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ORIGINAL ARTICLES

81 **Is 5% EMLA an Effective Topical Anesthetic Agent for Replacing Intravenous Pethidine for Extracorporeal Shock Wave Lithotripsy in Patients with Renal or Upper Ureteric Calculi?**
Surapong Thanavongvibul

88 **Effect of Bupivacaine on Preperitoneal in Laparoscopic Total Extraperitoneal Hernioplasty: Prospective Randomized Double Blind Controlled Trial**
Chusaeng Teerawiwatchai

94 **Surgical Correction of Congenital Apical Left Ventricular Aneurysm: A Case Series**
Chartaroon Rimsukcharoenchai, Surin Woragidpoonpol

99 **Hemorrhoidal Artery Ligation for Patients with Bleeding Tendencies: Peri-operative Outcomes**
Eakarach Lewthanamongkol, Jirawat Pattana-arun, Shankar Gunarasa, Supakij Khomvilai

CASE REPORT

104 **Agenesis of Inferior Vena Cava Associated with Acute Bilateral Common Iliac Vein Thrombosis and Hypoplastic Right Kidney (KILT Syndrome) in a 54-Year-Old Female**
Anuwat Chanthip

ABSTRACTS

109 **Abstracts of the 42nd Annual Scientific Congress of the Royal College of Surgeons of Thailand, 7-10 July 2017, Ambassador City Jomtien Hotel, Jomtien, Pattaya, Cholburi, Thailand (Part I)**

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Original Article

Is 5% EMLA an Effective Topical Anesthetic Agent for Replacing Intravenous Pethidine for Extracorporeal Shock Wave Lithotripsy in Patients with Renal or Upper Ureteric Calculi?

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Abstract

Background: **Patients with renal or upper ureteric calculi may require extracorporeal shock wave lithotripsy (ESWL). To suppress the pain during the lithotripsy, commonly used medications included opioids, which give satisfactory analgesia but have numerous side effects.**

Objective: **This study was to determine whether 5% EMLA cream (a topical anesthetic agent) is an adequate analgesic for the lithotripsy, helping to reduce the use and side effects of opioid analgesics.**

Materials and Methods: **The study was a prospective, controlled, randomized, double-blind study. Patients were randomly assigned to either one of two groups (A, B) of 100 patients each. Groups A and B were treated with 5% EMLA and placebo cream, respectively.**

Results: **Both groups were comparable in terms of demographic data, gender, age, body mass index (BMI), site and size of the stones, American Society of Anesthesiologists physical status (ASA class) and comorbidities. The location or point of exposure of sound wave, duration and the number of lithotripsy shock waves were the same in both groups. Numerical rating scale (NRS) was used in the pain assessment. The pain score during the lithotripsy in the 5% EMLA group was found to be significantly lower than that in the control group. The amount of opioid (pethidine) used in the control group was significantly greater. The number of hospitalization hours following the lithotripsy in the control group was significantly higher. Significantly more patients in the control groups experienced dizziness, nausea and headache from intravenous (IV) opioids.**

Conclusion: **The 5% EMLA cream may be used to suppress the pain induced by the renal or upper ureteric lithotripsy and may help reduce opioid use, decreasing opioid-related side effects and hospitalization time.**

Keywords: **lithotripsy, NRS, EMLA, pethidine**

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Introduction

Extracorporeal shock wave lithotripsy (ESWL) is the most common and gold standard treatment of calculi in the urinary tract (kidneys and ureters) indicated for this approach[1,2]. Pain from the ESWL is mainly is parietal pain[3], which is caused by the continuous impacts of ultrasonic shock wave on cutaneous nociceptors, as well as visceral pain (visceral nociceptors), which is caused by the added intrapelvic pressure and the renal capsule distension[4]. Factors influencing ESWL pain include the type of lithotripters, the site and size of the stones and the pressure of shock waves. Anesthesia used may be general, regional or local.

The most commonly used analgesics during the ESWL are opioids, followed by sedatives, non-steroidal anti-inflammatory drugs (NSAIDs) and topical anesthetic creams. Opioids are frequently used, with satisfactory analgesia. A disadvantage of this drug group, however, is its side effects, ranging from light headedness, dizziness, nausea and vomiting todyspnea, respiratory suppression, necessitating treatment and patient monitoring for some time following the lithotripsy. Some patients may even require hospitalization.

5% EMLAcream is a topical anesthetic. It contains 2.5% lidocaine (acetamide, 2-(diethylamino)-N-(2,6-dimethylphenyl)) and 2.5% prilocaine (propanamide, N-(2-methylphenyl)-2-(propylamino)). One gm of 5% EMLA contains 25 mg lidocaine and 25 mg prilocaine. The mechanism of action is stabilization of neuronal membranes by inhibiting the ionic fluxes essential for nerve impulse initiation and conduction, thus producing local anesthesia. The cream penetrates approximately 4 mm into the skin, has an onset time at approximately 10 to 20 minutes, and a duration of action of 60 minutes[5].

The onset, depth and duration of action of EMLA depend on the duration of its exposure prior to surgery, and exposure time will vary according type of surgery. Operations on the genital mucosa usually require 5 to 10 minutes of exposure, while IV opening and split-thickness skin graft require approximately 1 and 2 hours, respectively, of exposure. EMLA is minimally absorbed and hence has little systemic effect (Table 1). It is very safe regardless of how much and for how long it is applied to the skin, even for young patients (Table 2).

Patients and Methods

From January 2016 to March 2017, patients who had renal and upper ureteric calculi with indications for ESWL at Lerdsin Hospital were enrolled into a double-blinded randomized controlled trial to determine whether the EMLA5% cream could be used to replace an opioid analgesic (pethidine) during renal or upper ureteric ESWL, and whether the cream could help reduce the quantity as well as side effects of opioid use. The Hospital's research ethics committee approved the study.

Patients were excluded if any of the following conditions was present: Hypersensitivity to the EMLA 5% cream or opioids (pethidine); obesity (BMI> 30 kg/m^2); active urinary tract infection (UTI); coagulopathy (medical bleeding); pregnancy or nursing mother; uncontrolled hypertension (HT); currently using neuropsychiatric or cardiovascular medications. In addition, patients must refrained from the use of sedatives-hypnotics and antiemetic drugs prior to the lithotripsy.

Patients in the study were randomized into two groups, A and B. Group A received 2 gm of 5% EMLA cream applied at a pre-marked site (by a local technician at the lithotripter), which was the location where the sound waves were to pass to disintegrate the stones. The cream was applied within a10 cm^2 area, covered with occlusive dressing, and left in place for 1 hour prior to lithotripsy. Group B received a placebo cream, which looked identical to the EMLA cream and packaged in similar tubes, but did not contain any anesthetic. The placebo cream was applied in the same way as that in Group A (Figure1).

Data on the age, gender, weight, height, ASA status, underlying diseases, size and site of the stones were recorded for all patients. The lithotripter used was a Dornier-R lithotripter SII (Germany). Lithotripsy steps, intensity, rate and timing were the same in all patients.

Prior to the lithotripsy, pain scores were evaluated by a nurse anesthetist, using a numerical rating system (NRS). Pain scores prior to the procedure must be 2 or less. Vital signs and oxygen saturation were monitored throughout the ESWL.

During the ESWL, pain scores (NRS) and side effects were evaluated every 15 minutes (15, 30 and 45 minutes) after the beginning until the end of the 1 hour lithotripsy. If the pain score was5 or greater, 25

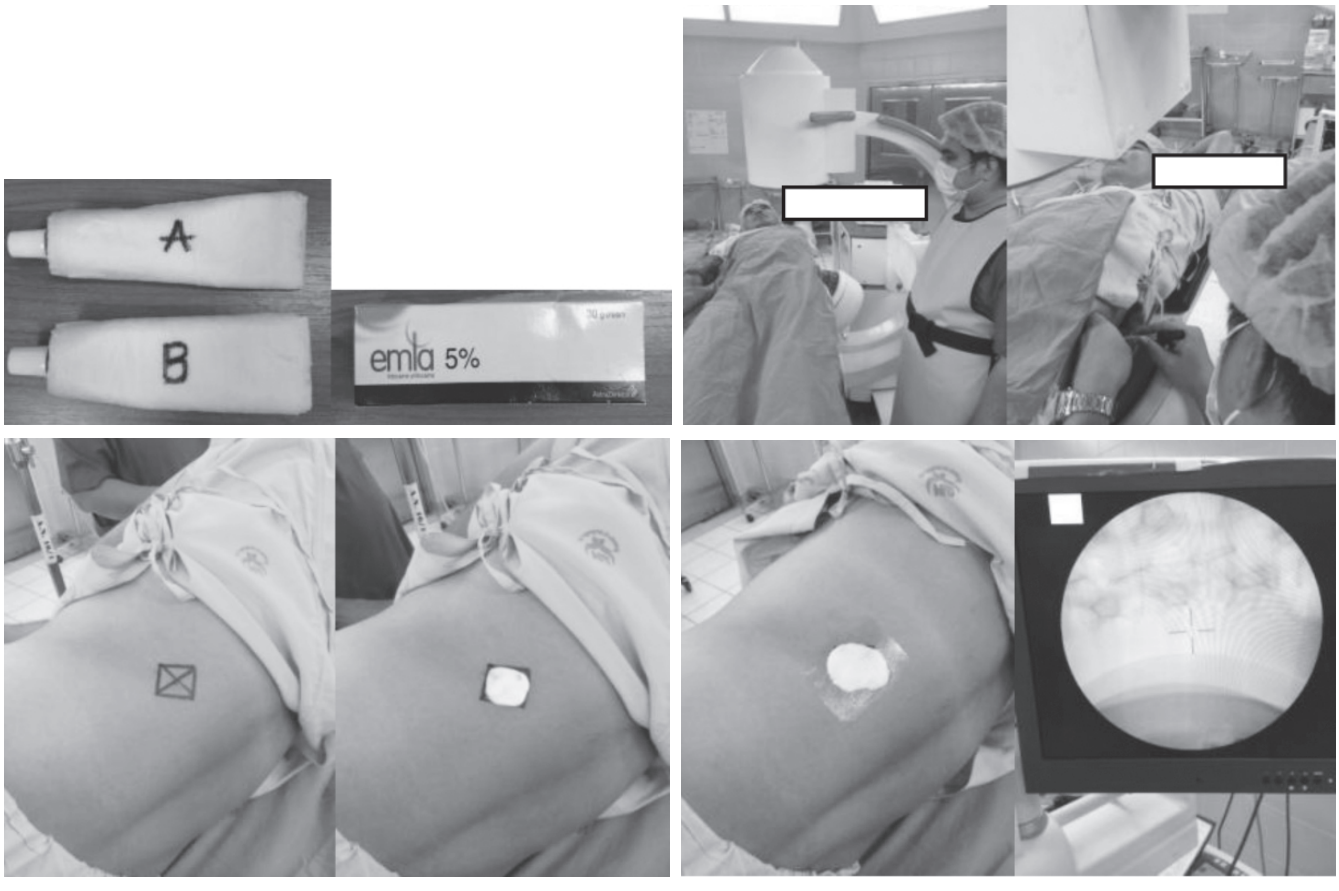

Figure 1 The application of analgesic cream

mg of pethidine was administered intravenously. If patients experienced side effects of pethidine, the usual standard treatment was given.

After the lithotripsy, patients who received intravenous pethidine were observed for a minimum of two hours at the Hospital. Patients who did not receive pethidine could return home as soon as the lithotripsy was finished.

Results

A total of200 patients were recruited into the study, 100 patients to group A with 5% EMLA, and the other 100 to group B with placebo. Table 3 shows the baseline data of the patients. The age, gender, BMI, ASA class, comorbidities, site and size of the stones, the number of shock waves were not significantly different between both groups.

Table 4 shows the pain scores prior to (0 minutes) and at the first (15 minutes), second (30 minutes) and third (45 minutes) time points during lithotripsy. Group A, which received the 5% EMLA, had significantly lower pain scores than group B in all evaluations at 15, 30 and 45 minutes. Table 5 shows the number of patients who received intravenous pethidine in both groups at the first, second and third evaluations. The number of patients receiving intravenous pethidine was significantly fewer in group A than that in group B at 15, 30 and 45 minutes. No patient in group A stayed in the hospital for longer than 2 hours. In group B, 47 patients stayed in the hospital for longer than 2 hours, with one patient staying for 22 hours.

Table 6 shows the number of patients experiencing side effects of intravenous pethidine during lithotripsy. Patients in group A had significantly less nausea, dizziness and headache than those in group B.

Discussion

Patients undergoing ESWL for renal or ureteric calculi often require some form of analgesia, commonly opioids. However, opioids have many side effects

Table 1 Absorption of lidocaine and prilocaine from EMLA cream: normal volunteers (n = 16)

EMLA cream (gm)	Area (cm^2)	Time on (hr)	Drug content (mg)	Absorbed (mg)	C_{max} (μg/mL)	T_{max} (hr)
60	400	3	Lidocaine 1,500	54	0.12	4
			Prilocaine 1,500	92	0.07	4
60	400	24*	Lidocaine 1,500	243	0.28	10
			Prilocaine 1,500	503	0.14	10

*Maximum recommended duration of exposure is 4 hours.

Reference: EMLA - FDA prescribing information, side effects and use; https://www.drugs.com/pro/emla.html

Table 2 Maximum recommended dose and application and time for the EMLA cream by age and weight for infants and children based on application to intact skin

Age and body weight requirements	Maximum total dose of EMLA cream	Maximum application area	Maximum application time
0 up to 3 months or < 5 kg	1 g	10 cm^2	1 hr
3 up to 12 months and > 5 kg	2 g	20 cm^2	4 hr
1 to 6 years and > 10 kg	10 g	100 cm^2	4 hr
7 to 12 years and > 20 kg	20 g	200 cm^2	4 hr

Reference: EMLA - FDA prescribing information, side effects and use; https://www.drugs.com/pro/emla.html

Table 3 Baseline data of the patients in the study

	Placebo (n = 100)	5% EMLA (n = 100)	*p*-value
Number			
Gender			0.622
Male	74	77	
Female	26	23	
ASA class			0.671
Class I	46	49	
Class II	54	51	
Side			0.671
Left	51	48	
Right	49	52	
Type			0.669
Ureteric calculi (UC)	58	55	
Renal calculi (RC)	42	45	
Mean ± SD (range)			
Size of stone (cm)	0.9 ± 0.3 (0.5, 2.0)	0.9 ± 0.3 (0.5, 1.8)	0.349
Age (years)	44.0 ± 11.6 (22, 68)	44.2 ± 10.6 (26, 70)	0.874
Number of shock waves	6904.27 ± 95.25 (6680, 7115)	6893.71 ± 109.36 (6875, 7200)	0.467
BMI	22.9 ± 1.9 (19.05, 27.7)	22.9 ± 2.1 (18.36, 28.63)	0.971

Table 4 Pain scores

	Placebo (n = 100) Mean ± SD (range)	EMLA 5% (n = 100) Mean ± SD (range)	Mean difference	*p*-value
Pain scores prior to ESWL (0 min)	1.1 ± 0.5 (0, 2)	0.9 ± 0.6 (0, 2)	0.2	$p = 0.011$
Pain scores at 15 min	5.4 ± 1.5 (0, 10)	4.1 ± 1.6 (2, 8)	1.3	$p < 0.001$
Pain scores at 30 min	6.0 ± 1.4 (1, 8)	3.8 ± 1.3 (1, 8)	2.2	$p < 0.001$
Pain scores at 45 min	4.6 ± 1.2 (1, 8)	3.1 ± 0.9 (0, 4)	1.5	$p < 0.001$

Table 5 Number of patients who received intravenous pethidine at each time point

	Placebo (n = 100)	5% EMLA (n = 100)	*p*-value
Pethidine at 15 minutes			< 0.001
- Yes	75	41	
- No	25	59	
Pethidine at 30 minutes			< 0.001
- Yes	80	19	
- No	20	81	
Pethidine at 45 minutes			< 0.001
- Yes	31	0	
- No	69	100	

Table 6 Patients with side effects of intravenous pethidine during lithotripsy

	Placebo (n = 100)	5% EMLA (n = 100)	*p*-value
No side effect	15	82	< 0.001
Nausea	40	6	< 0.001
Dizziness	67	8	< 0.001
Vomiting	3	4	0.700
Headache	28	6	< 0.001
Dyspnea	4	2	0.407

including nausea, dizziness and respiratory depression, which may require treatment or hospitalization[6-8]. Intravenous or intramuscular non-steroidal anti-inflammatory agents (NSAIDs) may be used, but these have been found to be inferior to opioids, and may also have gastrointestinal side effects or hypersensitivity effects. Regional and general anesthesia may also be employed during lithotripsy, but both require prolonged hospitalization, longer preparation time, carry their on considerable risk of complications, as well as being expensive.

Topical anesthetic agents have also been used for ESWL. A prospective, randomized, double-blind study found that 5% EMLA and intravenous fentanyl, compared with placebo and intravenous fentanyl, was not significantly more effective[9]. However, a study compared the analgesic effects of NSAIDs, intravenous opioids, intramuscular opioids and 5% EMLA at the time of lithotripsy and found no significant difference in VAS scores among the treatments[10]. Newer studies have found that the use of 5% EMLA makes patients more tolerant of ESWL, resulting in more successful outcomes[11,12]. Thus, 5% EMLA seems to be an interesting candidate for replacing or at least reducing the use of other established analgesics during ESWL. In the present study, intravenous pethidine was used as the main analgesic agent because of its effectiveness, low cost, and fewer side effects than other opioids.

In the present study, patients' baseline data were not significantly different between the two study groups. The number of shock waves and the amount of time spent during lithotripsy were controlled to make sure that they were the same for all patients. Important differences between the present and previous studies

included keeping the site of ESWL constant for all patients, who had either renal or upper ureteric stones, and the comparison of pethidine use and pethidine-related side effects between treatment groups. The application of EMLA was thus very precise and accurate, at the actual point of ESWL. While previous studies have used varying amounts of 5% EMLA, for example as much as 30 gm on an area as large as 300 cm^2 (15 × 20 cm^2), and with application times from60 to 90 minutes13,14, in the present study we were able to reduce the amount of 5% EMLA to only 2 gm on an area of only 10 cm^2, with an application time of 60 minutes.

The apparent significant reduction of pain and use of intravenous opioids in the 5% EMLA group in the present study seemed to suggest the possibility of using local analgesics as part of a pain management protocol in future patients with ureteric and renal calculi requiring ESWL.

