planes are divided into grafts from central and peripheral portion and each subgroup is divided into 3 thickness, 1 2 and 3 mm. Warping angle of all grafts were compared at different timing, immediate, 30 minutes, 1 hour, 1 day, 1 week and 1 month after carving.

Results: Cephalocaudal plane warped more than other planes significantly. Anteroposterior had the lowest warping angle, however there was no statistically significant. Grafts had maximum warping at 30 minutes and some grafts continued warping over time even at 1 month. Grafts from central portion warped less than peripheral portion but there was no statistical different.

Conclusion: Carving in cephalocaudal plane, even in central portion results in most warping among other planes. Choosing anteroposterior or parallel to synchondrosis plane yields better results if surgeons need straight cartilage. If surgeons need curvy cartilage, we suggest cutting in cephalocaudal plane. We suggest placing cartilage in normal saline and waiting 30 minutes for maximum warp to occur. Surgeons also benefit from using cephalocaudal group in straight cut if grafts are thicker than 3 mm.

Keywords: Costal cartilage, Warping, Carving plane

EFFECT OF LOCAL ANESTHETIC WOUND INFILTRATION FOR REDUCING POSTOPERATIVE PAIN IN PATIENTS RECEIVED LAPAROSCOPIC CHOLECYSTECTOMY, A RANDOMIZED CONTROLLED

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Background: Post-operative pain is an important problem that contributes to many post-operative sequels such as delayed ambulation, inability to adequately clear the airway, increased usage and doses of analgesics, and prolonged hospital stay. Local anesthetic infiltration is

a method that is widely used to reduce surgical wound pain.

Objectives: Primary outcome of this study was to evaluate the effect of local anesthetic wound infiltration on reducing post-operative pain and the most effective tissue layers of drug injection. Secondary outcome was to evaluate factors that affect post-operative pain.

Methods: Patients undergoing elective laparoscopic cholecystectomy at Ramathibodi Hospital from March 2018 to February 2019 were blindly randomized into three groups.

Of the total 150 patients, 48 patients in group 1 did not receive local anesthetic wound infiltration, 50 patients in group 2 received local anesthetic wound infiltration into the subcutaneous layer, and 52 patients in group 3 received local anesthetic wound infiltration into the abdominal sheath and the subcutaneous layer. Post-operative pain was measured by numerical rating scale (NRS) and analgesic drug consumption recorded by IV-PCA.

Results: Patients who received local anesthetic wound infiltration into abdominal sheath and subcutaneous layer, showed lower NRS than the other two groups. Immediately and at the first hour post operation, patients in abdominal sheath infiltration group showed significantly lower pain intensity as measured by NRS than patients in no infiltration group ($p = 0.014$ and $p = 0.006$, respectively). Post-operative morphine consumption in abdominal sheath infiltration group was lower than in no infiltration group ($p = 0.004$). Total morphine consumption in abdominal sheath infiltration group was significantly lower than no infiltration group ($p = 0.043$). Total morphine consumption in subcutaneous infiltration and no infiltration group was not significantly different ($p = 0.999$). There was no difference in operative times, post-operative complications, nausea and vomiting symptoms, and length of hospital stay. Other than local infiltration, patients with underlying disease of diabetes mellitus used lower dose of morphine than patent without diabetes mellitus ($p = 0.003$) and prolonged operative time resulted in higher dose of morphine consumption ($p = 0.010$).

Conclusions: Local anesthetic wound infiltration reduced post-operative pain in patients undergoing laparoscopic cholecystectomy. The most effective method for local infiltration of anesthetic drugs is to inject into abdominal sheath and subcutaneous layer. Factors associated with post-operative pain were local infiltration, diabetes mellitus and operative time.

EXTERNAL VALIDATION OF MODIFIED RAPID EMERGENCY MEDICINE SCORE IN ROAD TRAFFIC INJURIES IN BANGKOK LEVEL I TRAUMA CENTER

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Background: Trauma is a significant problem of public health, the suitable responsive acquired the excellent perceptive in trauma system. As a result, the accurate predictor for accessing trauma severity is crucially.

Objectives: This study aimed to validate the modified rapid emergency medicine score (mREMS) for in-hospital mortality prediction in the road traffic injuries and to compare mREMS with the other trauma scores as follows: revised trauma score (RTS); and mechanism, Glasgow coma scale, age and arterial pressure (MGAP) score.

Methods: Data were retrospectively collected from the Vajira Hospital database. A total of 1,033 patients were identified from January 1, 2015, to December 31, 2018. The mREMS was calculated from six predictors: age, systolic blood pressure, heart rate, respiratory rate, pulse oxygen saturation, and Glasgow coma scale. The receiver operating characteristic curve was plotted, and the area under the curve (AUC) was calculated. The AUC and 95% confidence interval (CI) of mREMS was compared with the AUCs of the other scores. Model calibration were assessed using Hosmer-Lemeshow goodness-of-fit test.

Results: Results indicated that mREMS performed significantly better in death prediction than RTS in road traffic injury, with the AUCs (95% CI) of 0.909 (0.866, 0.951) versus 0.859 (0.791, 0.927), p-value 0.023. However, the difference between the AUC of mREMS and MGAP score was not statistically significant (p-value 0.150). The mREMS also demonstrated good calibration in this dataset with a p-value of 0.277 from the Hosmer-Lemeshow goodness-of-fit test.

Conclusions: In the road traffic injury population, the mREMS is an excellent predictor for in-hospital mortality, which could apply for triage in timely manner.

However, this score should be further validated in other trauma centers before nationwide implementation.

Keywords: Modified rapid emergency medicine score, Road traffic injury, External validation

OPEN VERSUS LAPAROSCOPIC AND ROBOTIC-ASSIST SURGERY FOR LIVER RESECTION (SINGLE SURGEON EXPERIENCE)

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Background: While minimally invasive surgery (MIS) to treat liver tumors has increased, the data on perioperative outcome of MIS relative to open liver resection in Thailand is lacking.

Objective: This study aimed to compare short-term outcomes between MIS and open hepatectomy in the Thailand database.

Methods: This is a retrospective analysis of data of all patients treated by liver resection between December 2012 and December 2019. A total of 71 patients underwent minimal invasive surgery (subgroup: laparoscopic 61, robotic 10 patients) and 87 patients underwent open surgery by single surgeon in our center.

Results: Patients undergoing minimally invasive surgery had significantly shorter length of hospital stay (LOS), (5 vs. 8 days), less estimated blood loss (430 vs. 500 ml), lower complication (11.2% vs. 27.4%), shorter time to step to full diet (1 vs. 2 days) but had significantly longer operative time (275 vs. 210 mins).

There were no differences between groups in terms of blood transfusion (22.6% vs. 29.9%), post-operative pain on post-operative day 1 (2 vs. 3), positive margin (7% vs. 8.1%).

