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PEDIATRIC SURGERY

CHROMOSOMAL ABNORMALITIES IN HYPOSPADIAS AND CRYPTORCHIDISM

Treetip Kerdsinchai, Piyawan Chiengkriwate, Sinitdhorn Rujirabanjerd
Pediatric Surgery Unit, Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand

Background and Objective: Hypospadias and cryptorchidism are common congenital anomalies. There are many possible causes of hypospadias such as testosterone biosynthesis defects due to chromosomal anomalies. This study aimed to find the prevalence and types of chromosomal defects in patients with hypospadias and cryptorchidism seen at Songklanagarind Hospital.

Methods: Medical records of 842 hypospadias and cryptorchidism patients seen at Songklanagarind Hospital between 1 January 2005 and 31 December 2014 were reviewed. Data regarding genitalia abnormalities, age, nationality, and chromosomal study results were collected.

Results: Of the 842 patients, 476 had cryptorchidism, 301 had hypospadias, and 51 had both hypospadias and cryptorchidism. There were 90 of 842 patients (11%) who underwent chromosome studies, but one had missing chromosome data. Of these 89 patients, 21 had hypospadias with cryptorchidism, 43 had cryptorchidism only, and 25 had hypospadias only. Abnormal chromosome results were found in 20 of 89 patients (23%), including 47, XY+21 (Down syndrome; 30%), mosaicism (25%), abnormal autosomal and sex karyotypes, and 46, XX ovotesticular disorders of sexual development. Relating abnormal chromosome studies to abnormal genitalia, 8 of the 21 patients with hypospadias with cryptorchidism had abnormal chromosomes (38%), 9 of 43 cryptorchidism patients had abnormal chromosomes (21%), and 3 of 25 hypospadias patients had abnormal chromosomes (12%; *P* value = 0.008). Most of the patients with abnormal chromosomes, i.e., 10/20 (50%), had a posterior urethral opening.

Conclusions: These results suggest that chromosomal studies in hypospadias with cryptorchidism and posterior hypospadias patients can provide useful information for the attending physician.

TREATMENT OF INTUSSUSCEPTION IN A LIMITED RESOURCE HOSPITAL

Wirachai Sontimuang
Department of Surgery, Maharaj Nakhon Si Thammarat Hospital, Nakhon Si Thammarat, Thailand

Background: Intussusception is a common emergency disease in infants and children. For an accurate diagnosis and treatment, specialty doctors and special equipment is needed. But, if resource is limited, the doctor can only use the available equipment in the hospital to investigate and treat the patient.

Objective: To review treatment modality and result of intussusception at Maharaj Nakhon Si Thammarat.

Material and Methods: The medical record of children 0 to 15 years with the diagnosis of intussusception, admitted at Maharaj Nakhon Si Thammarat Hospital, from January 2012 to December 2015 were reviewed.

Results: There was a total of 42 patients, of which 25 boys and 17 girls with 46 episode of intussusception. A total of 69.6% were aged less than one year, only two patients of Peutz-Jegher syndrome with small bowel intussusception were more than four years old. Forty-two patients (91.3 %) were referred from another hospital, 3 patients were from another province. Only 28.3% had an onset less than 24 hours. Symptoms of vomiting, bloody stool, abdominal pain and palpable abdominal mass were found in 95.7%, 78.3%, 65.2% and 47.8% respectively. A total of 52.2% showed gut obstruction on abdominal X-ray. Twenty-seven patients received an abdominal ultrasound of which 26 patients demonstrated an abdominal mass. Two patients had abdominal CT scan. Barium enema reduction was successful in 16 of 30 patients (53.33%). Ultrasound guided pneumatic reduction was successful in 9 of 11 patients (81.81%). Twenty-five patients (54.3%) needed operation. Seven patients needed bowel resection due to bowel gangrene. Eight patients had a leading point. Five episodes of recurrence were noted and there were no casualties.

Conclusion: Intussuception is mostly diagnosed in children less than one year. Most of the cases were referred from other hospitals and often arrive late. The diagnosis is usually made by clinical signs and symptoms and abdominal X-ray. Ultrasound guided pneumatic reduction had a better success rate than barium enema reduction. About half of the patients needed an operation.

PROGNOSTIC VALUES OF SERUM BILIRUBIN AT 7TH DAY POST-KASAI FOR SURVIVAL WITH NATIVE LIVERS IN PATIENTS WITH BILIARY ATRESIA

Sinobol Chusilp[*,†], *Paiboon Sookpotarom*[*], *, Kanokan Tepmalai*[*,‡], *Prapapan Rajatapiti*[*], *Voranush Chongsrisawat*[§], *Yong Poovorawan*[§], *Paisarn Vejchapipat*[*]

[*]Department of Surgery, Faculty of Medicine, Chulalongkorn University, King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Bangkok, Thailand

[†]Department of Surgery, Faculty of Medicine, KhonKaen University, Khon Kaen, Thailand

Department of Surgery, Panyananthaphikkhu Chonprathan Medical Center, Srinakharinwirot University, Nonthaburi, Thailand

[‡]Department of Surgery, Faculty of Medicine, Chiang Mai University, Chiang Mai 50200 Thailand

[§]Department of Pediatrics, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Background: Biliary atresia (BA) is a serious liver disease with uncertain prognosis. The objective of this study was to investigate prognostic values of the >20% decrease in serum total bilirubin (TB) at 7th post-op day regarding early outcome and 5-year survival with native liver in BA.

Methods: BA patients undergoing Kasai operation between 2001 and 2014 were reviewed. The ratio of serum TB at 7th post-op day to pre-op TB levels (TB7/TB0) was calculated for every patient. TB7/TB0 ratio of < 0.8 indicated the > 20% decrease in serum TB. At 6th month following Kasai operation, outcome of BA patients were categorized into good outcome (TB < 2mg% or clinically jaundice-free) and poor outcome (TB > 2mg% or clinically jaundice). For outcome analysis, logistic regression was used. For survival analysis, Cox regression was applied.

Results: There were 133 BA patients (M:F= 68:65) undergoing Kasai operation. Median age at surgery was 79 days. BA patients with TB7/TB0 ratio of < 0.8 were found in 38%. Outcome at 6-month post-op could be evaluated in 126 patients (good: poor = 68:58).The 1-, 3- and 5-year survival rates with native livers were 85%, 70% and 65%, respectively. The median overall survival with native livers was 164 months. Median follow-up time was 87 months. Logistic regression showed that gender and age at operation were not significant factors impacting on early outcome (P > 0.05). However, TB7/TB0 ratio of < 0.8 was an independent factor for good outcome (Odds ratio = 3.0, P = 0.006). Cox regression analysis demonstrated that 5-year survival rate was significantly correlated with TB7/TB0 ratio of < 0.8(HR = 0.46, 95%CI 0.23-0.91, P = 0.025) and outcome at 6th month post-op (HR = 0.05, 95%CI 0.01-0.15, P < 0.001).

Conclusions: The >20% decrease in serum TB at 7th day post-Kasai is a predictor for good outcome. BA patients with TB7/TB0 of < 0.8 had 5-year survival with native livers significantly higher than those with the ratio of > 0.8.

POSTNATAL PROGNOSTIC FACTORS OF NEONATES WITH CONGENITAL DIAPHRAGMATIC HERNIA

Chankaew O, Buranakitjaroen V, Niramis R

Department of Surgery, Queen Sirikit National Institute of Child Health, Bangkok, Thailand

Background: Congenital Diaphragmatic Hernia (CDH) is one of the complex congenital diseases in pediatric surgery with a high mortality rate. Most patients are neonates presenting with respiratory distress shortly after birth. The overall outcome is still not satisfactory.

Objective: The aim of this study is to analyze the prognostic factors that affect the survival of neonates with CDH in our institute during a 5-year period.

Material and Methods: Retrospective study of all neonates with the diagnosis of CDH who were treated at

Queen Sirikit National Institute of Child Health from January 2010 to December 2014 was performed. Data collection included demographic data, associated anomalies and outcome. Statistical analysis was done using Chi-square test with the *p*-value less than 0.05.

Results: There were 51 patients (30 males and 21 females) with CDH treated at our institute. Male to female ratio was 1.5:1. Forty-three patients (84%) developed respiratory distress within the first 6 hours of life and 8 cases died before any surgical correction could be done. Of the 43 cases, 21 (49.9%) survived after surgical correction. The remaining 8 patients developed symptoms later than 6 hours after birth and all survived (100%). The diaphragmatic defects in 42 cases (83%) were at the left side and 9 cases (17%) at the right side. The survival rate of patients with the left diaphragmatic defects was significantly better than the right side (71.4% vs 22.2%, $P = 0.039$). Of all 35 patients who underwent surgical correction of the diaphragmatic defects, 13 cases were noted to have the hernia sac but only 10 survived (77%), whereas 22 cases had no hernia sac and 19 survived (86%). There was no significant difference of the survival rate between presence and absence of hernia sacs ($p = 0.42$). The most common associated anomaly was congenital heart diseases. The major cause of death was pulmonary hypertension. The overall survival rate was 58.8% and the survival rate of the patients who underwent surgical correction was 67.4%.

Conclusion: The prognostic factors that affect the survival of neonates with CDH in our institute are onset of the symptoms presenting over six hours after birth, absence of pulmonary hypertension and congenital heart disease. The left diaphragmatic defect had better survival rate than the right sided defect.

BILIARY ATRESIA IN INFANCY: AN ANALYSIS OF DIAGNOSIS, PROGNOSTIC FACTORS AND OUTCOMES OF TREATMENT

Noitumyae J, Laorwong S, Anantkosol M, Niramis R
Department of Surgery, Queen Sirikt National Institute of Child Health, Bangkok, Thailand

Purpose: The aim of this study was to evaluate the diagnosis, prognostic factors and outcomes of treatment of biliary atresia in infancy.