Conclusions

The results of the present study showed that5% EMLA cream may be effectively used as a topical analgesia to help reduce intravenous opioid (pethidine) analgesia in patients undergoing renal or upper ureteric ESWL. Side effects of intravenous opioids and hospitalization time were significantly reduced as well.

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บทคัดย่อ

EMLA 5% สามารถใช้ทดแทนยาแก้ปวดแบบฉีดเข้าหลอดเลือดดำ Opioid (Pethidine) ขณะทำการสลายนิ่ว (ESWL) ในผู้ป่วยที่มีนิ่วบริเวณไต ท่อไตส่วนบนได้หรือไม่

สุรพงษ์ ธนวงศ์วิบูลย์, พบ., วว. ศัลยศาสตร์ทั่วไป, วว. ศัลยศาสตร์ระบบทางเดินปัสสาวะ
หน่วยศัลยศาสตร์ระบบทางเดินปัสสาวะ กลุ่มงานศัลยศาสตร์ โรงพยาบาลเลิดสิน กรมการแพทย์

ที่มาและความสำคัญ: มีคนไข้จำนวนมากที่มีข้อบ่งชี้ในการรักษานิ่วที่ไต, ท่อไตส่วนบน ด้วยวิธีการสลายนิ่ว (ESWL) การให้ยาระงับอาการปวดขณะทำสลายนิ่วที่นิยมใช้มากที่สุดคือการใช้ยากลุ่ม opioids ซึ่งได้ผลระงับอาการปวดดีเป็นที่น่าพอใจ แต่ผลข้างเคียงของยาแก้ปวดกลุ่มนี้ค่อนข้างมาก

วัตถุประสงค์: การศึกษานี้เป็นการศึกษาว่า EMLA 5% cream สามารถนำมาใช้ระงับอาการปวดขณะทำสลาย นิ่วได้ดีพอที่จะสามารถทดแทนการใช้ยากลุ่ม opioids เดิมได้หรือไม่ หรือสามารถลดปริมาณการใช้ยาและผลข้างเคียงของยาแก้ปวดกลุ่ม opioids ได้หรือไม่

วัสดุและวิธีการ: เป็นการศึกษาแบบ prospective, controlled, randomized, double-blind study โดยการสุ่มเลือกผู้ป่วยเป็น 2 กลุ่ม (A, B) กลุ่มละ 100 คน กลุ่ม A ทายา EMLA 5% cream กลุ่ม B ทายาหลอก (placebo) เปรียบเทียบ demographic data เพศ, อายุ, BMI, ตำแหน่ง และขนาดของนิ่ว, ASA class,โรคประจำตัวของผู้ป่วยทั้งสองกลุ่ม โดยควบคุมให้ตำแหน่งหรือจุดในการปล่อยคลื่นเสียง, เวลาและจำนวนนัดในการสลายนิ่วไม่แตกต่างกัน ใช้ NRS (numerical rating scale) เป็นตัวประเมินระดับความปวด (pain score)

ผลการศึกษา: ผลของการศึกษาพบว่ากลุ่มตัวอย่างทั้ง 2 กลุ่ม demographic data ไม่มีความแตกต่างกัน Pain score ในกลุ่มที่ได้รับการทายา EMLA 5% พบว่าน้อยกว่ากลุ่ม control ในขณะทำสลายนิ่วอย่างมีนัยสำคัญ ปริมาณยา opioids (pethidine)ในกลุ่ม control มีการใช้มากกว่าอย่างมีนัยสำคัญ จำนวนชั่วโมงที่อยู่โรงพยาบาลหลังการสลายนิ่วในกลุ่ม control มากกว่าอย่างมีนัยสำคัญ และผลข้างเคียงของยา IV opioids (pethidine) โดยกลุ่ม control พบว่า nausea, dizziness, headache มีจำนวนมากกว่าอย่างมีนัยสำคัญ

สรุป: EMLA 5% cream สามารถนำมาใช้ทดแทนยาแก้ปวดกลุ่ม opioids (pethidine) ในการระงับอาการปวดจากการสลายนิ่วที่บริเวณไต, ท่อไตส่วนบนได้ และสามารถช่วยลดปริมาณการใช้ยา opioids (pethidine) ส่งผลให้อาการข้างเคียงจากยาขณะหรือหลังทำสลายนิ่วลดน้อยลง คนไข้ไม่ต้องอยู่โรงพยาบาลนานเพื่อสังเกตอาการหรือรักษาผลข้างเคียงนั้น

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Original Article

Effect of Bupivacaine on Preperitoneal in Laparoscopic Total Extraperitoneal Hernioplasty: Prospective Randomized Double Blind Controlled Trial

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Abstract

Objectives: **The aim of the study was to evaluate the analgesic effect after instillation of bupivacaine in preperitoneal space in patients undergoing unilateral laparoscopic totally extraperitoneal (TEP) hernioplasty.**

Methods: **A total of 44 patients with unilateral reducible inguinal hernia were randomly assigned into two groups. The bupivacaine group received 40 mL of 0.25% bupivacaine, and the control group received 40 mL of normal saline, instilled into the preperitoneal space during the TEP procedure. Surgeons, anesthesiologists, and patients were blinded to the assigned treatments. A nurse assessor also blindly assessed the pain score, using the visual analogue scale (VAS) and the numeric rating scale (NRS). Postoperative pain scores were recorded at 2, 4, 8, 12, 24 hours after operation. Complications, time of first analgesia and fentanyl consumption were recorded. All operations were performed by one surgeon.**

Results: **The age, sex, BMI, operative time did not significantly differ between the two groups. Similarly, there were no significant differences between groups with regard to postoperative pain, time to first analgesia, fentanyl consumption and complications.**

Conclusions: **The instillation of bupivacaine in the preperitoneal space during laparoscopic totally extraperitoneal hernioplasty did not reduce postoperative pain compared with placebo.**

The study was registered on www.clinicaltrial.in.th with number TCTR2016712004

Keywords: **Bupivacaine, preperitoneal, laparoscopic total extraperitonealhernioplasty inguinal hernia**

INTRODUCTION

An inguinal hernia occurs in the groin area when fatty or intestinal tissues push through the inguinal canal. Modality of treatment of inguinal hernia includes open and laparoscopic techniques. Laparoscopic technique is associated with less pain, rapid recovery, quick return to work and shorter hospital stay than the open procedure[1]. There are two laparoscopic techniques; laparoscopic transabdominal preperitoneal (TAPP) hernioplasty and laparoscopic totally extraperitoneal (TEP) hernioplasty. The choice of surgical technique depends on the surgeon's skills,

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patient and surgeon preferences, available instruments, and patient's condition. The site of pain in TEP hernioplasty included the port site wound and the dissected preperitoneal space. Postoperative pain may prolong hospital stay and recovery. Preperitoneal infusion of bupivacaine may significantly reduce postoperative pain[2-4,7]. Several randomized controlled trials have addressed pain reduction after instillation of bupivacaine in the preperitoneal space in patients undergoing TEP, but results have been inconclusive[5,6,8]. This study aims to compare the pain reduction by preperitoneal infusion of 0.25% bupivacaine versus normal saline solution during TEP hernioplasty. Secondary outcomes included postoperative complications, fentanyl consumption and time to first use of analgesic drugs.

Materials and Methods

This prospective randomized double blind controlled trial was conducted at Hatyai Hospital, Songkhla, Thailand, from March 2016 to February 2017. The protocol was approved by the Hatyai Research Ethics Committee. Patients with reducible unilateral inguinal hernia and scheduled for elective TEP hernioplasty, who had American Society Anesthesiologist (ASA) status I-II, and aged between 14 to 70 years, were enrolled into the study after informed consent was obtained. Exclusion criteria included high risk for general anesthesia, allergy to bupivacaine, pregnancy, denying consent, history of previous lower abdominal surgery, recurrent inguinal hernia, bilateral inguinal hernia, and history of drug abuse.

All patients were admitted one day prior to surgery and familiarized with the visual analogue scale (VAS) and numeric rating scale (NRS). For VAS, a continuous 10 cm line was used, with the 0 point defined as no pain to the 10 cm point defined as the most severe pain. For NRS, 0 was defined as no pain, to the score of 10 defined as the most severe pain.

The patients were premeditated by receiving 10 mg diazepam before bedtime and diazepam 5 mg on the morning of operation. All patients were instructed to void prior to operation, and urinary bladder catheterization was not performed. Patients received 1gm cefazolin intravenous within 30 minutes before skin incision. The operation was carried out under general anesthesia using the same protocol. General anesthesia was induced with propofol 2.5 mg/kg and fentanyl 1.5 mg/kg. Oropharyngeal intubation was facilitated by the administration of cisatracurium 0.1 to 0.2 mg/kg and maintained with incremental IV dose of 1 to 2 mg. After intubation, anesthesia was maintained with oxygen, 70% N2O, 1 to 2% sevoflurane, and fentanyl 0.5 to 1 mg/kg to maintain blood pressure and pulse within 20% of patient's baseline values. Patients were ventilated with positive pressure ventilation to keep at ETCO2 30 to 35 mmHg. The anesthesiologist team was blinded to patient's assignment.

The patient was placed in the Trendelenburg position with the ipsilateral side rotated up. All patients were operated by one surgeon. A 2-cm transverse infraumbilical incision was performed and the anterior rectus sheath was incised horizontally. The ipsilateral rectus muscle was retracted laterally. Preperitoneum space was created by sharp dissection (not using balloon dissection) initially, a 12 mm port was inserted, and CO2 was insufflated. The pressure was maintained at less than 12 mmHg. A zero-degree 10 mm laparoscope was inserted, and a second port was made in the midline between the first and third port, the third port created 3 cm above pubic symphysis. The preperitoneal space was developed by sharp dissection under vision from midline to pubic symphysis, and Cooper's ligament and hernia sac were identified. The sac was separated from spermatic cord while preserving all blood vessels and vas deferens. The hernia sac was ligated with silk 2-0. The proximal sac was pulled back and distal sac was left alone.

All of patients were randomized in blocks of 4, with concealment using numbered closed envelopes, into 2 groups by scrub nurse: one instilled with 40 mL of 0.25% bupivacaine, and the other 40 mL of normal saline into the preperitoneal space. The scrub nurse opened the envelope to reveal the allocated treatment when the hernia sac was closed. The surgeon, the anesthesiology team, and nurse assessors were blinded to the allocation. A small catheter was inserted through a 5 mm trocar and guided to instill the allocated treatment into the preperitoneal space under direct vision.

After instillation, the operating table was rotated to the reverse Trendelenburg position and down towards the ipsilateral side for 3 to 5 minutes. After

rotating the table back to the operative position, a 15 × 10 cm polypropylene mesh was inserted through subumbilicus port. The mesh was placed and transfixed with trackers two pieces at the Cooper's ligament, and at transversalis fascia above the iliopubic tract with tackers (Protack, Autosuture, Norwalk, CT, USA). After the preperitoneum space was deflated, laparoscopic ports were removed. Bupivacaine, 5 to 10 mL, was infiltrated at the port incisions. The subumbilical fascia was closed with 1-0 interrupted absorbable suture. The skin was closed with 4-0 absorbable, subcuticular suture. At the end of the operation, residual neuromuscular blockade was antagonized with 2.5 mg of neostigmine and 1.2 mg of atropine. After endotracheal tube extubation, patients were transferred to the recovery room and were attended by anesthetic nurses who were also blinded to the patient's treatment assignment.

Intravenous fentanyl of 50 μg was given if the patient had VAS or NRS pain score more than 5, or at the patient's request. Postoperative pain scores were assessed at 2, 4, 8, 12, and 24 hours after surgery, using both VAS and NRS, by nurses. All patients were clinically assessed at the Outpatients Clinic at 1 week and 30 days after operation by the same surgeon.

Operative time was defined as the duration in minutes between skin incision to skin closure. Postoperative complications such as nausea or vomiting, pruritus, constipation, urinary retention, hematoma, and infection were recorded. Superficial surgical site infection (SSSI) was defined as tender and redness at the surgical wound. Seroma was defined as a fluid mass in the scrotal sac or at the groin. Hematoma was defined blood in scrotal sac or under the area of dissection. Groin pain was defined pain around the surgical wound. Readmission and reasons for readmission to the hospital were recorded, as well as time to first analgesia (fentanyl) use, and the amount of analgesics used.

The parameters obtained were summarized in computerized spreadsheets and statistical analysis was performed by using STATA MP-13. The two groups were compared using Student's t test for continuous variables. Categorical variables were analyzes by Chi square test or Fisher's exact test. Numerical data were presented as mean ±SD and categorical data was expressed as counts and percentages. Statistical significance was defined as a *P* value of 0.05 or less.

Results

The study included 44 patients with unilateral reducible inguinal hernia, and were randomly allocated into two groups. There was one patient with unilateral pantaloon hernia in the bupivacaine group. The mean ages were 48.86 ± 13.58 years in bupivacaine group and 47.00 ± 11.32 years in control group. There were no differences between the two groups in terms of age, sex and body mass index (Table 1). The mean operative time in the bupivacaine and control groups (67.00 ± 16.36 and 80.23 ± 26.39) were statistically comparable (*P*=0.52). No patient was converted to the open technique. The mean time to first analgesia (fentanyl) and the mean fentanyl consumption were not statistically different between the two groups.The mean postoperative pain (VAS and NRS) at 2, 4, 8, 12, and 24 hours after surgery were not statistically different between two groups (Table 2). There were no wound infection, groin pain, hematoma, nausea vomiting, pruritus, constipation, urinary retention in this study. All patients were discharged within 48 hours after surgery. The overall incidence of complications (seroma) within 30 days was not significantly different

Table 1 Demographic data of randomized patients who underwent TEP

Demographic data	Bupivacaine (n=22)	Normal Saline (n=22)	*p*-value
Age (years)	48.86 ± 13.58	47.00 ± 11.32	0.624
Men (%)	22 (100)	21 (95)	0999
Body mass index (kg/m^2)	21.90 ± 1.92	22.09 ± 2.07	0.762

Table 2 Outcomes of the study

Outcomes	Bupivacaine (n=22)	Normal Saline (n=22)	*p*-value
Operative time (min)	67.00 ±16.36	80.23 ± 26.39	0.52
VAS 2 hour	4.50 ± 3.11	5.45 ± 2.70	0.284
VAS 4 hour	4.32 ± 2.46	3.59 ± 1.59	0.251
VAS 8 hour	3.59 ± 2.46	2.32 ± 1.94	0.064
VAS 12 hour	2.41 ± 2.52	1.82 ± 1.89	0.384
VAS 24 hour	2.55 ± 1.92	1.95 ± 2.44	0.380
NRS 2 hour	3.94 ± 2.97	5.00 ± 2.89	0.240
NRS 4 hour	3.75 ± 2.43	2.72 ± 2.00	0.136
NRS 8 hour	3.05 ± 2.68	1.95 ± 1.89	0.123
NRS 12 hour	2.13 ± 2.31	1.77 ± 1.98	0.409
NRS 24 hour	2.11 ± 1.87	1.77 ± 1.98	0.561
Fentanyl consumption	0.95 ± 0.95	0.59 ± 0.85	0.189
First fentanyl (hour)	1.75 ± 2.17	1.06 ± 2.05	0.281
Seroma	3 (14%)	3 (14%)	0.999

VAS: visual analog scale, NRS: Numeric rating scale, *: time to first analgesia

between the 2 groups.

Discussion

Postoperative pain is often a concern after hernia repair. The reduction of postoperative pain can decrease hospital stay and facilitates recovery, with faster return to work or normal activity. The laparoscopic technique is associated with less pain than the open technique. Factors associated with postoperative pain in laparoscopic TEP hernioplasty include preperitoneal blunt dissection, stretching of surrounding muscles during gas insufflations, the presence of skin incisions, and the use of mesh fixation[9,10]. The mechanism of chronic pain following TEP hernioplasty is unknown but probable causes include nerve damage or irritation, chronic inflammation, reaction to the mesh, and irritation from staples[11]. Preemptive anesthesia may prevent nervous system hyperexcitability and postoperative hyperalgesia, but the efficacy of various preemptive anesthesia techniques is unclear[12,13]. Hon et al.[7] have shown that preemptive preperitoneal infiltration with 0.5% bupivacaine significantly reduced postoperative pain in laparoscopic TEP hernioplasty.

The present study was conducted to evaluate the analgesic effect of bupivacaine instillation during TEP hernia repair. We compared 40 mL of 0.25% bupivacaine instilled via a small catheter under direct vision into the preperitoneal space through the trocar site, with the same amount of normal saline. The operating table was tilted for good distribution of both solutions, and 3 to 5 minutes was given for sufficient absorption. There were no significant differences in postoperative pain between patients receiving either bupivacaine or normal saline instillation.

There may be several reasons that might explain the results of the present study. Firstly, balloon trocar was not used for preperitoneal dissection. Secondly, tackers were used to fix the mesh. There have been three RCTs in which tackers were used. Instillation of bupivacaine into the preperitoneal space had no significant impact on postoperative pain in these studies[5,6,8]. In three RCTs where tackers were not used, however, bupivacaine instillation was associated with significant relief of postoperative pain[2,4,7]. Thirdly, this study did not use preemptive analgesia. Fourthly, tissue injury after dissection might decrease the absorption of bupivacaine. Fifthly, in cases where tearing of the peritoneum occurred during the procedure, residual CO2 in the peritoneal cavity might increase postoperative pain. Finally, pain has at least two dimensions, sensory and affective. VAS and NRS are unidimensional pain scales. These scales might not fully capture the experience of pain, and thus may be less sensitive measures of pain.

The instillation of analgesic drugs and the amount of analgesic drug in the preperitoneal space during TEP procedure may increase the risk of seroma formation. Our incidence of seroma formation is 14%.

Seroma was found in six patients (three patients in each group). The incidence of seroma was not significantly different between both groups.

Previous studies on postoperative pain after instillation of bupivacaine into the preperitoneal space during TEP hernioplasty differ in how they were conducted. Some used balloon trocars for tissue dissection[2,4,5,8]; the methods of mesh fixation were different[3,5,6,8]; some controlled for pain at the port site[2,3,6,7]; some included bilateral or recurrent hernia as well[2,6,8]. The timing, technique of instillation, volume and concentration of bupivacaine instillation were also different across the studies. The optimal volume and concentration of bupivacaine for instillation into the preperitoneal space during TEP inguinal hernioplasty have not been standardized. These differences may explain the differing results between studies. Tong et al.[15], in a meta-analysis of these studies, showed that extraperitoneal instillation of bupivacaine during TEP inguinal hernioplasty was not associated with greater reduction in postoperative pain compared with placebo.

