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Abstracts
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CARDIOVASCULAR THORACIC SURGERY

Open Heart Surgery in Yala Hospital: The First Year Result

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Background: There are a few regional hospitals which can perform open heart surgery because it needs many special personnel and equipments.

Objectives: To evaluate the result of open heart surgery in a new unit of a regional hospital.

Materials and Methods: During Jan. 2001 to Mar. 2002 there were 54 case of open heart surgery performed, 16 males and 38 females. Their ages ranged from 16 to 52 years. The disease were rheumatic valvular heart disease in 40 cases, congenital heart disease 13, and other 1.

Results: The operations performed were MVR 28, MVR with AVR 10, CASD 9, total correction 2, AVR 1, MV repair 1, CPDA 1, TVR with CVSD 1, and repair ruptured sinus of Valsalva 1. There were two serious complications but with no hospital mortality.

Conclusion: It is feasible to set up open heart surgery in the regional hospital, but there should be a good back-up team from an experienced Unit.

Immediate and Mid-Term Results of Mitral Valve Repair in Chulalongkorn Hospital

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Objective: Comparison with prosthesis mitral valve replacement, mitral valve repair has lots of advantages, After valve repair, patients have better left ventricular function, lower rate of thromboembolism and infective endocarditis. We studied our early experience of mitral valve repair.

Materials and Methods: From January 2000 to May 2002, forty two consecutive patients with mitral regurgitation had mitral valve repair. Valve diseases were degenerative in 51.2 per cent, ischemic in 18.7 per cent, rheumatic in 13.9 per cent, infectious in 11.6 per cent, and others in 4.6 per cent. Surgical techniques included P2 quadrangular resection (N = 13; 30.95%), chordal transfer (N 11; 26.19%), only annuloplasty (N = 10; 23.8%), artificial chordae (N = 3; 7.14%), commissural closure (N = 3; 7.14%), and other in 2 cases (4.76%).

Results: Immediate post-operative echocardiogram showed no or trivial regurgitation in 95 per cent and moderate regurgitation in 5 per cent. There was no operative mortality, but one case had hospital mortality. With 1-24 months follow-up, 90 per cent of cases had FC I, and the other (10%) were in FC II.

Conclusions: This preliminary experience had provided promising immediate and midterm results. We believe that mitral valve repair is safe and seem to have a lot better result than mitral valve replacement.

Repair of Truncus Arteriosus at King Chulalongkorn Memorial Hospital

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Objective: Truncus arteriosus is a complex congenital anomaly that imposes severe hemodynamic burden in life. Congestive heart failure often occurs within days or weeks

after birth as pulmonary vascular resistance falls and pulmonary blood flow dramatically increases. Primary repair is preferable to palliation in the treatment of infants with truncus arteriosus. We would like to share our experience with other centers.

Materials and Methods: Between December 1995 and June 2001, there were 9 patients with truncus arteriosus underwent primary repair with homograft valve conduit. Their age ranged from 28 days to 10 months (mean age = 4.78 months). Most of them were truncus type 1. Right ventricle - pulmonary artery continuity was established with a homograft valve conduit in all patients. Bicuspidization homograft valve conduit were use in 6 patients.

Results: There were 2 hospital deaths. The survival was 7/9 patients (77.78%). The bicuspidized homograft valve conduits worked well without significant regurgitation or stenosis.

Summary: Primary repair for truncus arteriosus is treatment of choice. The remodeled bicuspidized homograft valve conduits showed excellent hemodynamic characteristics and appeared to be a good alternative to other types of conduits when an appropriate sized homograft is not available.

Repair of Secundum Atrial Septal Defect: Using the Cardioplegia Arrest or Fibrillating Heart

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Background: Surgical approach of secundum atrial septal defect remains controversail.

Methods: Between February 1979 and December 2001, in these 230 patients having secundum atrial septal, there were 178 females and 52 males. Their ages ranged from 2 to 63 years (mean = 22.36 ± 15.28). Diagnosis was established preoperatively in all patients by echocardiography and in 97 patients by cardiac catheterization.

