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TRAUMA, BURN, CRITICAL CARE

ENDOVASCULAR STENT GRAFT FOR BLUNT THORACIC AORTIC INJURY: EARLY EXPERIENCE FROM SINGLE CENTER WITHOUT MORTALITY

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Background: Blunt thoracic aortic injury (BAI) is highly lethal. Surgical treatment though standard carries inherent high morbidity and mortality. Endovascular stent graft emerges as a new treatment modality for aortic disease and provides a new therapeutic option with minimal surgical damage for blunt thoracic aortic injury.

Objective: To determine the feasibility, safety, and outcomes after endovascular stent graft in blunt thoracic aortic injury patients at our institution.

Materials and Methods: We retrospectively reviewed our experience in treating blunt thoracic aortic injury. All medical records of patients who suffered from BAI treated with endovascular stent graft (EVSG) between January 1, 2006 and March 31, 2008 in our hospital were examined. Variables assessed included age, gender, injury severity score (ISS), total length of stay (LOS), intensive care unit LOS, operative technique, complications, and discharge status.

Results: Eight patients who have BAI were identified during this period. All patients, 6 males and 2 females, were treated with valiant thoracic stent graft (Medtronic, USA.). The mean ISS was 45+6. Mean intensive care unit LOS was 6.5 days (1-10) and mean total LOS of 38 days (10-77 days). All patients were treated successfully without graft related complications detected and no patient developed postoperative paraplegia. There was no mortality in this group of patients.

Conclusions: Blunt thoracic aortic injury can be safely treated with endovascular stent graft with early promising results. Further long-term follow-up and larger number of cases is warranted to verify this minimal invasive therapeutic option.

3-STITCH TECHNIQUE WITHOUT STENT, A SIMPLE LACRIMAL DRAINAGE REPAIR; RETROSPECTIVE STUDY OF 28 PATIENTS AT PRAPOKKLAO HOSPITAL FROM OCTOBER 2004 TO OCTOBER 2007

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Aim: To retrospectively access the results of simple 3-stitch with 6-0 prolene surgical technique applied in the treatment of patients with acute lacrimal drainage injuries.

Method: From October 2004 to October 2007, 48 patients with acute lacrimal drainage injuries were treated at Prapokklao Hospital, 2 patients in ophthalmic department and 46 patients in surgical department. Twenty-eight patients in surgery department underwent primary repair using 3-stitch technique with 6-0 prolene. The patients were followed up to more than 3 months. If epiphora presented, irrigation was done.

Results: Patent lacrimal drainage with good esthetic appearance was achieved in all 28 patients with primary repair by this technique.

Conclusions: Simple 3-stitch technique without stent for primary lacrimal drainage repair is effective and is an easy way to treat lacrimal drainage injury.

RECOMBINANT ACTIVATED FACTOR VII IN EXSANGUINATING HEMORRHAGE AFTER SEVERE TRAUMA: EARLY EXPERIENCE FROM SONGKLA-NAGARIND HEMOSTASIS REGISTRY

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Background: Massive hemorrhage is a leading cause of early death in trauma. Though off-label use, recombinant activated factor VII (rFVIIa) is increasingly being administered to trauma patients with exsanguinate bleeding. Currently, there is only one randomized control trial showing the benefit of rFVIIa in correcting coagulopathy and decreasing transfusion requirements but not the mortality. Given the high cost of rFVIIa and cost-contain environment in public hospitals, the outcomes after rFVIIa being administered warranted captured.

Objective: To examine the survival outcome after the administration of rFVIIa in massive bleeding trauma patients.

Materials and Methods: A retrospective study was conducted from January 2006 to December 2007. All patients were identified from the Hemostasis Registry that prospectively collected data of all patients who received rFVIIa in our institution. Inclusion criteria included multi-system trauma patients suffering from massive hemorrhage who reached hospital alive and required transfusion of 6 or more units of packed red cells within the first 12 hours. All patients received rFVIIa as an adjunct treatment for bleeding control. Patients demographics, hemodynamic parameters, injury severity score (ISS), transfusion requirement, and survival outcomes were recorded. Primary outcome was a 24-hour survival and secondary outcome was overall survival.

Results: 21,652 trauma patients were seen in our hospital during 2-year study period. Thirty two patients (0.15%) received rFVIIa but 17 patients (0.08%) met inclusion criteria and were then analyzed. The mean age was 32+10 years old. Thirteen patients (77%) were male. Eight of 17 patients (53%) sustained penetrating trauma. The average ISS was 32 ± 15 with mean admission arterial base deficit of minus 10 ± 6. The median time of receiving rFVIIa after arrival was 3 hours (2-18) with the average dose of 88 ± 23 μg/kg. Patients required mean packed red cells transfusion of 18 ± 7 units in the first 12 hours. Nine patients (53%) survived longer than 24 hours with 8 of them (89%) survived to discharge. The median hospital length of stay for the survivors was 63 days (11-126).

Conclusions: Until large scale studies in trauma are conducted and completed to address the potential benefit of rFVIIa on survival, this observational study at least provides a basis for understanding current experience on rFVIIa in a level-1 trauma center in Thailand.

THE ROLE OF LAPAROSCOPY IN THE DIAGNOSIS AND TREATMENT OF DIAPHRAGMATIC INJURY

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Background: The management of posttraumatic diaphragmatic injury (DI) is still challenging. In the hemodynamically stable patient with thoraco-abdominal injury (TAI), laparoscopy may aid in the diagnosis and treatment of DI.

Methods: Fourteen patients with TAI between January 2002 and January 2007 admitted to the Division of Trauma, Siriraj Hospital, Mahidol University, Thailand, were collected. Laparoscopy was performed in all patients.

Results: All patients were male with mean age of 30.21 years (range 15-54 yr). Thirteen patients (92.86%) had a penetrating injury. Three patients (21.43%) presented with tachypnea and decreased breath sound. Pneumohemothorax occurred in 4 patients (28.57%). CXR could reveal diaphragmatic elevation in one patient (7.14%). Four cases (28.57%) were found to have DI. In one patient with right-sided DI, thoracoscopic repair was performed. There were no procedure related complications. The patients recovered rapidly and were discharged 72 hours after the operation.

Conclusions: Laparoscopy is an excellent diagnostic and therapeutic tool in hemodynamically stable patients. Left-sided DI can be successfully treated with laparoscopic repair. However, right-sided DI may be better repaired thoracoscopically.

LOWER EXTREMITY VASCULAR INJURY: SIRIRAJ EXPERIENCE

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Background: The outcome of extremity vascular injury management especially in the lower limbs has significantly improved in the last decade but is still challenging. The injuries can cause significant morbidity

and even mortality.

Objectives: To analyze the causes of injury, clinical pictures, associated injuries, surgical approaches, outcomes and complications of vascular trauma of the lower limbs.

Materials & Methods: Medical records of patient with the diagnosis of lower extremity vascular injury in the Division of Trauma, Department of Surgery, Siriraj Hospital during the 2-year period from 2006 to 2007 were reviewed retrospectively.

Results: Thirty-five patients were involved in this study with age range from 1 to 66 years (mean age 25.2). Male patients were predominant (80%). The most common cause of injury was motor-vehicle accident in 65.7% (23/35) followed by gunshot injury in 11.4% (4/35). The most commonly injured vessel was popliteal artery in 54.2% (19/35). Mean warm ischemic time was 11.9 hours (4-76 hours). Twenty two cases (62.8%) were associated with lower limb fracture or dislocation. Amputation was performed in 8 cases (22.8%) which was considered primarily in two cases with higher but not statistical significant in blunt injury. Limbs were salvageable after revascularization effort in 27 cases (81.8%) without significant difference of salvageable rate in cases with less than or equal to 12 hours and more than 12 hours ischemic time group. There was no mortality.

Conclusions: Blunt trauma of the lower extremity with associated injuries may be associated with increased risk of amputation.

THE EFFECTIVENESS OF SPONTANEOUS BREATHING TRIAL WITH LOW-PRESSURE SUPPORT PROTOCOL FOR LIBERAL FROM MECHANICAL VENTILATOR IN GENERAL SURGICAL ICU

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Introduction: Discontinuance from mechanical ventilation is an important problem in intensive care units. The aim of this study was to compare the effectiveness between spontaneous breathing trial with low pressure support protocol and liberal or non-protocol directed method.

Methods: A retrospective cohort study involving 577 patients who were arranged for weaning from mechanical ventilation in surgical intensive care unit between 1 July 2004 and 30 June 2007 was conducted. In 222 patients (liberal group), the weaning process depended on their physicians. The remaining 355 patients had undergone once daily spontaneous breathing trial with low pressure support protocol. Patients assigned to this protocol had the pressure support level decreased to 5-7 cm of water for up to two hours each day. If signs of intolerance occurred, the process was restrained. Patients who tolerated a two-hour trial without signs of distress were extubated. Demographic data, causes of ICU admission, APACHE II scores at the time of weaning, weaning process time, ventilator day and ICU length of stay were collected.

Results: Although there were statistically significant difference between liberal and protocol in age (59.2 ± 19.3 vs 55.6 ± 19.8; p = 0.03) but no statistically difference in gender (male 74.3% vs female 67.9%; p = 0.2) and APACHE II score at arrange time to wean (14.7 ± 7.4 vs 15.3 ± 6.3; p = 0.2). The mean duration of weaning process was 72.1 ± 101.3 hours in liberal group and 7.7 ± 16.8 days in protocol group ($p < 0.01$). The mean ventilator day and length of ICU stay were statistically different between liberal and protocol group.

Conclusions: Spontaneous breathing trial with low-pressure support protocol for liberal from mechanical ventilator was effective in general surgical ICU.

A SUCCESSFUL THERAPEUTIC OPTION FOR SEVERE BURN INJURY USING TISSUE ENGINEERING

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Introduction: The benefits of Dermal Regeneration Template® in the management of extensive burn wounds have been well established. Terudermis is a product of the tissue engineering dermal template which can reduce both donor and graft site morbidity and scarring. Given these potential advantages, we have attempted to use Terudermis for a reconstructive application in acute major burn patients who have limited donor site at the time of burn wound excision or post burn patients who have scar contracture.

Methods: Seven patients with complex burn wounds who underwent treatment with Terudermis reconstruction at burn unit, Siriraj Hospital in 2006-2007 were enrolled in this study. Patient data were reviewed with attention to wound etiology and location, surgical indication, area of autograft, percent Terudermis and skin graft take, wound infection, day of first wound excision and first autograft on Terudermis, functional and cosmetic outcomes. The cosmetic outcome was evaluated by patient satisfaction and

functional outcome was evaluated by experienced burn physician.

Results: Meshed (1:1) Terudermis was used in all cases. The average wound size covered with Terudermis was 404 ± 450 cm^2. The average time from Terudermis application to subsequent autografting was 18 ± 5 days. The overall engraftment rate of Terudermis was 98 ± 4% and autograft was 96 ± 3%. All areas of graft loss healed without regrafting. No patients developed wound infections following skin graft coverage or hypertrophic scarring in the donor or recipient graft sites and, following a period of postoperative physical therapy, all patients with extremity wounds gained full range of motion. Terudermis has become a useful adjunct in the management of extensive burn injuries. Its ability to augment the native dermis in split-thickness skin grafts and to vascularize over areas of excised burn wound, exposed tendon and bone make Terudermis an attractive tool in the management of complex burn wounds.