Conclusion

The preperitoneal instillation of 40 mL of 0.25% bupivacaine had similar analgesic effects as the placebo in the patients undergoing unilateral laparoscopic totally extraperitoneal hernioplasty.

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บทคัดย่อ **การศึกษาแบบสุ่มไปข้างหน้า ปกปิดการจับกลุ่ม ผลของการใช้ยาชา Bupivacaine ในเนื้อเยื่อนอกช่องท้องหลังการผ่าตัดไส้เลื่อนแบบส่องกล้องนอกช่องท้อง**

ชูแสง ธีระวิวัฒน์ชัย

กลุ่มงานศัลยกรรม โรงพยาบาลหาดใหญ่ จังหวัดสงขลา

จุดประสงค์: เพื่อประเมินผลของการลดปวดจากการใส่ยาชา Bupivacaine ในเนื้อเยื่อนอกช่องท้องหลังผ่าตัดไส้เลื่อนแบบส่องกล้องในผู้ป่วยที่เป็นไส้เลื่อนข้างเดียวแบบดันกลับได้

วัสดุและวิธีการ: ผู้ป่วยที่เป็นไส้เลื่อนข้างเดียวแบบดันกลับได้จำนวน 44 ราย แบ่งเป็น 2 กลุ่ม กลุ่มที่ 1 ให้ยา 0.25% bupivacaine 40 มิลลิลิตร กลุ่มที่ 2 ให้น้ำเกลือ 40 มิลลิลิตร ในเนื้อเยื่อนอกช่องท้อง โดยศัลยแพทย์ที่ผ่าตัด, ทีมวิสัญญีแพทย์, ทีมพยาบาลผู้ประเมินความปวดแบบ NRS และ VAS ไม่ทราบว่าผู้ป่วยอยู่กลุ่มใด คะแนนความปวดจะถูกเก็บหลังผ่าตัดเป็นระยะเวลาที่ 2, 4, 8, 12 และ 24 ชั่วโมง ภาวะแทรกซ้อน, เวลาที่เริ่มใช้ยาแก้ปวด, ปริมาณยา fentanyl ที่ใช้ จะถูกเก็บข้อมูล การผ่าตัดทั้งหมดได้รับการผ่าตัดโดยศัลยแพทย์คนเดียว

ผลการศึกษา: ข้อมูลทั่วไป เช่น อายุ เพศ ดัชนีมวลกาย ระยะเวลาที่ใช้ในการผ่าตัด ทั้ง 2 กลุ่มไม่มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ ระดับความปวด เวลาที่เริ่มใช้ยาแก้ปวด, ปริมาณยา fentanyl ที่ใช้ และภาวะแทรกซ้อนไม่มีความแตกต่างอย่างมีนัยสำคัญทางสถิติ

สรุปการศึกษา: การใส่ยา Bupivacaine ในช่องในเนื้อเยื่อนอกช่องท้องในผู้ป่วยเป็นไส้เลื่อนข้างเดียวแบบดันกลับได้เอง ไม่มีผลต่อการลดระดับความปวดหลังผ่าตัดไส้เลื่อนแบบส่องกล้อง

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Original Article

Surgical Correction of Congenital Apical Left Ventricular Aneurysm: A Case Series

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Abstract

Background: **Congenital apical left ventricular aneurysm is a rare cardiac anomaly and the procedure for the corrective surgery is often not well described. The purpose of this study is to present our surgical technique for the management of this rare cardiac anomaly and to report the outcome of our series of patients.**

Methods: **We detailed our experience with three patients with congenital apical left ventricular aneurysm. Their ages were three months, eight months, and four years, all of whom were operated between the years 2012 and 2013. The main technique was apical amputation and linear repair of ventricular wall with or without endoventricular circular patch under cardiopulmonary bypass.**

Results: **All patients underwent operations successfully without any perioperative complications and were discharged from the cardiac intensive care unit within one day after surgery. Postoperative echocardiogram showed normal left ventricular function in all cases. All patients have good functional status.**

Conclusion: **Based on our experience, apical amputation and linear plication with or without endoventricular circular patch is a simple, safe, effective and reproducible technique for the management of congenital apical left ventricular aneurysm.**

Keywords: **Congenital left ventricular aneurysm, endoventricular patch, linear plication apical, left ventricular aneurysm, echocardiogram, amputation**

Introduction

Congenital apical left ventricular aneurysm is a rare cardiac anomaly, with a prevalence of 0.04% in the population.[1] Patients may be asymptomatic, or have congestive heart failure, with arrhythmia, and may face sudden death from rupture of the aneurysm.[1-5] Details of surgical strategy are not often described due to the rarity of the condition. Only a few case reports have been published and the surgical technique is not well documented.[6] In the present article we present our experience in treating this rare condition, and report the short-term outcomes of our approach.

Patients and Methods

From 2012 to 2013, there were three patients in Chiang Mai University Hospital who were diagnosed as having true apical left ventricular aneurysm. All three presented with symptoms of heart failure. One patient had hemopericardium (Table 1).

Diagnosis was achieved by the use of imaging studies such as transthoracic echocardiography and CT scan (Figures 1 & 2). Pathological diagnosis of true

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Table 1 Patients in the case series.

Patient No.	Age (mo)	Sex	Presentation	Aneurysmal size (mm × mm)	Peak gradient across aneurysmal neck (mmHg)
1	7	M	CHF	30 × 40	60
2	3	M	CHF, hemopericardium	34 × 35	73
3	48	M	CHF	32 × 26	58

M=Male, CHE=congestive heart failure

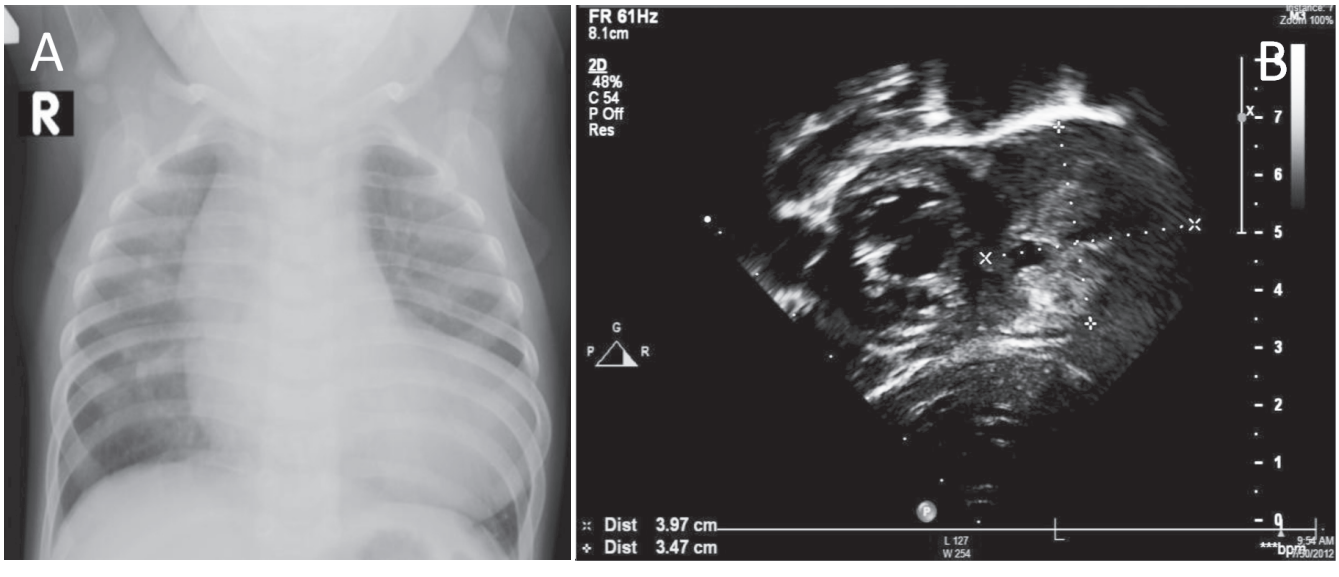

Figure 1 A) Chest X-ray of a 7-month-old infant shows abnormal bulging of left cardiac border. B) Transthoracic echocardiogram of the same patient demonstrates a 3.9x3.4 cm aneurysm protruding from left ventricle.

LV aneurysm was confirmed in all cases (Figure 3).

Surgical techniques

Correction of congenital LV aneurysm was performed under cardiopulmonary bypass with cardioplegic cardiac arrest. There were three main surgical steps: apical aneurysmal amputation; aneurysmal neck closure; and linear plication of aneurysmal wall (Figure 4).

There were two techniques of aneurysmal neck closure, depending on the size of the neck. In the case of small aneurysmal neck, closure was done directly using interrupted horizontal mattress 4-0 polypropylene sutures with pledget reinforcement (Figures 4C, D). For large aneurysmal neck, a circular endoventricular PTFE patch was placed prior to the use of horizontal mattress sutures (Figure 5). A summary of operative procedures for all three patients is given in Table 2.

Outcomes

All patients underwent successful surgical correction of congenital LV aneurysm, without postoperative complications. All were discharged from the cardiac intensive care unit within one day after surgery.

Preoperative echocardiographic results of all patients were compared with those obtained postoperatively at two months. The diameter of the left ventricle was measured along the parasternal axis at the level of the mitral valve tips. Ventricular function was measured using fractional shortening of the ventricle. Postoperative echocardiograms show improvement of the left ventricular function in all cases, compared with preoperative results (Table 3).

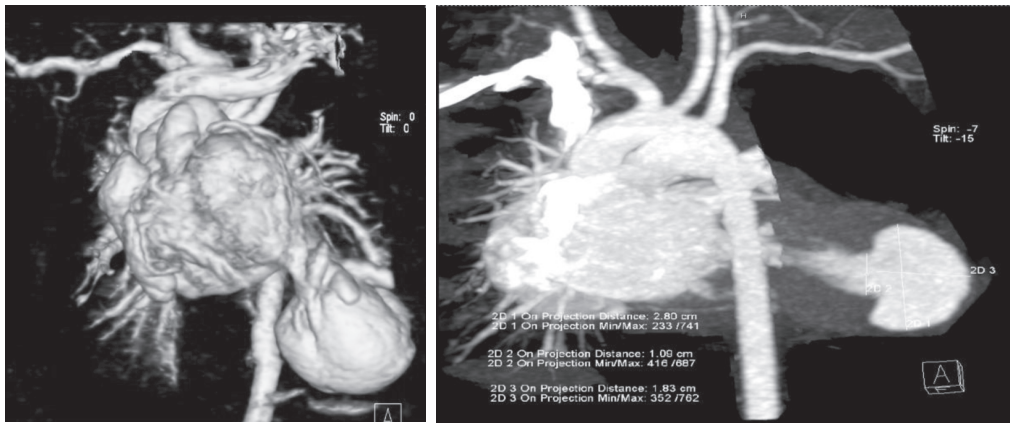

Figure 2 3D CT reconstruction demonstrates a large outpouching sac arising from left ventricular apex, measuring about 3.7x3.7 cm in caliber.

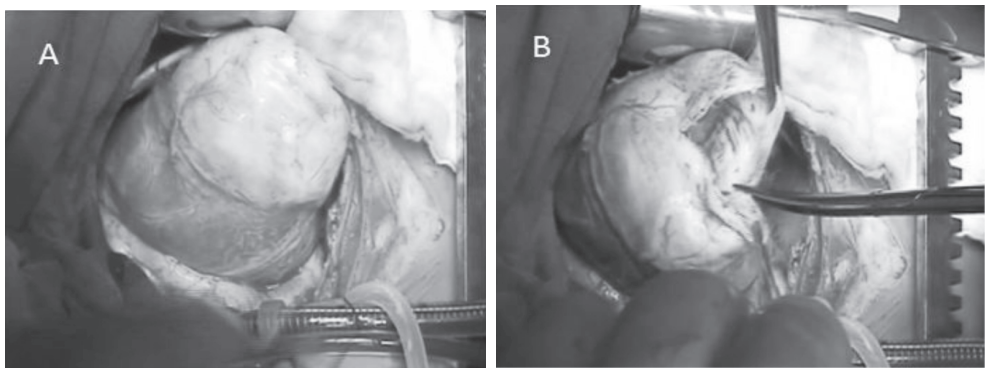

Figure 3 Intraoperative findings in three-month-old infant (patient No. 1). A) Showing apical LV aneurysm. The wall of the aneurysm contracted in synchrony with the corresponding chamber. B) No intraluminal thrombus was found.

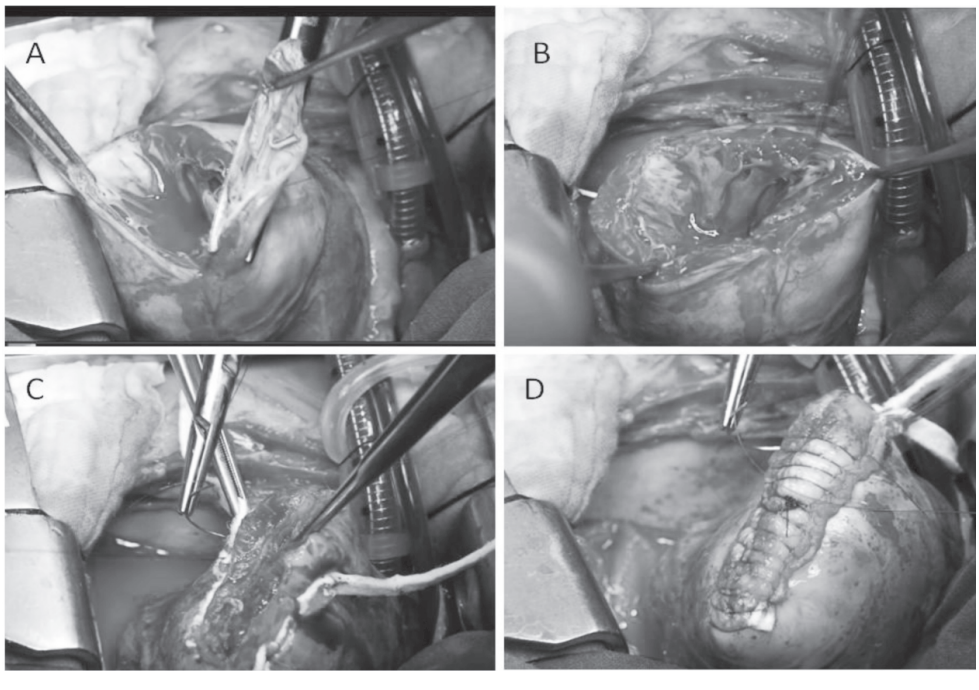

Figure 4 A) The wall of aneurysm is excised. B) The residual wall of aneurysm, with good blood supply, is electrocauterized. C, D) Linear plication of aneurysmal wall is done using double layered, horizontal mattress 4-0 polypropylene sutures with stripped pledget reinforcement.

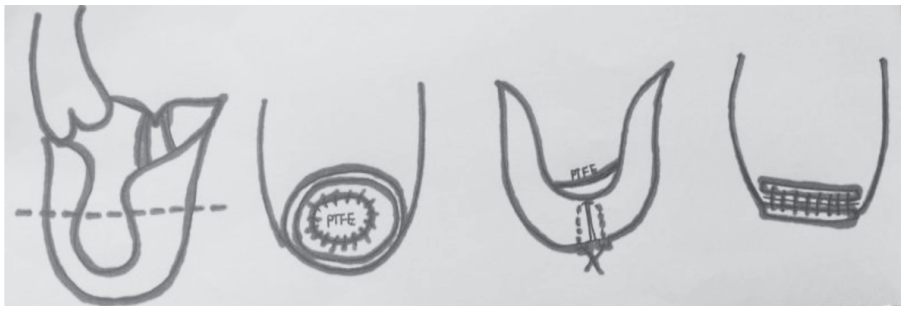

Figure 5 A circular endoventricular PTFE patch is placed prior to horizontal mattress polypropylene sutures.

Table 2 Operative details of the three patients in the series

Patient No.	BW (Kg)	Technique of repair	Bypass time (min)	Clamp time (min)	Post-op intubation time (hr)
1	5.5	Directed aneurysmal neck closure, linear plication	67	25	21
2	7	Endoventricular circular patch, linear plication	61	42	9
3	12.7	Directed aneurysmal neck closure, linear plication	49	32	9

Table 3 Comparison between preoperative and postoperative values of ventricular size and ventricular function

Patient No.	LVEDD(mm)		LVESD(mm)		FS %	
	Pre-operative	Post-operative	Pre-operative	Post-operative	Pre-operative	Post-operative
1	34	27	29	19	14.4	29.8
2	30.1	24	21.7	16	28	34
3	43	38	35	22	18.7	42.9

LVEDD = left ventricular end diastolic diameter, LVESD = left ventricular end systolic diameter, FS = fractional shortening

Mitral valve function was also evaluated in all patients after operation. One patient (Patient No. 2) had mild mitral valve insufficiency, which was not clinically significant.

All patients were followed over a period of 3 to 23 months (mean, 15 months), and are still currently under follow-up. The most recent clinical information was obtained by means of outpatient evaluation or telephone interview. All patients had good functional status.

Conclusion

Based on our experience, apical amputation and linear plication with or without endoventricular circular patch is a simple, safe, effective and reproducible technique for the surgical correction of congenital apical left ventricular aneurysm.