In subgroup analysis, only operative time of robotic is significantly longer. Others result were not difference; length of hospital stays (5 vs. 6 days), estimated blood loss (300 vs. 600ml), lower complication (11.5% vs. 10.0%), shorter time to step to full diet (1 vs. 1 days)

Conclusion: Minimally invasive liver surgery is still in evolution in Thailand and showed benefits over open surgery in LOS, blood loss, complication, and time to step diet but it may take longer operative time. We found no difference in post-operative pain on day 1, margin status. Future studies are needed to define potential beneficial long-term outcomes.

STUDY OF THE EFFICACY OF SI-HERB AG VS STANDARD DRESSING IN TRAUMATIC ABRASION WOUND TREATMENT

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Background: Advancement in technology helps medical products for wound treatment development in terms of healing improvement, prevention of infection, and pain reduction. Nowadays, there are many effective wound dressing products; however, most of them need to be imported. In Thailand, there was a locally-made, advanced wound dressing polyester containing herbal extract, created by Muangman in 2016, aimed for minimally contaminated wounds designed for burn patients. However, traumatic abrasion wounds are more common. They are most severely contaminated and likely to be infected. Silver is a natural element that has local antimicrobial effects and, has been proved for its effectiveness for wound care.

Objective: This study aimed to examine the clinical efficacy of the silver-added polyester-containing herbal extract dressing (SI-Herb Ag) in traumatic abrasion wounds.

Methods: The prospective randomized controlled trial was conducted. The duration for complete healing, pain, wound infection rate, unfavorable symptoms and side effects were compared. Traumatic patients with at least 2 abrasion wounds in each patient were enrolled in this study. Two wounds in each patient were randomized to control wound and treatment wound (dressing with SI-Herb Ag).

Results: Forty patients were enrolled into this study. Thirty-two patients were analyzed with 8 patients losing follow up. The wound healing of treatment group was significantly faster compared with the control group (6.28 ± 2.57 VS 7.22 ± 2.84 days, $p < 0.05$). The visual analogue score for pain was significantly lower in the treatment group in the subsequent days of dressing. There was no difference in unfavorable symptoms, side effects and infection rate between groups.

Conclusion: SI-Herb Ag showed greater wound healing, less pain, and no unfavorable outcome in traumatic abrasion wound treatment.

Keywords: Herbal dressing, Hydrocolloid dressing, Herbal hydrocolloid dressing, Silver dressing, Traumatic abrasion wounds

SURVIVAL OUTCOMES OF PATIENTS DIAGNOSED WITH PANCREATIC NEUROENDOCRINE TUMORS (PNETS) BETWEEN FUNCTIONAL AND NONFUNCTIONAL TUMORS IN SONGKLANAGARIND HOSPITAL DURING 2004-2019

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Background: Pancreatic neuroendocrine tumors (PNETs) are uncommon neoplasms, presenting with symptoms of hormone overproduction (functional) or asymptomatic (nonfunctional). Survival outcomes following surgery is remain uncertain.

Objectives: To evaluate survival outcomes of patients diagnosed with functional compared with nonfunctional PNETs and to identify predictive factors affecting the survival outcomes.

Methods: A retrospective study was conducted in Songklanagarind Hospital between January 1, 2004 and December 31, 2019. The medical records of 59 patients diagnosed with PNETs who underwent surgery were retrospectively reviewed. Patient factors, operative procedures and tumor characteristics were collected. The disease-free survival (DFS), overall survival (OS) and predictive factors for survival were analyzed.

Results: A total of 59 cases of PNETs was identified and classified to functional (n = 30) and nonfunctional tumor group (n = 29). Tumor location at head/uncinate process and neck was statistically significantly higher in the nonfunctional tumor group ($p = 0.008$). The size of tumor was significantly smaller in the functional compared with nonfunctional tumor group (1.5 cm; [IQR 1.5, 2.3] vs. 3.0 cm [IQR 1.7, 4.8]; $p < 0.001$). Enucleation was significantly higher in the functional tumor group, whilst pancreaticoduodenectomy was significantly higher in nonfunctional tumor group ($p = 0.02$). Low grade tumor ($p = 0.009$) and early stage of disease ($p = 0.03$) were significantly higher in the functional tumor group. At a median follow-up time of 5.8 years (SD, 3.8), the 5-year DFS and OS in functional tumor group was 96.7% and the 5-year DFS and OS in nonfunctional tumor group was 82.8% and 89.7%, respectively. In multivariate analysis, only the large tumor size was an independent predictive factor for worst survival outcomes (HR 1.19, 95% CI 1.02-1.38, $p = 0.03$).

Conclusions: Patients diagnosed with PNETs either functional or nonfunctional have excellent survival outcomes. Larger tumor size is a predictive factor for poorer survival outcomes.

Keywords: Pancreatic neuroendocrine tumors, Insulinoma, Enucleation, Survival outcomes

THE COMPARISON OF 1-YEAR AND 5-YEAR SURVIVAL RATE IN BILIARY ATRESIA WITH HEPATIC PORTOENTEROSTOMY ALONE, HEPATIC PORTOENTEROSTOMY WITH LIVER TRANSPLANTATION AND PRIMARY LIVER TRANSPLANTATION; A NETWORK META-ANALYSIS

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Background: Biliary atresia (BA) was the condition which had time-dependence surgery. The main operation was Kasai procedure (Hepatic portoenterostomy). Nowadays, liver transplantation had more role in treatment.

Objective: This study was to compare 1-year and 5-year survival rate of patients who underwent Kasai operation alone (K), Kasai operation followed by liver transplantation (KLT) and primary liver transplantation (LT).

Methods: Network meta-analysis was done to

compare the relationship of each paired (K vs LT, K vs KLT, and LT vs KLT). The report of 1-year and 5-year survival rate was required, and the follow up time was at least 1 year. The online database searching was between 2000-2021.

Results: Overall were 1983 records and 11 records remained. The follow-up time was from 1 to 27 years. Total patients were 2578 children. Mean age of first operation in each group were 73 ± 13.15, 305 ± 132.90, and 68 ± 4.69 days old in K group, LT group and the first operation (Kasai) in KLT group (K VS LT; $p = 0.003$, K VS K in KLT; $p = 0.498$). Mean age of LT as primary surgery vs rescue transplantation (LT after K) was 305 ± 132.90 and 706 ± 669.37 ($p = 0.146$). The probability of 1-year survival rate of LT, KLT, and K were 78.2%, 14.8% and 7.0% relatively. The probability of 5-year survival rate of LT, KLT, and K were 71.9%, 28.1% and 0.0%. Using K as a reference group, the risk ratio of 5-year survival of LT was 1.25 (95% confidence interval; CI = 1.15-1.35, $p < 0.001$) and KLT was 1.23 (95% CI = 1.15-1.31, $p < 0.001$). No statistically significance of risk ratio found between any group in 1-year survival analysis.