Results: The clinical manifestation includes dyspnea on exertion in 137 cases (59.6%), recurrent respiratory infection in 33 cases (14.3%), palpitation in 12 cases (5.2%) and leg edema in 7 cases (3.0%). Mean preoperative New York Heart Association functional classification was 1.54. Two types of surgical approach were employed fibrillating heart in 173 (75.2%) and cardioplegic arrest in 57 (24.8%). Follow up ranged from 0-216 months (mean = 43.06 ± 39.40). There was no hospital mortality. Complications occurred in cardioplegic arrest 2 cases (3.5% pericardial effusion and air embolism), and in fibrillating heart 4 cases (2.3% pneumonia, air embolism, low cardiac output syndrome and bleeding). Cardiopulmonary bypass time in cardioplegic arrest was significantly longer than fibrillating heart (51.28 ± 16.66 vs 30.95 ± 15.47 minutes, $P < 0.05$). Mean postoperative New York Heart Association function classification dropped to 1.34.

Conclusion: The cardioplegic arrest approach is not superior than the fibrillating heart approach in repair of secundum atrial septal defect. All patients who underwent secundum atrial septal defect closure were in satisfactory condition.

Predictors of Atrial Fibrillation after Isolated Coronary Artery Bypass Grafting

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Objectives: Atrial fibrillation increases the morbidity of coronary artery bypass surgery. The aim of this study was to find incidence of atrial fibrillation after isolated CABG.

Material and Methods: A total of 107 patients who underwent isolated CABG between September 2001-December 2001 in Central Chest Hospital were studied. Two Off-Pump Coronary Artery Bypass (OP-CAB) patients and two patients who were dead postoperatively were excluded. In hospital mortality was 1.8 per cent.

Results: Demographic characteristics were similar between the groups. Atrial fibrillation (AF) occurred in 29 patients (27%). Preoperative serum creatinine were higher in AF group. Univariate analysis showed that only preoperative diuretic medication was a predictor of AF after CABG (p=0.028). However, hospital stay was not different in both groups.

Conclusion: Predictor of Atrial Fibrillation after CABG was preoperative diuretic medication but Atrial Fibrillation did not increase hospital stay in this study.

Fortan With Hepatic Vein Anomaly

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After the Fontan procedure (without fenestration) most of the patients have good oxygenation. However some patients with hepatic vein anomalies may have hypoxemia due to right to left shunt through this vein

which connected to the left atrium.

We ecountered two patients with left hepatic vein drained ddirectly to the left atrium. One patient with severe hypoxemia 2 months after the Fontan procedure underwent reoperation to occlude the left hepatic vein and another one patient the anomalous left hepatic vein was ligated at the time of the Fontan proocedure. The resulting elimination of the right to left shunt led to marked improvement in the arterial oxygen saturation. There was no changes in hepatic function.

Off-Pump Coronary Bypass Surgery: Initial Experience at the Bangkok Heart Institute

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Recently off-pump coronary artery bypass surgery (OPCAB) has been proposed as potential alternative for the surgical treatment of coronary artery disease. This approach has been tried in many centers around the world including Thailand. This communication is to report our initial experience at the Bangkok Heart Institute. During a period from January 2001 to March 2002, one hundred and thirty-three OPCAB were carried out by our team. They were 81 per cent male, 19 per cent female, with mean age of 61 ± 10 years. Forty per cent of them have diabetes, 7 per cent have morbid obesity, 4 per cent with pre-op creatinine > 2 mg/dl, 7 per cent had history of CVA, 1 per cent PVD, 10 per cent COPD, 60 per cent had previous MI, 29 per cent with CHF, 57 per cent have unstable angina at the time of surgery and only 2 per cent underwent emergent salvage surgery. Thirty per cent of this group had EF < 40, 52 per cent had left main narrowing more than 50, 22 per cent required IABP and 2 per cent was re-operative procedure. The total number of grafts/patients = 4.17 ± 1.28 and close to 1/3 of these patients had all arterial conduits. The LIMA was used in 90 per cent, RIMA 3 per cent, left radial in 62 per cent, right radial in 25 per cent, gastro-epiploic in 8 per cent and vein graft in 71 per cent of the cases. The 30 day mortality was 6.8 per cent and there was no peri-operative MI. One and a half per cent of them had stroke and 1.5 per cent required renal dialysis. The re-operative bleeding occurred in 3 cases (2.3%) and 5.6 per cent required conversion to on-pump procedure. New atrial fibrillation occurred in only 6 per cent and there was no deep sternal wound infection. The mean skin to skin time was 4 ± 0.7 hrs., and intubations time was 5.5 ± 0.9 hrs. First 15 month experience with OPCAB at single institution shows a reasonable immediate outcome to continue utilize this approach and obtain a long-term follow-up.