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บทคัดย่อ **ผลการรักษาโรคหัวใจห้องล่างซ้ายโป่งพองแต่กำเนิด (Congenital Left Ventricular Aneurysm) โดยวิธีการผ่าตัด: Case Series**

ฉัตรอรุณ ริมสุขเจริญชัย, สุรินทร์ วรกิจพูนผล

สาขาศัลยศาสตร์ทรวงอก คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่

วัตถุประสงค์: เพื่อรายงานวิธีการผ่าตัดรักษาโรค congenital left ventricular aneurysm ซึ่งเป็นภาวะที่พบน้อยมาก และยังไม่มีการรายงานวิธีการและขั้นตอนในการผ่าตัดที่เป็นมาตรฐานชัดเจน รวมถึงรายงานผลของการรักษาทั้งในแง่ของการตรวจทางภาพสะท้อนคลื่นหัวใจและอาการทางคลินิก

วิธีการ: รวบรวมข้อมูลของผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็น congenital left ventricular aneurysm ของโรงพยาบาลมหาราชนครเชียงใหม่ย้อนหลัง ตั้งแต่ มกราคม 2555 ถึง ธันวาคม 2556 ในรายละเอียดของอาการแสดง ผลตรวจทางรังสีวิทยา และรายละเอียดวิธีการผ่าตัด รวมทั้งผลการรักษา

ผลของการศึกษา: มีผู้ป่วย congenital left ventricular aneurysm 3 ราย ได้รับการรักษาโดยวิธีการผ่าตัดภายใต้เครื่องปอดและหัวใจเทียม ซึ่งเทคนิคที่ใช้ได้แก่ การตัดผนังกล้ามเนื้อหัวใจ (apical amputation) และทำการซ่อมแซมด้วยวิธี linear plication และบางรายใช้วิธี endoventricular circular patch ร่วมด้วย ไม่มีผู้ป่วยคนใดมีภาวะแทรกซ้อนจากการผ่าตัด และใช้เวลาในหอผู้ป่วยวิกฤตินอ้ยกว่า 24 ชั่วโมง ผลการตรวจภาพสะท้อนคลื่นหัวใจหลังผ่าตัดพบการทำงานของหัวใจห้องล่างซ้ายเป็นปกติ ผู้ป่วยทุกรายมีสมรรถภาพการดำรงชีวิต (functional status) ปกติ

สรุป: การผ่าตัดรักษาโรค congenital left ventricular aneurysm โดยเทคนิค apical amputation และ linear plication, endoventricular circular patch เป็นวิธีที่ไม่ซับซ้อน สามารถนำไปใช้ได้อย่างแพร่หลาย และมีความปลอดภัยโดยที่สามารถรักษาการทำงานของกล้ามเนื้อหัวใจให้กลับคืนสู่ปกติอีกด้วย

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Original Article

Hemorrhoidal Artery Ligation for Patients with Bleeding Tendencies: Peri-operative Outcomes

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Abstract

Background: **Bleeding hemorrhoids in patients with bleeding tendencies may be very harmful and fatal. Hemorrhoidectomy may cause further bleeding from surgical wound. In this situation, Doppler-guided hemorrhoidal artery ligation (DGHAL) seems a better choice, because this technique occludes the feeding arteries or hemorrhoids under Doppler guidance without any surgical wound. We examined the effectiveness of DGHAL to control bleeding in this group of patients.**

Methods: **Patients diagnosed with Hemorrhoids with bleeding tendencies who were treated with DGHAL during January 2008 to December 2014 were included in this study. The peri-operative outcomes were reviewed.**

Results: **From the data records, we obtained 11 patients who had bleeding tendencies undergoing DGHAL for hemorrhoids. At one month post DGHAL, only one patient had occasional spotting which spontaneously resolved without any intervention.**

Conclusions: **DGHAL is an effective alternative treatment for bleeding hemorrhoid. Without tissue resection and under Doppler guidance, it is of benefit for bleeding hemorrhoids in patients with bleeding tendencies.**

Keywords: **Massive bleeding hemorrhoid, Bleeding tendencies, Doppler-guided hemorrhoidal artery ligation**

INTRODUCTION

Bleeding hemorrhoids in patients with bleeding tendencies may be a life-threatening condition because of massive hemorrhage[1]. At present, there is no widely accepted safe and effective therapy for this group of patients. Morinaga et al.[2] introduced a Doppler-guided hemorrhoidal artery ligation (DGHAL) procedure for the treatment of hemorrhoids. Without any tissue resection, this technique may lessen postoperative bleeding and be beneficial to patients with bleeding risks.

The aim of this study was to determine the peri-operative outcomes of bleeding hemorrhoids which were treated with DGHAL in our institution, particularly in patients who have bleeding tendencies.

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Materials and Methods

Data of patients with hemorrhoids who underwent DGHAL from January 2008 to December 2014 were extracted for this study. Patients with bleeding risks were defined as patients with any of the following conditions: thrombocytopenia, platelet dysfunction, coagulopathy, disorders which cause abnormal hemostasis (such as renal failure, cirrhosis, etc.), or exposure to anti-platelet or anti-coagulant within two weeks prior to surgery. Their medical records were reviewed. Patients were treated on an in-patient or day-care surgery basis. For in-patients, both admission forms and out-patient forms were reviewed. Patients whose medical records were lost or inadequately recorded were excluded.

The extracted data included age, sex, underlying illnesses such as renal or hepatic disorders, the use of anti-platelet or anti-coagulant agents, grade of internal hemorrhoids, presence of external hemorrhoid, and clinical presentation of hemorrhoids. Early and 30-day events including postoperative bleeding, blood components transfused, and occurrence of recurrent hemorrhoids in patients with bleeding tendency were analyzed.

Most of patients underwent surgery on a day-care basis. Bowel preparation and antibiotic prophylaxis were not provided. The surgery was performed with patients in the prone position. Local anesthesia (1.0% Lidocaine with adrenaline) was used in patients who were still on anti-platelets or anti-coagulants. Regional anesthesia was used in patients who had stopped anti-platelets or anti-coagulants one to two weeks prior to surgery. Doppler-probe-equipped proctoscopy was used in all cases. Flow signals of hemorrhoidal arteries were detected at 1 to 2 cm above the dentate line. All submucosal arteries were sutured with 2-0 absorbable sutures, the success of which was confirmed by the absence of the Doppler signal. Care must be taken not to tie the knots too tight, which might lead to further bleeding.

Postoperative care included pain control with acetaminophen (paracetamol) and/or a COX-2 inhibitor, and the use of bulk-forming stool softeners. All in-patient cases were discharged on the day following surgery. All patients were followed as outpatients at 1 month after surgery, and monthly thereafter in cases with residual symptoms or complications which need to be managed.

Results

There were 59 patients who underwent DGHAL during the study period. The mean age was 51 years (range 24 to 78 years). Forty cases were male (68%). Forty patients (68%) underwent DGHAL on a day-care basis. The rest were treated as in-patients.

Postoperative bleeding was found in 7 patients (12%). Only two patients (both without any bleeding risks) had significant bleeding complications: one patient presented with rectal bleeding from suture site on post-operative day 2, which needed endoscopic hemostasis, and one patient had infected hematoma at the suture site on post-operative day 7, which needed clot removal and surgical hemostasis. The remaining five patients had only occasional bloody spotting, of whom one had bleeding risk. None of the seven bleeding patients needed postoperative transfusion. All bleeding stopped within the first month after surgery.

Of the 59 patients, 11 patients (19%) had bleeding tendencies. Their risks included exposure to anti-platelets (aspirin and clopidogrel) or anti-coagulant (warfarin), liver cirrhosis, end-stage renal disease, and thrombocytopenia secondary to myelodysplastic syndrome (Table 1). Of the 11 patients at risk, only 1 had occasional spotting during the first month after surgery. The bleeding in this patient stopped spontaneously without any intervention. There was no recurrent symptoms (prolapsing or bleeding) at month 1 after surgery.

Discussion

The "vascular" theory of arterial overflow was recently proposed to explain the pathogenesis of hemorrhoids, based on many studies[3-6]. Morinaga et al. first introduced the method of hemorrhoidal artery ligation with aid of doppler-equipped proctoscope[2]. There have been many modifications of the technique[7-10], applying similar concepts. These include the reduction of arterial flow into the hemorrhoidal plexus, without resecting the hemorhoidal tissues. Hence, DGHAL should be associated with less postoperative pain and bleeding, compared to conventional hemorrhoidectomies.

Many recent studies[11-22] reported early success rates up to 70%, but with high recurrence rate of symptoms (9 to 27%) after a follow-up of up to 5 years.

Table 1 Patients with bleeding tendencies underwent DGHAL

Case number	Sex	Age	Pro-lapse	Blee-ding	Underlying conditions	Anti-platelet/ Anti-coagulant	Hb/Hct/plt	PT(sec), INR, aPTT(sec)
1	M	68	Grade 3	Yes	Myelodysplastic syndrome	No	7.7, 23.4, 10000	13.0, 1.1, 27.0
2	F	67	Grade 2	Yes	Alcoholic cirrhosis Child B, HT	No	8.6, 27.0, 127000	17.3, 1.56, 32.4
3	M	78	Grade 3	No	HT, DM, ischemic stroke, aortic dissection, prostatic cancer s/p radiation, radiation proctitis	Clopidogrel	N/A	N/A
4	M	56	Grade 2	No	HT, DM, alcoholic cirrhosis Child C	No	12.8, 36.1, 33000	15.2, 1.33, 28.8
5	F	75	No	Yes	HT, DM, stroke, OA	Aspirin	13.5, 40.3, 304000	11.6, 0.97, 25.6
6	F	56	Grade 3	Yes	HCV cirrhosis Child B	No	11.4, 36.6, 117000	10, N/A, N/A
7	F	62	Grade 3	Yes	HT, DM, Cervical cancer s/p radiotherapy	Aspirin	N/A	N/A
8	M	45	No	Yes	HT, AF, severe mitral valve regurgitation s/p valve replacement, COPD	Warfarin	N/A	N/A
9	M	56	No	Yes	CAD	Aspirin	N/A	N/A
10	M	77	Grade 2	Yes	HT, DM, stroke, CAD s/p CABG	Clopidogrel	N/A	N/A
11	M	38	Grade 3	Yes	ESRD, Cirrhosis Child C	Clopidogrel	N/A	N/A

AF, Atrial fibrillation; aPTT, activated partial thromboplastin time; CAD, Coronary artery disease; CABG, Cororany artery bypass grafting; COPD, Chronic obstructive pulmonary disease; DM, Diabetes mellitus; ESRD, End-stage renal disease; Hb, hemoglobin; Hct, hematocrit; HCV, Hepatitis C virus; HT, Hypertension; INR, international normalized ratio; OA, osteoarthritis; plt, platelet count; PT, prothrombin time; sec, second(s); s/p, status post

For bleeding hemorrhoids, DGHAL seemed useful for hemostasis. Postoperative bleeding complications included hematoma, persistent bleeding, and recurrent bleeding. Persistent bleeding can be considered as either a complication or treatment failure. Its incidence was between 1 to 21% during the first few months. Persistent bleeding was usually minor, and only 1 to 3% required surgical hemostasis. After 1 to 5 years of follow-up, the incidence of bleeding complications was 2 to 9%, and some were considered recurrent symptoms.

Bleeding hemorrhoids in patients with bleeding risks can be massive and life-threatening[1], but the optimum treatment for this condition is unknown. Cavazzoni et al.[23], reported the first study of the effectiveness of DGHAL for arresting persistent hemorrhoidal bleeding in the emergency setting. In their study, 11 of 68 patients with severe bleeding continued bleeding after tampon application, and underwent emergent DGHAL. Seven of these took anti-platelets or anti-coagulants (aspirin, clopidogrel, orwarfarin). All bleeding stopped completely with DGHAL. There were no major complications. None received any blood transfusion. There was no persistent or recurrent bleeding at 30 and 90 days after the procedure.

The present study found DGHAL to be technically simple, safe and effective in controlling bleeding hemorrhoids. Postoperative bleeding complications occurred in 12% (7/59) of patients. This was comparable to the reported postoperative bleeding complications between 1 to 21% from other studies[11-22]. Only two patients who did not have any bleeding risk required endoscopic or surgical hemostasis.

In the subgroup of patients with bleeding tendencies, only one had a postoperative bleeding complication, which was minor, within one month after DGHAL. None suffered from other major or minor complications. The hospital stay for these patients was between one to two days. This demonstrated the effectiveness of the procedure in patients at risk. Thus, we recommend that DGHAL be used for bleeding hemorrhoids in patients with bleeding tendencies.

Besides being a retrospective study, the limitations of the present study included a small sample size and lack of long-term outcomes.

Conclusion

DGHAL is an effective alternative treatment for bleeding hemorrhoids. Without tissue resection, it is of special value in patients with bleeding risks. Our series confirmed the effectiveness and safety of this procedure in controlling bleeding hemorrhoids in high risk patients.

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บทคัดย่อ **การเย็บผูกหลอดเลือด hemorrhoidal artery ในผู้ป่วยที่มีภาวะเลือดออกง่ายหยุดยากที่มีเลือดออกจากริดสีดวง: ผลการรักษาหลังผ่าตัด**

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หน่วยศัลยกรรมลำไส้ใหญ่และทวารหนัก ภาควิชาศัลยศาสตร์ คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย โรงพยาบาลจุฬาลงกรณ์

ความเป็นมา: ภาวะเลือดออกจากริดสีดวงในผู้ป่วยที่มีปัญหาเลือดออกง่ายหยุดยากเป็นภาวะที่อันตรายมาก จนอาจถึงแก่ชีวิต การผ่าตัดริดสีดวงเสี่ยงต่อเลือดออกจากแผลผ่าตัดในสถานการณ์นี้ การผูกหลอดเลือดริดสีดวงโดยใช้ดอปเปล้อร์ช่วยหาตำแหน่งหลอดเลือด (DGHAL) ดูเป็นทางเลือกที่ดี เพราะวิธีนี้สามารถห้ามเลือดโดยไม่ก่อให้เกิดแผล การศึกษานี้เพื่อทราบประสิทธิผลในการช่วยห้ามเลือดในผู้ป่วยกลุ่มดังกล่าว

วิธีการศึกษา: ผู้วิจัยรวบรวมผู้ป่วยริดสีดวงที่มีภาวะเลือดออกง่ายหยุดยากที่รักษาด้วยวิธี DGHAL ระหว่างเดือนมกราคม 2008 ถึงธันวาคม 2014 และติดตามผลการรักษาด้วยวิธีข้างต้น

ผลการศึกษา: จากข้อมูลเวชระเบียน ผู้วิจัยพบผู้ป่วยที่เข้าเกณฑ์ข้างต้น 11 ราย ซึ่งภายหลังการผ่าตัดหนึ่งเดือน มีเพียงผู้ป่วยรายเดียวที่มีเลือดออกเพียงเล็กน้อยและหยุดไปได้เองโดยไม่ต้องรักษาเพิ่มเติมใด ๆ

สรุป: DGHAL เป็นวิธีรักษาภาวะเลือดออกจากริดสีดวงที่มีประสิทธิผลในกลุ่มผู้ป่วยที่มีภาวะเลือดออกง่ายหยุดยาก เนื่องจากสามารถเย็บผูกหลอดเลือดริดสีดวงเพื่อห้ามเลือดได้โดยไม่ทำให้เกิดแผล

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Case Report

Agenesis of Inferior Vena Cava Associated with Acute Bilateral Common Iliac Vein Thrombosis and Hypoplastic Right Kidney (KILT Syndrome) in a 54-Year-Old Female

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Abstract

Background and Objective: **Agenesis of the inferior vena cava (AIVC) is a rare anomaly (<1%) with known association with renal anomalies, and an uncommon cause of deep venous thrombosis (DVT). Previous reported cases were young (mostly under 30 years), and predominantly male (82%), but the present case was a 54-year-old female with a thrombophilia sibling, presenting with acute onset DVT.**

Material and Method: **A 54-year-old female presented with right lower quadrant pain and swelling of both thighs, right more than left, for 12 consecutive days. There was no history of smoking, alcohol drinking, oral contraceptive use, or other underlying diseases. The patient had one brother with thrombophilia. A CT scan of the abdomen demonstrated absence of the entire inferior vena cava (IVC), and bilateral common iliac vein thrombosis with hypoplastic right kidney (KILT syndrome). Assessment for thrombophilia found presence of lupus anticoagulant antibody. The patient was treated with low molecular weight heparin (LMWH), and planned lifelong oral anticoagulant.**

Conclusion: **AIVC can be found very rarely in female patients over the age of 40 years, with positive family history of thrombophilia. Anticoagulants is the recommended treatment.**

Keywords: **Agenesis of inferior vena cava, deep vein thrombosis**

Introduction

The most common congenital abnormality of the inferior vena cava (IVC) is duplication and retro-aortic left renal vein[1]. Agenesis of inferior vena cava (AIVC) is rare, recognized to be associated with deep vein thrombosis (DVT), and is present in 0.3% to 0.5% of young healthy adults[2,3]. It may not be recognized until later in life, usually as an incidental finding. AIVC has a known association with renal anomalies mainly confined to the right kidney. Previous cases of AIVC reported in the literature are usually younger than 30 years, and are predominantly male (82%)[4]. The present report described a very rare case of a 54-year-old female patient with AIVC.

Case Report

A 54-year-old female presented with right lower quadrant pain, bilateral upper thigh swelling, on the right more than left, with heaviness of both limbs for 12

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consecutive days. She also complained of thigh tingling, but no discoloration of skin of both lower limbs. She denied a history trauma, or previous illnesses or medications. Her brother (a 52-year-old male) was being treated for ahypercoagulable state for more than 10 years, and had a mid-left foot amputation 2 years ago from progressive iliofemoral venous thrombosis and arterial insufficiency. On examination of the patient, no erythema, warmth, varicose vein or ulcers was present. She was admitted to the hospital for evaluation of the cause of right lower quadrant pain and right thigh swelling.

The CT scan of the abdomen and pelvis showed extremely small-caliber inferior vena cava, with markedly prominent bilateral ascending lumbar veins, suggestive of AIVC. There were enlarged bilateral common iliac and external iliac veins, with concentric intraluminal filling defects, suggestive of acute venous thrombosis, which was more severe on the right side. A small-sized right kidney (6.2 cm), with a small but patent right renal artery, was seen, also with renal parenchymal enhancement and excretory function (Figures 1 to 4). Her chest X-ray was normal.