Conclusions: The tissue engineering dermal template "Terudermis" demonstrated excellent results in the management of massive burn wounds especially in burn patient with insufficient donor site at the first time of burn wound excision. Terudermis can be extended to other types of complex burn wounds. Successful Terudermis use requires a clean, viable wound bed, and an adequate period for Terudermis vascularization.

A PROSPECTIVE RANDOMIZED TRIAL OF SILVER CONTAINING HYDROFIBER DRESSING VERSUS 1% SILVER SULFADIAZINE FOR TREATMENT OF PARTIAL THICKNESS BURN WOUNDS

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Introduction: Silver sulfadiazine has been used as a topical burn wound treatment for many years. Pain associated with frequent dressing change is the main problem. Aquacel Ag, a hydrofiber dressing coated with silver has been reported to reduce burn wound infection and promote antimicrobial activity. The purpose of this study was to demonstrate the benefit of Aquacel Ag for the treatment of partial thickness burn wounds.

Methods: This study was assigned on 70 patients with partial thickness burn wound less than 15% of total body surface area treated at Siriraj outpatient burn clinic during December 2006-February 2008. Patients were divided into 2 groups: Aquacel Ag treated group with 3 day dressing change (35 patients) and 1% silver sulfadiazine treated group with daily dressing change (35 patients). Healing time, pain score and cost of treatment was compared between both groups.

Results: No difference in demographic data including age, gender, % burn between both groups. Time of wound closure was significantly shorter in Aquacel Ag treated group (10 ± 3 versus 13.7 ± 4 days, $p < 0.02$) as well as pain scores at 1st, 3rd and 7th day of treatment (4.1 ± 2.1, 2.1 ± 1.8, 0.9 ± 1.4 versus 6.1 ± 2.3, 5.2 ± 2.1, 3.3 ± 1.9, respectively, $p < 0.02$). Total cost of treatment was 52 ± 29 US$ for Aquacel Ag versus 93 ± 36 US$ for silver sulfadiazine treated group.

Conclusions: Aquacel Ag shortened time of wound healing, decreased pain symptom and increased patient convenience due to limiting the frequency of replacement of dressing at lower total cost. This study confirms the efficacy of Aquacel Ag for the treatment of partial thickness burn wound at outpatient clinic.

FRAME-COMPOSITE MESH: THE NEW METHOD TO TREAT COMPLEX UNSTABLE FLAIL CHEST. A CASE REPORT

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Background: A middle-age man suffering from a severe unstable flail chest caused by an elephant having trampled on the upper right part of his chest was admitted to our university hospital. A chest x-ray showed a flail segment in the region of his 1st-5th ribs, hemopneumothorax and lung contusion in the right chest. Although he could still breathe spontaneously, he had a marked tachypnea and paradoxical movement of his right upper chest leading to hypercapnic hypoxemia. Consequently, he was intubated and positive mechanical ventilation employed on the day of admission. Within a few days, the amount of intercostal bloody drainage decreased and ventilation improved. However, when we tried to reduce the ventilatory support by using a spontaneous low pressure support (5-7 cm H_2O) mode, the patient could not tolerate it. He extubated by himself several times during the first two weeks of admission but could not breathe effectively because of the unstable flail segment in his right upper thorax. Therefore, he was re-intubated. It

was concluded that, in order to treat this patient, we needed to design and fabricate a framework which could close the chest wall defect.

Methods: In collaboration with the Biomedical Polymers Technology Unit, a 15 cm x 15 cm frame composite mesh was designed and fabricated. This composite mesh consisted of four layers and three different types of material. Titanium wire was chosen for the framework of the mesh which could be easily manipulated into the required shape. This was then sandwiched in between two layers of a polypropylene net, the purpose of which was to act as a scaffold for coating on one side (the inner side) with a thin, transparent, flexible sheet of an absorbable polymer. This polymer was a random co-polyester of L-lactide and _-caprolactone in a 50:50 mol% ratio. The operation to implant this frame-composite mesh in the patient was performed at the end of the 2nd week after his admission. The incision was made at the right pectoral groove. Intra-operative findings revealed a thoracic cage defect of about 8 cm × 12 cm in area which exposed the lung parenchyma as well as a tearing of the clavipectoral fascia and some part of the pectoralis minor muscle. However, the major part of the pectoralis muscle was intact. The mesh, shaped manually into the appropriate contours of the cage defect, was implanted in the retropectoral space and tethered with the surrounding soft tissue.

Results: Following the operation, the patient could be disconnected from the mechanical ventilator and extubated the next morning uneventfully. As a result, he was able to be discharged from the hospital after several more days of observation. Two weeks after his discharge, he was well and had good pulmonary function (FVC 2.63 L (70%), FEV1 2.10 L (67%), FEV1/FVC 83%).

Conclusions: The use of this purpose-designed frame-composite mesh represents a new method for treating complex unstable flail chest injuries safely in terms of closing a large defect and shortening the ventilator and intubation days. However, further studies are still needed to evaluate fully the effectiveness of the mesh and also the long-term outcome of this method.

VASCULAR DISEASES

CANDIDACY FOR ENDOVASCULAR AORTIC ANEURYSM REPAIR IN PATIENTS WITH ABDOMINAL AORTIC ANEURYSM AT SONGKLANAGARIND HOSPITAL

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Background: Endovascular aortic aneurysm repair (EVAR) has been an accepted alternative for the treatment of abdominal aortic aneurysm (AAA). The morphologic suitability rate for EVAR varies from 10% to 66% in western published reports. The anatomical selection criteria were developed based on Caucasian populations. No collective data is available regarding suitability rate for EVAR in Thailand.

Objective: To determine percentage of candidate for EVAR in patients with AAA that meets the anatomical selection criteria at Songklanagarind hospital.

Materials and Methods: Retrospective and prospective studies were carried out in patients who had an AAA with a diameter of ≥ 5.0 cm, measured on contrast computed tomographic angiography between May 2005 and March 2008. Demographic data and aortoiliac morphological characteristics were recorded. Anatomical selection criteria were selected based on manufacturer's recommendations and on data of prospective multicenter trials published for AneuRx device. The percentage of patients eligible for EVAR was evaluated.

Results: There were 50 patients included in this study. Among these patients, 8 (16%) were anatomically suitable candidates for EVAR. The main anatomical reasons for non-candidates were unfavorable infrarenal neck morphology (66%). The primary reason was too wide or too narrow infrarenal neck diameter in 40%, too short in 28% and too angulated in 28% of the patients. There was unfavorable iliac artery morphology in 44% of the patients. Both common iliac arteries (CIA) were too wide in 36%, too angulated in 16% and too narrow in 4% of the patients. There were CIA aneurysms in 26% (unilateral 8% and bilateral 18%) of patients. Overall suitability increased from 16% to 50% when more permissive criteria were used for morphological suitability. (Neck length ≥ 10 mm, neck diameter ≤ 30 mm, CIA diameter ≤ 20 mm)

Conclusions: Candidacy for EVAR in the AAA patients in this study varies from 16% to 50% depending on the currently approved devices and technical options. The primary reason for exclusion is too wide or too narrow infrarenal neck diameter and followed by too wide both CIAs diameter. The appropriate devices for the AAA

patients from these results need more variations in infrarenal neck diameter and iliac artery diameter.

PREOPERATIVE SERUM NT-proBNP LEVEL IN PERIPHERAL ARTERIAL DISEASE (PAD) PATIENTS

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Introduction: The prevalence of peripheral arterial disease (PAD) is increasing worldwide. Patients with this condition have more chance to develop myocardial ischemia, myocardial infarction, heart failure even in asymptomatic patient. Previous studies suggested that NT-proBNP can be used to identify patients with heart failure in PAD patients. This study was to determine the plasma NT-proBNP level in PAD patient and to determine the relationship between NT-proBNP level and cardiac complications.

Research design: Cross sectional study

Methods: A total of 62 patients with PAD admitted between 1 January 2005 and 31 December 2007 were recruited. The demographic data, plasma NT-proBNP levels, co-morbidity, cardiac complications in terms of heart failure, myocardial ischemia, and cardiac death were collected and analyzed.

Results: The mean NT-proBNP level in all patients was higher than normal range (10,288.1 ± 15,205.8 pg/ml VS 150.0 pg/ml, p-value ≤ 0.001). In patients with cardiac complications (CHF, MI, cardiac death) the NT-proBNP level was significantly higher than non-cardiac complication group (23,364.8 ± 16,819.1 pg/ml VS 1,452.5 ± 1,756.1 pg/ml, p-value ≤ 0.001)

Conclusion: NT-proBNP level in PAD patients was higher than in general population and strongly related to the cardiac complications

NON-ATHEROSCLEROTIC CAROTID DISEASE

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Background: There are a large variety of non-atherosclerotic diseases of carotid artery. We report our experiences in these groups of patients in Chiang Mai.

Methods: The retrospective review of patients with carotid artery disease from 1997-2007 was conducted. In this paper, we selected only non-atherosclerotic disease. The clinical manifestation and treatment were reviewed.

Results: Seven types of non-atherosclerotic disease were found. The clinical manifestation and treatment were concluded in table.

Type	Number of patients	Manifestation	Treatment
Tortuosity	4	Supraclavicular mass	Medical treatment
Aneurysm	2	Neck mass	Aneurysm repair
Dissection	2	Non disabling stroke	Anticoagulant
Fibromuscular dysplasia	1	Non disabling stroke	Antiplatelet therapy
Takayasu's disease	1	Multiple syncope	Aortocarotid bypass
Carotid body tumor	1	Large neck mass	Tumor resection
Trauma	2	Penetrating injury with massive bleeding	Carotid artery repair/ligation

Conclusions: There have been 7 types of non atherosclerotic disease in our last ten years experience.

PATENCY RATE OF THE RADIAL ARTERY

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Objectives: The aims of this study were to evaluate the patency rate of the single radial artery (SRA, n = 527) used to bypass the lateral wall of the left ventricle and to identify the predictor of graft failure.

Methods: Inflow of the radial artery was either from T-graft (TG, radial artery end-to-side to the left internal thoracic artery) or direct aortic anastomosis with St. Jude Medical aortic connector (AC). The outflow was to the intermediate, obtuse marginal branch (OM1), OM2, OM3, distal circumflex or posterolateral branches of the right coronary artery. One hundred and thirty-six of these patients randomly undertook a 64-slice CT coronary angiogram at one year (67 TG vs. 69 AC)

Results: The number of grafts per patient was 4.36 ± 1.05 for TG and 4.25 ± 1.26 for AC. Graft patency was defined as no or less than 50% stenosis in the graft and/or at the anastomotic site. Of the 67 TG: in 15 grafts to left circumflex artery, 100% remained open; in 13 grafts to OM1, 77% remained open; in 6 grafts to OM2, 100% remained open; in 8 grafts to PL, 100% remained open; and in 25 grafts to PDA, 80% remained open. The patency rate was 88% ($P < 0.05$). Of the 69 AC: in 16 grafts to left

circumflex artery, 50% remained open; in 23 grafts to OM1, 48% remained open; in 12 grafts to OM2, 33% remained open; in 8 grafts to posterolateral branch of the right coronary artery, 75% remained open; and in 10 grafts to posterodescending branch of the right coronary artery, 80% remained open. The patency rate was 54% (P <0.05).