Patients and Method: Medical records of patients with biliary atresia who were treated between 2006 and 2015 at Queen Sirikit National Institute of Child Health were reviewed. All of the patients underwent the operative procedures such as intraoperative cholangiography (IOC), liver biopsy, hepatic portoenterostomy or hepatic portocholecys-tostomy. Data collection included age at operation, types of operation, diameter of bile ductules at the porta hepatis, and outcomes after treatment depending on jaundice disappearance, serum bilirubin levels and effects of steroid administration.

Results: One hundred and twenty patients were treated during the study period. They were categorized into type I, II and III in 3 (2.5%), 28 (23.3%) and 89 cases (74.2%), respectively. Twenty-four patients (20%) underwent only mini-laparotomy, IOC and liver biopsy because of progressive cirrhosis was seen during the operation. Roux-en-Y hepatic portoenterostomy was performed in 90 cases (75%) of all types with the ratio of functionalized to defunctionalized limb of 20 ± 4.0 cm : 40 ± 5.1 cm. Hepatic portocholecystostomy was performed in 6 cases (5.0%) in type II. Rate of jaundice disappearance after operation was 43%. The factors significantly influenced jaundice disappearance were age at operative approximately 60 days ($P = 0.043$, RR = 1.154, 95% CI = 1.08-2.11). The diameter of bile ductule at the porta hepatis less than 50 microns effected the persistence of bilirubin level and appearance of jaundice ($P = 0.002$, RR = 1.81, 95% CI = 1.29-2.54). There was no statistical relationship between corrected age of operation, type of operation, stage of liver fibrosis, bile ductular proliferation, steroid usage, cholangitis to jaundice disappearance. The total and direct bilirubin level had significant increased above 2.5 g/dl in patients with diameter of ductule of porta hepatis < 50 microns ($P = 0.006$, RR = 1.578, 95% CI = 1.18-2.11). There was no statistical relationship between corrected age of operation, types of operation, stage of liver fibrosis, bile ductular proliferation, steroid usage, cholangitis to normal bilirubin level.

Conclusion: The prognostic factor of jaundice disappearance and normal total and direct bilirubin level was the diameter of ductule of porta hepatis. Age of operation was significant only in jaundice disappearance.

THE RELATIONSHIP BETWEEN CLINICAL OUTCOMES AFTER KASAI OPERATION AND RELATED FACTORS IN INFANTS WITH BILIARY ATRESIA

Patcharaphan Srikuancharoen, Mongkol Laohapensang
Division of Pediatric Surgery, Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Background: Biliary atresia (BA) has unclear etiology, leading to cholestasis and cirrhosis. Kasai portoenterostomy has been accepted worldwide as the primary treatment for establishing biliary drainage. Successful Kasai operation increases the survival and postpones subsequent liver

transplantation. Several prognostic factors have been related to the results of this procedure.

Objective: To study about the relationship between clinical outcomes after Kasai operation and related factors in infants with BA

Design of study: Retrospective charts review

Material and Methods: A retrospectively reviewed of 48 infants with BA who underwent Kasai operation in division of pediatric surgery at Siriraj Hospital (January 1st, 2006 to May 31st, 2015). Ten patients were excluded due to the incomplete clinical data. Finally, 38 patients enrolled in this study.

The variables from clinical, laboratory database, radiologic findings, operative findings, and post-operative conditions were chosen for study.

Result: The median onset of visible jaundice was 4 (0-16) weeks. The median age at Kasai operation was 82 (34-204) days. There were 25 (65.8%) cases who could achieved post-operative jaundice clearance. The evidence of post-operative cholangitis were 30 (78.9%) cases.

The age at the time of Kasai operation has significant impact on post-operative jaundice clearance (*P* value = 0.028). The cut-off age, defined by the ROC curve analysis, was 90 days (*P* value = 0.042). Odds ratio for age at the operation (90 days was 4.78 (95% CI 1.13 - 21.32).

Conclusion: The age at the time of the Kasai operation has significant impact on the ability to achieve post-operative jaundice clearance. The patients whose age at the operation > 90 days have significant risk for delayed clearance of jaundice compare with the age of < 90 days.

INTUSSUSCEPTION IN PREMATURE BABY, UNUSUAL CAUSE OF BOWEL OBSTRUCTION AND PERFORATION: A CASE REPORT AND LITERATURE REVIEW

*Thanyaluck Naowapan**, Kanokkarn Tepmalai*, Jesda Singhavejsakul*, Mongkol Laohapensang†, Jiraporn Khorana**

*Division of Pediatric Surgery, Department of Surgery, Faculty of Medicine, Chiang Mai University Hospital, Chiang Mai University

†Division of Pediatric Surgery, Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Intussusception in a premature baby is a rare condition. We report a male preterm infant, birth weight 1,190 grams delivered by Cesarean section at 29 weeks of gestation. A literature review was conducted of 22 neonatal intussusception cases. While abdominal distension was found in all of the cases, bilious emesis was found in 94.4%. An abdominal mass was only found in 36.4%. The presentation of preterm cases mimicked necrotizing enterocolitis (NEC) whereas term cases presented with obstruction and were associated with bowel atresia. Small bowel obstruction and perforation can also found on the plain abdominal radiography. Ultrasonography and contrast enema did not archive for the diagnosis in most cases. Only 13.6% of cases could demonstrate intussusception by abdominal ultrasonography. Surgical treatment was the recommended treatment in neonatal intussusception.

ASSOCIATED GENITOURINARY ABNORMALITY IN LOW TYPE ANORECTAL MALFORMATIONS AND UROLOGIC INVESTIGATION

Pichamonch Pengvanich, Ravit Ruangtrakool, Akkrapol Mungnirandr

Pediatric Surgery Unit, Department of Surgery, Facutly of Medicine Siriraj Hospital, Bangkok, Thailand

Background: Urogenital anomaly has been considered as the most common associated condition to anorectal malformation (ARM). There were recommendations for urogenital anomaly surveillance. The goal of this study was to evaluate the benefit of screening tools for urogenital anomalies in ARM patients, especially low-type malformations, in our institution.

Methods: A retrospective review of 183 ARM patients in Siriraj hospital during January 2004-December 2014 was performed. Demographic data included age, sex, type of anorectal malformation, type of surgery, and other associated anomaly. Basic screening methods are ultrasonography and voiding cystourethro-graphy. Further investigations included diuretic renogram, intravenous pyelogram, DMSA scan, magnetic resonance urography, cystoscopy, and retrograde pyelogram. Symptoms, types of anomaly, and treatments of urinary tract anomaly were recorded.

Results: All 183 patients' data were reviewed. Low type malformation accounted for 51 patients. One hundred and fifty-three were scheduled for KUB ultrasonography as a screening protocol with 42 abnormal results. Most common anomaly was vesicoureteric reflux followed by renal agenesis. Thirteen low-type ARM patients had abnormal screening results. After follow up, 4 from 11 hydronephrosis and pelviectasis patients appeared normal in later years. For the genital abnormality, hypospadias was predominated in low-type ARM with urinary tract anomaly patient. This correlation was not found in non low-type patients.

Conclusion: In case of low-type ARM, hydronephrosis was predominated and some of them spontaneously

resolved, expectant management was preserved in selected cases. Non-invasive screening test should be encouraged and performed in all ARM patients.

THE LEVEL OF VITAMIN A, VITAMIN B1, VITAMIN B12, VITAMIN D, VITAMIN E AND FOLATE IN THE SHORT BOWEL SYNDROME PATIENTS WITH TOTAL PARENTERAL NUTRITION

Jackavit Sasiwong, Piyawan Chiengkriwate, Surasak Sangkhat
Department of General Surgery, Department of Pediatric Surgery, Faculty of Medicine, Prince of Songkhla University, Hat Yai, Songkhla, Thailand

Background: Intestinal failure had results an inadequate digestion and absorption of nutrients. Patients will required the long term total parenteral nutrition. The most common of short bowel syndrome in children was occurred from NEC. Also, we study the level of vitamin A, B1, B12, D, E and folate in the short bowel syndrome patients at before and after receive total parenteral nutrition.

Methods: Twelve short bowel syndrome patients were prospectively studied. Routine and study blood samples is taken before total parenteral nutrition is started at the first and second admission dates. Total parenteral nutrition was adjusted according to individual patients and then follow up study blood samples were taken after completion of TPN for a total of 5 days and 2 days of rest. We compare the differences of vitamin level A, B1, B12, D, E and folate of before and after receiving total parenteral nutrition.

Results: From June 2013 to December 2015, 12 SBS patients were 5 boys (41.6%) and 7 girls (58.4%) with age range of 1 year to 12 years. All 12 patients need total parenteral nutrition (TPN). A weighted mean of SBS patients was 14.9 kg. Most of the patient's weight was less than the 25th percentile, and there for classified as malnutrition. Ten cases were free of ileocolic valve and two cases had ileocolic valve. The length of remaining intestine was more than 75 cm in 3 patients and less than 75 cm in 9 patients. All patients had vitamin deficiency and were given oral vitamin supplement at home. Different from the result of pre and post given the TPN, it increases a vitamin A ($p < 0.004$), E ($p < 0.001$), D2 ($p < 0.001$) and D3 ($p < 0.04$) significantly. Although the serum levels of vitamin B1, vitamin B12 and folate in the SBS group intend to increase, but there were no significant difference.