An investigation for thrombophilia was performed, including tests for the presence of antithrombinlll, protein C, protein S and lupus anticoagulant antibody. The result was positive for lupus anticoagulant antibody. The patient received systemic administration of low molecular weight heparin (LMWH), enoxaparin 40 mg subcutaneously

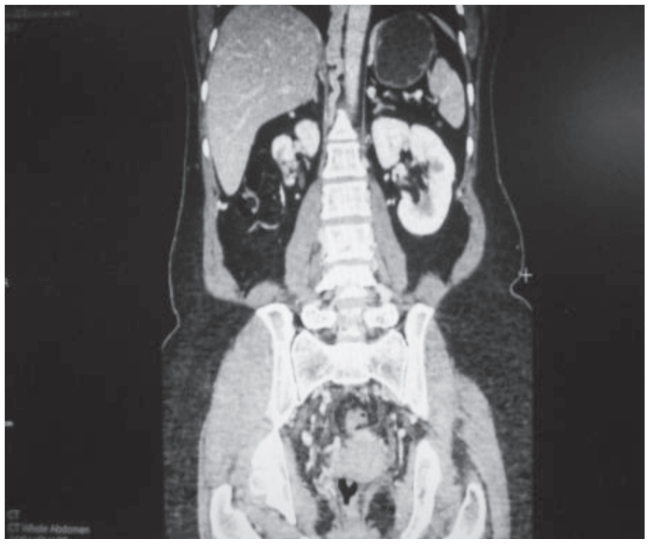

Figure 1 Small size of right kidney

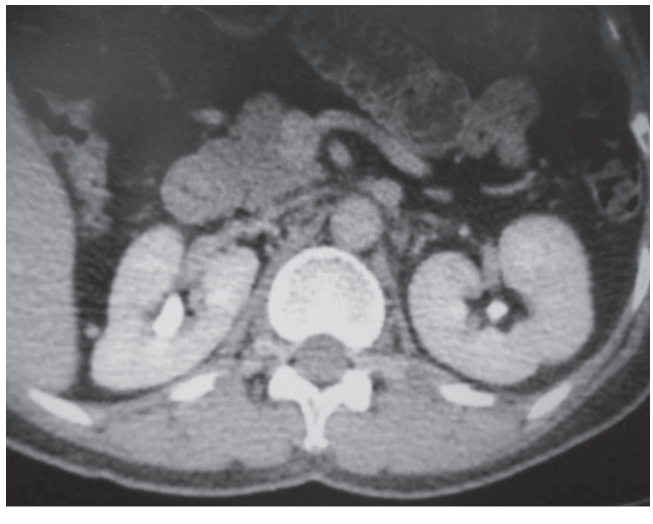

Figure 3 Agenesis of inferior vena cava

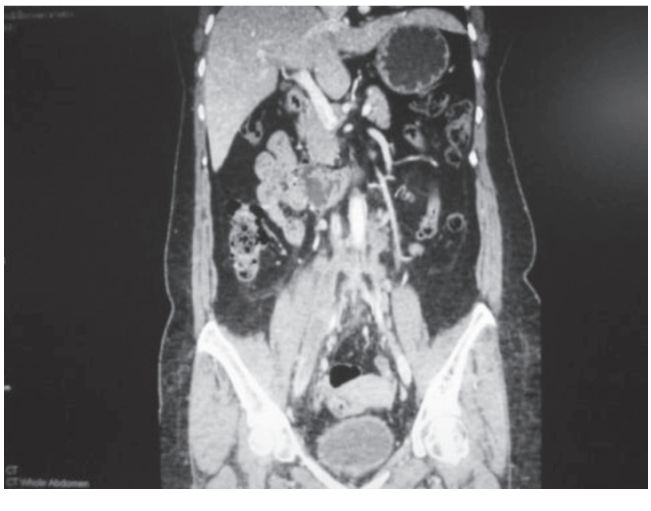

Figure 2 Thrombosis of bilateral common iliac veins

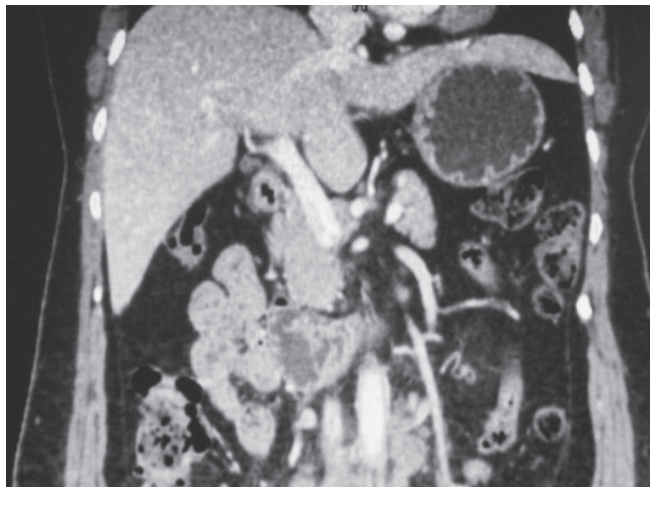

Figure 4 Hepatic veins drain directly to right atrium

twice daily, followed by an oral anticoagulant, warfarin sodium. Graduated stocking with ankle pressure 20 to 30 mmHg (thigh high) was also applied. Symptoms of right lower quadrant pain and heaviness of both legs gradually improved two days after start of treatment. LMWH was continued for 7 days, and warfarin was used to maintain a therapeutic international normalized ratio (INR) between 2 to 3, for life.

Discussion

The prevalence of dysgenesis of inferior vena cava in the general population is approximately 1 %[5]. The overall prevalence of AIVC is very low (0.6%) and can be found in 5% of patients aged under 30 years with deep vein thrombosis[6]. AIVC is often referred to in three different forms, i.e.,

1. Absence of the suprarenal inferior vena cava, where hepatic venous flow drains directly into the right atrium, and the blood from the infrarenal inferior vena cava returns to the heart through the azygos and hemiazygos veins[7,8,9].
2. Absence of the infrarenal inferior vena cava with preservation of the suprarenal segment;
3. Absence of the entire inferior vena cava.

The etiology of these developmental failures is unclear and remains controversial according to the current literature. Inferior vena cava abnormalities have been identified as a possible congenital risk factor for deep vein thrombosis[10,11,12,13]. Garcia -Fuster et al. in their prospective study of 116 patients under the age of 50 years reported that inferior vena cava anomalies were present in 16.2% of patients with iliac vein thrombosis, and vena cava malformations was considered a risk factor in 5.1% of the population studied[1]. Sagban et al. found anomalies of right kidney in 6% of patients with inferior vena cava agenesis, while hypoplastic left kidney was found in 2.7%[14].

In patients with suspected vena cava anomalies, abdominal ultrasound with venous duplex scan of leg should be performed. A contrast-enhanced CT scan or MRI of the abdomen should be done following abdominal sonography[15]. The ultrasound can identify collateral venous circulation, but cannot specify the exact type of inferior vena cava anomaly. Lambert et al. reported 10 cases of deep vein thrombosis associated with inferior vena cava agenesis and reviewed 62 published cases until 2010[15], and states that the ultrasound could not establish the diagnosis of AIVC. Venography is reserved for venous mapping for post-interventional reevaluation[16]. Hypercoagulability studies should also be done.

In 10% of patients with agenesis of inferior vena cava, other organ malformations can coexist, such as renal and pulmonary atrophy, heart valve defects, or asplenia syndromes[17]. The combination of deep vein thrombosis with inferior vena cava agenesis and kidney abnormalities is known as the "KILT syndrome" (kidney anomaly, inferior vena cava anomaly, and leg thrombosis)[18]. In the present case study, the diagnosis was established via abdominal CT, in which the absence of entire inferior vena cava, bilateral iliac vein thrombosis, and hypoplastic right kidney were found. In addition, thrombophilia studies found positive lupus anticoagulant antibody.

Conclusions

AIVC associated with deep vein thrombosis, a rare condition, is usually seen in younger patients, in contrast to patients with classical deep vein thrombosis, and can be difficult to diagnosis due to lack of specific symptom and signs. The present report details an even more rare case of an older, 54-year-old female patient with AIVC, and provides information on the diagnosis and treatment of such a condition.

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บทคัดย่อ **ความผิดปกติแต่กำเนิดชนิดบกพร่องในการสร้างหลอดเลือดดำ inferior vena cava ร่วมกับการเกิดลิ่มเลือดในหลอดเลือดดำส่วนที่อยู่เหนือต่อขาหนีบทั้ง 2 ข้าง (Bilateral Common Iliac Veins Thrombosis) และมีขนาดไตข้างขวาเล็กกว่าปกติ ในผู้หญิงอายุ 54 ปี เรียกกลุ่มอาการนี้ว่า KILT syndrome**

นายแพทย์อนุวัชช์ จันทร์ทิพย์
กลุ่มงานศัลยกรรม โรงพยาบาลลำปาง

วัตถุประสงค์ : ความผิดปกติแต่กำเนิดชนิดบกพร่องในการสร้างหลอดเลือดดำ inferior vena cava (AIVC) เป็นความผิดปกติที่พบได้ค่อนข้างน้อย ประมาณ 0.0005%-1% และมีความผิดปกติร่วมกับไต โดยตรวจพบการมีลิ่มเลือดในหลอดเลือดดำของขา (Deep Vein Thrombosis, DVT) ได้ไม่บ่อย จากรายงานในวารสารทางการแพทย์ที่ผ่านมามักพบในผู้ป่วยอายุน้อย โดยส่วนใหญ่น้อยกว่า 30 ปี และมักพบในผู้ป่วยเพศชายประมาณ 81.9% ในรายงานนี้ตรวจพบกลุ่มอาการนี้ในผู้ป่วยหญิงอายุ 54 ปี ซึ่งมาด้วยอาการลิ่มเลือดในหลอดเลือดดำของขาร่วมกับตรวจพบประวัติการแข็งตัวของเลือดมากกว่าปกติ (thrombophilia) ของน้องชาย

วิธีการ: ผู้ป่วยหญิงอายุ 54 ปี มีอาการปวดท้องด้านล่างขวา ร่วมกับมีการบวมบริเวณต้นขาทั้ง 2 ข้าง, ข้างขวาบวมมากกว่าข้างซ้าย, เป็นมา 12 วันก่อนมาโรงพยาบาล ผู้ป่วยไม่มีประวัติสูบบุหรี่, ดื่มสุรา, การใช้ยาคุมกำเนิด หรือประวัติโรคประจำตัวอื่น ๆ แต่มีประวัติคนในครอบครัวเป็นโรคที่มีการแข็งตัวของเลือดมากกว่าปกติ (thrombophilia) การตรวจภาพถ่ายรังสีคอมพิวเตอร์พบว่าผู้ป่วยไม่มีหลอดเลือดดำ inferior vena cava ร่วมกับการมีลิ่มเลือดในหลอดเลือดดำเหนือต่อระดับขาหนีบขาทั้ง 2 ข้าง และมีไตข้างขวาขนาดเล็กกว่าปกติ การตรวจเลือดหาภาวะผิดปกติเกี่ยวกับการแข็งตัวของเลือดพบมีผลเป็นบวกของการทดสอบ lupus anticoagulant ซึ่งได้ทำการรักษาผู้ป่วยรายนี้โดยใช้ยา low molegular weight heparin (LMWH) และใช้ยาต้านการแข็งตัวของเลือด (warfarin) หลังจากนั้นเพื่อลดการกลับเป็นซ้ำ

สรุปผลการศึกษา: ความผิดปกติแต่กำเนิดชนิดบกพร่องในการสร้างหลอดเลือดดำ inferior vena cava ตรวจพบได้น้อยมากในผู้ป่วยหญิงที่มีอายุมากกว่า 40 ปี ที่มีพี่น้องเป็นโรคที่มีการแข็งตัวของเลือดมากกว่าปกติ การรักษาโรคในผู้ป่วยกลุ่มอาการนี้สามารถใช้ยา LMWH อย่างได้ผล

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ABDOMINAL SURGERY

RANDOMIZED CONTROLLED TRIAL STUDY FOR EVALUATION OF HERBAL LOZENGE COMPARED WITH STANDARD POSTOPERATIVE CARE TO ENHANCE POSTOPERATIVE BOWEL FUNCTION RECOVERY FOLLOWING ELECTIVE OPEN ABDOMINAL SURGERY

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Objective: Early return of bowel function after surgery is essential for successful patient recovery from abdominal surgery. The aim of this study was to compare the effect of herbal lozenge with standard postoperative care on the postoperative bowel function recovery following elective open abdominal surgery.

Materials and Methods: In this prospective trial, 98 patients (age between 31 and 91 years) were randomized into two groups. The first group receive herbal lozenge together with standard postoperative care (treatment group, n = 49) and the second group receive standard postoperative care (control group, n = 49). The primary outcome is the return of bowel function. The secondary outcome is the patient's length of hospital stay and discomfort from bowel ileus.

Results: There was no significant difference between the two groups for the return of bowel function regarding to flatus time (p=0.24). In addition, the time to tolerate solid food and length of hospital stay were similar with no significant difference (p = 0.32 and p = 0.69 respectively).

Conclusion: The addition of herbal lozenge to standard postoperative care did not reduce the period of postoperative bowel ileus or shorten the length of hospital stay following elective open abdominal surgery.

OUTCOMES OF CYTOREDUCTIVE SURGERY AND HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY IN MANAGEMENT OF PERITONEAL SURFACE MALIGNANCIES: INITIAL EXPERIENCE FROM A SINGLE TERTIARY CARE CENTER IN THAILAND

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Background: Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) has emerged as a treatment option in management of peritoneal surface malignancies. It has been shown to improve survival outcomes in selected patients and its indication has continuously been expanded and investigated

Objectives: As a large tertiary care center, we provide our initial experiences and clinical outcomes of this new treatment modality in management of peritoneal surface malignancies.

Materials & Methods: Data were prospectively

collected and retrospectively reviewed on patients who underwent CRS and HIPEC for peritoneal surface malignancies between August 2014 and February 2017.

Results: 29 patients underwent CRS and HIPEC with the mean age of 57.2 years (37-77 years). 34.5% of the patients were male. The primary tumors were colorectal (37.9%), ovarian (31.0%), appendiceal (13.8%), primary peritoneal (10.3%), and others (6.8%). The mean PCI was 11.6 (3-36). Complete cytoreduction (CC0/1) was achieved in 27 patients (93.1%). The mean number of organ resection was 2 (1-5). The mean operative time was 627 minutes (450-960 minutes) and the mean blood loss was 1,197 ml (100-5,000 ml). The mean hospital stay was 19.9 days (10-53 days) with the mean ICU stay of 2.1 days (1-7 days). Clavien grade III/IV morbidity was identified in 6 patients (20.7%). There was no 30-day perioperative mortality. Overall survivals at 1-year and 2-years were 96.2% and 88.1% respectively. Disease free survivals at 1-year and 2-years were 67.1% and 38.6% respectively. Subgroup univariate analysis demonstrated no statistically significant differences in overall survival in relation to type of primary tumor, time of first diagnosis of peritoneal metastasis, neo-adjuvant therapy and/or adjuvant chemotherapy status, PCI, and CC score.

Conclusions: CRS and HIPEC procedure was a reasonable treatment option for peritoneal carcinomatosis with acceptable morbidity and mortality in selected patients.

BREAST SURGERY

THE COMPARISON OF EARLY POSTOPERATIVE COMPLICATIONS BETWEEN T1 AND T2 BREAST CANCER PATIENTS AFTER BREAST CONSERVING SURGERY WITH BOOST INTRAOPERATIVE RADIOTHERAPY

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Introduction: Boost intraoperative radiotherapy (IORT) is becoming an acceptable radiotherapy technique for treatment of early breast cancer. The preliminary data from TARGIT-B trial was reported the superior oncologic outcome of boosted IORT plus whole breast irradiation (WBI) comparing with boost EBRT plus WBI. However there was limited data report about complications after the boost IORT, as well as the lack of complications between T1 and T2 breast cancer.

Objectives: To compare the early postoperative complications between T1 and T2 breast cancer patients after breast conservative surgery with boost intraoperative radiotherapy and to identify factors that affect the complications.

Methods: Boost IORT (Intrabeam system) had been operated in King Chulalongkorn Memorial Hospital since 2009. There were 136 patients underwent boost IORT. The data regarded the complications within 5 years after surgery and a concern involving the size of tumor. The clinical data and mammogram with USG results were collected. The relationship between clinical picture and complication was studied. The chi-square test was used for comparison.

Results: Out of the 136 patients, 27 patients were excluded from the study due to their pathological results, which were not in T1 and T2 stages. Thereby, the study consisted of 109 patients in total. There were 55 patients in T1 group and 54patients in T2 group. The most common early postoperative complication was seroma; which occurred in 22 patients (20.2%). There was no statistical difference between T1 and T2 group (12.8% vs 7.3%, p = 0.166). Correspondingly, there was no statistical difference between T1 and T2 groups in the stage 2 complication (10 vs 7, p = 0.453).

Conclusions: IORT with Intrabeam system shared the satisfied oncologic result. The postoperative complications were not related to the size of tumor. Boost IORT was oncologic satisfied and biologically satisfied.

RESIDUAL CANCER AFTER BREAST CONSERVING SURGERY WITH POSITIVE OR CLOSE MARGINS

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Objective: To determine the proportion of breasts with residual cancer after breast conserving surgery with positive or close margins, and to determine the size and type of residual cancer, in breast cancer patients who underwent breast conserving surgery and concurrent or subsequent secondary surgery.

Methods: Medical records of breast cancer patients who underwent breast conserving surgery (BCS) and who had concurrent secondary surgery (cavity shaving) or

subsequent secondary surgery (re-excision or mastectomy), for any reason, during the period between May 2010 and May 2016, were reviewed. Patients were categorized into 3 groups as having positive, close, or free margins if their primary surgical specimens (lumpectomy, quadrantectomy, or partial mastectomy specimens) had one or more positive margins, one or more margins of 1 mm or less, and all margins greater than 1 mm, respectively, as reported on routine examination by pathologists. The presence of residual cancer in the remaining breast, as well as the type and size of the residual cancer, was determined by routine examination of cavity shaving specimens, and/or subsequent re-excision of the tumor cavity or mastectomy specimens. The presence, size, and type of residual cancer were compared between the 3 groups of patients, with the group with free margins serving as controls. The unit of analysis was the breast cancer removed at each occasion of BCS. Statistical analyses were done with the statistical software Stata version 14 (Stata Corp, TX, USA).

Results: There were 151 breast cancer patients who underwent 154 BCS procedures along with some type of secondary procedure, of which 143 had some information on margin and residual cancer status. Among the 143 resections, 25 (17%) had initially free margins, 54 (38%) had close margins, and 64 (45%) had involved margins. Among the 25 with free margins, 3 (12%) had residual cancer; among the 54 with close margins, 20 (37%) had residual cancer; and among the 64 with involved margins, 36 (56%) had residual cancer. Among the 15 (of 20) close margin cases with residual cancer and available information, the median size of the residual cancer was 0.3 cm (range, 0.05 to 1.3 cm). Similarly, among the 29 (of 36) involved margin cases, the median size was 0.4 cm (range, 0.05 to 7.5 cm).