Slide Trachoplasty with Pericardial Patch Augmentation for the Repair of Severe Congenital Tracheal Stenosis Involving Carina

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Congenital tracheal stenosis is an uncommon but life-threatening condition whose management is still debated due to the rarity of this disease. Patients frequently have associated cardiac, other respiratory, or gastrointestinal anomalies. Various methods of tracheoplasty have been described. Resection and reanastomosis of the trachea with or without cardiopulmonary bypass support is recommended for short segment steosis. For long-segment lesion enlargement-tracheoplasty with a pericardial patch or costal cartilage graft may result in granulation tissue requiring repeated bronchoscopies, tracheostomy, and stents which may produce recurrent stenosis. Slide tracheoplasty offers the advantage of using the patient's native tracheal tissue, and has the potential for earlier extubation and decreased granulation tissue. But extremely long tracheal stenoses or those that involve the mainstem bronchi posted potential limitations of slide tracheoplasty alone and needed additional operative procedures. We had applied slide tracheoplasty in combination with pericardial patch and modified right Blalock-Taussig shunt to a 3 month-old girl with the diagnosis of tetralogy of Fallot and congenital tracheal stenosis involving carina. She had postoperative hyperactive airway reaction and needed prolonged ventilator support. Then tracheostomy was performed for tracheal toilet. Postoperative bronchoscopy, 3 month after surgery, revealed adequate major airway patency.

Aortic Valve Preserving Operation: Central Chest Hospital Experience

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Surgical management of patients with ascending aortic aneurysm and aortic regurgitation is a surgical challenge for cardiac surgeons. Recently aortic valve preserving operation has gained more popularity as an alternative

surgical treatment for this group of patients. Between September 1998 and April 2002, this operation was successfully done in 18 patients at Central Chest Hospital. There were 7 males and 11 females. Their age ranged from 27-77 years old with a mean of 48.1 years. Mean follow-up was 20.5 month. One patient was lost to follow-up and was excluded. The causes included Marfan's syndrome (8), Degenerative aortic aneurysm (6) and annulus aortic ectasia (3). The aneurysms were presented as true aneurysm (7) and dissecting aneurysm (10). There were 3 hospital deaths, 2 from bleeding and the other from low cardiac output. One patient needed aortic valve replacement due to aortic regurgitation at 26 month postoperation. All the remaing patients were in stable condition and improved substantially. We conclude from our experience that aortic valve preserving operation can be done with predicable and stable results. It should be considered as an alternative treatment for patients with ascending aortic aneurysm and aortic regurgitation.

Univariate Analysis of The Pre-Operative Risk Factors in off-Pump Coronary Artery Bypass Surgery

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Pre-operative risk factors have been known to be co morbidity and mortality of coronary artery bypass surgery. This communication is to identify those pre-operative risk variables that could lead to death and complications following OPCAB surgery. One hundred and thirty-three consecutive patients undergone OPCAB surgery at our institution was reviewed. The pre-operative risk factors as listed in the National STS cardiac surgery database including: Age (≤ 70 yrs. vs > 70 yrs), gender (male vs female), diabetes (yes vs no), morbid obesity (yes vs no), renal insufficiency (yes vs no), history of CVA (yes vs no), history of PVD (yes vs. no), history of COPD (yes vs no), history of MI (yes vs no), history of CHF (yes vs no), unstable angina (yes vs no), LVEF ≤ .4 vs LVEF > 0.4, emergent (yes vs. no), LM lesion (LM ≤ 50%, vs LM > 50%), IABP used (yes vs no) were used to predict post-operative death (MR), peri-operative infarction (POMI), stroke, renal failure requiring dailysis (RF), and prolong intubations (PI). Univariate analysis of the significant ($p < 0.05$) variables.