Conclusion: Primary liver transplantation had better 5-year survival outcome than others. However, the age at first operation was noticeably different. Patients with early diagnosis still were initiated with Kasai, and liver transplant was reserved as a rescue procedure for who failed first operation. Also, primary liver transplantation was considered an option for the patient with delayed diagnosis in aspect of 5-year survival outcome.

Keywords: Biliary atresia, Kasai, hepatic portoenterostomy, Liver transplantation, Survival rate

VALIDATION OF THE NOVEL NOMOGRAM TO PREDICT NON-SENTINEL LYMPH NODE STATUS IN BREAST CANCER AND COMPARISON WITH PREVIOUS NOMOGRAMS

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Background: Axillary lymph node dissection (ALND) may be omitted in patients with limited disease in axilla. One-step nucleic acid amplification (OSNA) is a molecular detection technique for intraoperative assessment of tumor burden in sentinel lymph nodes (SLN). There have been several well-established nomograms developed to predict non-sentinel lymph nodes (NSLNs) status including recently reported one namely the Siriraj Molecular Nomogram.

Objective: To validate the Siriraj Molecular Nomogram in a separate cohort of breast cancer patients and the accuracy of the Siriraj Molecular Nomogram with the MSKCC Nomogram and the Siriraj Conventional Nomogram.

Methods: Patients with invasive breast cancer clinical stage T1-T3 and clinically negative axillary lymph node who underwent SLNB using intra-operative OSNA assay with positive results were recruited. All patients underwent ALND. The associations between Total tumor load (TTL), clinicopathological parameters, and NSLN status were analyzed by Student t test and Chi square statistic. Receiver operating characteristic curve (ROC) analysis was performed to discriminate NSLN status using the probability received from the Siriraj Molecular Nomogram, the Siriraj Conventional Nomogram, and MSKCC Nomogram.

Results: Total of patients who underwent SLNB using intra-operative OSNA assay with positive results was 112. NSLN status were negative in 67 patients. NSLN status were positive in 45 patients and factors that predict non-sentinel lymph node status were larger size of tumor, presence of LVI ang higher log TTL. The novel nomogram can predict NSLN status similar to MSKCC nomogram with area under ROC curve of 0.686, 95% CI 0.583-0.790 for OSNA preop, 0.711, 95% CI 0.608-0.813 for OSNA postop, and 0.709, 95% CI 0.606-0.812 for MSKCC nomogram.

Conclusion: A nomogram using results obtained via OSNA can predict NSLN status as well as aid in deciding to omit ALND.

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

VDO Award

CHALLENGE IN LAPAROSCOPIC APPROACH TO CHRONIC DIAPHRAGMATIC HERNIA

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Chronic diaphragmatic hernia is an uncommon disease which may be associated with significant morbidity and mortality. Chronic diaphragmatic hernia is the sequelae of an undiagnosed and untreated diaphragmatic injury, during an acute traumatic event. Usual clinical presentation may range from asymptomatic cases to serious respiratory/gastrointestinal symptoms. Surgery represents the treatment of choice. Challenge in laparoscopic approach is owing to intrathoracic adhesion, multiple organ migration and difficulty of the technique to close diaphragmatic defect. In general, diaphragmatic hernia direct repair, a tension-free suture is generally attempted. Nevertheless, in case of very large defects or when a tension-free suture is deemed unfeasible, prosthesis mesh is recommended. This VDO will show about Chronic diaphragmatic hernia etiology, clinical presentation, diagnosis and surgical technique for treatment.

Keywords: Chronic diaphragmatic hernia, Laparoscopic approac

CHOLECYSTECTOMY IN HOSTILE ABDOMEN, LAPAROSCOPIC APPROACH

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Background: Cholecystectomy nowadays mostly performed by laparoscopic approach. But the limitation of laparoscopic approach is working space, especially in patients who have heavy intraabdominal adhesion. This video would like to show you how to deal with this problem.

Objective: To present the technique of laparoscopic cholecystectomy for patient with previous open abdominal surgery.

Methods: A 55 years old male presented with gallstone and CBD stone with cholangitis and undergone ERCP with successful stone extraction. Cholecystectomy was considered to prevent recurrent of CBD stone. This patient had history of ruptured abdominal aortic aneurysm and undergone open aneurysmal repair with unable to closed the abdomen causing large ventral hernia. He also underwent ventral hernia repair with ALT free flap 2 years ago. The patient was operated cholecystectomy by laparoscopic approach. The video shows port inserting, space creating, and cholecystectomy technique.

Results: The operative time was 160 minutes. Postoperative recovery was good. Start oral diet at post-operative day 1 and patient was discharge at post-operative day 4.

Conclusion: Cholecystectomy in hostile abdomen is safe and can be performed by laparoscopic approach.

Keywords: Cholecystectomy, Hostile abdomen, Laparoscopic approach

HOW TO DO WITH GASTRIC BAND MALPOSITION AND WEIGHT REGAIN, STEP BY STEP

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Laparoscopic adjustable gastric banding was a popular bariatric procedure in the past. But nowadays, this procedure is less commonly used due to a lot of evidence from many studies indicates that the result of losing excess weight after this surgery is not very good and caused long term weight regain. The recent standard bariatric surgery such as laparoscopic sleeve gastrectomy and laparoscopic Roux-en-Y gastric bypass are now currently used. This VDO present the case of long-term post laparoscopic adjustable gastric banding surgery who presented with weight regain and gastric

band malposition. The VDO show technique and options of gastric band removal and correct weight regain problem by the standard bariatric surgery.

Keywords: Laparoscopic adjustable gastric banding, Bariatric surgery, Band malposition, Weight regain

LAPAROSCOPIC ABDOMINOPERINEAL RESECTION WITH EN BLOC VAGINAL RESECTION AND IMMEDIATE NEOVAGINAL RECONSTRUCTION WITH COLONIC FLAP AND PELVIC FLOOR RECONSTRUCTION WITH MUCOSA-REMOVED COLONIC FLAP

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Background: Colorectal cancers invading adjacent organs require extended en bloc resection. Immediate pelvic reconstruction has been advocated to minimize complications. Myocutaneous flap, especially the VRAM, has been recommended as the flap of choice. Not only is open laparotomy required, but both donor and recipient site complications have been frequently reported.

Objective: The purpose of this video was to demonstrate the minimal invasive surgical approach of this high-risk operation.