Conclusions: The patency rate of TG is significantly better than AC at one year follow-up. The use of aortic connector, diffused diseases of less than 1mm in vessel diameter, <70% native artery stenosis are predictors of early graft failure.

ENDOLUMNAL REPAIR OF AAA IN A RURAL HOSPITAL: AN ENCOURAGING FEEDBACK

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Purpose of Study: Endovascular AAA repair (EVAR) has been practiced for over 16 years now. It did not take long to come to rural hospitals. We have a case report on 67 patients in a rural hospital over a period of 4 years with very low mortality and morbidity.

Methods: The Excluder prosthesis was used on 60 patients selected by preoperative CT, renal function tests and physician check-up. Preoperative data was supplied to the stent manufacturing scientists to help them to produce appropriately customized and fashioned stents for every individual case. In emergency patients with painful non-ruptured AAA the stent was placed without extra difficulties. Follow ups are at 3 months & 6 months with duplex scans and 12 months with CT. In our 4 year series there was one death from an unusual spontaneous rupture of an iliac vein. Many patients needed high-dependency support for less than 24 hours. Our experience is becoming increasingly popular among many vascular surgeons with rural exposures and also among the rural surgeons with vascular training.

Summary of Results: 60 patients had successful EVAR. There were no type I endoleaks, 4 patients had type II endoleaks identified during surgery. Two late type II leaks were identified and treated radiologically by the injection of sealant. There was no case of a stent migration. Patient acceptance has been very overwhelming. Surveillance time in the preoperative period can be reduced to get a convenient anchoring site in the infrarenal aorta.

Conclusions: EVAR can be practiced in rural vascular units with support of standard HDU and a good medical team. Rupture of iliac vein is an uncommon problem but we high light it as a complication of EVAR.

CAROTID ENDARTERECTOMY: CHIANG MAI EXPERIENCE

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Objective: Atherosclerosis at or around carotid bifurcation can cause ischemic stroke. Carotid artery stenosis was recognized as an important cause of stroke in Thailand recently. Carotid endarterectomy (CEA) offer benefit in some selected patients. We aimed to review our experience in CEA.

Methods: The retrospective review of patients undergoing CEA from 1997-2007 was conducted. The clinical manifestation, data in surgical technique and outcome of surgery were reviewed.

Results: There were 30 patients in our study. Patients were associated with diabetes mellitus, hypertension, coronary artery disease, congestive heart failure, renal insufficiency, cholelithiasis and hypercholesterolemia. Twenty six patients had symptomatic cerebrovascular insufficiency. Most patients had severe carotid stenosis (70-99%). Thirty percent of patients were shunted during operation and all patients were under general anesthesia. Patching was performed in 50% of patients. 2 patients were carried out at the same time with coronary artery bypass. Unilateral carotid endarterectomy was performed in all 30 patients. There were one transient ischemic attack and 2 major strokes in 30 days postoperative period. No death was found in this review.

Conclusion: This paper presented our initial experience in CEA with satisfactory results.

THE PREVALENCE OF CAROTID STENOSIS AT MAHARAJ NAKORN CHIANG MAI HOSPITAL

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Objective: Atherosclerosis at carotid bifurcation can cause stroke. Carotid endarterectomy is beneficial in some selected patients e.g. patients with moderate to severe symptomatic carotid stenosis (50-99%). However there has been a limited data in the prevalence of carotid stenosis (CS) in Thais. Therefore we aimed to find out this figure in our Carotid Screening Clinic.

Methods: The data of patients investigated for CS by duplex scan were collected retrospectively from 1998 to

2004. The demographic data, risk factors and the degree of stenosis were analyzed. We classified the degree of CS by percentage of stenosis into five categories; no CS, mild CS (1-50%), moderate CS (51-70%), severe CS (71-99%), and total occlusion (100%).

Results: There were 504 patients in this study. The mean age was 60.7 years. 80.1% of these patients were symptomatic (45.3% with hemisensory loss, 5% with transient ischemic attack, 3.7% with aphasia and 3.1% with amaurosis fugax). In the symptomatic patients, the prevalence of ipsilateral CS in no CS, mild CS, moderate CS, severe CS and occlusion was 6.9%, 59.5%, 1.7%, 8.6% and 7.8% respectively. In asymptomatic patients, this figure in the most severe CS side was 11.1%, 50.0%, 11.1%, 5.6% and 22.2% respectively. The prevalence of retrograde flow in vertebral artery was 1.1%.

Conclusions: Most symptomatic patients have carotid stenosis and 10.3% should benefit from carotid endarterectomy. Therefore carotid stenosis is not a rare disease in Thais and recurrent stroke can be prevented by carotid endarterectomy in many patients.

A NEAR MISSED CASE OF "EXTERNAL CAROTID ARTERY ANEURYSM" FOR TONSILLAR TUMOUR

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Purpose of study: To report a case of External Carotid Artery Aneurysm involving the tonsil and review available world literature.

Methods: This is the only case in 15 years of External Carotid Artery Aneurysm to present to Mersey community hospital, a small rural hospital serving 100,000 people. Post traumatic false aneurysm has been reported after tonsillectomy. But Pubmed search found no available case report of similar sort. General incidence of aneurysm in external carotid artery and its branches mentioned ùLowû.

Case report: A 42 year old Caucasian woman was referred to an ENT surgeon with suspected tumor of left tonsil causing breathing and swallowing difficulties. She had a whiplash type of a mild injury in neck two years prior with a possible link to this condition. CT scan prior to aspiration cytology revealed an aneurysm of Lingual branch of left external carotid artery. Preoperative and post-operative pictures are preserved.

Results: The decision was made for surgical removal. The anesthetist examined the patient prior to operation and took meticulous care to intubate the patient. Removal was not technically feasible and ligation of the feeding vessel was successfully done which collapsed the aneurysm immediately. The risk of embolism and stroke in using radiological instrumentation was considered unacceptable.

Conclusions: External carotid Artery Aneurysm involving tonsil is a rare presentation and potentially fatal if misdiagnosed. Needle cytology may have led to hemorrhage, hematoma and asphyxia.

ENDOVENOUS MICROWAVE ABLATION OF VARICOSE VEINS: IN VITRO, LIVE SWINE MODEL AND CLINICAL STUDY

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Objective: This study aims to investigate the application of the microwave generator to treat the patients with varicose veins.

Materials and Methods: Phase 1: Explanted saphenous veins in subcutaneous layer of the pork meat were ablated at 0, 40, 50, 60 and 70 watts. Phase 2: The forelimb veins and the hindlimb arteries of a 40-kg swine were ablated at 50 and 60 watts. Phase 3: The patients were treated with endovenous microwave ablation at 50 watts.

Results: Phase 1: Perivenous tissue injury was found in groups 50-, 60-, and 70-watts. Phase 2: Less perivenous tissue injury was found in group 50-watt. Phase 3: Venous occlusion rate was 95% and venous reflux free was 85% in 1 year. No severe complication was found.

Conclusion: The microwave generator with 50-watt power setting could be used to ablate the varicose veins safely.

LAPAROSCOPIC DUODENOJEJUNOSTOMY IN PATIENT WITH SUPERIOR MESENTERIC ARTERY SYNDROME: A VIDEO PRESENTATION

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Superior mesenteric artery syndrome is an uncommon condition presenting with duodenal obstruction. This is believed to be caused by a compression on the third part of the duodenum by the superior mesenteric artery. Precipitating factors include rapid severe weight loss, thin body build and exaggerated lumbar lordosis. Surgical

treatment is indicated when conservative treatment is unsuccessful. Duodenojejunostomy is the most common procedure used.

Case Report: A 23-year-old female patient presented with acute episodes of duodenal obstruction. The symptoms included abdominal distension, nausea and vomiting. The patient had no previous history of abdominal or back surgery. Upper GI study showed marked dilatation of the stomach, 1st and 2nd part of the duodenum with abrupt change of small bowel caliber just distal to the duodenal loop. Laparoscopy revealed dilated first and second parts of the duodenum. Duodenojejunostomy with Endo GIA45-3.5 mm (Tyco Healthcare) was done. The defect was closed with intracorporeal suturing technique. Postoperative course was uneventful. The patient resum normal diet on the 3rd postoperative day. However, the patient still had the symptom of intermittent vomiting. Esophagogastroduodenoscopy revealed patent anastomosis without any cause of obstruction. The patient was diagnosed gastric paresis which responded well to nasogastric decompression.

Conclusions: Laparoscopic duodenojejunostomy is technically feasible in patient with superior mesenteric artery syndrome. Postoperative gastric paresis may be found and responded well to conservative treatment.

PAIN

A RANDOMIZED CONTROLLED TRIAL OF PREPERITONEAL BUPIVACAINE INSTILLATION FOR REDUCING PAIN FOLLOWING LAPAROSCOPIC INGUINAL HERNIORRHAPHY

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Objective: To determine the efficacy of bupivacaine instillation into the preperitoneal space following laparoscopic herniorrhaphy.

Materials & Methods: A randomized controlled trial, double blinded study was conducted in 40 patients who had an inguinal hernia with no complication, unilateral or bilateral and recurrence or no recurrence after previous hernia repair. Patients were randomly assigned to receive bupivacaine (n = 19) and normal saline (n = 21). The intervention or placebo was instilled into preperitoneal space after totally extraperitoneal laparoscopic herniorrhaphy by the same surgeon who was blinded to the intervention. Pain intensity was assessed by using visual analogue scale and verbal rating scale after 1, 2, 6, 12 and 24 hours postoperatively by the same nurse who was blinded to the intervention.

Results: For bupivacaine and placebo group, mean of pain score was 3.5 vs. 5.2 respectively after 1 hour (p = 0.059), 2.9 vs. 4.5 respectively after 2 hours (p = 0.117), 2.1 vs. 3.2 respectively after 6 hours (p = 0.101), 1.5 vs. 2.7 respectively after 12 hours (p = 0.145) and 1.6 vs. 2.0 respectively after 24 hour (p = 0.672). Complications developed in 4 patients (2 with seroma, 1 with urinary retention and 1 with arrhythmia) in bupivacaine group and 7 patients (5 with seroma, 1 with urinary retention and 1with ileus) in placebo group.

Conclusions: Bupivacaine instillations into preperitoneal space after laparoscopic herniorrhaphy do not reduce postoperative pain with statistical significance.

CONTINUOUS INTRACUTANEOUS INFUSION USING "PAIN BUSTER" FOR NEUROPATHIC PAIN- MAY BE AN EASY ALTERNATIVE IN SELECTIVE CASES WITH INTRACTABLE PAIN

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Purpose: Continuous intracutaneous infusion using a constant flow infusion pump "Pain Buster" is commonly employed for treatment of incisional pain. We report its use in persistent neuropathic pain.