Conclusion: SBS patients had the vitamin deficiency. These findings suggest that the total parenteral nutrition were significant improve for vitamin A, E, D deficiency and that individual adjustments are needed depending on the patient's vitamin status.

CONGENITAL PYLORIC ATRESIA: A RARE CONGENITAL ANOMALY

Noitumyae J, Poocharoen W, Anuntkosol M
Department of Surgery, Queen Sirikit National Institute of Child Health, Bangkok, Thailand

Introduction: Congenital pyloric atresia (CPA) is a very rare congenital anomaly of the pylorus that was first described by Calder in 1979***. CPA is presented less than 1% of gastrointestinal atresia with the incidence of 1:100,000 live births***. It is classified into three anatomical types: pyloric web or diaphragm, segmental atresia or solid cord and pyloric atresia with atretic gap***. CPA may occur as an isolated lesion or in association with other congenital or hereditary anomalies. It has frequently been reported with epidermolysis bullosa***. However, commonly CPA only presents with abdominal distension and non-bilious vomiting. This is our experience with three cases within four years of this very rare congenital anomaly, focusing on the diagnosis, associated anomalies and the management.

Case 1: A 4-day-old female baby born term at 39 weeks of gestation with the birth weight of 2,900 g, was transferred to us with the history of non-bilious vomiting. Feeding was initiated on day 2 of life and since then she has been vomiting after every feed. Physical examination revealed slight epigastric distension but the abdomen was soft without tenderness. Plain abdominal film showed a large gastric dilatation with decreased distal bowel gas. Upper gastrointestinal study (UGIS) showed gastric dilatation and a long narrowed pyloric canal. Preoperative diagnosis was gastric outlet obstruction, suspected hypertrophic pyloric stenosis. On laparotomy, the stomach was distended down to the pylorus and the bowel distally was collapsed. A nasogastric tube was pushed down to identify the obstruction site, resistance was found at the pylorus. A longitudinal incision was made through the pylorus and a pyloric web was found. The web was excised and Heineke-Mikulicz pyloroplasty was performed. Histopathology of the web confirmed gastric tissue including the mucosa and submucosal layer. Feeding was initiated on postoperative day 5. The baby was discharged uneventfully on day14. A follow-up UGIS three months later showed a normal passage of the stomach.

Case 2: A 2-day-old female baby born prematurely at 35 weeks of gestation with the birth weight of 2,040 g was transferred to us with a prenatal diagnosis of duodenal atresia. The prenatal ultrasonography found gastric dilatation with maternal polyhydramnios. Physical examination revealed epigastric distension. Plain

abdominal film (Figure 6) showed dilatation of the stomach and what was thought to be the duodenal bulb. Preoperative diagnosis was duodenal atresia with the obstructed site at the first part of the duodenum. On laparotomy, pyloric atresia with a short cord was found therefore gastroduodenostomy with end to side anastomosis was performed. Feeding was initiated on postoperative day 10 and the baby was discharged uneventfully on day 15.

Case 3: A 10-day-old female baby born prematurely at 33 weeks of gestation with the birth weight of 1,900 g was transferred to us with multiple clear blisters on the trunk and extremities, abdominal distension and history of respiratory distress syndrome. Feeding intolerance and abdominal distension started on day 4 of life. Physical examination revealed epigastric distension but the abdomen was soft without tenderness. Plain abdominal film (Figure 7) showed a single bubble appearance without distal bowel gas. Preoperative diagnosis was pyloric atresia. On laparotomy, pyloric atresia with a 1.5 cm in length of solid cord was found. Pyloric resection and end to end gastroduodenostomy (BillrothI) was performed. Feeding was initiated on postoperative day 7 and the baby was discharged uneventfully on day 17. She also has been confirmed with the diagnosis of epidermolysis bullosa.

Conclusion: CPA is a rare congenital anomaly. However, our experience of three cases within a four-year period demonstrates that it is not that rare. CPA should be a differential diagnosis of any newborn with gastric outlet obstruction especially in the association of epidermolysis bullosa. The diagnosis is done by plain abdominal film with the finding of single bubble appearance without distal bowel gas. CPA can be prenatally diagnosed with the findings of gastric dilatation without distal bowel gas. Surgical management is mandatory and can be done safely. For pyloric web, excision of the web and Heineke-Mikulicz pyloroplasty should be done. For other types of CPA, resection of the pylorus and gastroduodenostomy should be done. Gastrojejunostomy should be avoided due to high morbidity in children.

LAPAROSCOPIC ASSISTED EXCISION OF CHOLEDOCHAL CYST AND ROUX-EN-Y HEPATICOJEJUNOSTOMY: PRELIMINARY REPORT OF THREE CASES

Varaporn Mahatharadol

Surgery Department, Queen Sirikit National Institute of Child Health (QSNICH), Bangkok, Thailand

Background: The first laparoscopic choledochal cyst excision performed in a child was reported in 1995 by Farello and colleagues and eventually has increasingly gained acceptance as an alternative to open excision in children.

Objective: To report the preliminary results of laparoscopic assisted excision of CDC and Roux-en-Y hepaticojejunostomy in children performed at QSNICH.

Patients: The patients' ages were 3 months, 2.6 years and 2.8 years. The weights were 5.1, 11 and 18 kgs., respectively. There were all type I, according to Todani's classification. In these three cases, one presented with jaundice and the other two with the abdominal pain.

Operative technique:

- A 5 mm port was introduced through the umbilicus for the telescope.
- Three additional 5 mm ports are then used for the working instruments.
- Carbon dioxide pneumoperitoneum was maintained at a pressure for 8-12 mmHg.
- Endotracheal intubation general anesthesia was standard without epidural analgesia.
- Intraoperative cholangiography via the gallbladder was performed in all cases.
- The duodenum was retracted downward using a fan retractor through the left upper port.
- The cyst was dissected, begin at the mid portion and then opened.
- The cyst wall was then dissected from the portal vein and hepatic artery while viewing the cyst from inside and outside.
- The cephalad portion of the cyst was excised after identifying the orifice of the right and left hepatic ducts, leaving a stump approximately 5mm from the bifurcation of the hepatic ducts.
- The distal portion was dissected from the pancreatic tissue and then was divided and sutured with 4/0 vicryl.
- Calculi within the cyst were removed and washed out.
- The jejunum was exteriorized, and the jejunostomy was performed extracorporeally.
- The Roux limb was passed through a window in the transverse mesocolon to the porta hepatis.
- The hepaticojejunostomy was performed by interrupted sutures of 4/0 vicryl.
- The gallbladder and the cyst were removed through the umbilicus.
- The operative field was washed with warm saline and a subhepatic closed suction drain was left.

Results: The average operative time was eight hours. There was no operative complication and no conversion. The blood loss was minimal. The average hospital stay was

eight days. The follow up time ranged from 2 months to 3.2 years. No complication was detected at the follow-up visits.

Conclusion: Laparoscopic excision of choledochal cyst and Roux-en-Y hepaticojejunostomy in children, even in neonate, is both feasible and safe. The disadvantage, as on the learning curve, was the longer operative times but no adverse outcomes were observed.

PLASTIC & RECONSTRUCTIVE SURGERY

AN EASY METHOD FOR CARTILAGE DICING: CARTILAGE GRINDER

Kanda Chetthasombat, Kidakorn Kiranantawat, Surawej Numhom

Division of Plastic and Maxillofacial Surgery, Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

Background: The used of diced cartilage graft has recently increased over the past 10 years. Although technique of dicing cartilage has not been developed, diced cartilage had been used in rhinoplasty, forehead defects, and other facial contouring. This study was designed to develop a new cartilage grinder, which helped to make the cartilage in smaller pieces without losing part of cartilage and lessen time.

Methods: After obtaining approval from institutional review board, between January and December 2014, costal cartilages which obtained from ten patients were included. The cartilage was diced by conventional technique and by cartilage grinder. The specimens were processed by thin section histology stained with hematoxylin and eosin for their viability and architectural characteristics. Times between two techniques were compared.

Results: The mean chondrocyte viability rate for the conventional dicing and new grinding technique were 66.2% and 67.5% form the costal cartilage, respectively. The differences between the mean viability rates of conventional dicing and new grinding technique were not statistically significant (P value = 1.00). Mean used time of the conventional dicing (1.47mins/gm) was significant longer than new grinding one (0.24 mins/gm) (P value < 0.001).

Conclusion: The new cartilage grinder is efficient, fast and easy tool to make very fine cartilage without decreasing the cartilage viability. Moreover, this grinder can make very fine long strip cartilage, which helps in better molding and good for filling in every flaw.

AUGMENTATION RHINOPLASTY WITH EPTFE: HOW I DO IT

Kamol Pansritum

Kamol Hospital, Bangkok, Thailand

Background: Augmentation rhinoplasty is one of most common aesthetic surgical procedures in Thailand by personal observation. The convention procedures involved silicone implantation, still commonly employed in the majority of cases. However, the silicone prosthesis induces long term capsular contracture and tissue erosion. Moreover, long term infection is not uncommon. The expanded polytetrafluoroethylene (ePTFE) prosthesis was used for nasal implantation to reduce complications and achieve more natural appearance.

Purpose: To describe the surgical procedure of augmentation rhinoplasty with carved ePTFE material.

Methods: There were 352 cases of augmentation rhinoplasty performed with ePTFE material at Kamol Hospital between January 2013 and December 2015. The surgical procedures were performed under local or general anesthesia by the author. The operation time was approximately 1-2 hours. The follow up time was between 1 week and 2 years.

Results: The majority of patients were satisfied with the aesthetic results. The external appearance looked natural. Post-operative complications were infection and implant migration. There were 12 cases requesting for secondary revision for aesthetic purpose.