Methods: A 51-year-old woman presented with rectal cancer invading the vagina and pelvic floor. She also had synchronous pulmonary metastasis. After neoadjuvant chemotherapy of mFOLFOX6 for 7 cycles, she developed tumor-related pelvic septic shock requiring intravenous antibiotic for one week, followed by laparoscopic en bloc abdominoperineal resection with neovaginal and pelvic floor reconstruction using colonic flap. The detail of the procedure included laparoscopic mobilization of descending and sigmoid colon by lateral to medial approach, and posterior rectal dissection in the TME plane. Low ligation of the IMA with lymph nodes dissection was carried out, the left colic and sigmoidal vessels were preserved for colostomy and colonic flap pedicle, respectively. The colonic transection was made at sigmoid-descending junction where the proximal colon was matured for colostomy. The pelvic floor was cut cylindrically with wide en bloc of the posterior vaginal wall using perineal approach. The specimen was removed via the perineal wound. Colonic flap was divided into 2 parts, the proximal part was used for neovaginal reconstruction, and the distal part of mucosa-removed colonic flap was used for the pelvic floor reconstruction. The perineal skin was closed.

Results: There were no complications nor any need for blood transfusion. The patient could ambulate and start oral diet on the postoperative day 2. She was discharged home safely.

Conclusion: Immediate neovaginal and pelvic floor reconstruction with colonic flap is feasible and provides good outcomes. This reconstruction technique enables the minimal invasive possible for this condition.

Keywords: Locally advanced rectal cancer, Neovagina, Pelvic reconstruction, Colonic flap, Minimal invasive surgery

LAPAROSCOPIC D3 LYMPHADENECTOMY WITH EN BLOC UNCINATE PROCESS OF THE PANCREAS FOR LOCALLY ADVANCE HEPATIC FLEXURE COLON CANCER

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Background: The concept of complete mesocolic excision (CME) with central vascular ligation (CVL) aims to preserve the embryological planes and achieve a complete lymphadenectomy. While Japanese Society for Cancer of the Colon and Rectum (JSCCR) recommend D3-lymphadenectomy by removing all the tumor barring nodes, for T3-4 tumors, or suspected lymph node metastases by preoperative imaging. Recent studies show that CME/CVL and D3-lymphadenectomy are feasible and provide better oncological outcomes.

Objective: To demonstrate the stepwise approach of laparoscopic subtotal colectomy with D3-lymphadenectomy and en bloc uncinate process of the pancreas.

Case presentation: This is a case of 50-year-old woman who presented with locally advanced hepatic flexure colon cancer with multiple pericolic node and huge matted peripancreatic node encases SMV and abut 2nd/3rd part duodenum. There is a synchronous malignant polyp at rectosigmoid colon. She underwent diverted loop ileostomy followed by perioperative chemotherapy. After 5 cycles of mFOLFOX-6, the primary tumor deceases in size and extension, the peripancreatic

node slightly decreases size but still abut SMV and 2nd/3rd part duodenum without fat plane separation. She completes 12 cycles of perioperative chemotherapy before the operation.

Surgical technique: Laparoscopic right side colon mobilization in lateral to medial approach by SMA-first approach. The dissected plane was performed along the anterior surface of SMA. The ileocolic vessels were identified, and individual ligated at origins. The dissection continues upward until identified GCT, MCV and MCA, the vessels were individual ligated. After control the vessels, dissection of matted node from the uncinate process was performed by partial dissected capsule of uncinate process with specimen. The rest of the surgery continued in the routine fashion.

Results: There was no intraoperative complications and no blood transfusion required. The patient could ambulate to walk and start diet on the postoperative day 2. There was postoperative pancreatic fistula which not required further operation. The pathologic result show no residual viable tumor at primary site and all 42 lymph nodes.

Conclusion: Multidisciplinary team approach is the key to success for complicated locally advanced colon cancer. Minimally invasive approach is feasible and safe in order to achieve adequate node dissection with good circumferential margins.

Keywords: Laparoscopic D3-lymphadenectomy, Locally advance colon cance

LAPAROSCOPIC EXTENDED TOTAL PELVIC EXENTERATION WITH EN BLOC PENECTOMY WITH IMMEDIATE ANTERO-LATERAL THIGH FLAP FOR PERINEAL RECONSTRUCTION FOR T4 RECTAL CANCER

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Background: Multidisciplinary team approach with appropriate neoadjuvant treatments is crucial to achieve the best oncological outcomes in the T4 locally advanced rectal cancer. Prudential oncologic resection provides good surgical margins, which usually requires multivisceral organ resection beyond the normal total mesorectal excision plane. Several studies reported the feasibility and benefits of minimally invasive approach in this scenario.

Objective: This video aims to demonstrate the feasibility of minimally invasive approach in extended total pelvic exenteration with immediate perineal reconstruction.

Methods: This is a case of a 54-years-old man who presented with obstructed low rectal cancer with prostate, seminal vesicle, urethra, and scrotal invasion. After diverting loop transverse colostomy, he underwent total neoadjuvant treatment with long course chemoradiation follow by consolidation chemotherapy. Extended pelvic exenteration with total penectomy and coccygectomy with immediate perineal reconstruction was planned. This video demonstrates step by step approach for this procedure.

Results: No intraoperative complications were observed. The patient ambulated well and tolerated regular diet on the postoperative day 2. The patient was discharge home safely without any postoperative adverse events.

Conclusion: Appropriate neoadjuvant treatments is crucial for T4 rectal cancer. Minimally invasive approach for extended pelvic exenteration is feasible and safe in selected patient.

LAPAROSCOPIC LATERAL PELVIC LYMPH NODE DISSECTION AFTER NEOADJUVANT CHEMORADIATION FOR LOCALLY ADVANCE RECTAL CANCER

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Background: While it has been argued for decades whether patients with low rectal cancer should undergo chemoradiation or lateral pelvic lymph node dissection, it has increasingly become recognized that there are patients for whom neither modality alone is sufficient for optimal local control. However, the indications for such a combined approach have not been clearly identified; especially for patients who lateral pelvic lymph node remains enlarge after neoadjuvant chemoradiation.

Objective: To demonstrate laparoscopic lateral pelvic lymph node dissection technique following neoadjuvant chemoradiation therapy in locally advance low

rectal cancer.

Methods: This is a case of a 65-year-old man who presented with low rectal cancer with internal iliac node enlargement. The lateral pelvic lymph nodes remain enlarge after completed long course neoadjuvant chemoradiation. Laparoscopic low anterior resection was performed by TME technique. Then right ureteropelvic fascia was dissected with autonomic nerve preservation. Right superior vesicle artery was identified and preserved. Right obturator and internal iliac node group were dissected then retrieved in en bloc fashion. The dissection boundaries were also shown in the video.

Results: Pathology demonstrated positive metastasis adenocarcinoma in apical (2/7) and lateral pelvic nodes (1/6). The patient was discharged home safely without complications. No local recurrence after 28 months follow-up.