Methods: A 41 year-old Caucasian male was hospitalized with severe persistent upper abdominal visceral and neuropathic pain. The visceral component was secondary to multiple surgeries which followed a traumatic liver laceration and subsequent adhesions. The pain had previously been managed with long-term opiate and various combinations of neuropathic medications. An I-Flow on Q Pain Buster, Lake Forest CA, was inserted percutaneously 15 cm in the painful scar. The pump infused Ropivacaine 0.2% at a constant flow rate of 5 ml/hr for 54 hrs. The patient reported an improvement in pain scores on the verbal analogue scale from 10/10 to 3/10 with subconscious improvement in his posture from forward flexed to upright position during ambulation.

Results: Continuous intracutaneous infusions are commonly employed for post-operative incisional pain. The catheter wall has minute pores which diffuse the local

anesthetic into the surrounding tissues. Persistent pain from entrapment neuropathy typically responds to short term local anesthetic blocks. A continuous infusion technique of local anesthetic may affect the outcome by attenuating afferent input, and thus diminishing the plasticity of the central nervous system.

Conclusions: Continuous intracutaneous infusion of local anesthetic agent may be employed for the treatment of persistent pain from entrapment neuropathy in surgical scars.

WOUND CARE

THE EFFICACY OF SILVER MESH DRESSING COMPARED WITH SILVER ZINC SULFADIAZINE CREAM FOR THE TREATMENT OF PRESSURE ULCERS

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Objectives: Controlling infection and promoting healing should be aims of pressure ulcer treatment along with improving a patient's general condition and relieving pressure. Many pressure ulcers present with cavities, tracks or a combination of these. A new silver mesh dressing (Tegaderm™ Ag mesh dressing) has the ability to contour around and conform to irregular surface of a wound bed.

Purpose: To evaluate the efficacy of a silver mesh dressing compared with silver zinc sulfadiazine cream for pressure ulcer treatment.

Methods: To date six patients in the silver mesh group and six patients in the silver zinc sulfadiazine cream group with pressure ulcers, grade III or grade IV, were included in the study. These are part of a larger randomized, controlled trial of 40 patients (20 per group). The study period was 8 weeks for each patient. Demographic data, wound size, wound photography and bacterial culture were recorded at the beginning of the study and every 2 weeks thereafter. Wounds were debrided as necessary. Wound beds were covered with silver zinc sulfadiazine cream in the control group and silver mesh dressing in the experimental group. Cotton gauze was used as the outer dressing in both groups. Dressings were changed twice a day in the control group and every 3 days in the experimental group.

Results: After 8 weeks, wounds reduced in size between 40-80% in the experimental group and 30-60% in the control group. No wound infections or adverse effects from the dressing were detected in either group.

Discussion: Silver mesh dressings can be adapted very well on the wound bed, can control infection and promote wound healing. Wound reduction was greater in the experimental group than the control group.

Conclusion: Silver mesh dressings can be one of the choices for pressure ulcer treatment with good healing rate and minimal care.

THE EFFICACY OF SILVER MESH DRESSING COMPARED WITH SILVER SULFADIAZINE CREAM FOR THE TREATMENT OF PRESSURE ULCERS

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Introduction: Pressure ulcer is still a common problem found in either developing or under-developed countries. Control of infection and promotion of healing along with improving the patient's general condition and relief of pressure are the aims of pressure ulcer treatment. Silver has been proven to be an antimicrobial agent against most bacteria and fungus, including antibiotic-resistant strains, such as methicillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant enterococci (VRE). Many pressure ulcers are present with cavities, tracks or a combination of these. It is important to ensure that the dressing is in contact with the majority of the cavity and that dead space is reduced. A new silver mesh dressing (Tegaderm TM Ag Mesh dressing) has the ability to contour around and conform to the irregular surface of a wound bed. It can release silver to the wound up to seven days. This product may have a role in pressure ulcer treatment because it has a broad spectrum of antimicrobial activity and enhanced wound healing. It might add the benefits to both the family and the personnel also.

Purpose: To evaluate the efficacy of a silver mesh dressing compared with silver sulfadiazine cream for pressure ulcer treatment.

Methods: A prospective, randomized, double-blind clinical trial was conducted at Siriraj Hospital on out- and in-patients with pressure ulcers graded according to National Pressure Ulcer Advisory Panel. The study was approved and monitored by the ethical committee, Siriraj Hospital.

The ulcers graded III-IV were divided randomly by computer into two 20-patient groups. The study period was 8 weeks for each patient. To date, six patients in the silver mesh group (mesh group) and in the silver sulfadiazine cream group (cream group) finished the study. Demographic data, wound size determined by using VISITRAKR Wound measurement system, wound photography and bacterial wound culture were recorded at the beginning of the study and every 2 weeks thereafter. Ulcer healing was assessed by using the Pressure Ulcer Scale for Healing (PUSH 3.0) every 2 weeks also. PUSH tool was used for evaluation of the condition of the wounds. Wounds were debrided as necessary. After wound bed cleansings were done, wound beds were covered with silver sulfadiazine cream in the control group and silver mesh dressing in the experimental group. Cotton gauze was used as the outer dressing in both groups. Dressings were changed twice a day in the control group and every 3 days in the experimental one.

Results: Six patients in each group finished the 8-week study. Mean ages were 61 and 68.8 years in mesh and cream groups, respectively. The patients in each group were not different in the underlying disease, general condition, size and duration of the ulcer when these parameters were compared by Mann-Whitney test. The mean ulcer areas at the start of the treatment were 12.85 and 15.6 cm2 in mesh and cream groups, respectively (p = 0.631), and were 3.65 and 5.28 cm^2, respectively at the 8th week (p = 0.423). The mean healing rates (area@0-area@N/area@0x100) at the 8th week were 77.18% in mesh group and 63.25% in cream group (p = 0.470). The means of PUSH score were 11.17 and 12.33 in mesh and cream groups, respectively at the initial. PUSH scores were 5.50 and 7.17 in respective groups at the 8th week (p = 0.568). The percentage of reduction in PUSH score was calculated by score@0-score@n/score@0x100. In mesh group, the mean of this percentage was 52.91% and in the cream group 42.34% (p = 0.423). The bacterial study in mesh group showed better control of the bacteria than in cream group. There was no complication from the treatment occurred in both groups. The estimated cost of the treatment in mesh group was 188 USD per patient while it was 469 USD in the cream one.

Discussion: Pressure ulcer still is a common problem occurring all over the world especially in seriously ill or immobile patients. In Siriraj Hospital, one of the biggest modern hospitals in Thailand, the prevalence was 4.76% in one day cross sectional study of the in-patients on 16th May 2007 despite the existence of standard protocol for prevention. Silver has a long history in wound care. The conventional dressing method for stage III or IV pressure ulcer in our hospital is cleansing the wound with normal saline and putting silver sulfadiazine cream over the wound surface twice daily. This causes a lot of time for the care team or the relatives. Many new silver dressing containing products have come out in the market. Silver mesh dressing is a new ionic silver dressing. It is composed of non-woven cotton fibers that are coated with silver sulfate. In vitro testing has demonstrated rapid and sustained effectiveness against a wide range of microbes. It is soft and has the ability to contour around and conform to irregular surface of a wound bed. This suits the pressure ulcer with cavities, tracks or a combination of these. From the result of this study, silver mesh dressing can enhance wound healing of the ulcer more than silver sulfadiazine (mean ulcer area at the 8th week = 3.65 and 5.28 cm^2 in mesh and cream groups (p = 0.423) and mean healing rate = 77.18% and 63.25% in mesh group and cream group (p = 0.470), respectively. PUSH score turned to be better in silver mesh group than in cream group but it was not statistically different. Regarding the cost of treatment, using silver mesh was cheaper than using silver sulfadiazine cream.

Conclusion: Silver mesh dressings can be one of the choices for pressure ulcer treatment with good healing rate, minimal care and cost-effective.

PROSPECTIVE RANDOMIZED TRIAL OF EFFICACY OF PORTABLE VACUUM IN CHRONIC WOUND CARE

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Background: Chronic wound is a common condition and sometimes causes treatment problem because chronic wound usually needs longer treatment time and high hospital cost. Treatment of chronic wound depends on causes and types of wound, and physical status of patient. At Ramathibodi Hospital, vacuum dressings were used for in-patients only. The problem with this way of treatment is the long hospital stay, high cost and unavailability of bed for other patients. This leads to our study to develop the new way to help dealing with chronic wound patients. Portable vacuum machine used in this study was designed for ease of use and can be used at home. If the efficacy of portable vacuum machine and wall vacuum are not significantly different, out-patients can benefit from this portable vacuum machine.

Methods: A randomized control trial was conducted in 2 groups of patients; conventional vacuum dressing (n = 15) and portable vacuum dressing (n = 15). Rate of wound healing was measured every 3 days and the efficacy was compared between the two groups.

Results: Thirty patients with chronic wound were assigned randomly to one group of 15 patients for the treatment with conventional wall vacuum dressing and the remaining 15 patients were treated with our portable vacuum dressing. Demographic data were similar in both groups (sex, age, underlying causes). Wound areas were recorded at initial of treatment as day 0 and recorded in day 3, day 6, day 9, and day12, and then calculated into percentage of wound healing. Rate of wound healing was 1.57% per day in conventional group and 1.59 % per day in portable group. There was no clinical difference in both group (P >0.05).

Conclusions: Our portable vacuum dressing had no clinical difference from conventional wall vacuum dressing regarding rate of wound healing.

PERCUTANEOUS TENDOACHILLES LENGTHENING (TAL) IN THE TREATMENT OF RECURRENT DIABETIC NEUROPATHIC FOOT ULCER: A CASE REPORT

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In Thailand recurrent diabetic neuropathic forefoot ulcer is not uncommon but it is very often unrecognized and inadequately treated. Percutaneous tendoachilles lengthening (TAL) is a simple and safe technique for healing and prevention of this recurrent diabetic neuropathic forefoot wound due to equinous deformity. TAL was done in conjunction with total contact cast (TCC). After the wound heals the patient can walk on simple custom made diabetic shoes. With regular follow-up and good care of the callus formation, recurrent neuropathic forefoot ulcer can be prevented.

Case Report: This is a report of a case of 49 year old male who has had diabetic type II for more than ten years with severe peripheral neuropathy but good peripheral vascularity as well as good renal function. He presented with bilateral chronic punched out ulcer with area covering three central metatarsal heads surrounded by callus which lasted for many years before presentation. Upon this visit, in addition to the chronic ulcer, he came with severe soft tissue infection and opened wounds around right big toe base. After medical stabilization of his diabetic condition and control of infection with antibiotics; surgical debridement of the infective tissue around the right big toe was done. Tendoachilles lengthening (TAL) with percutaneous double hemisection tenotomy of both legs was done at the same time. The patient was put on total contact cast (TCC) for six weeks. TCC was done to promote wound healing and to immobilize the neuropathic feet. After removal of the casts, healing of forefoot ulcers was achieved. Because of the correction of the equinus deformity, there was no recurrent ulcer with ambulation on simple custom made diabetic shoes for the rest of follow-up period of ten months.