History of MI, CHF, LVEF < 40% and the use of IABP are the predictors of higher operative mortality; female gender is a predictor RF and PI; and history of COPD with poor oxygenation is a predictor of post-operative stroke.

Variable (% of yes)	MR%	POMI%*	Stroke%	RF	PI%
HxMI Yes (60)	11.3				
HxMI No	0				
CHF Yes (29)	16.2				
CHF No	3.3				
LVEF < 40 (30)	17.5				
LVEF > 40 (53)	2.9				
IABP Yes (22)	20.7				
IABP No	3				
Male				0	1
Female (19)				9	9
COPD yes (9)			9		
COPD No			1		

**no (POMI) occurred; Hx MI = history of myocardial infarction: CHF = congestive heart failure: LVEF = left ventricular ejection fraction; IABP = intra aortic balloon pump: COPD = chronic obstructive pulmonary disease.*

OPCAB Surgery : An Evaluation of Extubation Time and Predictors of Failed Early Extubation

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Anesthesia during and after off-pump surgery are critical for the outcome of the procedure. Intubation time has been shown to correlate with ICU time and length of stay. This satudy is to evaluate the extubation time and predictors of prolonged extubation at our institution. One hundred and twenty-three consecutive patients, excluding death and pre-operative tracheostomy (n = 10) were retrospectively reviewed. They were 80 per cent male with the mean age of the entire group of 60 ± 10 years. The anesthetic agents include Fentanyl, Rocuronium Bromide, Midazolam and Sevoflurane. Neosynephrine and Nitroglycerine were used to maintain adequate arterial pressures. Post-operative pain control was mainly with Fentanyl and oral pain medications. The extubation time was divided into 4 groups; 0-2 hrs, n = 64, mean = 1.17 ± 0.5 hrs; 2-4 hrs, n = 23, mean = 2.84 ± 0.5 hrs; 4-24 hrs; n = 34, mean = 12.1 ± 7.5 hrs; > 24 hrs, n = 2, mean = 59 ± 16.2 hrs. The data were collected and analyzed following the guidelines of National STS cardiac surgery database. All pre-operative risk factors included: Age (≤ 70 yrs vs > 70 yrs), gender (male vs. female), diabetes (yes vs no), history of PVD (yes vs. no), history of COPD (yes vs no), history of MI (yes vs. no), history of CHF (yes vs. no), unstable angina (yes vs no), LVEF (≤ 0.4 vs > 0.4), emergent (yes vs no), LM lesion (LM ≤ 50% vs LM > 50%), IABP used (yes vs no) were used to predict failed early extubation (2 hrs.) More than 50% of the patients were extubated in less than 2 hrs. (1.17 ± 0.5 hrs) and only 2 patiens were extubated after 24 hrs.

Univariate analysis revealed old age, diabtes, history of MI, LVEF ≤ 0.4 and the use of IABP were the predictors ($P < 0.05$) of failed early extubation. The findings suggested early extubation is possible in OPCAB surgery and attention should be made when operating in people with old age, diabetes, history of MI, LVEF ≤ 0.4 and the use of IABP.

Early Result of Postoperative Coronary Angiopgraphy in the Off-Pump Coronary Artery Bypass Patients

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Objective: Coronary artery bypass without cardio-pulmonary bypass or off-pump coronary artery bypass (OPCAB) is an alternative procedure for coronary artery revascularization. The purpose of this study is to evaluate the early result of this procedure at Siriraj Hospital.