Conclusion: Lateral pelvic lymph node dissection after neoadjuvant chemoradiation is safe and feasible. This approach results in an optimal local control without increase in major morbidity.

LAPAROSCOPIC REPAIR OF MORGAGNI HERNIA WITH MESH REINFORCEMENT

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Morgagni hernias are rare congenital diaphragmatic hernias, and are characterized by herniation through the foramen of Morgagni. Most of patients with Morgagni hernias are asymptomatic. However, in symptomatic patients, they usually present with gastrointestinal or respiratory symptoms.

In this video, we presented a 67-year-old female with functional class change for 18 months. Physical examination was unremarkable. An elevation of right hemidiaphragm with abnormal bowel loops were detected from chest radiography. Computed tomography of the chest and abdomen revealed a 4.8-cm defect at antero-medial aspect of right hemidiaphragm with herniation of transverse colon without signs of ischemia or obstruction. Laparoscopic repair with mesh reinforcement was performed.

The patient was placed supine on the operating table. Camera port was inserted at left upper quadrant under direct vision. Pneumoperitoneum was done. In laparoscopic view, we found Morgagni hernias with incarcerated transverse colon and greater omentum. Instrument ports were inserted clockwise consequently. Incarcerated contents were reduced and 4×2 cm hernial defect was primarily repaired by transfascial suturing with 2-0 non-absorbable suture and pledgets. A 20×15 cm Dual-layer composite mesh was placed and fixed with tracker in double crown fashion for reinforcement. At the area of pericardium, we used 2-0 non-absorbable suture instead of trackers.

Patient condition gradually improved after operation without complications. Chest radiography on the day after operation showed full expansion of right lower lung witout visible bowel loops in right thorax. Patient was discharged 3 days after operation. There was no evidence of recurrence at 3 months post surgery.

LAPAROSCOPIC TOTAL PELVIC EXENTERATION WITH EN BLOC LABIA MAJORA AND URETHRAL ORIFICE WITH MUCOSECTOMIZED COLONIC FLAP PELVIC FLOOR RECONSTRUCTION FOR T4 LOW RECTAL CANCER

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Background: Locally advanced rectal cancer has been associated with high local recurrent rate and poor survival. Multidisciplinary team approach is very important to improve the treatment outcomes. Additionally, adequate radical oncologic surgery by en bloc multivisceral organs resection may be required. Minimally invasive approach has been widely accepted for T4 rectal cancer; however, the procedure is a technically demand and high learning curve.

Objective: This VDO demonstrates the minimal invasive approach of radical oncologic resection with pelvic and perineum reconstruction in extensive locally advanced rectal cancer.

Methods: This is a case of 54-year-old woman who was diagnosed with extensive locally advanced low rectal cancer invade to urethra and vulvar. After multidisciplinary tumor conference, the patient underwent neoadjuvant chemoradiation with consolidation chemo-

therapy follow by laparoscopic total pelvic exenteration with wide excision of the perineum including the labia majora. The procedure started with laparoscopic left side colonic mobilization by medial to lateral approach. The skeletonized inferior mesenteric artery was divided below the left colic origin. The dissection continues downward into the pelvis posteriorly by respecting the TME plane, and anteriorly into the Ritzius space. Bilateral internal iliac vessel branches were individually ligated. The harvested colonic flap using preserved left colic artery pedicle was placed in the pelvic cavity. The wide perineal dissection, which included perineal skin, labia majora, urethral orifice and anus, was performed by en bloc fashion. The specimen was extracted via the perineal wound. The pelvic inlet was closed by mucosal removal colonic flap. The perineal defect reconstruction was completed using the anterolateral thigh flap. Then the end colostomy and ileal conduit urinary diversion were created.

Results: There was no major complication that require surgical intervention. Pathological result showed negative all resected margins. The patient was discharged home safely on postoperative day 5.

Conclusion: Laparoscopic posterior pelvic exenteration with wide perineal recsection and complex pelvic floor and perineal wound reconstruction is safe and feasible in selected extensive locally advanced patient.

LAPAROSCOPIC TOTAL PELVIC ORGANS SUSPENSION FOR DESCENDING PERINEAL SYNDROME WITH PELVIC ORGANS PROLAPSE

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Background: Descending perineal syndrome consists of multiple pelvic organ problems e.g., bowel, bladder, sexual dysfunction, or pelvic organ prolapse. Multidisciplinary team approach is needed to address this complex condition. However, optimal treatments to solve all pelvic compartment problems simultaneously are still controversial.

Objective: This video demonstrates laparoscopic total pelvic organs suspension in descent perineal patient who had rectal prolapse, vaginal prolapse, rectocele, and cystocele with urinary and fecal incontinence.

Methods: MRI defecography revealed anterior, middle and posterior pelvic compartments descent with pelvic organs prolapse. The procedure was performed with modified lithotomy position via five trocars. Anterior bladder mobilization was performed by dissecting into the Retzius space. Then bladder suspension was completed by suturing to the median and bilateral medial umbilical ligaments. Dissection was then turned to the right anterolateral rectum mobilization. Starting from sacral promontory deep down to the pelvic floor level. Autonomic pelvic nerves were identified and preserved. Biologic mesh was placed between anterior rectal wall and posterior vaginal wall, using non-absorbable interrupted suture. Subsequently, the proximal end of the mesh was attached to sacral promontory.

Results: The patient was discharged home safely on postoperative day 2, without any complications. The incontinence score has been significantly improved. Six months postoperative MR defecography revealed that neither the pelvic floor descent nor the pelvic organ prolapsed.

Conclusion: Descending perineal syndrome needs the multidisciplinary team approach to address all pelvic compartment problems simultaneously. The Laparoscopic Total Pelvic Organs Suspension is safe and feasible with promising outcomes.

LAPARASCOPIC TOTALLY EXTRAPERITONEAL REPAIR (LAP TEP): CHALLENGING PLANE CREATION

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Background: Laparoscopic totally extraperitoneal repair (lap TEP) is recommended for inguinal hernia repair due to faster recovery period, lower both acute and chronic groin pain compared with open technique. Key success factors for lap TEP repair are well anatomical recognition and preperitoneal space creation, which plays an important role for adequate working space. Preperitoneal space creation can be achieved by balloon, blunt or sharp dissection. Peritoneal tear, resulting in pneumoperitoneum and loss of extraperitoneal space, is frequent with 10-64% reported rates. Endoscopic

stapling, pretied suture loop ligation and endoscopic suturing are techniques for closure peritoneal defect. Less common but more challenging situation for space creation is fibrotic reaction causing adhesion due to previous preperitoneal surgery such as radical prostatectomy and contralateral laparoscopic hernia repair.