Conclusion: There may be residual cancer in a substantial proportion of patients undergoing BCS who had close margin status, ranging from minimal to over 1 cm in size. The clinical importance of this finding can be debated. Conversely, a substantial proportion of patients with involved margins on BCS may not have residual cancer, as detected by conventional methods. However, the majority of involved margin cases have residual cancer, ranging from minimal to very large size.

COLORECTAL AND ANAL SURGERY

APPLICATION OF A METABOLIC RISK SCORE FOR EARLY DETECTION OF CANCER-ASSOCIATED COLORECTAL POLYP IN SONGKLANAGARIND HOSPITAL

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Objective: To validate the association of the metabolic risk score and the detection of cancer-associated colorectal polyp in asymptomatic volunteers.

Methods: This was a prospective cohort study in 129 volunteers (comparing between age group 41-50 years old and 51-60 years old) scheduled for a colonoscopy at the Nanthana-KriangkraiChotiwattanaphan Institute of Gastroenterology and Hepatology, Faculty of Medicine, Prince of Songkla University between January 2016 and January 2017. The demographic data including anthropometry profile and laboratory tests were collected. The findings of colonoscopy and reviewed pathologic results were compared between each group based on the metabolic risk score.

Results: A total of 129 volunteers (67.4% females), met the inclusion criteria. There were 45, 78 and 6 people in the mild, intermediate and high metabolic risk group. The polyp detection was higher associated with the higher metabolic score with 20%, 43.6% and 50% in mild, intermediate and high risk group, respectively. Of all 111 colonic polyps were detected in 45(34.9%) patients, 31 (68.9%) were tubular adenoma, and 1 (2.2%) was malignant polyp. Most polyps located in left-sided colon (63.9%). The polyp detection rate was 33% in 41-50 years old and 36% in 51-60 years old age group. All factors of the metabolic risk score was calculated with univariate analysis and it showed that obesity (defined as high body mass index BMI > 23.4 kg/m^2) (p = 0.02) and transaminitis (p< 0.01) were significantly associated with the presence of colorectal cancer associated polyps. In subsequent multivariate analysis, obesity (OR 2.84, 95% CI 1.12-7.20, p = 0.02) and transaminitis (OR 17.78, 95% CI 1.99-158.70, p< 0.01) were identified as independent factors for colorectal cancer associated polyp.

Conclusion: This preliminary result of this study revealed the association between the polyp detection and the metabolic risk score. Two factors (obesity and transaminitis) from metabolic risk score were significantly associated with the detection of colorectal-associated polyp. The detection rate in each age group was comparable. The

validation of metabolic score and the strong association of the remaining factors still were needed the more numbers of volunteers to conclude.

CONTINENCE OUTCOME OF ANORECTAL MALFORMATION IN SONGKLANAGARIND HOSPITAL

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Background: The purpose of this study was to assess the clinical and continence outcome of anorectal malformation compare between male and female, type of anorectal malformation

Methods: We retrospectively assessed the outcomes of 247 patients with anorectal malformation who had operated from 1991 to 2007. Follow up period from January 2001 to March 2017. 123 patients had complete data, 52 females (42.3%) and 71 males (57.7%). Patients were divided into 3 groups by Wingspread classification: group1 (High type, cloaca and rare type n= 27) group2 (intermediate type n= 43) group 3 (Low type n =53). Clinical outcomes and continence outcomes were compared between the three groups, and compared between male and female. We evaluated clinical outcomes and continence outcomes by 4 evaluations - clinical outcome 1995, Rintala score 1995, Krickenbeck 2005 and continence outcome 2010.

Results: In females and males, [Clinical outcome 2005] the rate of excellent group was 34% and 38%, respectively; [Rintala score 1995] The median of Rintala score was 19 and 19, respectively; [Krickenbeck 2005] The rate of voluntary bowel movements was 48% and 58%, respectively; the rate of soiling was 14% and 21%, respectively; The rate of constipation was 26% and 32%, respectively; [Continence outcome 2010] The rate of good result group was 42% and 48%, respectively. But all of results were not significantly difference between females and males groups. In groups High type, Intermediate type and Low type; [Clinical outcome 2005] the rate of excellent group was 19.2%, 34.2 and 47.9%,respectively; [Rintala score 1995] The median of Rintala score was 19, 19 and 19, respectively; [Krickenbeck 2005] The rate of voluntary bowel movements was 100%, 97.2% and 100%, respectively; the rate of soiling was 44%, 33.3% and 22.4%,respectively; The rate of constipation was 59.3%, 47.7% and 40.4%, respectively; [Continence outcome 2010] The rate of good result group was 73.1%, 81.1% and 85.4%, respectively.

Conclusion: The Low type anorectal malformation was associated with favorable outcomes; significant in Clinical outcome 2005 and the lowest rate of constipations in Krinckenbeck 2005 evaluation. Sex is not significant factor for Clinical or Continence outcome.

THE ACCURACY OF ALVARADO SCORE IN THE SCREENING OF PATIENTS WITH ACUTE APPENDICITIS IN CHIANG RAI HOSPITAL

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Backgrounds: Acute appendicitis is one among the most common diseases requiring emergency surgery. In clinical practice, the diagnosis of acute appendicitis is still challenging. The incidence of suspected acute appendicitis in Chiang Rai Hospital is 2,500 cases per year. Among these, 20% turned out as non-acute appendicitis. The accuracy of using Alvarado score in routine clinical system to screen suspected patients with acute appendicitis in community hospitals before transferring them to Chiang Rai Hospital is still unclear.

Objectives: The aim of this study was to assess the accuracy of using Alvarado score as a screening tool in Chiang Rai Hospital.

Materials and Methods: A diagnostic accuracy study was performed in patients suspected of acute appendicitis in Chiang Rai Hospital during January 2017 and March 2017. Patient data on arrival to the Emergency Department or the Out-Patient Department were recorded. Patients were followed-up until intraoperative gross findings and histopathological examinations were available. The diagnostic accuracy of Alvarado score was evaluated at three cut-off values; score 4, 5 and 6. Sensitivity, specificity, positive and negative predictive values were calculated.

Results: Out of 223 cases (male 47.9%, female 52%) the average age was 39 years. Most of the cases were in ASA class I. The duration of presentation was different between the 2 groups (23 hours in acute appendicitis group and 34 hours in non-appendicitis group), but with no statistical significance. The sensitivity at the cut-point values of 4, 5 and 6 was: 96.5%, 90.5% and 72.1%. The corresponding specificity was:27.2%, 45.4% and 63.6%.

Conclusions: The Alvarado score is useful to screen patientswith suspected acute appendicitis. If used in community hospitals, the cut-off point of 4 will be safe for patients due to its high sensitivity. However, surgeons should use patient history, physical examination, laboratory and experience to diagnose acute appendicitis.

THE STUDY OF EFFICACY OF DOUBLE FIT AND SINGLE FIT IN SCREENING COLON CANCER IN SONGKHLA PROVINCE

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Background: The NCCN guideline for screening Colon cancer have recommended to colonoscope the patient who has average risk at the age more than 50 years. But in reality the population with age above 50 years of Songkhla province was 347,495 peoples (2016). With limited resources for colonoscopy we have to find the method to reduce the workload of colonoscopy unit but still has adequate efficacy as gold standard method so this study was design to compare the efficacy of single and double FIT in screening colon cancer in Songkhla province

Objective: The paper was designed for compare the efficacy of single FIT and double FIT in screening colorectal cancer in Songkhla province.

Method: The patients from two districts of Songkhla were collected with two methods. At Hatyai District the patient was colonoscoped after only single FIT positive, but Namom district the patient was colonoscoped after Double FIT positive and the Colonoscopic result was compared for the efficacy in detection of malignant lesion.

Result: At Hatyai district single FIT test was done with 883 participants. With positive 274 persons (31.03%) and the patients attended the colonoscopy 94 persons (34.31%) and found 8 small adenoma (9.06%), 1 advance adenoma (1.13%) and 2 colon cancer (2.27%). At Namom district double FIT was done with 930 participants and has double positive for 13 patient (1.40%) and 10 patients (76.92%) attend the colonoscopy and found 3 small adenoma (30%), 2 advance adenoma (20%) and 2 colon cancer (20%). The positive predictive value of double FIT was 40 % which higher than single FIT 3.4 %

Conclusion: From our study the double FIT decrease the work load of colonoscopy and increase positive predictive value for screening colorectal cancer in Songkhla province.

OUTCOMES OF NON-OPERATIVE APPROACH FOR APPENDICEAL PHLEGMON AND ABSCESS: A 12-YEAR REVIEW IN SIRIRAJ HOSPITAL

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Background: Appendiceal phlegmon and abscess accounted for 2-6% of all acute appendicitis patients. Non-operative management is widely adopted. This study aimed to determine the outcomes of non-operative management of appendiceal phlegmon and abscess in Siriraj hospital.

Method: A retrospective review was performed in patients with clinical and radiological diagnosis of appendiceal phlegmon or abscess in Siriraj hospital between June 2004 and June 2016. Non-operative treatment and their outcomes were determined.

Results: During the study period of 12 years, 159 cases of appendiceal phlegmon or abscess were initially treated by non-operative approach (intravenous antibiotic - percutaneous drainage). Seven cases required surgery - accounting for 4.4% failure rate. Among successful non-operative approach of 152 cases with a follow-up period of 69 months (range 4-147 months), 27 cases (17.8%) experienced recurrent episode of appendicitis or appendiceal abscess or phlegmon. Colonic evaluation was performed in high-risk patients (e.g. aged > 40 years) and carcinoma of colon or appendix was confirmed in 4 cases (2.6%).

Conclusion: Our study demonstrated that non-operative approach in appendiceal phlegmon and abscess achieved a high success rate (95.6%). During an average follow-up of 69 months, recurrent episode of appendicitis or appendiceal abscess or phlegmon was found in 17.8% and carcinoma of colon or appendix was found in 2.6% - highlighting the fact that appropriate follow-up is essential in patient who underwent successful non-operative approach for appendiceal abscess or phlegmon.

COMPARISON OF SUPERFICIAL SURGICAL SITE INFECTION BETWEENDELAYED PRIMARY VERSUS PRIMARY WOUND CLOSURE IN COMPLICATED APPENDICITIS: A RANDOMIZED CONTROLLED TRIAL

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Background: Superficial surgical site infection (SSI) is common in appendectomy for complicated appendicitis. Delayed primary wound closure (DPC) is preferentially used over primary closure (PC) but its efficacy is still controversial.

Objective: To compare superficial SSI rates between PC and DPC for complicated appendicitis.

Material and Methods: A multicenter-randomized controlled trial involving 607 patients from 6 hospitals in Thailand, with complicated appendicitis including

gangrenous and ruptured appendicitis. Patients were randomized to PC (i.e., immediately wound closure) or DPC (i.e., wound closure at postoperative days 3 to 5). Superficial SSI was defined by the Center for Disease Control criteria. Secondary outcomes included post-operative pain, length of stay, recovery time, quality of life and cost of treatment.

Results: Among 303 and 304 patients in the PC and DPC groups, 5 and 4 patients were lost to follow up respectively, leaving 300 and 298 patients for the modified intention-to-treat (ITT) analysis. The superficial SSI rate was lower in the PC than DPC groups (i.e., 7.3% [95% CI: 4.4, 10.3] versus 10% [6.6, 13.3]) with a risk difference (RD) of -2.7% (95% CI: -7.1%, 1.9%). This RD reached the threshold for non-inferiority, using a margin of 2.5% (p = 0.012), but not superiority criteria. Assigning SSI and non-SSI for those lost follow up yielded RDs of -2.2% (95% CI: -7.1%, 2.5%) and -2.6% (95% CI: -7.1%, 1.8%), respectively. Per-protocol and as-treated approaches were used for protocol violations, resulted in the RD of 1.9% (-6.5%, 2.6%) and -1.1% (-5.6%, 3.4%), respectively. In addition, a counterfactual approach using instrumental-variable analysis yielded a RD of -3.6% (-8.3%, 1.1%). Postoperative pain, length of stay, recovery times, and quality of life were non-significantly different with corresponding RDs of 0.3 (-2.5, 3.0), -0.1 (-0.5, 0.3), -0.2 (-0.8, 0.4), and 0.02 (-0.01, 0.04). However, costs for DPC were 2083 (1410, 2756) Baht higher than PC (~$60 USD or 56 euros).

Conclusions: Superficial SSI rates for the PC were non-inferior compared to the DPC groups, although this did not reach statistical significance for superiority. Costs were modestly and statistically significantly lower for the PC group.

Trial Registration: clinicaltrial.org Identifier: NCT01659983

TRANSPERINEAL RECTOCELE REPAIR USING MINIATURE MESH

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Purpose: This study was designed to establish the safety and efficacy of transperineal mesh repair in patients with obstructed defecation caused by rectocele.

Methods: Site-specific rectocele repair with small Prolene mesh (2 sq.cm.) was performed using transperineal approach. Patients with pelvic floor descend or patients with previous rectocele repair were excluded from the study. The functional outcomes were evaluated using Watson's Score Criteria.

Results: There were 11 symptomatic rectocele women included in this study. Symptom of prolong straining, incomplete evacuation, and digitation were improved significantly. Preoperative and postoperative score were 6.55_2.73 and 2.27_1.42 respectively (p=0.003). Ten of eleven patients (90.9%) rated their global functional outcome as satisfied or very satisfied postoperatively. Mesh-related complications (Mesh erosion, mesh infection, and perineal pain) were not found. Dyspareunia was not reported in sexually active patients. Mean follow up time was 2 years.

Conclusions: Transperineal rectocele repair using miniature mesh is effective and safe. The technique is straightforward and reproducible. Patient selection is of paramount important.

MOSAPRIDE REDUCES THE INCIDENCE OF PROLONGED POSTOPERATIVE ILEUS AFTER OPEN COLORECTAL SURGERY

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Background and Objective: Postoperative ileus (POI) is a physiologic hypomotility of GI tract after abdominal surgery. Prolonged POI refers to this gastrointestinal dysfunction continuing past the expected timeframe - usually beyond 4 or 5 days after open colorectal surgery. Treatment options for prolonged POI are limited; therefore, it is essential to focus on preventive strategies. Mosapride, a prokinetic agent acting as a selective 5-hydroxytryptamine-4 agonist, has been shown to reduce prolonged POI in laparoscopic and hand-assisted laparoscopic colorectal surgery. This study aimed to determine the effects of mosapride on postoperative recovery of GI function, especially prolonged POI using a systematic review and global survey criteria of POI in 2013, in patients undergoing ùopenû colorectal surgery.

Methods: This was a review of prospectively collected database of patients undergoing elective ùopenû colorectal resection under an enhanced recovery after surgery pathway from 2012 to 2016. The last 84 patients receiving postoperative mosapride were compared to those 168 patients without such a drug (historical comparison with a ratio of 1:2). Postoperative outcomes were determined.

Results: Patient characteristics were comparable except the control group had more incidences of DM and

more complex operation. Overall complication, global resumption of intestinal transit and length of hospitalization were not significantly different between the two groups. However, the control group had more incidence of prolonged POI and prolonged POI requiring NG tube insertion (17.3% vs 7.1%; $p = 0.029$ and 8.9% vs 3.6%; $p = 0.19$), respectively. A multivariate analysis of factors potentially associated with or protective of POI showed that postoperative administration of mosapride is only a protective factor for prolonged POI (OR=0.37, 95% CI=0.15-0.93, $p = 0.034$).

Conclusion: This study shows that postoperative administration of mosapride reduced the incidence of prolonged POI after open colorectal surgery.

SACRAL NERVE STIMULATION FOR THE TREATMENT OF PATIENT WITH IDIOPATHIC FECAL INCONTINENCE

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Background and Objective: Fecal incontinence is a debilitating condition which significantly impact on psychosocial and quality of life. Several treatment modalities has been reported but the outcomes were varies. Sacral Nerve Neuromodulation/Stimulation (SNS) has been reported as an effective treatment for fecal incontinence. However, the mechanism is not fully understood. This paper reports on the results of SNS in a patient suffering from fecal incontinence.

Case Presentation: A 57-year-old female presented with passive and urge fecal incontinence for 3 years. Her comorbidities were diabetes, hypertension, chronic renal failure and gout. She had two vaginal deliveries without forceps assisting nor obstetric injury. Trans-rectal ultrasound showed no sphincter defects. MRI defecography demonstrated no anatomical abnormalities. Anorectal manometry revealed low baseline anorectal sphincter pressure with anismus. Preoperative St. Mark's incontinence score and Gastrointestinal quality of life (GIQoL) were 20 and 98 respectively. Two-stage sacral nerve stimulation was performed. A pulse generator was implanted 2 weeks after a successful testing (≥50% symptom improvement). Postoperative period was uneventful. At 1 month follow-up, her incontinence was improved. There were improvements in both incontinence score (=9) and GIQoL score (=118).

Conclusion: Sacral nerve stimulation is safe and effective for the treatment of fecal incontinence. However, long-term outcome needs to be followed.

LIGATION OF INTERSPHINCTERIC FISTULA TRACT (LIFT) PROCEDURE FOR HIGH TRANS-SPHINCTERIC FISTULA INANO

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Ligation of Intersphincteric Fistula Tract (LIFT) is the one of sphincter-preservative procedures for anal fistula. Recent studies demonstrated primary healing rate range from 47% to 95%. Here, we demonstrate this novel technique that perform on high transsphincteric fistula.

This is the 40 year-old male, who received fistula operation from outside hospital about 10 year ago. 3 months before surgery, pus has intermittent drained via external opening near previous incisional scar. Large abscess pocket and fistulous tract of posterior high trans-sphincterfistula were demonstrated on contrast enhanced magnetic resonance examination. This video demonstrated the important steps of LIFT procedure that apply for high transsphincterfistula. The key steps are firstly identification of the intersphincteric tract, then separate and secure closure of the internal and external opening between intersphincterplane. Secondly, pus and granulation tissue should be adequately removed and drained. Patient is scheduled for removing tube drainage on third week. This novel technique is modified from outstanding experience on conventional LIFT. And now this technique is commonly used in our institute.