Patients and Methods: From September 2001 to April 2002, we performed off-pump coronary bypass on eight selected patients. Operative data were collected and postoperative coronary angiography were studied before discharge.

Results: Early postoperative coronary angiography revealed good patency of all grafts. There were no mortality and no conversion to conventional precedure.

Conclusion: In selected case, early result of postoperative coronary angiography in the OPCAB patients demonstrated good anastomoses. However, long term follow up should be further evaluated.

Initial Experience with All Arterial Off-Pump Coronary Artery Bypass Surgery

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Recent trend of coronary bypass surgery is to use all arterial conduits and off-pump approach. This study is to evaluate the initial experience at the Bangkok Heart Institute. Forty consecutive patients at our institution were reviewed. They were operated upon between January 2001 and March 2002. The mean age was 55.4 ± 3.5 years. There were 33 males and 7 famales. The pre-operative risk factors included: diabetes 33 per cent, morbid obesity 8 per cent, COPD 10 per cent, history of previous MI 46 per cent, history of CHF 18 per cent. Eighteen per cent of them had EF of equal to or less than 40, 45 per cent has left main stenosis > 50, 52 per cent had unstable angina, one fourth of them required the use of IABP and 2 patients underwent re-operative surgery. The total number of grafts/patient = 3.41 ± 1.4; LIMA was used mainly to LAD and diagonal arteries (90%), RIMA was used to the RCA in 10 per cent, left radial was used in the circumflex system (82.5%), right radial was used in 25 per cent and gastro-epiploic in 22.5 per cent to the branches RCA. The 30-day mortality was 2.5 per cent and there was no peri-operative MI. None of the patient had stroked or required renal dialysis. The re-operative bleeding occurred in one case (2.5%). No patient required conversion to on-pump procedure and no patient developed new atrial fibrillation. The skin to skin time was 3.9 ± 0.9 hrs and intubation time was 5.0 ± 8.6 hrs First 15-month experience with OPCAB utilizing all arterial conduits at single institution shows a reasonable immediate outcome to continue utilize this approach and obtain a long-term follow-up.

Effect of Protamine and Tranexamic Acid Irrigation of Mediastinal bleeding in Openheart Surgery

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Background: Bleeding after open-heart surgery still a problem of serious concern. We hypothesize that local low dose tranxemic acid and protamine irrigation in the mediastinum before chest closure decrease postoperative bleeding in open-heart patients.

Method: Prospective double-blinded randomized study was carried out on 60 patients divided into 2 groups of 30 patients each. Group A, study group, received 500 mg of tranxemic acid plus 50 mg of protamine in 100 ml of NSS irrigating the mediastinum locally before chest closure; while group B received 100 ml of NSS irrigation before chest closure. Mediastinal drainage, coagulation profile, blood and blood product transfusion, reoperation and mortality were recorded.

Result: Both groups were comparable; there were no mortality or reoperation for bleeding. No significant difference noted regarding mediastinal drainage or blood products used. The only significant difference noted were mediastinal drainage time and length of stay which favor the study group. Furthermore in the warfarin group chest tube drainage duration was significantly less in the study group.

Conclusion: Local mediastinal irrigation with low dose tranxemic acid and protamine did not reduce post operative bleeding in open-heart surgery, but reduced the mediastinal drainage duration and hospital length of stay.

Can Tranexamic Acid Improve Post Cardiopulmonary Bypass Hemostasis? A Double-Blind, Prospective, Randomized, Placebo-Controlled Study.

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Objective: This study was designed to assess the clinical effect of tranexamic acid on postoperative hemostasis.

Materials and Methods: One hundred and one patients who underwent their first episode of open heart surgery requiring cardiopulmonary bypass, were prospectively randomized into two groups, A and B. Fifty one patients in group A were the control group, and received placebo (0.9% NSS 20 ml.) intravenously before sternotomy. The fifty patients in group B were the experimental group, and received tranexamic acid 1000 mg (20 ml. of 5% W/V tranexamic acid) intravenously before sternotomy. The patients, anesthesia personnel, perfusionists and all members of the surgical and intensive care unit teams were blind to the grouping.