Laparoscopic totally extraperitoneal repair (lap TEP) in many challenging situations, as mentioned above, is safe, feasible and favorable outcomes. However, longer operative times, more surgical skills and expertise are necessary.

Keywords: Inguinal hernia, Totally extraperitoneal, Laparoscopic surgery

LAPAROSCOPIC-ASSISTED PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (LAPEG) IN PATIENT WITH EVENTRATION OF LEFT HEMI-DIAPHRAGM

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Background: Percutaneous endoscopic gastrostomy (PEG) is the standard modality for long-term enteral nutrition. PEG procedure is difficult and harmful in patients who have unusual abdominal anatomy. Laparoscopic-assisted percutaneous endoscopic gastrostomy (LAPEG) is an alternative technique to the open gastrotomy. This video demonstrated the surgical steps of LAPEG in our institute.

Case presentation: A 56-year-old female was diagnosed as locally advanced anaplastic thyroid cancer and asymptomatic eventration of left diaphragm. Enteral route access was indicated due to mechanical dysphagia. From imaging show high lying of stomach then conventional PEG is technically not feasible and LAPEG was considered. Under diagnostic laparoscopic operation, we identified the stomach and placed additional ports for the retraction of organs and lysis of adhesion. The PEG was placed by push technique under laparoscopic view. LAPEG procedure was successful within 35 minutes of operative time. The patients recovered uneventfully and was discharged on 3rd postoperative day.

Discussion: Although PEG is the popular approach of gastrostomy, it was not feasible in all patients. PEG was technically limited in this patient who had stomach malposition. LAPEG is another useful technique in addition to conventional PEG to preserve the minimally invasive benefit. The advantages of LAPEG were intraoperative direct visualization of stomach, visceral organ orientation, and further adhesiolysis to lower risk of inadvertent organ injury. However, LAPEG is sometimes expensive and required the advance skills in laparo-endoscopy.

Conclusion: When conventional PEG placement is contraindicated, LAPEG is an effective and safe alternative for enteral route.

LONG-TERM OUTCOME OF SPHINCTEROPLASTY WITH MARTUIS FLAP FOR CLOACAL INJURY

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Background: Fourth degree obstetric injury usually results in anal incontinence and has negative effect on quality of life. Nowadays, the standard surgical management of obstetric anal sphincter injuries is primary repair immediately after delivery. However, unrecognized injury may occur and secondary repair is required. Overlap sphincter repair has been proposed and recommended as an effective procedure but recent review showed that anal incontinence deteriorate after long term follow up, especially in first two years after repair. Only one third of patients retain incontinence in 10 years follow up These disappointing results indicate that adjunct method may be utilized. Martius flap is a surgical procedure for repairing rectovaginal fistula that result from injury after child birth and patient regain functional use of vagina without fecal incontinence so we applied this procedure to treat obstetric anal injury to fill dead space and decrease tension after repair.

Objective: To evaluate efficacy of martius flap in repairing obstetric anal injuries in long term follow up period.

Methods: This is retrospective comparative study of 13 patients from June 2015 to February 2019. Diagnosis is fourth degree obstetric anal injury with cloacal-like defects. All patients were referred as outpatient. Preoperative endoanal ultrasound were used to confirm diagnosis and underwent delayed repair. Surgery performed was overlapping Sphincteroplasty with Martius Flap. Primary outcome is preoperative and

postoperative wexner's incontinence score and secondary outcomes are complication, length of hospital stay and fecal incontinence quality of life score.

Results: 13 patients with fourth degree injury were reviewed. Mean Follow up period was 46.3 months. Postoperative Wexner's incontinence score improves when compare to preoperative score (18.08 vs 4.23, *p* value < 0.001). Median length of hospital stay was 5 days and Fecal incontinence quality of life score were high with mean score of 16.56. Complication reported were wound infection without sphincter disruption in two patients and dyspareunia in one patient.

Conclusion: Martius flap procedure provide good long-term outcome in term of fecal incontinence and quality of life with minimal complication. However, Further study with larger volume is recommended.

Keywords: OASIS, Incontinence, Martius

MORGAGNI HERNIA WITH COMPLETE COLONIC OBSTRUCTION: LAPAROSCOPIC TREATMENT IN AN EMERGENCY SETTING

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Background: Morgagni hernia is a congenital hernia occurring in the retroxiphoid region, more likely to be detected in older patients with complications such as abdominal pain, chest pain, or colonic obstruction.

Objective: To demonstrate emergency laparoscopic management in case of Morgagni hernia with complete colonic obstruction.

Methods: We presented a case of a 70-year-old woman with 3 days of epigastric pain and complete colonic obstruction. CT showed an anterior diaphragmatic hernia. Laparoscopic treatment was performed by reduction of hernia content and closing the defect with synthetic mesh placement which fixed with non-absorbable interrupted suture.

Results: The patient was returned to normal activity in post-op day 2 without any complication.

Conclusion: Emergency laparoscopic treatment in a patient with Morgagni hernia is safe and feasible.

Keywords: Morgagni hernia, Laparoscopic approach, Colonic obstruction

THE THREE DIFFERENT APPROACHES FOR SPLENIC FLEXURE MOBILIZATION

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Background: Complete splenic flexure mobilization is one of the crucial steps in low anterior resection. Especially in coloanal anastomosis, where extra colonic length is needed to ensure tension-free anastomosis. Three main approaches for splenic flexure mobilization include inferior, superior, and lateral approach.

Objectives: This video demonstrates three different approaches of laparoscopic complete splenic flexure mobilization. The advantages of each approach in particular circumstance will be mentioned in the video.

Technique: Key principles of splenic flexure mobilization are entering into the lesser sac, and complete dissection of the gastrocolic and pancreaticocolic ligaments. This could be performed by three different approaches. First, the inferior approach, during the medial to lateral dissection, the pancreaticocolic ligament will be identified and dissected apart from the inferior border of the pancreas. Then, the lesser sac will be subsequently accessed at this point. Second, superior approach, starts with separation of the gastrocolic ligament follow by dissecting the stomach apart from the transverse colon. Third, lateral approach, the lesser sac will be entered during the lateral colonic mobilization by following the retromesocolic plane. Once the lesser sac is entered, regardless of which approaches are utilized, the gastrocolic and pancreaticocolic ligaments will be completely dissected.

Conclusions: Laparoscopic complete splenic flexure mobilization can be performed safely by using inferior, superior, and lateral approach. The Combination of these approaches may be needed in some situations. Therefore, surgeons need to be familiar with all of these different approaches.