Conclusions: The overall patients were satisfied with the aesthetic results. The expanded polytetrafluoroethylene (ePTFE) prosthesis is an alternative implant material for augmentation rhinoplasty. However, patient selection, surgeon's knowledge and manual skill are important to achieve the goal.

SKIN AND SOFT TISSUE

A RANDOMIZED CONTROLLED TRIAL ON THE OUTCOME IN COMPARING ALGINATE SILVER DRESSING WITH CONVENTIONAL TREATMENT OF NECROTIZING FASCIITIS WOUND

Jarernchon Meekul, Arnon Chotirosniramit*, Woraluck Himakalasa‡, Antika Wongthanee§, Kittipan Rerekasem*,*

*Department of Surgery, Faculty of Medicine, Chiang Mai University
Research Institute of Health Science, Chiang Mai University
‡Faculty of Economics, Chiang Mai University, Chiang Mai, Thailand
§Chiang Mai University, Thailand

Background and Objective: Necrotizing fasciitis (NF) is a lethal and rapidly progressive soft tissue infection. NF has high morbidity and mortality, and consumes a significant amount of medical resources. Debridement of NF usually results in a large wound. It is still unclear regarding the best type of wound dressing. The objective of the present study was to compare the alginate silver dressing with conventional dressing for NF in terms of cost and effectiveness.

Patients and Method: A prospective randomized controlled trial was conducted at Maharaj Nakorn Chiang Mai Hospital. A total of 39 consecutive patients, who underwent debridement of NF between April 2013 and May 2016, were randomized to receive either silver dressing (group A) or saline dressing (group B). There were three main outcomes: the duration till wound closure (the duration until the wound bed was ready for skin grafting or closure), cost, and length of hospital stay.

Results: There were 25 men and 14 women. Group A consisted of 19 patients, group B 20 patients. The mean wound area was not significantly different between the 2 groups (285.2 cm^2 and 215.8 cm^2 respectively; $P = 0.38$). The mean duration till skin closure was shorter in group A (21 days) than that in group B (32 days), but this trend was not statistically significant ($P = 0.057$). The mean costs of treatment in groups A and B were not significantly different (115,809 Baht and 92,673.60 Baht, respectively; $P = 0.434$). The length of hospital stay of the two groups was also not significantly different (29 days and 21 days, respectively; $P = 0.222$).

Conclusion: Although silver dressing seems expensive, the cost of treatment and the duration of hospital stay were not significantly different between the two comparative groups. However, the duration till skin closure showed a trend favoring the silver dressing group. More data is needed.

CLINICAL CHARACTERISTICS AND FACTORS INFLUENCING OUTCOMES IN ADULT SOFT TISSUE SARCOMAS

Karunchai Treetrong, Somrit Mahattanobol, Srila Samphao

Department of Surgery, Faculty of Medicine, Prince of Songkla University, Songkhla, Hat Yai, Thailand

Background: Soft tissue sarcomas (STS) are rare tumors classified into multiple histological subtypes. Complete surgical resection is the mainstay of curative therapy. However, the success of surgery varies with the site, histologic grade, depth and size of the tumor. Generally, the prognosis of disease remains poor.

Purpose: The aim of the study was to define clinical characteristics and factors that influence outcomes of treatment in adult STS.

Methods: Records review identified 385 patients with STS treated from January 2002 to July 2015 at Songklanagarind Hospital. Patient features, tumor characteristics, factors influencing surgical outcomes including adjuvant radiotherapy were analyzed.

Results: Mean age at diagnosis was 51 years (16-94). No difference in gender in diagnosis of STS (M:F = 1:1). The most common site was extremity (42.9%) followed by retroperitoneum (14.8%), trunk (12.5%), visceral organs (11.7%) and head & neck (11.2%). Median tumor size was 10.5 cm (1-40). Seventeen percent presented with stage IV at diagnosis. Almost 20% of patients had no surgery either unresectable or metastatic disease. Closed and involved margins were factors that influence local and distant recurrence.

Conclusions: Extremity remains the most common site of STS. The patients usually present with large tumor size (> 5 cm) which difficult in getting adequate margins, resulting in poorer outcomes.

TRANSPLANTATION

ADULT TO ADULT LIVING DONOR LIVER TRANSPLANTATION WITH MODIFIED RIGHT LOBE GRAFT: CHIANG MAI EXPERIENCE

Sunhawit Junrungsee, Worakitti Lapisatepun*, Settapong Boonsri†, SuraphongLorsomradee†, Anon Chotirosniramit*, Trichak Sandhu**

*Department of Surgery, Faculty of Medicine, Chiang Mai University, Thailand

†Department of Anesthesiology, Faculty of Medicine, Chiang Mai University, Thailand

Adult to adult living donor liver transplantation (ALDLT) is a very complex operation with regard to preoperative planning, cutting edge surgical techniques and postoperative management. The recipient is a 54 years old man who had chronic hepatitis B cirrhosis with multiple hepatocellular carcinoma. His 49 years old spouse is the donor who had 667 mL^3 of right lobe which was calculated to 1.06 of graft to body weight ratio of the recipient. The operation was started with cholangiogram through cystic duct to determine the bile duct anatomy. Subsequently, right hepatic artery and right portal vein were temporary occluded for demonstrating the demarcated line between right and left lobe of liver. Parenchymal transection was performed with the cavitron ultrasonic aspiration (CUSA) device along right side of the middle hepatic vein. The V5 and V8 branches of middle hepatic vein were well preserved at the graft side for back table process. Inferior mesenteric vein from the donor and left portal vein from explant specimen were used as the conduit for V5 and V8 reconstruction. The modified right lobe liver graft was implanted by piggy back technique. Right portal vein was anastomosed to main portal vein with the 1cm of a growth factor. Right hepatic artery was anastomosed to right hepatic artery under operative microscope and right intrahepatic bile duct was anastomosed to common hepatic duct. The warm and cold ischemic time was 56 minutes and 2 hours 40 minutes respectively. The operative time was 9 hours 30 minutes with 3 unit of pack red cell transfusion. The recipient was discharged on day 14 without any complication. He recovered well and showed no signs of recurrence disease one year after transplant.

TRAUMA, BURN, CRITICAL CARE

MANAGEMENT OF ABDOMINAL GUNSHOT WOUNDS: PREDICTOR FOR THERAPEUTIC LAPAROTOMY

Krerkrit Sooksatian, Supparerk Prichayudh

Department of Surgery, Chulalongkorn University, Bangkok, Thailand

Background: Management of abdominal gunshot wounds (AGW) has been shifted from mandatory exploration to selective non-operative management (SNOM). However, there is no uniform consensus regarding the criteria of SNOM and there is little information about the predictor for therapeutic laparotomy.

Purpose: The authors examined the outcomes SNOM of AGW patients in our institution and the predictor for therapeutic laparotomy that could be obtained at the emergency department (ED).

Methods: A retrospective study was performed on AGW patients from January 2004 to December 2014 at King Chulalongkorn Memorial Hospital. Laparotomy was done in 1) all patients presenting with shock and/or peritonitis, and 2) stable patients with suspected peritoneal penetration (PP) from physical examination and/or radiographic findings, with the exception of isolated right upper quadrant (RUQ) AGW. SNOM was attempted in 1) all patients with no PP (tangential AGW), and 2) stable patients with RUQ AGW who had isolated solid organ injury demonstrated by computed tomography. Data collection included demographic data, emergency department parameters, details of AGW, and outcomes in terms of mortality and non therapeutic laparotomy rate. Stepwise logistic regression of the ED parameters was performed to identify mutually independent predictors for therapeutic laparotomy.

Results: Eighty AGW patients were included in the study. Thirty-two patients with shock/peritonitis underwent immediate operation, all had therapeutic laparotomy. All 28 tangential AGW patients underwent successful SNOM. Of the 20 stable AGW patients with PP, 15 underwent laparotomy (1 was non therapeutic), while SNOM was attempted in 5 patients (4 RUQ AGW with isolated solid organ injuries and 1 delayed presentation) with 1 subsequent laparotomy required due to delayed bleeding from a kidney

injury. Successful SNOM was carried out in 32 patients (40%). The non therapeutic laparotomy rate was 2% (1 in 47 patients undergoing laparotomy). Six patients who underwent immediate laparotomy died from exsanguinations (mortality rate 7.5%). The mutually independent predictor for therapeutic laparotomy was a positive focused assessment sonography for trauma (FAST) result (Odds ratio 21.7, 95%CI 2.7-172.7, $p < 0.001$).

Conclusions: SNOM could be performed safely in patients with tangential AGW and stable patients with isolated RUQ AGW. Laparotomy in patients with shock/peritonitis and in patients with PP other than isolated RUQ AGW is still a safe approach carrying a low non therapeutic laparotomy rate. FAST may be helpful in predicting therapeutic laparotomy in AGW patients.

MILITARY AND CIVILIAN INJURIES DURING LOW-INTENSITY ARMED CONFLICT AREAS: A NEW PARADIGM IN MILITARY MEDICINE

Wanchalerm Chungsiriwattana, Burapat Sangthong*, Osaree Akaraborworn*, Komet Thongkhao*, Prattana Chiniramol*, Khanitta Kaewsaengrueang*, Chanon Kongkamol†, Surasak Sangkhathat**

*Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Thailand

†Department of Occupational Medicine, Faculty of Medicine, Prince of Songkla University, Hat Yai, Thailand

Background: A low-intensity armed conflict has been occurring for more than a decade in southernmost region of Thailand resulting in destruction of life and property. However, the epidemiology of military and civilian-related injuries is poorly defined.