Results: Both groups were demographically and hemodynamically matched. There were no differences in blood chemistry between the groups. Tranexamic acid significantly reduced bleeding from the chest drain (control group = 667.80 ± 460.94 ml., tranexamic acid group = 391.43 ± 256.81 ml., p = 0.002) and significantly reduced the requirement of blood transfusion (control = 4.88 ± 5.04 units/patient, tranexamic acid = 2.69 ± 2.64 units/patient, p = 0.0042, 45% reduction). Tranexamic acid also reduced the requirement of hemostatic drugs postoperatively. There were no difference in reoperation rate between the two groups.

Conclusion: It seems that there are advantages in using tranexamic acid as a prophylactic treatment for postoperative bleeding. Tranexamic acid can reduce the amount of postoperative transfusions, thus reducing the risk of disease transmission from blood products and highly increase cost effectiveness.

UROLOGY SURGERY

Percutaneous Nephrolithotomy (PCNL) in Previous Operated Open Nephrolithotomy

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Introduction: Nowadays, Percutaneous Nephrolithotomy (PCNL) was accepted to be the minimally invasive surgery for large renal and upper ureteric calculi. Many patients who had previously operated upon with open nephrolithotomy returned with resurrent stone that need PCNL treatment. The problems of the previously operated open nephrolithotomy for PVNL are adhesion around kidney and retroperitoneum and also the distortion of the pelvocaliceal anatomy. We compare the results and complications of the patients who had and had not received previous open nephrolithotomy prior to PCNL.

Patients and Methods: Sixty-six calculi in 64 patients who had previous open Nephrolithotomy (Group I) and 66 calculi in 65 patients who never had previous operation (Group II) were treated with percutaneous nephrolithotomy. Of Group I, the duration of previous open nephrolithotomy before PCNL was averaging 6.5 year (4 month to 14 years). In both groups, PCNL were done by standard technique with serial amplatz dilators until 30 F. Upper pole access under fluoroscopic guidance was achieved in most of patients. The success rate, analgesic requirement and complication were compared between both groups.

Results: Stone free rate was 83 per cent and the fragment of stone less than 4 mm was 15.5 and 19 per cent in group I and group II, respectively. Failure was found in one case of group I due to severe distortion of collecting system. Only operative time is significantly longer in group I as compared to group II. No major complication was found in both groups.

Conclusion: Percutaneous Nephrolithotomy (PCNL) in patient who had previous open nephrolithotomy is achievable and safe without more complication compared with the PCNL of non-operated even with more technical difficulty of dilation due to adhesion around the kidney and retroperitoneum.

Follow-up of Long-Term Treatment with Clean Intermittent Catheterization for Neurogenic Bladder in Children

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Objective: To assess the long-term follow up of neurogenic bladder in children born with myelomeningocele treated by clean intermittent catheterization (CIC) and compare the results between the early treatment group (<1

year old) and the late treatment group (> 3 year old).

Methods: Thirty-six cases of pediatric patients with myelomeningocele who where treated in the first year of life (group 1) and 36 cases who were treated after 3 years old (group 2) were followed up regularly for 15 years. All medical records were reviewed and long-term results of treatment including rising of BUN, creatinine, development of hydronephrosis, recurrent of upper urinary tract infection as well as the number of augmentation cystoplasty needed in both groups were noted.

The Pears Chi-square test, Mann-Whitney test and Kaplan-Meier survival analysis were used as statistical methods. A $p<0.05$ was considered statistical significant.

Results: The mean age at beginning of treatment in group 1 was 6.88 months (ranged from 3-11) and was 17.44 months (range from 37-60) in group 2. Rising of BUN and creatinine was found in 12 cases in group 1 and 19 cases in group 2. The patients in late treatment group showed earlier and worsen of renal function at the last follow-up. Hydronephrosis was found in 10 cases in group 1 and 18 cases in group 2. The patients in group 2 also had earlier and more severe hydronephrosis in the long-term. Augmentation cystoplasty was needed in 4 cases of group 1 and 6 cases of group 2. The result of surgery was better in group 1 than group 2. No statistical significant was shown regarding to upper tract infection between the two groups.