Young Investigator Award

ASSOCIATION BETWEEN THE SOCIETY FOR VASCULAR SURGERY (SVS) - WIFI (WOUND, ISCHEMIA, FOOT INFECTION) CLASSIFICATION, WAGNER-MEGGITT CLASSIFICATION AND AMPUTATION RATE IN PATIENTS WITH DIABETIC FOOT INFECTION

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Background: Diabetic foot infection (DFI) is a common problem in patient with diabetic foot disease. Amputations and other complications of DFI lead to significant morbidity and mortality. The society for vascular surgery (SVS)-WIfI (wound, ischemia, foot infection) classification system can evaluate the benefit for revascularization and the risk of amputation in 1 year.

Objectives: We aimed to evaluate the outcome of DFI under SVS-WIfI and Wagner-Meggitt (WM) classification and determined the factors associated amputation and mortality rate.

Methods: Diabetes patients who presented with characteristics suggesting a more serious DFI or potential indications for hospitalization between June 2018 and May 2021 were reviewed in this cohort study. Demographic data, clinical characteristic, type of revascularization was evaluated. Amputation and mortality rate were the main outcomes. The grading of WM classification and SVS-WIfI score were compared between amputation and non-amputation group. Association between mortality and co-morbidity, including major adverse cardiac events (MACE) were analyzed.

Results: 131 admitted patients with DFI were included in study. 73.28% had peripheral arterial disease (PAD). 64.89% were indicated for revascularization and underwent endovascular or open bypass surgery as appropriated after infection was controlled. The overall major amputation rate was 16.03%. 78 (59.54%) patients were required minor amputation to control infection before revascularization. 1-year amputation risk on SVS-WIfI score was not strongly associated with amputation rate in DFI. ($P = 0.052$) High WM classification score associate with high amputation rate on multivariate analysis ($P < 0.001$). However, open revascularization surgery was favored for high grade SVS-WIfI score with lower major amputation rate but not statistically significant ($P = 0.350$: 95% confidence interval (CI) 0.351 – 0.125). Benefit for revascularization of the SVS - WIfI score was directly associated with minor amputation ($P < 0.001$: 95% CI 0.145 – 0.414). Coronary artery disease and cerebrovascular disease associated with a mortality rate in univariate analysis, but not significant in multivariate analysis (relative risk (RR) 3.14, $P = 0.342$, RR 3.29, $P = 0.134$, respectively).

Conclusions: WM classification score were strongly associated with major amputation rate in patients with DFI. The SVS-WIfI score were not associated with the limb salvage. The limitation of hemodynamic parameter including medial calcinosis, toe amputation, active infection in patients with DFI may cause of an underestimate of SVS-WIfI score led to misinterpretation of the amputation risk. However, higher grade SVS-WIfI score was trendy to prefer the open bypass revascularization with low amputation rate.

Keywords: Diabetic foot infection, Wagner-Meggitt classification score, SVS-WIfI score classification system, Amputation, Peripheral arterial disease.

ACS Basic Science Award

THE ASSOCIATION BETWEEN ATHEROSCLEROTIC RISK FACTORS, HEMODYNAMIC PARAMETERS AND SPECIFIC LESION CHARACTERISTIC TO AMPUTATION AND MORTALITY RATE IN CHRONIC LIMB-THREATENING ISCHEMIA PATIENTS WITH POST-REVASCULARIZED INFRAINGUINAL OCCLUSIVE DISEASE

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Background: Chronic limb-threatening ischemia (CLTI) is advance form of peripheral arterial disease (PAD). Treatment of CLTI is usually required the advance endovascular therapy (EVT) technique for revascularization due to severe atherosclerotic occlusive disease with calcium burden lesion. Risk of amputation and mortality rate which are the major outcomes after advance EVT are not well determine in Asian and Thailand population. The predictive factor to determine the limb salvage and survival rate of CLTI patients which is multifactorial such as atherosclerotic risk factors, hemodynamic parameters, lesion characteristic are still cloudy. Aim of study is to explore the atherosclerotic risk factor, lesion characteristic and hemodynamic parameter associate amputation and mortality rate of CLTI patients after revascularization by advance EVT.

Methods: Retrospective review of CLTI patient who underwent EVT to treat infrainguinal occlusive disease between January 2018 and December 2019 were performed. Clinical characteristic and demographic data, atherosclerotic risk factor, vessel lesion characteristic, hemodynamic parameter, amputation and mortality data were collected from medical electronic database.

Results: 52 CLTI patients with infrainguinal occlusive disease who performed endovascular revascularization were enrolled during the study period. The mean age of patients was 70.1 ± 8.68 years old with 48% of female patients. Diabetes mellitus (DM) and hypertension were common comorbidities (76.9% and 67.3%, respectively). 63.5% had active heavy smoking history. Majority of patients were categorized in class 4 of the SVS WIfI (wound, ischemia, foot infection) classification system by 1-year risk of amputation (73.1%) and benefit for revascularization (88.4%). Half of patients were required complex endovascular including endovascular reconstruction of popliteal artery bifurcation by kissing balloon technique (13%) and retrograde puncture to revascularization (36.5%). Aging (77.5 ± 15.55 versus 65.15 ± 7.09, odd ratio (OR) 1.1: 95% confidence interval (CI) 0.950 - 1.296), absent of infrapopliteal (IP) runoff artery (OR 31.12: 95% CI 0.724 - 1337.12) and global limb anatomic staging (GLASS) for IP grade 4 including long diffuse stenosis, long chronic total occlusion (CTO), CTO involved to tibioperoneal trunk (OR 7.31, 95% CI 0.539 - 99.12) were associated with higher amputation rate in univariate analysis. The multivariate analysis demonstrated absent of IP runoff artery is the major risk factor for amputation. Ankle-brachial index (ABI) were not associate with amputation and survival rate due to false elevation by calcific vessel disease. The overall amputation and mortality rate were 11.53% and 15.38%, respectively.

Conclusion: Absent of IP runoff artery is major risk factor for amputation rate in CLTI patients with post-EVT to revascularization. High peripheral vascular resistance and failure in-line revascularization to the distal ischemic tissue in the absence of distal IP runoff artery is very poor prognostic evidence to limb salvage. ABI is not reliable to determine amputation and mortality rate especially in DM and end-stage renal disease (ESRD) patients. However, large prospective study with long term follow up is needed to confirmed the study's finding.

Keywords: Chronic limb-threatening ischemia, Peripheral arterial disease, Global limb anatomic staging, SVS WifI, amputation rate

ICS Inventor Award

PSU TOURNIQUET TRAINING MODEL

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Background: Exsanguinating hemorrhage from extremity injury is a preventable death in trauma patient. Rapid bleeding control starting with direct compression, wound packing or apply the tourniquet above the bleeding site can improve outcome and safe life. In the situation of covid-19 pandemic, practicing bleeding control in trauma manikin is necessary for improve performance of patient care and can prevent transmitting of disease between simulated patient and student.