LAPAROSCOPIC APR FROM A TO Z

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Despite sphincter-preserving surgery, abdomino-perineal resection or APR is still required in 18% of patients with rectal cancer. APR includes the resection of the sigmoid colon, rectum, anus and the construction of a permanent end colostomy. APR is indicated when there is an invasion of the anal canal and invasion of the anal sphincter. The benefits of Laparoscopic surgery include decreased postoperative pain, earlier return to normal activities, and fewer postoperative complications. Furthermore, performing APR laparoscopically offers the benefits of avoiding a minilaparotomy for specimen removal because the specimen is extracted perineally, and the left port site

is adapted for an end colostomy.

The patient in this video was diagnosed with adenocarcinoma of the anal canal and the plan of treatment was discussed and scheduled for Laparoscopic APR. The video presented here details the steps of laparoscopic APR both abdominal and perineal procedure. The patient had an uneventful postoperative recovery and discharge on postoperative day 4. The keys to success are good exposure, traction-countertraction and respect the embryological plane.

CRITICAL CARE

SURGICAL OUTCOME OF END-STAGE KIDNEY DISEASE PATIENT UNDERWENT MAJOR SURGERY

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Background: End-stage kidney disease (ESKD) is a major public health problem worldwide including Thailand. Patients with severe chronic renal failure or end-stage kidney disease are at significant risk for development of complications during the perioperative period. This study aim to study about ESKD patients associated with a greater risk of death (in-hospital mortality and ICU mortality) after major surgical procedures in Vajira Hospital, Bangkok, Thailand.

Method & Materials: Data of 122 patients who underwent major surgical procedure from 2013 to 2016 were reviewed. Sixty-one patients with end-stage kidney disease who required long-term dialysis (hemodialysis or peritoneal dialysis) were compared with matched 61 patients with non-end stage kidney disease. Between two groups of patients, we compared risk of in-hospital and ICU death.

Result: The clinical characteristics between the end-stage kidney disease (ESKD) group and the non-end stage kidney disease group were similar. The most prevalent morbidity during the ICU period was sepsis and shock (21.5%). The ICU mortality rates of ESKD group and non-ESKD group were 23% and 4.9% respectively (p-value 0.004). The hospital mortality rates of ESKD group and non-ESKD group were 34.4% and 17.2% respectively (p-value 0.001).

Conclusion: ESKD was associated with higher morbidity and mortality. With careful monitoring during the perioperative period, major surgical procedures can safely be performed on patients with end-stage kidney disease.

ENDOCRINE SURGERY

COMPARISON BETWEEN TRANSORAL ENDOSCOPIC THYROIDECTOMY VESTIBULAR APPROACH (TOETVA) AND OPEN CERVICAL THYROIDECTOMY: A SAFETY EVALUATION

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Background: Natural orifice transluminal endoscopic surgery (NOTES) thyroidectomy is a novel approach to avoid surgical scars. To assess the safety of transoral endoscopic thyroidectomy vestibular approach (TOETVA), we reviewed and compared the outcomes of TOETVA to those of conventional open thyroidectomy.

Objectives: To compare the safety and outcomes of transoral endoscopic thyroidectomy vestibular approach with open thyroidectomy.

Materials & Methods: The study included 425 patients who underwent transoral endoscopic thyroidectomy and 216 who had open thyroidectomy from June 2015 to April 2017, in a single tertiary care center in Thailand. Exclusion criteria were 1) previous neck surgery 2) substernal goiter 3) lymph node or distance metastasis 4) and those suspicious for invasion to adjacent organs. Operative time, blood loss and complications as well as operative parameters were recorded and compared. Propensity score matching was conducted to reduce selective bias.

Results: Transoral endoscopic thyroidectomy

vestibular approach was successfully performed in 422patients; three patients were converted to conventional operation (because of bleeding). Twenty-five patients (5.8%) had transient hoarseness and 41 (9.5%) had transient hypoparathyroidism. None had permanent recurrent laryngeal nerve palsy or permanent hypoparathyroidism. Three patients (0.7%) had transient mental nerve injury; all resolved by 4 months. One patient developed postoperative hematoma, treated by open surgery. Twenty patients (5.8%) had seroma, treated by simple aspiration. Operative time was longer for transoral group compared to the open group (100.8+39.7 min. vs 79.4+32.1, p<0.05). Visual Analog Scale (VAS) for pain was lower in transoral group (1.1 ± 1.2 vs 2.8 ± 1.2; $p < 0.05$). Estimated blood loss (36.9 ± 32.4 ml. vs 37.6 ± 23.1; p=0.43) and rate of complication (45 of 216 [20.8%] vs 38 of 216 [17.6%]; $p = 0.41$) were not significantly different.

Conclusions: Transoral endoscopic thyroidectomy vestibular approach requires only conventional laparoscopic instruments, avoid incisional scars and can be performed as safely as open thyroidectomy.

INDOCYANINE GREEN FLUORESCENCE IMAGING FOR IDENTIFYING AND ASSESSING THE PERFUSION OF PARATHYROID GLANDS IN TRANSORAL ENDOSCOPIC THYROIDECTOMY VESTIBULAR APPROACH (TOETVA): A PRELIMINARY STUDY

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Introduction: Postoperative hypocalcaemia following total thyroidectomy is one of the most common complications, and may have a significant effect on quality of life. The main cause of hypocalcaemia after total thyroidectomy is hypoparathyroidism due to intraoperative damage to the parathyroid glands by trauma, inadvertent parathyroid gland removal or devascularization. The present study evaluated the feasibility and safety of near-infrared (NIR) fluorescent imaging with intraoperative parathyroid gland indocyanine green angiography to identify parathyroid glands and predict parathyroid gland function in patients who undergo Transoral Endoscopic Thyroidectomy, Vestibular Approach (TOETVA).

Materials and Methods: A retrospective database of patients who underwent TOETVA between January 2015 and June 2016 in the Department of Surgery, Police General Hospital was reviewed. Angiography with the fluorescent dye indocyanine green (ICG) was performed in 32 patients undergoing total thyroidectomy, to identify and visualize vascularization of parathyroid glands. Postoperative parathyroid hormone levels, serum calcium levels, and clinical data of parathyroid-related outcomes were recorded.

Results: Thirty-two patients underwent total thyroidectomy with ICG imaging. There were 126 identified parathyroid glands visually, 96 (76.2%) of which showed ICG fluorescence uptake or were considered vascularized glands. Postoperatively, one patient (3%) had transient hypocalcaemia. None of the 32 patients presented permanent hypocalcaemia, and none received treatment for hypoparathyroidism. There is no incidental parathyroidectomy was founded.

Conclusion: Indocyanine Green Fluorescence Imaging of parathyroid glands during Transoral Endoscopic Thyroidectomy, Vestibular Approach (TOETVA) is safe and feasible. ICG Fluorescence Imaging might be a useful adjunct in identifying parathyroid glands and help preventing post-thyroidectomy hypoparathyroidism.

TRANSORAL ENDOSCOPIC THYROIDECTOMY VESTIBULAR APPROACH (TOETVA) IN SINGLE BENIGN THYROID NODULE: A COMPARISON OF SURGICAL RESULTS WITH ENDOSCOPIC TRANS-AXILLARY THYROIDECTOMY

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Introduction and Objective: Transoral endoscopic thyroidectomy vestibular approach (TOETVA) is a new scar-less surgery technique with excellent cosmetic outcome, whereas endoscopic transaxillary thyroidectomy is another approach commonly practiced in the recent years. This study aimed to compare safety and outcome between TOETVA and the transaxillary approach in single benign thyroid nodule surgery.

Materials and Methods: A total of 35 patients with single benign nodule were reviewed retrospectively. Patients were then divided into two groups; transaxillary group and TOETVA group. Endoscopic transaxillary thyroidectomy and TOETVA were performed in 18 patients and 17 patients, respectively. For TOETVA, a three-port technique through the oral vestibule was utilized. Thyroidectomy was done endoscopically using conventional laparoscopic instruments and an ultrasonic device. Patient demographics and surgical variables, including operative time, blood loss, postoperative pain score and complications were recorded. Statistical

analysis was later done to compare between the two groups.

Results: TOETVA was performed successfully in all 17 patients. However, one patient underwent transaxillary endoscopic thyroidectomy had to convert to open thyroidectomy due to excessive bleeding. All patient characteristics were similar in both groups. Operative time was significantly shorter in the TOETVA group (85.76 ± 22.94 and 171.32 ± 87.4 min, $p < 0.05$). Blood loss was similar between the two groups. The VAS pain score for the TOETVA group was significantly lower on day 1 (0.82 ± 1.07 vs 2.29 ± 1.96), day 2 (0.05 ± 0.24 vs 0.47 ± 0.87) and day 3 (0.058 ± 0.24 vs 0.11 ± 0.48) ($p < 0.05$). One case of transient recurrent laryngeal nerve palsy (RLN) was found in TOETVA group. One case of transient Horner's syndrome, which was resolved in 6 months, was found in transaxillary group. No other complications were observed.

Conclusion: TOETVA is a feasible, safe, and has shorter operative time treatment for single benign thyroid nodule surgery compared to endoscopic transaxillary approach. It can be an alternative choice for patients needing surgery but requiring cosmetic results.

HORNER'S SYNDROME AFTER ENDOSCOPIC TOTAL THYROIDECTOMY TRANSAXILLARY APPROACH

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Introduction: Horner's syndrome is resulted from an interruption of the sympathetic nerve supply to the eye and face. It is characterized by the classic triad of ipsilateral ptosis, mitosis, and anhydrosis. Horner's syndrome associated with thyroid surgery was rarely found.In the present report, we will report Horner's syndrome as a complication after endoscopic transaxillary total thyroidectomy in multinodular goiter.

Objective: This study was conducted to identify the cause of Horner's syndrome after endoscopic transaxillary thyroid surgery in order to prevent Horner's syndrome after endoscopic transaxillary thyroid surgery.

Method: The 44-year-old female patient presented with 7 years of multinodular goiter. Her clinical was euthyroidism. The ultrasound neck showed multinodular goiter with complex cysts in both nodules. Endoscopic transaxillary total thyroidectomy was performed. An inform consent was obtained. Case reports of Horner's syndrome after endoscopic thyroidectomy published in English were searched via Pubmed. All data was collected and analyzed.

Result: On postoperative day 1, the patient developed left ptosis and hoarseness without anhydrosis and miosis. The hoarseness progressively disappeared within 1 week and left ptosis was resolved within 1 month later without other complications. The pathological report confirmed multinodular goiter. The patient has been followed up for 2 years without any sign of recurrence of Horner's syndrome.

Conclusion: In the present report, we performed endoscopic transaxillary approach. The possible mechanism of postoperative Horner's syndrome was from sympathetic chain injury from over retraction on carotid sheath, anatomical variation, heat transfer from Harmonic device, and dissection in the wrong plane thanks to difficulty in lateral approach via axilla.

HEPATOBILIARY AND PANCREATIC SURGERY

INFRAHEPATIC INFERIOR VENA CAVA (IVC) OCCLUSION TECHNIQUE FOR REDUCING BLOOD LOSS DURING HEPATECTOMY: A RANDOMIZED CONTROLLED TRIAL

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Background: The morbidity and mortality from hepatectomy are strongly associated with intraoperative blood loss. Central venous pressure (CVP) reduction by anesthesiological technique is widely accepted to reduce blood loss during liver parenchyma transection which may associated with some side effects such as hemodynamic instability and impairment of renal function. Infrahepatic inferior vena cava (IVC) clamping technique might serve as an alternative technique to reduce blood loss without CVP reduction but there are few data from randomized control studies.

Objectives: To evaluate the effectiveness and safety of IVC clamping for reducing blood loss during hepatic resection, comparing with anesthesiological technique (restriction of administrated fluid, venodilator and/or diuretics).

Material and Method: All scheduled for elective laparotomy to hepatectomy patients were enrolled and randomized into the partial infrahepatic IVC clamping group or non-clamping group. Both groups were managed by anesthesiological technique including restricted intravenous fluid administration, the application of diuretics and nitroglycerine (venodilator) for CVP reduction. Amount of total blood loss, blood loss during transection liver parenchyma, volume of blood transfusion, and complications were compared between the two groups.

Results: Thirty-four patients were assigned to the IVC clamping group and 33 to the non-clamping group. Baseline characteristic were mostly similar between the study groups except gender and co-morbidity. The CVP was comparable in both groups (p = 0.356). There is no significant difference of total blood loss [600 (180-2500) ml VS 600 (300-6500) ml; p = 0.301] and transection blood loss [350 (50-2200) ml VS 500 (200-5700) ml; p = 0.066]. IVC clamping reduce duration of portal triad clamping [0 (0-60) min VS 5 (0-80) min; p = 0.032). Postoperative mortality and operative complication were no significant different in between both groups.

Conclusion: The blood loss during liver transection in IVC clamping group was lowered than non-clamping group but no statistical significance. The incidence of operative complications was similar in both groups. IVC clamping technique could be combined with anesthesiological technique to maximize the surgical outcomes.

THE LIVER COMBINE TEST: CALCULATION TOOL FOR SAFE MAJOR HEPATECTOMY

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Background: Post-operative liver failure is the major cause of mortality after major hepatectomy. A lot of selective criteria were proposed to avoid this complication. We here reported our calculation tool ùThe Liver Combine Testû (LCT) for safe major hepatectomy.

Methods: LCT calculation is based on the additive value of allowanced hepatic resection (AHR) and future liver remnant (FLR). AHR is calculated based on AHR graph which is plotted using results from ICG-R15, a graph that is proposed by Tokyo Women's Medical University Hospital, Japan. FLR is calculated using CT or MRI volumetry based on OsiriX, a DICOM viewer program.

We studied patients from our center who were planned for major hepatectomy (resection of 3 segments of liver or more), with Child-Pugh score A and ECOG 0-1. We hypothesized that LCT value of more than 100 is considered safe for major hepatectomy.

Results: From October 2013 to November 2016, 53 patients were included in the calculations for LCT. Twenty-three patients failed to pass the test. Remaining 30 patients, 1 patient denied surgery and 2 patients failed surgery due to advanced disease. Leaving 27 patients succeeded operation, 1 patient developed Grade A liver failure due to accidental injury of middle hepatic vein during operation. He subsequently recovered and was discharged 1 week after operation. One patient died from Grade C liver failure due to left bile duct injury caused by stapling device. The remaining patients recovered and were discharged without any significant complications.

Conclusion: We concluded that LCT may be a useful predictive tool for safe major hepatectomy.

SURGICAL OUTCOME OF INTRAHEPATIC BILIARY MUCINOUS CYSTIC NEOPLASM(BMCN) IN KCMH

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Background: Intrahepatic Biliary mucinous cystic neoplasms(BMCNs) or previously known as Biliary cystadenomas are rare, benign, potentially malignant cystic lesions of the liver, accounting for less than 5% of cystic liver tumors. We report the outcome following resection of BMCNs from a single tertiary center.

Material and Methods: A retrospective review of medical records all non-infectious liver cystic lesion patients who operated at King Chulalongkorn Memorial Hospital (KCHM) between January 2005 and December 2015 was performed. Their clinico-radiological variables and survival outcome were analyzed.

Results: Between January 2005 and December 2015, of 58 patients who underwent surgical resection for non-infectious cystic lesions, 49 patients (84.4%) and 9 patients (15.5%) had been pathological reported non-BMCNs and BMCNs, respectively. The baseline demographic data in both group were similar, clinical symptoms (pain, fullness, early satisfy, jaundice) were similar in both groups except weight loss had higher rate of Non-BMCNs group. The preoperative radiologic finding of liver cysts were statistical difference between non-BMCNs and BMCNs (Multilocular cyst p = 0.001, septa p = 0.002, Mural nodule p < 0.001, Intracystic calcification p = 0.005, hypervascularity p = 0.181, Wall enhancement p = 0.123, Bile duct dilatation p = 0.041). 29 of 58 patients were laparoscopic approach and one patient was converted to open approach surgery.The postoperative complication between two groups was similar.

Common early postoperative complications that need intervention were pleural effusion (12%) and collection (6%), respectively.

Conclusions: Biliary mucinous cystic neoplasms are very rare cystic neoplasms that potentially malignant cystic lesions of the liver.We found about half of patients not shown typical radiologic finding as public reported. So, we recommend resection with margin in typical and doubtful radiologic finding of BMCNs cystic lesions. Especially woman in fifties that most incidence of BMCNs should always differential diagnostic of BMCNs in non-infectious atypical cystic lesions and always plan to resected with margin.

HEALTH RELATED QUALITY OF LIFE AFTER PERCUTANEOUS TRANSHEPATIC BILIARY DRAINAGE IN UNRESECTABLE PERIHILAR CHOLANGIO-CARCINOMA

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Background: Cholangiocarcinoma is the most common liver cancer in Northeast of Thailand and prognosis was poor because most of patient present at advanced stage. Palliative treatment is mandatory for relief symptom and improve quality of life (QOL) in advanced stage patients. Percutaneous transhepatic biliary drainage (PTBD) is the most widely used for treatment obstructive jaundice and cholangitis but effect on improve QOL still unclear. This study aim to assess QOL in unresectable perihilar cholangiocarcinoma underwent PTBD.

Patients and Methods: Prospective study conducted in consecutive patients with unresectable perihilar cholangiocarcinoma underwent PTBD from Jun 2015 to Apr 2017. QOL was assessed by using Functional Assessment of Cancer Therapy-Hepatobiliary questionnaire (FACT-Hep) before PTBD and 3 months after treatment. FACT-Hep score between after and before PTBD was compared by t-test defined as primary objective. Overall survival and prognostic factor was analysis by Kaplan-Meier methods and Cox proportional Hazard model as a secondary outcome.

Result: 55 patients performed PTBD including 42 (76%) male and 13 (24%) female. 24(43.6%) of patients had distant organ metastasis and 36 (56.4%) had locally advanced disease. 22 (40%) patients completed post-treatment questionnaire, 32 (58%) died before 3 months and 1 (2%) loss follow up. Mean total bilirubin pre-PTBD was 21.8±10.9 mg/dL, post-PTBD was 12.8±11 mg/dL, reduction of mean serum bilirubin was 9.5 mg/dL ($p <$ 0.05, 95%CI [5.9-12.9]). Total FACT-Hep score before treatment was 112.3 ± 21.8. After PTBD total FACT-Hep scores did not significantly decrease to 108.3 ± 27.3, mean difference was 4.8 (p = 0.5, 95%CI [-10.1-19.7]). Even though subscale score, patients did not significant change score. Mean difference score improved of emotional well-being, hepatobiliary cancer subscale score was 1.4(p= 0.40, 95%CI [-2.0 - 4.8]) and 0.1(p = 0.98, 95%CI [-5.6 - 5.7]. Other score decreased of physical, social and functional well-being subscale score was 1.2 (p = 0.56, 95%CI [-5.3 - 3.0]), 1.5 (p = 0.31, 95%CI [-4.4 - 1.4]) and 3.6 (p = 0.11, 95%CI [-8.1 - 0.9]) respectively. The overall survival was 88 days (95%CI [64-152]).