Purpose: To analyze mechanisms and severity of injuries to advance treatment strategies and inform public health policies.

Methods: The Songklanakarind Hospital Trauma Registry and Hospital Information System (HIS) were queried for all individuals sustained injuries in the southernmost region of Thailand and transferred to Songklanagarind Hospital between the years 2009 and 2014. Mechanisms of wounding were recorded. Injuries were analyzed using Injury Severity Score (ISS) as were treatment required and outcomes.

Results: A total of 572 soldiers and civilians were transferred to Songklanakarind Hospital. Most of the victims were male (81.5%), mean age for the group was 40 years (range 4-92). Civilians were victimized more than military personnel (64.9% vs. 35.1%, respectively). Blunt mechanism accounted for 206 (36.0%) of the injuries, blast injury 179 (31.3%) and penetrating mechanism 164 (28.7%). The mean Injury Severity Score (ISS) was 14.5. Two hundred nineteen (38.3%) were major trauma (ISS > 15). Proportion of patients with major trauma increased annually. The proportion of victims with major trauma was highest among victims transferred from Pattani followed by Narathiwas, and Yala, respectively. Most patients (79.9%) required surgical treatment. Surgery for orthopedic conditions was the most frequently performed (35.9%) followed by surgery for wounds and soft tissue (17.1%), and laparotomy (13.6%). One hundred sixty-three patients (28.5%) suffered with post traumatic complications in which infection (62.6%) was the most frequent. Overall mortality was 33 patients (5.8%).

Conclusions: Significant number of patients referring from southernmost region of Thailand insurgency sustained major trauma. Despite a very low mortality rate, post traumatic complications were high especially infectious complication. More efforts and researches on this area are warranted.

DAMAGE CONTROL FOR THORACIC TRAUMA: KING CHULALONGKORN MEMORIAL HOSPITAL EXPERIENCE

Jirawadee Ruamjaroenchai, Pasurachate Samorn

Department of Surgery, King Chulalongkorn Memorial Hospital, Bangkok, Thailand

Background: Damage control surgery is a well established principle of treatment for severely injured patients, especially abdominal injuries, but there a few reports about its perspective in thoracic trauma.

Purpose: To evaluate outcomes of damage control for thoracic trauma at King Chulalongkorn Memorial Hospital.

Method: A retrospective data were collected from medical records of patients, admitted at King Chulalongkorn Memorial Hospital from January 2012 to January 2016, who underwent damage control for thoracic trauma including chest wall injury, tracheobronchial injury, lung parenchymal injury, thoracic vascular injury and cardiac injury. The primary outcomes are survival and causes of death, other accumulated data are demographic data, mechanism of injury, vital signs, injury scores, initial arterial blood gas values, operation procedures and complication.

Results: There were 14 patients undergoing damage control for thoracic surgery, 13 of them were male and 1 patient was female. Blunt injury was more frequent mechanism of injury (57%). Five patients survive (36%). Mortality was 64%, major causes of death are exsanguination

(67%) and organ failure (33%). Median systolic blood pressure at emergency department was 78 mmHg, median pH was 7.088, median lactate is 11.45 mmol/L and median INR was 1.28. Median ISS was 37.5. The surgical incisions were median sternotomy (14%), left anterolateral thoracotomy (21%), right anterolateral thoracotomy (21%) and Clamshell thoracotomy (44%). Twelve patients (86%) required thoracic packing and temporary chest closure. Mean ventilator day was 10.8 days and mean ICU stay was 12.6 days. Complications were pneumonia (29%), Empyema thoracis (14%) and surgical site infection (7%).

Conclusion: Damage control for thoracic trauma resulted in very high mortality because most of patients were moribund but it might be the last resort to save their life.

COMPARATIVE STUDY OF PRIMARY REPAIR OF TRAUMATIC COLONIC WOUND VERSUS DIVERTING COLOSTOMY

N Loktharmmarak, B Sangthong*, O Akaraborworn*, K Thongkhao*, A Geater†*

*Division of Trauma Surgery, Department of Surgery, Faculty of Medicine, Prince of Songkla University, Songkhla, Thailand

†Epidemiology Unit, Faculty of Medicine, Prince of Songkla University, Songkhla, Thailand

Background: The management of colon injury remains controversial. This study investigated the efficacy and safety of each types of treatment for colonic injury.

Purpose: To determine the outcomes stratified by types of treatment for colonic injury and risk factors associated with unfavorable outcomes.

Methods: We conducted a retrospective study from a prospective collected database, in which all adult patients with colonic injuries admitted to Songklanagarind Hospital, an academic Level I trauma center in Thailand, from 2010 to 2014, were reviewed. Statistical analysis was used to compare the results of each type of treatment and multivariate logistic regression was applied to identify independent risk factors for the development of unfavorable complications.

Results: Over the five-year study period 49,567 patients with trauma were seen and 7,318 patients (14.8%) were admitted. Eighty-seven patients were identified as having colonic injury. Sixty-nine patients (79.3%) had primary repair for colonic wound, 6 patients (6.9%) had resection and primary anastomosis, and 12 patients (0.1%) had diverting ostomy done. The overall intra-abdominal infection was 29.5% (primary repair, 25.8%; resection and anastomosis, 33%; diverting ostomy 50%; $P = 0.15$). The overall colonic suture line leak was 5.1% (primary repair, 4.8%; resection and anastomosis, 16.7%; diverting ostomy 0%; $P = 0.34$). The overall mortality was 10.3% (primary repair, 10.1%; resection and anastomosis, 0%; diverting ostomy 16.7%; $P = 0.65$). Multivariate analysis revealed age > 45 years as an independent risk factor for colonic suture line leak (odds ratio, 14.66; confidence interval, 1.28 to 168.36).

Conclusions: Our study suggested that the types of treatment (primary repair, resection and anastomosis, diverting ostomy) for colonic injury do not affect postoperative complication rate. Age of patient is an independent risk factor for colonic suture line leak.

USE OF DIAGNOSTIC PERITONEAL LAVAGE FOR DETECTING HEMOPERITONEUM IN BLUNT ABDOMINAL TRAUMA WITH HYPOTENSION DESPITE BEING A NEGATIVE RESULT OF FAST EXAMINATION

Komet Thongkhao, Burapat Sangthong, Osaree Akaraborworn, Prattana Chainiramol, Khanitta Kaewsaengrueang

Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand

Background: Massive hemoperitoneum is one of the major sources of bleeding in blunt trauma with hypotension. Diagnostic peritoneal lavage (DPL) is a very sensitive and effective means for detecting hemoperitoneum in hemodynamically unstable patients. However, most trauma centers now uses focused assessment sonography in trauma (FAST) for initial evaluation and triage trauma patient because FAST is non invasive, easy to perform, repeatable and has a high sensitivity.

Objective: To determine benefit of DPL in blunt trauma patients with hypotension and negative result of FAST examination.

Materials and Methods: From April 2012 to March 2015, blunt trauma patients who presented with systolic blood pressure ± 90 mmHg were recruited from Songklanagarind trauma registry. Patient older than or equal to 15 years who came directly to Songklanagarind trauma center with a negative result of initial FAST examination and performed a DPL at the emergency room were enrolled in this study. Demographic data, result of DPL and operative record were reviewed and descriptive reports were made.

Results: In 48 months' study period, 119 adult trauma patients presented with hypotension. Sixty-nine patients had a negative result of FAST examination. Diagnostic peritoneal lavage was performed in 27 patients and only 4 patients (14.29%) had a positive result. Exploratory laparotomy was performed in all patients with positive DPL. Non therapeutic laparotomy occurred in 1 patient (25%).

Conclusion: About 14% of blunt trauma patients

presented with hypotension and had a negative result of FAST examination had a hemoperitoneum that can be detected by DPL. Seventy five percent of these patients need emergency laparotomy for bleeding control.

INITIAL HEMATOCRIT AS A PREDICTOR FOR EMERGENCY OPERATION OR INTERVENTION

W. Chaochankit, O. Akaraborworn, K. Kaewsaengrueang
Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla,Thailand

Background: Severe trauma is the first cause of death in a developing country. Hemorrhage or hypovolemic shock is the main problem in these patients. It is believed that the initial hematocrit (Hct) cannot accurately predict blood loss. We challenge that belief by investigating the predictive value of an initial Hct.

Methods: The data were a retrospectively collected from a prospective collection registry that included 131 trauma patients following trauma activated criteria of Songklanagarind Hospital from January 2014 to December 2014. Emergency operation or intervention was defined as procedures needed to improve hemostasis within four hours. Categorical data were compared. Logistic regression was used to measure the relationship between dependent and one or more than independent variables.

Results: The study population was 81.7% male. The median age was 33 years. The most frequent mechanism was blunt injury (78%). The initial Hct was not related to an emergency operation. Injury severity score > 26 ($p < 0.039$), respiratory rate > 25 ($p = 0.039$) and Age > 46 ($p = 0.004$) were predictors for emergency procedures.

Conclusion: Although initial Hctdose not correlate OR emergency or intervention in first four hours but respiratory rate, FAST, INR, age, ISS and mechanism of injury are other factors that relate to an emergency operation in first four hours.

INCIDENCE AND MANAGEMENT OF OCCULT HEMOTHORAX IN BLUNT CHEST TRAUMA

Pawit Sriprasit, Osaree Akaraborworn, Nantaka Kiranantawat, Jitpreedee Sungsiri, Chanon Kongkamol
15 Kanchanawanich Road, Hat Yai, Songkhla, Thailand

Background: Increasing the use of computed thoracic tomography for blunt chest trauma evaluation has led to an increase in the occult hemothorax identification. The natural history of occult hemothorax is still not known. This research aimed to study the characteristics of patients who had progression of occult hemothorax until delayed pleural decompression was performed.