Conclusion: TAL is a good simple procedure to correct equinus deformity of the neuropathic foot and a good procedure to prevent amputation in selected diabetic neuropathic foot ulcer.

SURGICAL EDUCATION

THE VALIDITY OF THE MINIMAL PASSING LEVEL OF MULTIPLE-CHOICE EXAMINATIONS IN SURGERY BASED ON ACCEPTABILITY INDEX (AI)

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Background: One important step in administering a multiple-choice examination is to set up a minimal passing level to which examinees have to score higher than the predetermined value in order to pass the examination. One method that has been widely used in setting up the minimal passing level in surgical examinations in Thailand is to calculate an acceptability index (AI), based on the consideration of how difficult to eliminate distracters in each item. A minimal passing level for an examination is the summation of the AI values of all items in the examination.

Objectives: The validity of the minimal passing level as determined by this method is based on the assumption that surgical experts understand the thinking process of examinees in choosing a correct answer for each item and can determine the relative difficulty of each distracter. The properly set AI value for each item should have significant positive correlation with the item difficulty level (the probability of correct responses, p-value) obtained from

actual examinations. In this study, we evaluated whether the predetermined difficulty levels of items based on this method (AI values) have correlation with the real item difficulty levels obtained from the examinations (p-values).

Methods: We collected the AI values for multiple-choice question items used in the examinations of the fourth- and fifth-year medical students at the end of their surgical clerkships at the Department of Surgery, Faculty of Medicine Siriraj Hospital. These AI values were calculated based on the consensus of surgical content experts in the education committee of the department. Over one year, the department administered 248 items to fourth-year medical students and 315 items to fifth-year medical students. We calculated p-values for items from these examinations of medical students. We examined the Pearson correlation coefficient between the AI values and p-values for all items. We further conducted subgroup analyses to examine the relationship within the items for different levels of learners, and items for different surgical specialties.

Results: Overall, there were no significant correlations between AI values and p-values ($r = .03$, $p = ns$). However, there were small positive correlations between AI values and p-values for items in cardiothoracic surgery, neurosurgery, and general surgery.

Conclusions: AI values determined by surgical experts are poor indicators of actual item difficulty levels. Surgical experts are not good at determining how examinees exclude multiple-choice item options. Other approaches for determining minimal passing levels should be considered.

THREE-DIMENSIONAL AORTIC ANEURYSM MODEL AND ENDOVASCULAR AORTIC ANEURYSM REPAIR (EVAR): A NEW METHOD OF PREOPERATIVE ASSESSMENT FOR SURGICAL TRAINEES

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Background: Endovascular aneurysm repair (EVAR) is an emerging treatment modality for patients with abdominal aortic aneurysm (AAA). Success of EVAR depends on the selection of appropriate patients, which crucially includes the detailed knowledge of the patient's vascular anatomy and preoperative planning. Three-dimensional models of AAA using rapid prototyping technique were developed in order to help surgical trainees learn how to plan for EVAR more effectively.

Methods: Four cases of AAA were used as prototypes for the models. Nine questions associated with preoperative planning for EVAR were developed by a group of experts in the field of endovascular surgery. Forty-three postgraduate trainees in general surgery participated in this present study. The participants were randomized into 2 groups. The çinterventioné group was provided with the rapid prototyping AAA models along with 3D-CTs corresponding to the scenarios of the test to use in the preoperative planning, while the control group was provided with 3D-CT only.

Results: Differences in the scores between the groups were tested using the unpaired t-test. The average test scores were consistently and significantly higher in the M + 3-D CT group as compared with the 3-D CT group for all four scenarios. Age, year of training, gender and previous EVAR experience had no effect on the scores.

Conclusion: The three-dimensional aortic aneurysm model constructed using the rapid prototype technique could significantly improve the ability of trainees to properly plan for EVAR.

THE IMPACT OF A ONE-DAY WORKSHOP ON THE SELF-EFFICACY IN LAPAROSCOPIC SKILLS

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Background: In learning complicated surgical skills such as laparoscopic surgery, learners need some form of motivation. One strong source of learning motivation is learners' beliefs in their capabilities to successfully execute the task, which is called self-efficacy. Researchers have demonstrated that when learners perceived that they were capable of doing a task, they would be highly motivated to learn about it, and would be more likely to master the skills required to perform that task. Thus, one important task of surgical faculty in teaching laparoscopic surgical skills to residents is to help improve their self-efficacy in their laparoscopic skills.

Objectives: A group of surgical faculty at the Department of Surgery, Faculty of Medicine Siriraj Hospital set up a one-day workshop in laparoscopic suturing skills for residents and interested surgeons in March 2008. The investigators wanted to investigate the impact of this one-day workshop on participants' self-efficacy in laparoscopic skills.

Methods: At the beginning of the workshop, we administered a 15-item questionnaire to 19 participants asking them to rate their self-efficacy in surgical skills on a four-category rating scale, where one indicated the total lack of confidence, and four indicated the highest level of confidence in performing a procedure. The participants then attended a daylong workshop which comprised four lecture sessions and two hands-on sessions. After the workshop, we administered the questionnaire to all participants again to check their self-efficacy in 15 surgical skills. We analyzed the data using Rasch rating scale model. We employed a Wolfe and Chiu procedure to calibrate the measures of participants' self-efficacy prior to the workshop on to the same scale with the measures of their self-efficacy after attending the workshop. We used a Z-test to determine how many participants showed a significant improvement in their self-efficacy in laparoscopic skills.

Results: Only 16 participants responded to both questionnaires. From the 15 items in the questionnaire, 3 items (which addressed non-laparoscopic surgical skills) had response patterns that did not fit with the other 12 items. Thus, we excluded the responses from these 3 misfitting items from the analyses. The before- and after-workshop ratings had internal consistency reliabilities of 0.89 and 0.87, respectively. We found that 12 out of 16 (75%) participants showed statistically significant improvement in their self-efficacy in laparoscopic skills ($p < 0.05$).

Conclusion: A one-day hands-on workshop on laparoscopic suturing can significantly improve most participants' self-efficacy in laparoscopic skills.

CARDIOVASCULAR & THORACIC DISEASES

EFFICACY OF INTRAMYOCARDIAL INJECTION OF ANGIOGENIC CELL PRECURSORS FOR DILATED CARDIOMYOPATHY: A CASE MATCH STUDY

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Objective: To determine the efficacy of intramyocardial angiogenic cell precursors (ACPs) injection in dilated cardiomyopathy (DCM).

Methods: Thirty five DCM patients (cell group) underwent intramyocardial ACPs injection. Seventeen DCM patients (control group) from the heart failure database treated by medical means were matched with the cell group. There was no statistically significant difference between the cell and control groups in relation to age, preoperative left ventricular ejection fraction (LVEF), New York Heart Association (NYHA) Class and co-morbidities. In the cell group, mean age was 56.7 ± 14.3 years. Mean LVEF was 23.9 ± 6.5%. NYHA Class was 3.0 (0.6. The ACPs were obtained from autologous blood and culture in vitro. ACPs express CD34, CD133, CD144, CD31Bright and secrete interleukin-8, vascular endothelial growth factor and angiogenin. Number of cells prior to injection was 33.7 ± 35.9 million cells. The cells were injected into all areas of the left ventricle in the cell group.

Results: *In the cell group:* there was no new ventricular arrhythmia. NYHA was improved by 1.1 ± 0.7 ($P < 0.001$) at 284.7 ± 136.2 days. Six-minute walk test at 3 months follow up improved (preop 369.5 ± 122.4 vs postop 425 ± 218.5 meters, $P = 0.2$). The quality of life assessed by Short Form 36 demonstrated improving of physical function ($P = 0.004$), role-physical ($P = 0.02$), general health ($P<0.001$) and vitality domains ($P = 0.007$). The LVEF was improved in 71.4% of patients (25/35). The LVEF improved by 4.4 ± 10.6 points % ($P = 0.02$) (from 23.9 ± 6.5% to 28.3 ± 10.7%) at 192.7 ± 135.1 days. In the control group: there was no significant improvement of LVEF (preop LVEF 25.0 ± 8.9 vs postop LVEF 27.6 ± 7.6). The NYHA class was improved by 0.6 (0.8 (from 2.45 ± 0.9 to 1.9 ± 0.5) ($P = 0.052$).

Conclusions: Intramyocardial ACPs injection is safe and effective in the DCM patients. The NYHA class, LVEF and quality of life were significantly improved in the cell group. Large randomized control trials are needed to confirm these results.

PREDICTORS OF MORTALITY IN ALL ARTERIAL OFF-PUMP CORONARY ARTERY BYPASS GRAFTING

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Objective: To evaluate safety and operative risk of all arterial Off-Pump Coronary artery bypass grafting (OPCAB).

Materials and Methods: Between Jan 5, 2001 and Mar 28, 2008, 1301 patients underwent coronary artery surgery. 1047 patients (81%) were OPCAB alone. Sixty two patients (4.8%) had combined OPCAB and other procedures. The conversion (to On-pump) rate was 6.4%, 2.6%, 2.7%, 3.4%,

1%, 0%, 0% and 0% form 2001 to 2008, respectively. Saphenous vein graft was used in 28.9% (303/1047). 744 patients (71%) had all arterial OPCAB. 80.8% were male. The average age was 60.7 ± 10 years. 38.3% had unstable angina. 42.6% were diabetes. 64.9% were hypertension. 3.4% had previous stroke. 1.7% had renal failure. 5.4% had previous coronary intervention/surgery. 22.7% had previous myocardial infarction (MI). Left ventricular ejection fraction (LVEF) was 55 ± 13.1%. 10.8% had LVEF of less than 40%. 26.3% had significant left main (LM) coronary artery disease. Left internal thoracic, right internal thoracic, left radial, right radial and right gastroepiploic arteries were used in 96.2, 15.6, 86.3, 13.8 and 36% of patients, respectively. T graft from the left internal thoracic artery was used in 36.3% (270/744). Automatic proximal aortic connector was used in 25% (186/744). Fourteen risk factors for operative mortality (age, gender, diabetes, hypertension, previous stoke/renal failure/MI, previous coronary intervention/surgery, LVEF, LM disease, number of graft, T-graft, automatic proximal aortic connector, conversion to On-Pump) were determined by logistic regression analysis.

Results: The number of distal anastomosis was 4.1 ± 1.4. The 30-days mortality was 2.6% (19/744). Postoperative atrial fibrillation was found in 15.5% of patients. Stroke and deep sternal wound infection were found in 0.1% each. Re-operation for bleeding was 1.3% and renal failure required dialysis was 0.5%. The predictors of mortality were previous MI (P = 0.002) and conversion (P = 0.001).

Conclusions: All arterial Off-Pump coronary artery bypass grafting is safe with acceptable mortality. Care should be taken in patients with previous MI and preoperative evaluations/managements should be in place to avoid intraoperative conversion.

TEN-YEAR EXPERIENCE WITH RASTELLI OPERATION

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Objective: The purpose of this study was to describe the outcome of Rastelli operation in complex congenital heart disease with right ventricle to pulmonary artery discontinuity.