Objective: To present PSU Tourniquet Training

Model that mimic practicing applies the tourniquet in simulated patient.

Methods: The PSU Tourniquet Training Model composed of 3 major parts. The first one is a forearm amputation limb made from rubber foam with rubber tube placed in the same location of brachial artery in human. The second part is a pumping system that can generate flow to the injured limb. The last importance part is the voice recognition box than can response to basic question e.g., what is your name, what happen to you. The voice recognition system can detect flow from the pumping system and when apply tourniquet until the flow is cease, its will ask the student for loosening the tourniquet.

Results: The PSU Tourniquet Training Model can simulate the situation of severe bleeding from forearm amputation limb and can apply the tourniquet until the bleeding stop. The voice recognition system response quite well for human voice especially in male student. When student ask the long question or use the sentence that not match the preset question, the answer from the model was in appropriate.

Conclusion: The PSU Tourniquet Training Model was design for practicing hemorrhage control using tourniquet. It can simulate the situation of severe bleeding and can practice bleeding control by apply the tourniquet similar to the real patient. The voice recognition system needs more development for appropriate communication with human.

Keywords: Trauma manikin, Tourniquet training, Hemorrhage control

THE SISFISH TRAINING BOX: THE NOVEL PORTABLE LAPAROSCOPIC TRAINING BOX WITH ESSENTIAL FUNDAMENTAL TRAINING MODULES

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Background: In recent years, laparoscopic surgery has become a mainstay in clinical practice. Proficiency in the laparoscopic surgery is required to prevent the complications and achieve the good surgical outcomes. Therefore, surgical trainees should obtain an adequate laparoscopic training before performing surgery on patients. Basically, many training models such as live porcine, cadavers and simulators, etc. are available to use. However, most of them are expensive and difficult to access. We present one of a useful training model, The SisFish Laparosopic Training Box, which is effective, ready to use, inexpensive and suitable to surgical trainees.

Objectives: To establish a newly durable, portable, user friendly and effective laparoscopic training box that enhanced basic and advanced laparoscopic skills for surgical trainees

Methods: The laparoscopic training box was constructed using a clear acrylic which was translucent, strong and durable. The housing was designed as an easily storable and portable briefcase. The top cover consisted of seven port sites for instruments and adjustable angle bracket. Moreover, our training toolbox was compatible with tablets and webcam to provide real-time image. We developed eight different exercise modules including basic (loops and wire, peg transfer tower of nuts and bead on peg), intermediate (pattern cutting and knot typing) and advance (suturing and end-to-end anastomosis) skills in laparoscopic surgery. Instructional videos for each exercise were created for self-learning process.

Results: The laparoscopic training box was found to be an effective training device for development of laparoscopic skills and easy to use. It was a portable device that allowed trainers to develop their skill at home. Basic psychomotor skills were being trained in all exercises such as hand-eye coordination, precision and stability of the instruments. After achievement of basic laparoscopic technique, intracorporeal knotting and anastomosis was trained in advanced exercise. The approximate cost of the training box was 190 US dollars.

Conclusions: The SisFish Training box with essential fundamental training modules is a portable, ready-to-use, durable and affordable training module that is appropriate for surgical trainees. The regular practice in this box could improve the laparoscopic skills which is mandatory in laparoscopic surgeries.

Keywords: Laparoscopy, Box Training, Instruments, Surgical skills, Exercise modules

Pisith Viseshakul Award

AGE AS THE IMPACT TO MORTALITY RATE IN TRAUMA PATIENT AGE ≥ 40 YEARS OLD

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Background: The fastest growing population is older adult. Geriatric trauma patients pose a unique challenge to trauma teams because the aging process reduces the physiologic reserve. To date, no agreed-upon definition exists for the geriatric trauma patient, and the appropriate age cut point to consider patients at increased risk of mortality is unclear.

Objective: To determine the age cut point at which age impacts the mortality rate in trauma patients.

Methods: This was a retrospective cohort and prognostic analysis study conducted in trauma patients ≥ 40 years old. Patient data were retrieved from the trauma registry database and Hospital Information System in Songklanagarind Hospital. The estimated sample size of 1,509 patients was calculated based on the trauma registry data. The age with the maximum mortality rate was used as the cut point to define the elderly population. Hospital cost, intensive care unit (ICU) length of stay, gender, pre-comorbidity, mechanism of injury, Injury Severity Score (ISS), and Trauma and Injury Severity Score were analyzed for any correlation with mortality, and whether or not they were associated with elderly trauma patients.

Results: A total of 1,523 trauma patients ≥ 40 years old were included in the study. The median age in both the survival and death groups was 61 years and gender in both groups was similar (p-value = 0.259). In the multivariate logistic regression analyses with age adjusted for gender and ISS as the confounding factors, the adjusted odds ratio (OR) showed that increasing age was significantly associated with mortality (OR = 1.035; 95% CI, 1.013-1.057; p-value = 0.001). After reviewing percent of death by age, mortality increased at 48 years. Therefore, 48 years was used as the definition of elderly trauma patients in this study and to analyze other associated factors.

Conclusion: A significantly increased risk of mortality began at 48 years old with similar ISS and ICU length of stay results in the elderly and non-elder groups. Pre-comorbidities associated with increased mortality in elderly trauma patients were ischemic heart disease and renal disease/kidney stone. The most common mechanism of injury in elderly trauma patients was ground-level fall.

Keywords: Elderly, Geriatric, Trauma patient, Age cut point, Mortality

TREATMENT OUTCOME OF TRAUMATIC SUBCLAVIAN ARTERY INJURY

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Background: Traumatic subclavian artery injuries are associated with high morbidity and mortality. The thoracic cage and clavicle provide a protective barrier for the underlying subclavian vessels and nerves which, on the other hand, limit the operative space during open surgery. The endovascular modality is less invasive therefore becomes a possible alternative to conventional open surgical reconstruction.

Objective: The purpose of this study was to analyze the different therapeutic effects on limb salvage and mortality.

Methods: This retrospective study reviewed patients who presented with blunt or penetrating injuries to the subclavian artery from March 2012 to March 2021.

Results: From March 2012 to March 2021, a total number of 30 patients were effectively treated by either endovascular or open repair for traumatic subclavian artery injuries. There was no statistical difference in the limb salvage, mortality, procedure-related complication, and in-hospital medical complications. Intraoperative

crystalloid transfusion and length of hospital stay were significantly lower in the endovascular intervention group. The overall mortality rate was 13.3% and the limb salvage rate was 86.7%.

Conclusion: Endovascular treatment represents an attractive alternative to the traditional surgical approach for the treatment of traumatic injury of the subclavian artery.

Keywords: Traumatic subclavian artery injury, Blunt trauma, Penetrating trauma, Endovascular treatment, Mortality rate