Methods: This is a retrospective review of blunt chest injury patients from a prospective institutional trauma registry. The review included patients who had occult hemothorax defined by a negative CXR with presence of hemothorax in CT chest or abdomen verified by a radiologist. Data collected included demographics, injury sustained and characteristics of the hemothoraces from the CT scans such as thickness of the hemothorax, Hounsfield units (HU) and the treatments of hemothorax were also recorded.

Results: Of the 244 patients who had blunt chest injury, 30 (12.2%) had occult hemothorax during the 1-year study period. The mean injury severity score (ISS) was 16. Delayed hemothorax occurred in 19 patients (63.3%) and pleural decompression was performed in 11 patients (36.6%). Patients with pleural decompression tended to have higher ISS, more associated chest injury and thicker hemothorax.

Conclusions: Occult hemothorax occurs in a significant proportion of blunt chest trauma patients. It is important to be aware of the progressions and pleural decompression may be considered in multiple and severely injured patients.

CHYLOTHORAX AFTER BLUNT CHEST TRAUMA: A CASE REPORT

Pawit Sriprasit, Osaree Akaraborworn*[†]
*Department of Surgery, Faculty of Medicine,
[†]Division of Trauma Surgery, Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkhla, Thailand

Traumatic chylothorax after blunt chest trauma alone is considered rare and still has many hypothesis of mechanism of injuries. Mainly describing from hyperextension of spine, it causes thoracic duct stretching and results in duct injury. Our patient was a 27-year-old female who sustained in motorcycle crash and had a multiple injuries, blunt-only thoracic injuries and had traumatic thoracic aortic and left vertebral artery injuries with T2 vertebrae subluxation. She underwent TEVER without any thoracic or spine surgery. On post operation day 7 her chest drain content was milky-white like fluid with confirmation of chyle leak. The patient underwent conservative treatment with NPO and IV nutrition for two weeks. After that the lymphatic scan was performed and it showed no thoracic duct injury. The patient had safely chest drain removed and recovered. Though it is found to be rare it can be managed safely with conservative treatment.

UPPER GASTROINTESTINAL SURGERY

A COMPARATIVE STUDY BETWEEN OPEN AND LAPAROSCOPIC GASTRECTOMY WITH D2 LYMPH NODE DISSECTION IN GASTRIC CANCER

Nut Tongbuasirilai, Wisit Kasetsermwiriya, Piya Teawprasert, Suphakarn Techapongsatorn, Amarit Tansawet, Issaree Loapiamthong, Satit Srimonthayamas

Department of Surgery, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Bangkok, Thailand

Background: Gastric cancer is the 5th most common cancer worldwide. However, its incidence in Thailand is much lower than that of other Asian countries. Laparoscopic gastrectomy with D2 lymph node dissection for the treatment of gastric cancer is popular among East Asian countries such as Japan, China and South Korea. Proven benefits of laparoscopic surgery include shorter hospital stay, faster recovery, and less blood loss. However, the advantages of laparoscopic surgery have not been confirmed in a country with low-incidence of gastric cancer. This study aimed to evaluate the safety profile of laparoscopic gastrectomy in Thai patients.

Objective: To compare early post-operative result of gastrectomy with D2 lymph node dissection between open (OG) and laparoscopic techniques (LG).

Methods: Data of 38 consecutive patients with gastric cancer who underwent D2 gastrectomy between the years 2010 and 2015 were reviewed. Twenty-two patients who underwent successful LG were compared with 16 patients who underwent OG. We compared early postoperative results in term of complications, intra-operative blood loss, operative time, length of hospital stay, and the number of harvested lymph nodes between the two groups.

Result: The clinicopathological characteristics of patients in the LG and OG groups were similar. The operative time was longer on average for the LG group (280 mins in OG and 390 mins in LG, $p = 0.01$), but the volume of blood loss was less (200 mL in LG and 500 mL in OG, $p = 0.002$). Volume of blood transfusion was also significant less in the LG group ($p = 0.012$). The hospital stay, time to oral diet, and number of harvested lymph nodes were not significantly different between the two groups. The incidences of postoperative death and complications were also not significantly different. There was one in-hospital death in the LG group due to aspiration pneumonia with ARDS.

Conclusions: Laparoscopic gastrectomy with D2 lymph node dissection was a safe procedure with morbidity and mortality comparable to those of open surgery.

INCIDENCE OF ESOPHAGEAL AND GASTRIC PATHOLOGY IN PATIENTS WITH DYSPEPSIA AND ALARM SYMPTOMS: RAJAVITHI HOSPITAL EXPERIENCE

Morakot Bandittonsakul, Ratchamon Pinyoteppratarn, Siripong Sirikumpiboon

Department of Surgery, Rajavithi Hospital, Bangkok, Thailand

Background and Objectives: Upper gastrointestinal tract (UGI) cancer is a common cause of cancer-related death in Asia. Esophagogastroduodenoscopy (EGDS) is effective in detecting UGI cancers especially in symptomatic patients. Current guidelines recommend that any patient with dyspepsia and alarm symptoms (dysphagia, vomiting, weight loss, evidence of gastrointestinal bleeding, or anemia) should undergo EGDS. The purpose of this study was to relate endoscopic findings, such as esophageal and gastric cancer and other lesions, to risk factors such as age, gender, and the presence of alarm symptoms

Methods: A retrospective review of patients who underwent EGDS at Rajavithi Hospital from 2010 to 2014 was done, using information obtained from medical records. Symptomatic patients over 18 years of age with no history of esophageal or gastric cancer were selected. Data collected included endoscopic finding, results of histological examination, final diagnosis, and details of management. All participants underwent biopsies for rapid urea test (RUT), and also further biopsies in the presence of any visible lesions for histopathological examination.

Results: During the study period, 2,000 symptomatic patients (970 women, 1,030 men) with a mean age of 55.5 years (range:18 to 93 years) underwent EGDS. *H. pylori* infection was detected in 27% of patients. EGDS revealed normal findings in 13%, mass lesions in 22%, ulcers in 20%, inflammation in 38%, and bleeding in 7% of patients. Results of pathological examination included inflammation in 16%, squamous cell carcinoma (SCC) in 11%, adenocarcinoma in 7%, and precancerous lesions in 1% of patients. Gastric adenocarcinoma and esophageal squamous cell carcinoma were seen in 7% and 11% of patients, respectively. Early stage, stage II, stage III, and advanced stage gastric and esophageal cancers were seen in 0.4%, 16.4% , 2.1%, and 0.4% of patients, respectively.

Conclusion: Presence of alarm symptoms was found to be significantly associated with the presence of *H. pylori* infection (p-value < 0.05). Dyspepsia was found to be the most common presenting symptom (41%).

COMPARISON BETWEEN LAPAROSCOPIC VERSUS OPEN REPAIR FOR PERFORATED PEPTIC ULCER

A. Sattaratnamai, N. Samankatiwat†*

*Department of Surgery, King Chulalongkorn Memorial Hospital, Bangkok, Thailand

†Department of Surgery, Ratchaburi Hospital, Ratchaburi, Thailand

Background and Objective: Peptic ulcer perforation is a common emergency abdominal condition. Exploratory laparotomy with simple suture is the current standard of treatment. Laparoscopic repair of perforated peptic ulcer has been used during last decade as an alternative procedure to the open repair. However, the benefits of laparoscopic approach remain controversial. The purpose of this study was to compare the open and laparoscopic approaches for the treatment of perforated peptic ulcer in terms of early postoperative results and complications.

Method: A retrospective study was conducted at Ratchaburi Hospital, by reviewing the medical records of patients who underwent either open or laparoscopic repair for perforated peptic ulcer from September 2012 to December 2015. We excluded patients with incomplete data and patients who did not undergo surgery. We collected demographic data including age, sex, ASA, BOEY score, co-morbid conditions, history of peptic ulcer, NSAIDs use, alcohol use, smoking, and presence of free air on plain abdominal films. Intraoperative findings, post-operative complication, duration of nasogastric tube insertion, days till resumption of regular diet, and hospital stay were also collected.

Results: There were 165 patients in the study. One hundred and thirty-one patients underwent exploratory laparotomy with simple sutures, and 34 patients underwent laparoscopic simple sutures. Demographic data were comparable between both groups. Free air on plain films was found in 82% in both groups. Operative time was significantly longer in the laparoscopic group. Post-operative intravenous analgesia use was lower in the laparoscopic group (1.1 vs. 5.1 doses, $P < 0.001$). Duration of nasogastric tube placement, days till resumption of regular diet, and hospital stay were not significantly different between both groups ($p = 0.279$, 0.273, and 0.911, respectively). There was no conversion from laparoscopic to the open procedure. Surgical site infection was significantly lower in laparoscopic group (0% vs. 16.8%, $P = 0.008$), but the frequencies of other complications were similar between groups.

Conclusion: Laparoscopic repair of perforated peptic ulcer was similar to open repair in term of duration of nasogastric tube placement, resumption of regular diet, and hospital stay. The laparoscopic group had lower rate of wound infection and lower requirement of post-operative intravenous analgesia when compared with the open group. Laparoscopic repair is a safe and effective alternative treatment of perforated peptic ulcer.