Methods: Records of 36 consecutive patients who underwent the Rastelli operation between February 1997 and October 2007 were reviewed. The operations were performed by the same surgeon.

Results: The mean age and weight at definitive repair were 7 years (2-20) and 19.3 kg (13-45), respectively. Seventeen patients had PA and VSD, 8 patients had TGA, VSD and PS, 7 patients had DORV VSD and PS. The remaining patients had TOF with absent pulmonic valve or abnormal coronary artery (LAD cross RVOT). Seventeen patients (47%) underwent BT shunt before Rastelli operation. Cryopreserved aortic homografts with a mean diameter of 21.5 mm. (18-28) were used in 34 patients and cryopreserved pulmonic homografts with a mean diameter of 22 mm. were used in 2 patients. The mean aortic cross clamped time and cardiopulmonary bypass time were 1.70 hr. (1.12-2.60) and 2.85 hr. (1.57-4.28), respectively. The mean postoperative hospital stay was 13 days (7-24). There were no early operative deaths. Three patients had atrioventricular block and required permanent pacemaker implantation. Twenty nine patients (80%) were followed up. During a mean followed up of 4.5 years, there were no late operative deaths. There were 2 patients underwent reoperation 9 year later. One for conduit stenosis and another for homograft valve insufficiency. Echocardiographic assessment during follow up period showed 4 patients with gradient across RVOT of more than 40 mmHg. All patients were in class I of NYHA on recent follow up regardless of aforementioned gradient.

Conclusions: The Rastelli operation can be taken with low morbidity and mortality. Early and mid term results utilizing cryopreserved homograft are encouraging. However substantial late morbidity is associated with conduit obstruction.

Abbreviation and Acronyms

PA = Pulmonary Atresia, VSD = Ventricular Septal Defect, TGA = Transposition of the Great Arteries, PS = Pulmonary stenosis, DORV = Double outlet Right Ventricle, RVOT = Right Ventricular out flow Tract, LAD = Left anterior Descending Artery, BT shunt = Blalock Taussig Shunt, PV = Pulmonic Valve

GIANT CARDIAC DIVERTICULUM, SURGICAL TREATMENT

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Background: Cardiac diverticulum and aneurysm are uncommon in pediatric population and most are post-inflammatory or ischemic sequelae. Cardiac diverticulum have been observed originating in the right atrium, right

ventricle, left atrium, left ventricle, coronary sinus and atrioventricular septum or valve. Cardiac diverticulae are asymptomatic or symptomatic due to associated congenital cardiac defect, thromboembolism or rupture. The management is by surgical resection.

Material and Methods: We encountered two cases of giant cardiac diverticulum. The first patient was 9-year-old boy with giant left ventricular diverticulum presented with CHF and arrhythmia (history of VT need cardioversion). The second patient was 9-year-old girl with giant left atrium diverticulum. She was actually asymptomatic. Both of them underwent surgical resection with good results.

Conclusion: Cardiac diverticulum is an uncommon congenital heart disease. The management is by surgical resection. Prognosis is usually good.

OPTIMAL PT-INR AFTER PROSTHETIC VALVE REPLACEMENT: PRELIMINARY REPORT

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Background: Anticoagulant therapy after valve replacement using mechanical valve is indispensible for prevention of thromboembolism. On the other hand, hemorrhagic complications due to overdosing of anticoagulations also deteriorate the patients.

Objectives: The purpose of this study was to investigate the PT-INR value in patients who underwent mechanical valve replacement with anticoagulant-related complications compared with those who have had no complications. Besides, we would like to identify the optimal PT-INR value which does not cause either hemorrhagic or thromboembolic complications.

Methods: From September 2007 to April 2008, a total of 432 patients who underwent mechanical valve replacement with 962 postoperative follow-up visits were evaluated for the PT-INR value and anticoagulant-related complications. The patients were divided into 3 groups: group I included patients with no anticoagulant complications, group II patients with minor (such as gingival bleeding, small subcutaneous ecchymosis or minimal hematuria) and major bleeding (such as cerebral hemorrhage and large hematoma requiring surgical drainage). Lastly, group III included patients with thromboembolism. The hemorrhagic complication cases (group II) were redistributed into 3 groups: the PT-INR <2.50 group (group A), 2.50-3.50 group (group B) and >3.50 (group C) on the basis of the optimal range of PT - INR (2.50-3.50) proposed by the AHA's guideline.

Statistical analysis: Continuous variables are expressed as a mean + standard deviation. Differences between groups were analyzed by using one-way ANOVA. P values <0.05 considered statistically significance.

Results: Of 432 patients, there were 209 males and 223 females with age range from 16 to 80 years (mean 48.87 ± 11.35). The visit times ranged from 1 to 9 visits (mean 2.22 ± 1.27). Mean PT-INR values in group I, II and III were 2.57 ± 1.15 (n = 846), 4.09 ± 2.32 (n = 113) and 2.19 ± 1.73 (n = 3) respectively. The number of cases in group III (with thromoembolism) showed no significant difference from the other groups ($p < 0.05$). But, mean PT-INR in bleeding groups (group II) was significantly higher compared with no anticoagulant-related complications group (group I) ($p < 0.05$). When redistributing the hemorrhagic complication cases (n = 113) into 3 groups (group A, B, C), we found that mean PT-INR values in group A, B and C were 1.72 ± 0.50 (n = 22), 3.13 ± 0.26 (n = 23) and 5.17 ± 2.35 (n = 68) respectively. Mean PT-INR in group B and C were significantly higher compared with group A ($p < 0.05$). When we considered the number of cases in group C (the PT-INR >3.50 group), we found that the number of cases in this group was higher than other groups (group A and B).

Conclusions: (1) The higher PT-INR value especially when >3.50, the anticoagulant-related bleeding complications usually occurred. But we should individually define as the minor or major bleeding later. (2) The thromboembolic complications could occur even in the therapeutic PT-INR value (3) the optimal PT-INR value should not be higher than 3.50.

THE NEW APPROACH FOR SCIMITAR SYNDROME

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Background: Scimitar syndrome is a rare congenital heart disease consisting in part of right pulmonary venous return to the inferior vena cava. This anomaly was first described by Cooper in 1836 and the first corrective surgery was performed in 1956 by Kirklin et al. Most of corrective surgery aim at re-routing the Scimitar vein flow to the left atrium by intracardiac baffle. Dupius et al, revealed good result in only 12 patients out of 37 patients, whereas 4 patients died and 21 had thrombosis of the Scimitar vein to

left atrium pathway. Recently, Brown et al. from Indiana University used right thoracotomy approach to reimplant the Scimitar vein to the left atrium with no need for baffle or bypass (unless an intracardiac lesion also need to be fixed) and showed good results.

Material and Methods: We encountered 42 years old woman with progressive dyspnea for 2 weeks with intermittent palpitation, chest discomfort and leg edema.

Results: 2D-echo revealed moderate pulmonary hypertension, RVSP 60 mmHg without intracardiac shunt. V/Q lung scan revealed intermediated probably for pulmonary embolism. CTA revealed Scimitar syndrome. She underwent surgical correction by Indiana University technique with good result.

Conclusion: This approach for Scimitar syndrome is safe and effective that obviates both the need for an intra-baffle or the use of cardiopulmonary bypass.

ENDOSCOPIC HARVESTING CONDUIT FOR CORONARY ARTERY BYPASS GRAFTS

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Coronary Artery Bypass graft is the surgical procedure for patients suffering from the Coronary Artery Disease. Operating process requires the conduit grafts from many sites in the body for grafting vessels. Usually, we use internal thoracic artery, saphenous vein, radial artery, and gastroepiploic artery for this purpose. The old harvesting technique mostly left long ugly scars on patients' bodies, or sometimes it causes severe consequences such as deep wound infection, wound dehiscence, hematoma etc.

Now, we have new technology to provide patients and surgeons more satisfaction. The Endoscopic Vein Harvesting (EVH) and Endoscopic Radial Artery Harvesting (ERH) create much better cosmetic results with less wound complications. We have used the EVH and ERH for patients who needed CABG in our institute. Since we started using the EVH in April 2006 and the ERH in February 2007, patients had satisfactory outcomes in 66 cases, of which 64 were preceded by the EVH and 28 of the total by the ERH.

After the first case, we have gained more experiences and the harvesting time has been reduced gradually. The average time spent for harvesting was around 25 minutes for the EVH, and 38 minutes for the ERH.

From our experiences, however, we have encountered some complications. One of these cases got wound dehiscence from hypoalbuminemia after ERH, while other 2 cases got superficial wound infection after EVH.

In conclusion, we have experienced very positive outcomes from this new technology and we recommend using these techniques in the CABG patients whenever possible.

UNILATERAL TOTALLY ENDOSCOPIC PULMONARY VEINS ISOLATION FOR LONE ATRIAL FIBRILLATION

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Objective: To demonstrate a closed-chest totally endoscopic minimally invasive surgical technique to isolate pulmonary veins from left atrium with an endoscopic microwave-based probe.

Methods: From October 2007 to June 2008, six lone atrial fibrillation (AF) patients were included in the study. Mean age was 60+/-4.8 years. Mean left atrial size was 3.2+/-0.8 centimeters. Mean AF duration was 5.6+/-1.2 years. The pulmonary veins were isolated through right chest thoracoscopy on the beating heart by lines of conduction block. Microwave energy was delivered using Guidant microwave ablation system. We are the first in the country and in Asia to successfully perform this procedure using totally endoscopic technique. This video demonstrates a minimally invasive approach to cure atrial fibrillation step by step in detail.

Results: The complete pulmonary veins isolation was successfully performed in all patients without device or procedure related complications. The data was collected in prospective entered database. There were two patients with long standing AF, two with persistent AF, and two with symptomatic paroxysmal AF. For all patients (N = 6), the sinus conversion rate was 66% (4/6) at one month and 66% (2/3) at three month. For non-long standing AF patients (N = 4), sinus conversion rate was 100% (4/4) at one month and 100% (1/1) at three month. One patient that remained in AF after three month follow up had less frequent and less symptomatic episodes compared with the preoperative situation.

Conclusions: Endoscopic pulmonary veins isolation can be successfully performed as a minimally invasive surgical approach. The technique is less invasive, safe, effective, and producing excellent early results in symptomatic paroxysmal AF patients.

THE RESULT OF AORTIC ANEURYSM AND ACUTE AORTIC DISSECTION TREATMENT IN QUEEN SIRIKIT HEART CENTER OF THE NORTHEAST

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Background: Aortic aneurysm is a common disease in the Northeast region of Thailand. The treatment has many options for different location and pathology.

Objectives: To study results and complications of aortic aneurysms and acute aortic dissection treatment

Methods: Clinical data of 76 patients with aortic aneurysms and acute aortic dissection treated from 2005 to 2008 were retrospectively reviewed. Size, presentations, location, treatments, and outcomes were recorded and analyzed.