Conclusion: PTBD can improve jaundice but cannot improve QOL in unresectable perihilar cholangio-carcinoma.

PROGNOSTIC FACTORS OF ADVANCED MASS FORMING INTRAHEPATIC CHOLANGIOCARCIOMA WITHOUT SURGERY, CHEMOTHERAPY OR RADIOTHERAPY. A KHONKAEN UNIVERSITY HOSPITAL-BASED STUDY

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Background: Cholangiocarcinoma is common in the northeastern part of Thailand. The incidence is 90 per 100,000 populations. There are some systemic therapies and local treatments may affect the survival in advanced stage of cancer, but many patients do not choose any of that. Therefore, we want to evaluate the natural survival time and prognostic factors of advanced intrahepatic cholangiocarcinoma (ICC), mass-forming type.

Objective: To investigate survival time and prognostic factors of patients treated with supportive care; without any surgical interventions, chemotherapy or radiotherapy.

Methods: This study is a retrospective study conducted at Srinagarind hospital. Patients were enrolled from January 2004 to December 2009. 94 patients were included in the study. We reviewed medical records regarding the following criteria; histologically proven primary adenocarcinoma arising from bile duct epithelium, mass-forming type, advanced unresectable stages, no history of surgery, chemotherapy and radiotherapy.

Results: Median survival time was 2.53 months (IQR Q1: 1.7, Q3; 3.9). Multivariate analysis revealed that CA19-9 (>150 U/ml) was only statistically associated with poor prognostic factor for advanced ICC, mass-forming type (Hazard ratio 1.63, 95%CI 1.04 - 2.56)

Conclusion: The median natural survival time of untreated advanced ICC is 2.53 months and the only poor prognostic factor is CA19-9.

SURVIVAL OUTCOMES AFTER LIVER RESECTION VERSUSCHEMOEMBOLIZATION IN LARGE HEPATOCELLULAR CARCINOMA

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Background: Hepatocellular carcinoma (HCC) is the most common primary liver tumor in worldwide except Northeast of Thailand where cholangiocarcinoma is higher prevalence. Hepatic resection in large size HCC got high recurrent rate, poor survival and high complication while transarterial chemoembolization (TACE) had optimistic outcome and low complications. Therefore, the suitable treatment for large HCC remains unclear.

Objective: To evaluate 5-year-survival in the large HCC patients who undergone liver resection versus TACE as a primary outcome. Secondary outcome is to assess the prognostic factor that affect the survival outcome.

Methods: Patients with HCC and tumor size larger than 5 cm in Srinagarind hospital from January 2003 to December 2009 were included in this review. Patients who had distant metastasis, CTP class C, major vascular invasion and portal hypertension were excluded. Survival outcome of both groups was analyzed by Kaplan-Meier methods and compared by log rank test. The hazard ratio represented effects of the two treatment modalities, adjusted the effects of prognostic factors by multiple Cox regression model.

Results: 98 patients were included in this study. 46 patients underwent hepatic resection while 52 patients underwent TACE. Age, sex, mean tumor sizes, AFP, CTP score in both groups were insignificant difference. The 5-year-survival rate in hepatic resection group and chemoembolization group were 28.3% (95%CI 14.8-43.3%), 20.8% (95%CI 10-34.3%) respectively. The multiple Cox regression model demonstrated no statistical difference in survival rate of resection compared to TACE (HR= 0.79 [95%CI 0.49-1.26], $p = 0.32$). Prognostic factors were identified to be associated with a poor survival were vascular invasion (HR 2.61 [95%CI 1.57-4.35], $p < 0.01$) and tumor size larger than 10 centimeters (HR 2.23 [95%CI 1.29-3.85], $p = 0.01$) from multivariate analysis.

Conclusions: TACE is a comparable treatment option for large HCC liver resection due to no significant different survival outcome.

COMPARISON OF ENDOSCOPIC SPHINCTEROTOMY ALONE VERSUS ENDOSCOPIC SPHINCTEROTOMY PLUS LARGE-BALLOON DILATATION FOR TREATMENT LARGE BILE DUCT STONE

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Background: Incidence of common bile duct stone (CBD stone) is 6-12%, increasingly in age greater than 60 years. Standard treatment is endoscopic procedure which success rate is more than 90%, however decrease in success rate in large CBD stone (greater than 10 mm) has found. Aim of this study to compare outcome between endoscopic sphincterotomy alone and endoscopic sphincterotomy plus large-balloon dilatation for treatment large CBD stone.

Material and Methods: A retrospective review of medical records of 135 large CBD patients who treated in Gastrointestinal and Surgery department at King Chulalongkorn Memorial Hospital (KCHM) between January 2010 and May 2015 was performed.

Results: Between January 2010 and May 2015, of 144 patients who underwent endoscopic treatment for large CBD stone, 98 patients (68%) and 46 patients (32%) has been performed endoscopic sphincterotomy alone (EST) and endoscopic sphincteromy plus large-balloon dilatation (ESLBD) for treatment large CBD stone, respectively. There were no differences between the two groups with regard to age, size and number of stones, or bile duct diameter. The EST alone group (mean age, 65.38 years) and ESLBD (mean age, 69.5 years) had similar outcome in term of overall successful stone removal, 84.8% in EST alone group and 79.7% in ESLBD group (p = 0.35), and complete stone removal without the need for mechanical lithotripsy (86.1% vs. 82.6, p = 0.62). Postoperative complication related to endoscopic treatment between two groups was similar. Common cause of complication is post endoscopic retrograde cholangiopancreaticography pancreatitis, which found 6.2% in EST and 2.2% in ESBLD group (p=0.70). There were no difference between two groups in other complications such as perforation (0% vs. 2.2%, p = 0.54), bleeding (3.8% vs. 2.2%, p = 0.49) and cholangitis (1.3% vs. 2.2%, p = 0.70). All of complications were managed by conservative treatment excepted one patient required surgical treatment after performed ESLBD because of postoperative bleeding.

Conclusions: EST and ESLBD appears to be equally safe and effective for remove in large CBD stone (>10mm). Therefore, clearance large CBD stone can be performed by both EST and ESLBD, but requires careful technique in

patient with abnormal anatomical structure such as Roux-en-Y bypass or periampullary diverticulum.

OVERALL SURVIVAL OF GALLBLADDER CARCINOMA AFTER SURGICAL RESECTION IN SRINAGARIND HOSPITAL

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Background: Gallbladder carcinoma is an uncommon but highly malignancy. The survival depends on the depth of primary tumor invasion and lymph nodes metastasis. Only surgical resection can prognostic improvement. This study aims to assess survival rate and prognostic factor in gallbladder carcinoma after surgical resection.

Patients and Methods: Prospective study conducted in patients with gallbladder carcinoma underwent surgical resection from Jan 2004 to Dec 2013. After medical records reviewed for histologically confirmed primary gallbladder carcinoma, 100 patients were included in this study. Overall survival and prognostic factor was analysis by Kaplan-Meier methods and Cox proportional Hazard model.

Result: 100 patients performed surgical resection including 52(52%) male and 48(48%) female, with an average age of 60.43 years. Overall survival was 2.42 years (MIN 0.02, MAX 12.76). Median survival of stage 1 and 2 were more than 5 years, but median survival of stage 3 and 4 were 1.86 years (95%CI [1.05-2.55]) and 0.48 year (95%CI [0.3-0.55]). Median survival of R0, R1 and R2 resection were 5.35 years (95%CI [2.89-12.75]), 0.94 year (95%CI [0.61-1.05]) and 0.47 year (95%CI [0.3-0.49]).

Conclusion: Overall survival rate is 2.42 years and factor that associated with poor prognosis is stage 3, stage 4, and R1, R2 resection.

OUTCOME OF PALLIATIVE PERCUTANEOUS BILIARY STENT COMPARE TO ENDOSCOPIC BILIARY DRAINAGE IN ADVANCE PERIHILAR CHOLANGIO-CARCINOMA

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Background: Most cholangiocarcinoma patients have advance stage at presentation, event patient who underwent curative resection has high rate of recurrent disease. Percutaneous transhepatic biliary Stent (PTBS) and Endoscopic biliary stent (EBS) are used for palliative purpose.

Objective: To evaluate the successful rate of PTBS comparing to EBS

Methods: Retrospective review all cases of Cholangiocarcinoma who underwent PTBS or EBS at Srinagarind hospital from January 2013 to December 2014

Result: 98 cases were enrolled in this study: 33 in PTBS and 65 in EBS, Technical success 57% in PTBS and 60% in EBS. Overall Median patency time was 84 days (95%CI 63-141) with 77 days in PTBS (95%CI 42-146) and 98 days in EBS (95%Ci 49-166), No difference p-value= 0.96. Overall Median survival time was 144 days (95%CI 85-186) with 146 days in PTBS (95%CI 73-190) and 144 days in EBS (95%CI 67-204), No difference *p*-value = 0.74. Cholangitis occurred 3% per group and perioperative mortality is 12.8% in PTBS and 18.4% in EBS.

Nosignificant prognostic factor to patency time from multivariate analysis

Conclusion: the PTBS is not different from EBS in stent occlusion time, same complication.

OUTCOME OF SURGICAL MANAGEMENT IN POST CHOLECYSTECTOMY BILE DUCT INJURY IN KCMH

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Background: Laparoscopic cholecystectomy was emerged and became standard treatment of cholelithiasis, resulting in increasing incidence of bile duct injury. Due to complexity of management and multimodality approach, this review contained some data from this center.

Objective: To review the outcome of surgical management in patients with bile duct injury after cholecystectomy

Method: A retrospective review of 50 patients with post cholecystectomy biliary tract injury during 1990-2017. Patients in house and those who referred for other hospitals were included.

Result: 50 patients included in this review, 60% were male. Mostly diagnosed as biliary colic (46%) before undergo the operation. Most patients were operated laparoscopically at the beginning (LC 70%) but conversion rate was still high (convert to open approach 57%). Patients presented with various symptoms like leakage (48%), cholangitis (30%) and jaundice (30%). Type of injury seem to be equal in Strasberg type E1-4 (20, 18, 22, 20% respectively), type A-D were less common. 42 patients underwent with biliary-enteric anastomosis and 4 patients were informed for hepatectomy. 10 patients were redo operation due to anastomosis stricture, 4 of 10 had re-stricture and were performed multiple cholangioplasty and had a good outcome. In type A of BDI, all patients were treated successfully with ERCP. In type D (5 patients) one was treated with immediate repair and had no subsequence

complication, whereas 4 patients with delayed repair had multiple intervention and finally biliary-enteric anastomosis.In type E, surgical treatment is the mainstay. However these patients had multimodality treatment such as open drainage, percutaneous drainage, endoscopic treatment and surgical treatment

Conclusion: Post cholecystectomy bile duct injuries are complicated complication. Multimodality approach should be used in treatment of BDI.

LAPARASCOPIC RIGHT HEPATECTOMY:CLAMP CRUSHING TECHNIQUE (HOW I DO IT)

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Learning for laparoscopic hepatectomy requires laparoscopy and open hepatectomy skills. Surgeons who mastered in both techniques will have short learning curve for laparoscopic hepatectomy. Currently many surgical devices can help to shortage operative time. Ultrasonic dissector is the one that prove to be useful for open hepatectomy for years. This device was adapted to using in laparoscopic liver resection but the cost of this device was still high. We are here to present the video of laparoscopic right hepatectomy without using ultrasonic dissector.

Patient is the 55 years old man who was diagnosed rectal cancer with synchronous multiple liver metastases. Laparoscopic low anterior resection was done a year ago. He received 12 cycles of chemotherapy for 6 months after operation. CT scan after complete chemotherapy finding stable liver metastases without other distant metastasis so laparoscopic right hepatectomy was scheduled.

Laparoscopic right hepatectomy was done by 5 ports technique. Inflow control was done by intermittent Pringle's maneuver. Parenchymal transection was done by electrothermal bipolar tissue sealing device as clamp crushing technique. Single sealing mode was use for small vessels and other structures and double sealing technique or Hem-O-lock clip was use for large vessels and other structures. Portal pedicle and hepatic vein were transected by vascular staplers. Operative time was 200 minutes and blood loss was 100 ml. He was discharged at 5 days after operation without any post-operative complications.

Laparoscopic right hepatectomy without using ultrasonic dissector is feasible and safe when applied with basic open liver resection knowledge and laparoscopic sealing devices.

SINGLE-PORT LAPAROSCOPIC LEFT HEPATECTOMY: EXPERIENCE IN RAJAVITHI HOSPITAL

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Background and Purpose: Laparoscopic liver surgery is gradually gaining wider acceptable as a therapeutic modality in benign and malignant liver neoplasms. The advantages of laparoscopic surgery are shorter of hospital stay, early return to normal activity and decrease operative blood loss compared with open surgery and on difference in the oncological outcome. The experience of laparoscopic liver surgery in Rajavithi hospital in 5 years is 124 cases. Single-port laparoscopic surgery is the next level of evolution in surgical technique with scarless operation. We present our experience of single-port laparoscopic left hepatectomy via single infra-umbilical incision

Methods: The abdomen was approached through 20 mm infra-umbilical incision and single-port access device was used to performed left hepatectomy and specimen was transferred from peritoneal cavity via Pfannenstiel incision in patient with suspected intraductal papillary neoplasm of the bile duct at left intrahepatic bile duct

Results: Total operative time was 2 hours and 15 minutes with 30 ml blood loss. Hospital stay was 6 days

Conclusions: Single-port laparoscopic liver surgery is a feasible operation. It has short hospital stay, minimal intra-operative blood loss, early recovery to normal activities and cosmetic outcome, compared to standard liver surgery.

HERNIA SURGERY

THE SURFACE PHYSICAL PROPERTIES RELATED WITH SPECIFIC BACTERIAL BIOFILM FORMATION ON THE SURFACE OF IMPLANTED SURGICAL MESHES

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Background: In the present, there is development of surgical mesh for tension-free repair technique for ventral hernia to decrease the recurrence rates of hernia.However, infection is one of the most complications which can affect the patients from secondary operations, impaired wound healing, functional loss of the abdominal wall and extended hospital stay.

From previous vitro study, bacteria could react to surgical mesh by changing phenotypically, resulting into

biofilm formation which protected them from environmental stress as immune system or antibiotics. The treatment of choice requires the removal of the material so the adequate prevention of an infection should aim at the first contact of a microorganism with a biomaterial.

From in vitro work it is known that a number of morphological properties of implant surfaces can influence initial bacterial adhesion and biofilm formation. Nevertheless, a comparative study on the morphological differences of surgical meshes in relation to specific bacterial growth has not yet been performed.

Objective: The aim of this study is to evaluate relationships between the surface physical properties and specific bacterial adhesion and biofilm formation on the surface of implanted surgical meshes in an experimental setting.

Methods: Bacterial adhesion and biofilm formations of Staphylococcus aureus (DMST 4745), Staphylococcus epidermidis (DMST 5038), Enterococcus species (DMST 7985), Escherichia coli (DMST 2944), Acinetobacter baumannii (DMST 2271) and Pseudomonas aeruginosa (DMST 4211) were cultured in vitro on different meshes, including Prolene soft mesh, Physio mesh composite, Parietex composite and Optilene mesh. Bacterial adhesion was evaluated by confocal microscopy and plate count at 90 minute then biofilm formation was analyzed by scanning electron microscopy and plate count at 48 hours.

Results: Numbers of bacterial adhesion and biofilm formation were dependent on the different mesh. Most bacteria significantly adhered on the surface of Parietex composite mesh but formed more biofilm on the surface of Prolene soft mesh. In quality of mesh, Parietex composite was the only multifilament type of mesh in this study and had the highest number of roughness (278.23 ± 193.18 nm), as Prolene soft mesh had the lowest number of surface free energy (11.04 ± 3.8 Mn/m) and also higher number of wettability (119.63 ± 8.28 degree).

Conclusion: In conclusion, this study showed factors associated the bacterial adherence and biofilm formation on different meshes. For bacterial adhesion, *S. aureus, S. epidermidis, E. faecalis, E. coli, A. baumannii* and *P. aeruginosa* mostly adhered on the multifilament meshes due to high surface roughness. For biofilm formation, the organisms preferred to develop biofilm on the hydrophobic or low-energy surface, except *E. faecalis* and *E. coli* which might be explained by their certain biological characteristics. However, in clinical medicine, an evaluation of mesh infection has to consider both environmental and patient factors. Further research for in-vivo utilization and design of specific material against bacterial adhesion in individual patients was necessary.

LOSS OF ENTIRE ABDOMINAL WALL IN SEVERE MALNUTRITION PATIENT: HOW I DO IT

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Background and Objective: Large ventral hernia from open abdomen is a complex abdominal wall problem. Many techniques such as component separation, advancement flaps, skin grafts and staged repairs are used depending on each patient's comorbid conditions, type of hernia, and the surgeon's preference. This report describes the management in open abdomen from necrotizing fasciitis in severe malnutrition patient.

Methods: This was a case report of a 63-year-old female with ruptured appendicitis and necrotizing fasciitis of the entire anterior abdominal wall, who underwent right hemicolectomy and debridement of abdominal wall. Temporary abdominal closure with vacuum dressing was applied. Septic condition was improved and nutritional status was optimized. Large ventral hernia was repaired with composite mesh after the abdominal defect was well granulated. Regional flap advancement was done from both thighs to cover the defect. Clinical data was recorded. An informed consent was obtained.

Results: Hernia was managed successfully with composite mesh and regional flap advancement. The operative time was 250 minutes with estimated blood loss of 100 ml. Flap necrosis developed on day 3 post-operation and serial debridement was done. Vacuum dressing was applied continuously until the necrotic area was well granulated. Finally, split thickness skin graft was performed. Total hospital stay was 4 months. The patient was discharged with rehabilitation program.

Conclusion: Multidisciplinary approach with well planning is the key to success for large ventral hernia repair. Infection control and optimizing nutritional status are also required. Complications should be managed and rehabilitation should be encouraged to improve quality of life.