COMPARING THE COST-EFFECTIVENESS OF MINIMALLY INVASIVE, HYBRID, AND OPEN ESOPHAGECTOMY FOR ESOPHAGEAL CANCER

Alongkorn Yanasoot, Somkiat Sunpaweeravong

Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Songkla, Thailand

Background: Esophagectomy is regarded as the only curative option for resectable esophageal cancer. Many studies have reported that minimally invasive esophagectomy (MIE) had improved short-term outcomes such as decreased postoperative pneumonia and pain compared to open esophagectomy, however, MIE also had increased operative cost and time. To solve the problem of high cost and long operation time, we have experimented with hybrid esophagectomy instead of total MIE.

Objectives: The objective of this study was to compare the cost-effectiveness of MIE, open esophagectomy and hybrid esophagectomy.

Methods: Between January 2007 and December 2014, 83 thoracic esophageal cancer patients underwent a 3-phase esophagectomy. Surgical techniques included (1) open esophagectomy; open right thoracotomy and open laparotomy in 54 patients, (2) hybrid esophagectomy; right thoracoscopic surgery and open laparotomy in 16 patients, and (3) MIE; right thoracoscopic and laparoscopic surgery in 13 patients. A chart review was performed to identify the costs and clinical data of each technique for cost-effectiveness analysis.

Results: MIE was estimated to totally cost 210,971.46 Baht, hybrid esophagectomy 164,089.69 Bath, and open esophagectomy 148,926 Baht with $p = 0.152$. MIE took 596.46 minutes, hybrid esophagectomy 455.31, and open esophagectomy 429.35 minutes with $P = 0.002$. No significant differences were found between the three groups in terms of early postoperative complications, blood transfusion, length of ICU stay, or length of hospital stay.

Conclusion: Hybrid esophagectomy is effective compared to MIE and open esophagectomy. According to this economic study we recommend hybrid esophagectomy for esophageal cancer because this technique may allow the reduction of cost and operative time.

A COMPARISON ON EARLY OUTCOME OF PER-ORAL ENDOSCOPIC MYOTOMY (POEM) AND LAPAROSCOPIC HELLER MYOTOMY (LHM) IN ACHALASIA PATIENTS

Preeyapan Chiemsombat, Jerasak Wannaprasert[*,†], *Thawee Ratanachu-ek*[*,†], *Poochong Timratana*[*,†], *Ratchamon Pinyoteppratan*

*Department of Surgery, Rajavithi Hospital, Bangkok, Thailand

†Department of Surgery, College of Medicine, Rangsit University, Bangkok, Thailand

Background: Achalasia is a rare esophageal motility disorder. The gold standard of treatment is Laparoscopic Heller myotomy (LHM). Per-oral endoscopic myotomy (POEM) is a novel endoscopic treatment. There had only been a few studies comparing POEM with LHM.

Objective: The aim of this study is to report the early outcomes of POEM compared with LHM.

Materials and Methods: A retrospective review of patients who underwent POEM and LHM in Rajavithi Hospital from April 2007 to January 2016. The data was collected by chart review and phone interview. Eckardt symptom score was collected preoperatively, three and six months postoperatively. The primary outcome was Edkardt score improvement compared in both groups. The secondary outcome was rate of complications.

Results: Fifty seven achalasia patients were included, 19 patients underwent POEM, 38 patients underwent LHM. The median age, operative time and duration of symptom were compared between the POEM and the LHM group with the result of 39.7 yrs (20-59) vs 49 yrs (27-75) $P = 0.01$, 142 min (40-295) vs 165 min (80-450) $P = 0.2$, 39 mo (3-144) vs 52 mo (6-480) $P = 0.5$. Comparison of the mean Eckardt score between the POEM and the LHM group at preoperatively, 3 months and 6 months postoperatively were 7.3 ± 2.1 vs 7 ± 1.4 ($P = 0.64$), 0.9 ± 1.0 vs 1.5 ± 1.2 ($P = 0.03$), 1.4 ± 1.1 vs 1.3 ± 1.3 ($P = 0.21$). Treatment success (Eckardt score _3) in the POEM group and the LHM group were 94.7% and 97.4% at 6 months follow-up. GERD symptoms presented postoperatively in the POEM group in 2 patient (10.5%) while LHM with fundoplication in 2(6.8%) and LHM without fundoplication in 4/9 (44%) patients. Rates of minor complications in the POEM vs LHM group were 26% and 10.5%. There is one esophageal wall necrosis in POEM group which improved with conservative treatment. Capnoperitoneum was found in 2 patients (20%), successful treated with needle decompression. One patient (4%) in LHM group had an esophageal mucosal tear which was repaired intraoperatively. Minor complications in the POEM and LHM group were 15% vs 10.5% respectively without postoperative mortality.

Conclusions: POEM is comparable with LHM in safety and effectiveness of achalasia treatment within postoperative six month follow-up period. Minor complications can be resolved by conservative treatment without short term morbidity and mortality.

SHOULD ELECTROCAUTERY BE USED FOR HEMOSTASIS OF SLEEVE GASTRECTOMY STAPLE LINE OR NOT? THIS STUDY CONCERNS HISTOLOGICAL ALTERATION OF THE GASTRIC WALL AFTER ELECTROCAUTERIZATION ON STAPLE LINE

Jakrapan Wittayapairoch[*,#], *Sakkran Sangkhamanon*[†], *Narong Boonyagard, Rapheephat Tanomphetsanga , Kongpon Tangpanitandee, Krit Kitisin, Suppa-ut Pungpapong, Chadin Tharavej, Patpong Navicharern, Suthep Udomsawaengsup*

*Department of Surgery, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

†Department of Pathology, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

#Department of Surgery, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Introduction: Sleeve gastrectomy has become more popular in a surgical procedure to treat patients with morbid obesity. An essential part of the procedure is the hemostasis on the staple line. Electrocautery must be applied to staple line precisely. It is still a controversial issue whether postoperative leakage around the staple line would occur.

Method and Procedures: After sleeve gastrectomy was performed, the divided part of the stomach which was used as a surgical specimen was studied. Three specimens from three different patients were used in the study. Different spots on the staple line of each specimen were electrocauterized by a monopolar hook in a different period of time: spot cautery, one second, two seconds, three seconds, four seconds and five seconds. A systematic study was conducted; each electrocauterized spot on the staple line was studied in three dimensions: two lateral sides, two longitudinal sides and thermal injury in depth to evaluate tissue injury on the staple line.

Results: Eighty-five pieces of tissue, five on each of seventeen slides, were studied macroscopically and microscopically. Macroscopically, the tissue injury did not exceed the staple line. Microscopically, submucosa and intramuscular hemorrhage and cellular swelling were found in both electrocauterized and non-electrocauterized areas;

nevertheless, neither cell death nor structural change was found.

Conclusions: Precisely and carefully performed electrocautery on sleeve gastrectomy staple line is effective for hemostasis and as it has been proved to be safe in this histological study.

OUTCOME OF PLANNED ESOPHAGECTOMY IN CLINICAL RESPONDERS FOLLOWING CHEMO-RADIATION IN LOCALLY ADVANCED SQUAMOUS CELL ESOPHAGEAL CANCER

Worapong Anuponganan, Patpong Navicharern, Supaut Pungpapong, Krit Kittisin, Suthep Udomsaweangsup, Chadin Tharavej

Department of Surgery, Chulalongkorn University, Bangkok, Thailand

Background: Due to high operative mortality after chemoradiation treatment (CRT), definitive chemo-radiation (dCRT) has been gaining in popularity for treatment of locally advanced squamous cell esophageal cancer. However, incidence of locoregional recurrence was high but number of salvage surgery was low. To date, no test can accurately detect micro residual disease. We consider that, watchful waiting until disease is obvious, is too late after dCRT. We hypothesized that significant number of clinical complete responders have microscopic residual disease after dCRT which worth undergoing esophagectomy. To our knowledge no study has investigated clinicopathological outcome of planned esophagectomy after dCRT in locally advanced squamous cell esophageal cancer. We conducted this prospective study to test our hypotheses.

Methods: Patients with locally advanced squamous cell esophageal cancer (T3-T4/N0-1/M0) were included. All patients had tranthoracic esophagectomy with 2-field lymphadenectomy 4 months after concurrent 50-60 Gy of radiotherapy with 2 cycles of 5FU and cis-platin. Clinical complete response (cCR) was defined when no dysphagia, negative endoscopy/biosies and unremrkable CT+/-PET 3 months after dCRT. Contraindications for esophagectomy included patients with unresectable, poor performance status/severe co-morbid diseases and declining surgery. Clinicopathological outcome was examined.

Results: Of 70 dCRT, 51 clinical complete responders (cCRs) underwent esophagectomy with 2-field lymphadenectomy. Operative mortality was 1.9%. R-0 resection was 89%. Incidence of pathological complete response (pCR) was 45% and 55% had microscopic residual tumor. Five-year survival was 31.5% (50% for pCR and 20% for non-pCR, $p=0.04$). Locoregional recurrence was identified in 24% of cCRs with esophageal resection. Endoscopic findings, CT or PET-CT cannot accurately detect pCR or microscopic residual disease.

Discussion: More than 50% of advanced squamous cell esophageal cancer with clinical complete response after dCRT had microscopic residual disease. Planned esophagectomy after dCRT was safe. Resection and R-0 rate was high. Operative mortality and locoregional recurrence was low. Five year survival was more than 30%. Until an accurate marker for residual disease detection is established, planned esophagectomy, rather than salvage surgery should be an optional treatment in fit patients after dCRT for locally advanced squamous cell esophageal cancer.