Results: From 2005 to 2008, the treatment for aortic aneurysm (89%) and aortic dissection (11%) were conducted in 57 men (75%) and 19 women (25%); 8 (10.5%) had Chronic Aortic Dissection Type B with TAAA, 30 (39.5%) had Ascending Aortic Aneurysm, 21 (26.7%) had Infrarenal AAA, 3 (4%) had Descending Thoracic Aneurysm, 5 (6.6%) had Aortic Arch Aneurysm and 9 (11.8%) had emergencies in 16 (21%). Opened repair was performed in 13.2%. Majority of mortality involve the Chronic Aortic Dissection Type B with TAAA patients (40%). No deaths occurred after opened repair of Ascending Aortic Aneurysm, Infrarenal AAA, and EVAR group. The complication rate is 32.8% mainly in Chronic Aortic Dissection Type B with TAAA (24%) and complications were more frequent and hospitalization was longer after opened repair than EVAR (P<.05).

Conclusions: The result of the treatment is excellent in the EVAR and Ascending Aortic Aneurysm and Infrarenal AAA group. But the complication and mortality were so high in Chronic Aortic Dissection Type B with TAAA patient, 24% and 40% respectively. The new innovation might improve the outcome in the future.

UNILATERAL PULMONARY EDEMA AFTER EXTRA-CARDIAC CONDUIT FONTAN

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Background: Most would agree that the Fontan operation is one of the procedure of choice for congenital cardiac anomaly not amenable to a biventricular repair. Recently the Fontan operation mortality has been reduced to <5%. Obstruction to pulmonary venous flow has been observed in some patients after the procedure but the mechanism responsible for this complication is not clear.

Materials and Methods: We encountered unilateral pulmonary edema after extracardiac conduit Fontan in a 6-year old boy who had dextrocardia, common ventricle and pulmonary atresia. Suspension of the extracardiac conduit resulted in improvement of the unilateral pulmonary edema. The last follow-up revealed good functional class II with almost clearing of the left lung.

Conclusion: Pulmonary venous compression or obstruction by extracardiac conduit Fontan could result in unilateral pulmonary edema. Correction by suspension or conduit lengthening may solve the problem.

NEUROSURGERY

ROUTINE USE OF SUPRAORBITAL-PTERIONAL APPROACH FOR SURGERY OF ANTERIOR CIRCULATION ANEURYSMS

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Supraorbital-pterional approach is one of skull base approaches that facilitate aneurysm surgery by allowing early proximal and distal vascular control, shortening and widening of the operative field, increasing the range of the surgeon's operative view and motion, and alleviating brain retraction. During1997 to 2002 the author routinely used this anterior skull base approach for all anterior circulation aneurysms such as anterior communicating artery aneurysm, internal carotid artery aneurysm and middle cerebral artery aneurysm. Previously the author used pterional approaches for these aneurysms. This audio visual presentation aim to demonstrate a simplified craniotomy for this approach by single bone flap opening with ordinary craniotomy by two burr holes, one at keyhole site and another at posterior inferior temporal site, as used in pterional craniotomy. The additional removal of lateral superior orbital ridge and zygomatic process of frontal bone alleviating frontal lobe

retraction at the early stage of arachnoid dissection at chiasmatic cistern. There were 68 patients operated by this approach with good outcome in 87% and 4% death rate for patient with Hunt and Hess subarachnoid hemorrhage (SAH) grade I-III. There was no increasing morbidity related to craniotomy compared with pterional approach. Time consumption was more than pterional approach about 30 minute for more extensive dissection of supraorbital ridge and zygomatic process of frontal bone. This approach can also be used in lesions at around sellar and parasellar region and in conjunction with transcavernous approach for basilar tip aneurysms.

ORTHOPEDICS

THE PT ROD REDUCTION INSTRUMENT

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The pedicular screw fixation had been proved effective in not only spinal stabilization but also correction of the spinal deformities and promoting bone graft healing. The techniques are worldwide used by spine surgeon, both orthopedist and neurosurgeon. One of the processes during surgical intervention is an approximation between rod and screw head. If the surgeon cannot have good alignment of screw head direction or in case of spinal deformity that the screw head usually misses alignment or placement, this will obstruct the surgical procedure. The operative time will be prolonged and surgeons get upset. To accomplish this problem, surgeons usually require a special instrument. Even though there is several reduction instruments made from foreign companies, problems still remain due to the technical difficulty and the strength of the instrument being unable to tolerate high force during the reduction procedure. Breakage of the instrument is always encountered after several attempts of application. To prevent and conquer this complicated event during surgery, the author has invented a newly designed instrument named PT rod reduction Instrument. Two sets of the instrument and screw have been designed and manufactured. The pictures of those two instrument sets are shown. This instrument set has been registered under my name and has been patented several months ago. The spine surgeons from several provinces of Thailand have performed their spine pedicular fixation using the PT rod reduction instrument to facilitate surgical procedure. There has been no report about the breakage of the instrument.

In conclusion, I found that this instrument copes well with our intentional goal. First of all, it is very easy to apply, secondly, it is very strong instrument suitable for rod screw head approximation and very useful for the reduction in spondylolisthesis especially the high grade type and also helps facilitate correction of the spinal deformities.

PEDIATRIC SURGERY

OUTCOMES OF NEPHROBLASTOMA MANAGEMENT IN LOWER SOUTHERN THAILAND; 1996-2007

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Objectives: To review and address the treatment outcomes of nephroblastoma (Wilms' tumor), one of leading solid tumors in childhood, in a tertiary level hospital in southern Thailand.

Methods: Between January 1996 and December 2007, 34 patients under 15 year-old were operated for nephroblastoma. The figure was 85% of all pediatric renal tumors treated during the same period. Median age at diagnosis was 2.07 years. Gender ratio (M:F) was 1.26:1. Eighteen patients (52.9%) had left sided tumor, 14 cases were right-sided and 2 cases (5.9%) had bilateral disease. Majority of patients presented with palpable abdominal mass (47.0%) or abdominal distension (36.7%). Interestingly, hematuria was evidenced in only 11 cases (32.4%). The management and staging followed the protocol of National Wilms' Tumor Study Group of the United States. Total nephrectomy was performed for all except two cases of bilateral tumor who underwent partial resection.

Results: Thirteen cases (38.2%) had stage I tumor at operation, 4 cases (11.8%) were in stage II, 13 cases in stage

III and each 2 in stage IV and V. Primary nephrectomy was performed in 29 cases (85.3%). Five patients, including 2 cases with bilateral disease, were considered initially unresectable and received neo-adjuvant chemotherapy. Histopathological study showed unfavorable histology in 3 cases, 1 case in stage I and 2 cases in stage II, respectively.

Median follow-up period was 533 days (0-4,097 days). Fifteen patients (44.1%) were lost to follow-up. Four-year overall survival (OS) and event-free survival (EFS) were 68.6% and 36.4%, respectively. By log-rank analysis, the study found that lymph node metastasis significantly correlated with poorer OS probability.

Considering stage I patient, 2-year OS and EFS were 75% and 49.5%, respectively. Excluding one case who failed to receive adjuvant chemotherapy, 4 of 12 cases had early event (occurred within 2 years) of local recurrence (1), or distance metastasis (3).

Conclusions: Compared with reports from NWTS, the treatment outcome of nephroblastoma in our institute remains to improve. Relapse and metastasis were our main problems. Refining the management protocol, focusing on an early detection of metastasis and a reduction of local recurrence may improve survival rate.

OVEREXPRESSION OF HEPATIC INDUCIBLE NITRIC OXIDE SYNTHASE IN BILIARY ATRESIA

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Aims: Biliary atresia (BA) is a rare and serious liver disease in infants characterized by progressive inflammatory cholangiopathy. The aims of this study were to investigate hepatic expression of inducible nitric oxide synthase (iNOS) in BA and to associate the iNOS expression with their early therapeutic outcome.

Methods: Hepatic iNOS expression was determined using immunohistochemistry from liver biopsies of 24 patients with BA, and 16 non-BA patients whose liver tissues were needed in the treatment process. At 6 months after surgery, the BA patients were categorized into 2 groups including good and poor outcome. The iNOS expression of hepatocyte areas was evaluated based on its intensity using ImageJ software. Unpaired t-tests were used for the comparisons of iNOS expression between groups.

Results: Hepatic iNOS expression of BA patients was significantly stronger than that of non-BA patients ($P < 0.0001$). The largest area of hepatic iNOS expression was the area of hepatocytes. Subgroup analysis of BA patients at 6 months post-op revealed that there was no difference in iNOS expression between the patients with good outcome and those with poor outcome ($P = 0.732$).

Conclusions: Overexpression of hepatic iNOS in BA patients was demonstrated. Within liver tissues, hepatocytes were the major source of hepatic iNOS production. However, the expression was not associated with the early therapeutic outcome. These findings suggest that iNOS plays a role in the liver pathology of BA but its expression cannot be used as a predictor for therapeutic outcome.

CHRONIC SECRETORY DIARRHEA, UNUSUAL PRESENTATION OF GANGLIONEUROBLASTOMA IN CHILDREN: A CASE REPORT AND REVIEW OF THE LITERATURE

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Background: Neuroblastic tumors arise from neural crest cells and encompass a spectrum from neuroblastoma, an undifferentiated malignant tumor to ganglioneuroma, a well differentiated benign neoplasm. Most of these tumors are diagnosed by the age of 4 years. Ganglioneuroblastoma is an intermediate type of tumor in the spectrum of ganglion tumors, containing both primitive neuroblas-tomatous and mature ganglioneuromatous elements of sympathetic cell origin. There are various clinical symptoms and sometime unusual clinical presentation may mislead the diagnose and thus delay the correct diagnosis and treatment.

Material and Method: A case report and review literatures.

Results: A twenty-one month old girl presented with chronic secretory diarrhea for 8 months before admission. Other substantial findings included weight loss, abdomen distension and no palpable mass. Initial laboratory studies were normal. CT scan revealed retroperitoneal mass extending beyond left kidney to level about the origin of IMA to S3 level. This reported case was one with unusual clinical symptoms which delayed the diagnosis and prior multiple investigations were required. After surgical removal of the tumor, the clinical symptoms immediately improved, diarrhea disappeared and at present she is doing well.

Conclusion: Diarrhea could be an unusual presentation of Ganglioneuroblastoma. It is very important to realize that it may be the presentation of neuroblastic tumor such as Ganglioneuroblastoma.

SIGNIFICANT USE OF THE RECTO-SIGMOID INDEX IN PREDICTION OF HIRSCHSPRUNG'S DISEASE IN THE NEWBORN PERIOD

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Background/Purpose: There is a lot of debate about the accuracy of barium enema during the newborn period. The aim of this study was to determine the accuracy of the recto-sigmoid index in helping the prediction of aganglionosis in newborn period.

Methods: A retrospective study of newborn cases with suspected Hirschsprung's disease who underwent pre-operative contrast enema was reviewed over a 3-year period from 2005 to 2008. The recto-sigmoid index (RSI) and other positive contrast enema signs were evaluated and compared with pathological reports. Data were analyzed by χ^2.