EPIPHRENIC DIVERTICULECTOMY WITH LONG MYOTOMY AND DOR FUNDOPLICATION IN RECURRENT DYSPHAGIA

Supamit Leemasawat[*], *Ratchamon Pinyoteppratarn*[*], *Thanasan Pratumrat*[*], *Poochong Timratana*[*,†], *Thawee Ratanachu-ek*[*,†]

[*]Department of Surgery, Rajavithi Hospital, Bangkok, Thailand

[†]Department of Surgery, College of Medicine, Rangsit University, Bangkok, Thailand

Epiphrenic diverticula are a rare disease, it is a pseudodiverticulum of pulsion type located in the distal 10 cm of the esophagus and frequently associated to achalasia. The symptoms and the pathophysiology of achalasia and EED may overlap, leading to the speculation that achalasia may be responsible for the symptoms. Similarly to patients with achalasia without EED, a careful preoperative evaluation is essential in patients with EED. Endoscopy and an esophagogram are mandatory in the workup of these patients, while esophageal manometry confirms the associated motility disorder. Treatment is indicated in all patients fit for an operation except those who are asymptomatic with a small EED and no prior history of aspiration. Laparoscopic Heller's myotomy and partial fundoplication is the most adequate therapy. Diverticulectomy must be added to the procedure in large diverticula. Experience with endoscopic therapy is very limited.

This video shows the case of a 72-year-old woman with a 20-years of recurrent dysphagia and 10-kg weight loss caused by an epiphrenic diverticulum associated with esophageal achalasia. She underwent multiple sessions of botulinum toxin injection and balloon dilation. A preoperative barium swallow showed a dilated esophagus with a 6-cm epiphrenic diverticulum. Esophageal manometry confirmed the absence of peristalsis in the

esophageal body. We performed a laparoscopic diverticulectomy and a 10-cm distal esophageal myotomy with a Dor fundoplication. The postoperative course was uneventful. On the third postoperative day a barium swallow showed no leak, and the patient started oral intake. She was discharged home four days after the operation free of symptoms and tolerating a soft diet. Twelve months after surgery, she was asymptomatic and had gained 8 kg. A barium swallow showed a normal-size esophagus with regular emptying.

UROLOGY

A RANDOMIZED CONTROLLED STUDY OF ORAL CIPROFLOXACIN VERSUS ORAL CEFIXIME IN PREVENTING TRANSIENT BACTEREMIA AFTER TRANSRECTAL PROSTATIC BIOPSY

Thuchchai Pipitpanpipit, Pitak Santanirand†, Wisoot Kongchareonsombat**

*Division of Urology, Department of Surgery, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

†Clinical Microbiology Unit, Department of Pathology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

Objective: To compare the effectiveness of oral ciprofloxacin and oral cefixime in terms of the incidence of transient bacteremia, and other adverse events, in men undergoing transrectal prostatic biopsy.

Materials and Methods: One hundred patients with suspected prostate cancer who underwent out-patient transrectal prostatic biopsy at Ramathibodi Hospital were randomly assigned to either oral ciprofloxacin or oral cefixime. Patients were monitored for transient bacteremia and other adverse events over a 14-day period.

Results: In the oral cefixime group, transient bacteraemia occurred in 2% of patients, while no bacteremia was observed in the oral ciprofloxacin group ($p > 0.05$). The frequencies of some adverse events, which included acute urinary retention, hematuria, rectal bleeding, vasovagal syncope, and hematospermia, were not significantly different between the 2 groups ($p > 0.05$). Only the frequency of dysuria was significantly different between the 2 groups ($p < 0.05$).

Conclusions: Oral cefixime was no better than oral ciprofloxacin in preventing post-transrectal prostatic biopsy transient bacteraemia, and appeared to be associated with a higher rate of dysuria. Until a more suitable, or more effective oral prophylactic agent is found, quinolone-based antibiotics should remain the prophylactic antibiotic of choice for men undergoing trans-rectal prostatic biopsy.

EFFECTS OF 8-YEAR TREATMENT OF LONG-ACTING TESTOSTERONE UNDECANOATE ON METABOLIC PARAMETERS, URINARY SYMPTOMS, BONE MINERAL DENSITY AND SEXUAL FUNCTION IN MEN WITH LATE ONSET HYPOGONADISM

Sompol Permpongkosol, Kalayanee Khupulsup†, Supatra Leelaphiwat†, Sarawan Pavavattananusorn ,Supranee Thongpradit‡, Thanom Petchthong‡*

*Division of Urology, Department of Surgery, †Department of Pathology, Division of Nursing Service, ‡Center of Academic Affairs and Innovation, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

Introduction: The long term effects of long acting testosterone undecanoate (TU) and the Androgen receptor (AR) CAG repeat lengths in Thai late onset hypogonadism (LOH) men has not yet been reported.

Objective: This study analyzed the 8-year follow-up effects of intramuscular TU therapy on metabolic parameters, urinary symptoms, bone mineral density (BMD), and sexual function and investigated the CAG repeat lengths in LOH men.

Methods: We reviewed the medical records of 428 LOH men who had been treated with TU and a total of 5 patients were diagnosed with prostate cancer during TU. There were 120 patients (mean age 65.6 ± 8.9) who had 5-8 years continuous TU supplementation and sufficiently completed records for analysis. Genomic DNA was extracted from peripheral blood and the CAG repeat region was amplified by PCR. Fragment analysis, sequencing, electropherogram and chromatogram were performed. The main outcome measure was dynamic parameter changes during testosterone supplementation.

Results: TU did not improve all obesity parameters. A statistically significant decline was found in waist circumference, % body fat, HbA1c, cholesterol, LDL and International Prostate symptom Score ($p < 0.05$). TU did

not produce differences in body mass index (BMI), HDL, triglyceride and the Aging Male Symptoms score from the base line. However, a statistically significant increase was demonstrated in the level of testosterone, PSA, hematocrit, International index of erectile function score and both vertebral and femoral BMD ($p < 0.05$). No major adverse cardiovascular events and prostate cancer in this study. The CAG repeat length was between 14 and 28 and the median CAG length was 22. There was no association between the CAG repeat length and any of the anthropometric measurements.

Conclusions: Long-term TU treatment in LOH men for up to eight years durations appears to be safe, tolerable and effective in improving obesity parameters.

VASCULAR SURGERY

VASCULAR GEL MODEL FOR CENTRAL VENOUS CATHETERIZATION PRACTICE

Pongpol Sriphan, Piyanut Pootracool, Wiwat Tirapanich, Sopon Jirasiritum, Surasak Leela-Udomlipi, Suthas Horsirimanont, Nutsiri Kittitiratong

Division of Vascular and Transplantation, Department of Surgery, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

Background and Objective: Central venous catheterization provides a route for delivery of caustic or critical medications and allows measurement of central venous pressure. Ultrasound (US) guided puncture is now recommended for central venous catheterization procedures. The purpose of this study was to describe an inexpensive and simple educational model for US-guided central venous catheterization made with gelatin and mucillin powder, comparable in educational value to that of standard gel models available in the market.

Methods: A home-made educational gel model for central venous catheterization practice under US guided was described. Two model blood vessels were included, to simulate a vein and an artery at the area of catheterization. Sixty experience-naive trainees were included in study, and divided into two groups: those training with the homemade gel model (30), and those training with the standard gel model (30). Time to completion of the procedure was collected for each trainee, and compared between the two groups.

Result: The US images obtained using the homemade gel phantoms were of high quality and reliability, and were comparable to those obtained using the standard gel model. The time to completion of the procedure was not statistically different between the two groups (p = 0.957).

Conclusion: Homemade gel models can be used as an educational tool for simulating central venous catheterization under US guide for trainees, with comparable quality to standard gel models.

VASCULAR GEL MODEL FOR CENTRAL VENOUS CATHETERIZATION

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Background: Central venous catheterization provides a route for delivery of caustic or critical medications and allows measurement of central venous pressure. Ultrasound guide puncture is now recommended in central venous catheterization procedure. The purpose of this study is to describe an inexpensive material (gelatin, mucilin powder) and simple method to create ultrasound-imaging models for the purpose of education and practice using, comparable with standard gel model.

Method: Sixty non-experience trainees were included in study and subjected to two groups, homemade and standard gel model. Procedural times were collected and compared between the two groups.

Result: Homemade ultrasound phantom we produced contains two vessel lumens. The images obtained using the phantom were high reliance quality and comparable to standard gel model. When comparing the two groups, time to complete procedure was not statistically significant (p = 0.957).

Conclusion: Homemade gel model can used as simulator in central venous catheterization for trainees and comparable to standard gel model.

PHLEGMASIA CERULEA DOLENS WITH COMPARTMENT SYNDROME

Wongsakorn Chaochankit

Department of Surgery, Faculty of Medicine, Prince of Songkla University, Hat Yai, Thailand

Venous thromboembolism (VTE) is a major health

care problem resulting in significant mortality, morbidity, and expenditure of resources. The incidence of VTE is approximately 100 per 100,000 people per year in the general population. The VTE compounds with pulmonary embolism and deep vein thrombosis (DVT). The complication of DVT has many conditions. The extensive DVT of the major axial deep venous channels of the lower extremity causes a condition called phlegmasia cerulea dolens which is a complication of DVT. Phlegmasia cerulea dolens (PCD) is an uncommon but potentially life-threatening complication of acute DVT characterized by marked swelling of the extremity with pain and cyanosis, which in turn may lead to arterial ischemia and ultimately gangrene with high amputation and mortality rates. There is no consensus for treatment and treatment methods reported are usually suboptimal. The key in treating such patients is to provide quick and effective treatment to save the limb and the patient. Besides, this case report is very rare condition because this patient had phlegmasia cerulea dolens with compartment syndrome which had been reported only 15 cases. Timely restoration of the venous circulation is important in order to save limbs. We would like to present a patient who developed lower extremity DVT secondary to femoral vein compression syndrome, progressed rapidly to PCD.