Results: During this period, thirty five neonates, 20 males (57%), 15 females (43%) at mean age of 19.5 days, underwent 37 preoperative contrast enemas. Twenty patients were finally diagnosed with Hirschsprung's disease (54%). The most common site of proximal extent of aganglionosis was recto-sigmoid colon (9 patients, 45.0%). The pathologic and radiographic findings were concordant in 91% for transitional zone (TZ) and 68% for other positive contrast enema signs. From the ROC curve of recto-sigmoid index, the most accurate cut point was RSI lateral ≤ 0.7 (60% sensitivity and 88.2% specificity) while radiographic TZ had 50% sensitivity and 94% specificity. The combination of RSI and/or radiographic TZ improves sensitivity up to 70% while the specificity is 82.4%. The interrator reliability was 0.83 and 0.7 for 2 observers while variant was 0.1.

Conclusions: RSI can improve the diagnostic accuracy in the diagnosis of Hirschsprung's disease in newborn. However, there are some limitations due to small sample size. We suggest further study to increase sample size and reliability.

CHOLEDOCHAL CYST: A 12-YEAR STUDY

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Background/Purpose: Only small series of pediatric choledochal cyst (CDC) have been reported in Thailand. However, many cases have been treated in each year, the authors reviewed the experience of CDC management during a 12- year period at the Queen Sirikit National Institute of Child Health, Bangkok.

Method: A retrospective chart review was used to collect the data of the CDC patients between 1996 and 2007. Demographic data, clinical presentations and results of the treatment were analyzed.

Results: Ninety-nine patients with CDC had been treated during this period. Female to male ratio was 2.5:1. The classical triad of jaundice, abdominal pain and abdominal mass was noted only in 9 cases (9.1%) of the older children. Six newborn infants (6.1%) had the clinical presentations similar to biliary atresia. All of the patients were diagnosed by abdominal ultrasonography. Operative procedure included intraoperative cholangiography, cyst excision and Roux-en-Yhepatico-jejunostomy. Classification of CDC following Todani's definition revealed type I, type IV and type V in 64 (64.7%), 27 (27.3%) and 1 case (1%), respectively. The survival rate was 97% (96 cases). Only 2 cases died due to severe congenital heart diseases (2) and severe septicemia before the definitive operative procedure (1). Complications included adhesive small bowel obstruction (4), anastomotic leakage (2) and wound dehiscence (2) mostly in infants below one year of age.

Conclusions: Clinical presentations of CDC in infants are different from those in older patients. Ultrasonography is the most available investigation for the diagnosis. Excision of the cyst and Roun-en-Y hepatico-jejunostomy provided satisfactory results with morbidities in some cases.

GERM CELL TUMORS IN CHILDREN: A 10-YEAR RETROSPECTIVE STUDY

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Background: Germ cell tumors (GCT) are relatively common in children. The aim of this study was to report the experience with these tumors at the Queen Sirikit National Institute of Child Health, during the year 1997 - 2006.

Methods: A retrospective review of patients with GCT treated at our institute during 1997 - 2006 was carried out. Results are shown by descriptive data.

Results: There were 102 cases of GCT. Of these, 71% were teratoma (mature 8O%, immature 20%), 20% endodermal sinus tumor, 5% germinoma and 4% malignant mixed GCT. Tumors were located in the ovary in 36 cases,

sacrococcygeal area in 24 cases, retroperitoneal area in 21 cases, testis in 14 cases, mediastinum in 4 cases and central nervous system in 3 cases. Female to male ratio was 2.2:1. Age at surgery was associated with malignant histology only in sacrococcygeal GCT. The high serum alpha fetoprotein level correlated well with the presence of endodermal sinus tumor and malignant mixed GCT. There were 8% recurrent tumors. The overall survival rate was 87%.

Conclusion: The result of GCT treatment seemed to be excellent. However, long-term follow up is necessary.

PLASTIC & RECONSTRUCTIVE SURGERY

ANATOMY OF THE DIRECT CUTANEOUS THORACODORSAL ARTERY PERFORATOR FLAP (TAP Flap)

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Objective: To determine the vascular anatomy of the direct cutaneous thoracodorsal artery perforator (TAP) flap for the design of the thoracodorsal artery perforator (TAP) flap.

Materials and Methods: Thirty dissections of the thoracodorsal arterial system were carried out in a total of 30 preserved cadavers. The pattern of the thoracodorsal artery, cutaneous perforator branch were studied and measured. Statistics were analyzed using SPSS computer program.

Results: Of all cadavers, there were 23 direct cutaneous perforator (76.7%). The direct cutaneous perforator originated directly from the thoracodorsal artery in 15 of 30 dissections. The direct cutaneous perforator did not originate directly from the thoracodorsal artery in 6 of 30 dissections. The direct cutaneous perforator originated directly from the thoracodorsal and another artery in 2 of 30 dissections. The average length of the direct cutaneous perforator was 9.106 cm (1-15.5 cm). The average distance that the direct cutaneous perforators were observed to penetrate the skin was 5.02 cm (1-12 cm) distal to the apex of the axilla and located between anterior axillary line and posterior axillary line.

Conclusion: The results of this anatomic study have a direct impact on flap design with confidence of 76.7% and are very useful in a wide variety of clinical applications.

UROLOGY

IS THE COMBINATION OF ENDORECTAL MAGNETIC RESONANCE IMAGING (MRI) AND MAGNETIC RESONANCE SPECTROSCOPY (MRSI) A USEFUL TOOL TO DECREASE UNNECESSARY TRUS BIOPSY IN PREVIOUSLY NEGATIVE BIOPSY PATIENTS?

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Objectives: Repeated negative prostate biopsies in individuals with persistently elevated or increasing PSA levels can be frustrating for both the patient and the urologist. Magnetic resonance spectroscopic imaging (MRSI) is a method of obtaining biochemical information from a series of voxels placed over the prostate gland. It can be performed as part of endorectal prostate MRI. The biochemical signature of normal prostate has a high citrate peak and a low choline/creatinine peak, whereas prostate carcinoma has the opposite pattern. In this study the usefulness of combined MRI and MRSI for the detection of prostatic cancer foci in men with negative initial set(s) of TRUS biopsy was prospectively evaluated.

Materials and Methods: 23 consecutive patients with persistently increasing serum PSA, at least 1 previous set of negative 12 cores prostatic biopsies and normal digital rectal examination (DRE) were included. Mean age was 65.75 years (range 45 to 78) for cancer-free patients and 64.33 years (55-77) for CaP group. All patients underwent standard TRUS 12-core peripheral zone biopsy with up to 4 additional biopsies targeted at the equivocal or suspected sites

Results: No statistically significant between age, no. core biopsy, total PSA, PSAD and lesion size. In 3 of 23 (13.04%), radiographic images were classified as suspicious and biopsy were positive. Five of 23 (21.73%) had both negative imaging for cancer and biopsy. Fifteen of 23 (65.21%) had suspected lesion on MRI/MRSI but were negative on biopsy. Endorectal MRI and MRSI had 100%

sensitivity, 25% specificity, 16.67% PPV, 100% NPV, and 34.78% accuracy, respectively, for prostate cancer detection.

Conclusions: In our study MRI and MRSI showed high sensitivity and NPV to 100%, while specificity and PPV are low, 25% and 16.67% respectively. Endorectal MRI/MRSI highly predicted negative biopsies. This novelty may be a useful test to rule out the presence of tumors in the prostate gland.

LAPAROSCOPIC SIMPLE NEPHRECTOMY: PERI-OPERATIVE OUTCOMES AT SRINAGARIND HOSPITAL

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Background: Data during the last decade showed that laparoscopic urology has become an accepted and advantageous minimally invasive alternative to the open procedure. In our institution, various laparoscopic urological procedures have been performed, such as laparoscopic simple nephrectomy, laparoscopic radical nephrectomy, laparoscopic radical nephroureterectomy, laparoscopic radical cystectomy, laparoscopic adrenalectomy, laparoscopic stone surgery, laparoscopic high ligation of varicocele, laparoscopic deroofing of renal cyst and laparoscopic hernioplasty. Thus results in shifting from traditional open approaches toward minimally invasive routes by laparoscopy.

Objectives: To evaluate the efficacy and perioperative outcomes of laparoscopic simple nephrectomy in a series of 58 consecutive cases at Srinagarind Hospital during the last 2 years.

Materials and Methods: During the last 2 years, a total of 58 patients in our institution underwent laparoscopic nephrectomy. Their data including demographic and perioperative data were entered into database and analyzed.

Results: Mean age at surgery was 55.3 (0.5-83) years old. The indications for surgery included non functioning kidney in 50 cases and infection in 8 cases. The mean operative time was 123.9 (45-330) minutes. Thirty-five cases were performed by transperitoneal approach and 23 cases by retroperitoneal approach. Intraoperative complications were recorded in 9 cases (15.4%) with bleeding in 6, diaphragmatic injury in 2 and pancreatic injury in one. Six cases (10.3%) were converted to open surgery because of marked adhesion in 5 cases (2 cases had surgery previously) and uncontrolled bleeding in 1 case. Mean estimated blood loss was 143.2 (2-850) ml. Postoperative complications were recorded in 12 cases (20.6%), including prolonged ileus in 7, wound infection in 3, atelectasis in 1 and urinary retention in one case. Mean postoperative analgesic requirement was 15.1 mg of morphine. Mean pain score at postoperative day 1 was 6.8. The mean time to oral intake was 1.7 days, and postoperative period was 4.9 days. Retroperitneal approach was associated with shorter operative time (155 vs 135 minutes, p = 0.016), lesser postoperative ileus (0% vs 20%, p = 0.017) and lower intraoperative bleeding (94 vs 175 ml, p = 0.030).

Conclusions: Laparoscopic urology may be currently considered a routine, safe and effective procedure associated with minimal morbidity, but needs skilled and experience surgeons. In view of the inherent benefits for patients, in terms of reduced pain level, faster recovery and improved cosmetic results, whenever feasible, we prefer to perform laparoscopic nephrectomy by the retroperitoneal approach for benign diseases.

TOPICAL STEROID IS EFFECTIVE FOR THE TREATMENT OF PHIMOSIS IN MALE INFANTS

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Aim: The purpose of this study was to evaluate the effects of non-operative treatment using topical steroids on phimosis in infants and young children.

Method: From June 2003 to May 2005, the parents of children with phimosis were instructed to apply and massage the phimotic skin with 0.05% betamethasone valerate cream twice daily for 2 months. Patients whose parents refused the non-operative treatment underwent circumcision. During non-operative treatment, patients whose parents were not satisfied with the results would undergo circumcision.

Results: Ninety-eight phimotic boys with average age of 32.62 months (range 1 to 144 months) were studied. Ninety-two boys were enrolled for steroid application whereas the other 6 boys preferred circumcision. Of the 92 patients, 79 (85.9%) were satisfied with their results. The other 13 patients whose outcomes clinically improved but did not satisfy their parents finally underwent circumcision. Histologically, circumcised skins of patients initially receiving steroid therapy revealed markedly interstitial edema and slightly increased vasculature. There were no systemic side effects or significant dermal atrophy in our study.

Conclusions: Topical steroid treatment for phimosis is successful in young children. This therapeutic approach is a safe, easy and inexpensive alternative to circumcision.