Conclusion: For most patients and with close long-term follow up, early treatment of neurogenic bladder in children born with myelomeningocele by intermittent catheterization yielded better results. In our experience, early treatment is recommended as soon as possible especially in the first year of life.

Adventage of Uretheral Lengthening and Reimplantation (Kropp Procedure) for Urinary Incontinence in Patients with Neuropathic Bladder

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Objectives: Incontinence in neuropathic bladder has been treated by increase bladder compliance with augmentation cystoplasty and increase urethral resistance by several technics. We evaluate the effectiveness of Kropp procedure compared with rectus fascial slign in achieving continence in neuropathic bladder.

Materials and Methods: We reviewed the records of 17 patients with neuropathic bladder secondary to myelodysplasia or traumatic spinal cord injury who underwent augmentation cystoplasty with Kropp procedure in 6 and augmentation cystoplasty with rectus fascial sling in 11. Mean patient age was 14 years (range 5 to 36). All patients were incontinent despite maximal anticholinergic pharmacotherapy and intermittent catheterization. Videourodynamic evaluation was performed pre and postoperatively. Specific urodynamic criteria for surgery included low compliance bladder and bladder neck incompetence.

Results: With a mean follow up of 8.8 month (range 1.5 - 60), urinary continence (defined as complete dryness for at least 4 hours between catheteraizations) was achieved in 5 of 6 patients (83%) in Kropp procedure group and 5 of 11 patients (45.5%) in rectus fascial sling group. Two patients who remained intermittent leakage due to sphincter weakness after sling procedure were successfully treated with Kropp procedure, while 5 patients with stress incontinence between catheterization were managed by conservative treatment.

Conclusion: Kropp procedure can be effectively used in all our patients for neuropathic bladder with incontinence and seems to be a good alternative method for the patient who previously failed the sling operation.

One Center Experience of Retroperitoneoscopy

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Objective: To report the experiences in one center of the efficacy and safety of retroperitoneoscopic procedures (RLPs).

Introduction: Since June 1997 until April 2002 more than 100 laparoscopic urological procedures have been performed in our urological unit. Excluded learning period, we retrospectively analyzed our last one year of 38 RLPs.

Patients and Methods: During May 2001-April 2002, 39 RLPs were performed in 38 patients (mean age 50, range 23-93). Under general anesthesia, in lateral position, retropertioneal space was accessed. The difficult procedures were defined in 25 operations (nephrectomy, radical nephrectomy, nephroureterectomy, adrenalectomy, pyeloplasty, pyelolithotomy, excised renal mass) and simple procedures in 14 operations (biopsy, ureterolithotomy< unroofing renal cysts, nephropexy, drainage).

Result: In difficult procedures, there were 4 conversions (1 stone migration, 1 bleeding, 2 for dissected kidney & intact specimen removal after endoscopic renal hilum controlled), 1 port site hernia, I wound infection. In simple procedures, there was no conversion, 1 prolonged

urinary drainage (>5 days). All cases improved with conservative means.

Conclusion: Retroperitoneoscopy is a reasonably safe and efficient procedure with encouraging results.

Urinary Cystine Crystal Induction Technique

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Background: The cause of cystine lithiasis is cystinuria in which there is an increase of urinary excretion of the dibasic aminoacids: cystine, ornithine, lysine and arginine (COLA) in the urine. The disease is a complex autosomal recessive heredıatry defect, and the mutant genes are supposed to be in the short arm of chromosome two. The clinical interest of the disease is its resistance to Shockwave and high recurrent rate. The incidence has been reported to be 1-3 per cent in the United States. Of more than 7,000 urinary stone cases seen at Ramathibodi Hospital, Bangkok, Thailand, we only detected 4 cases with cystine stones (<0.06%) and probably none found in other hospitals. These cases illustrated that an index of suspicious was required to identify patients with cystine stones with a simple and less expensive technique. The urinary cystine crystal is unstable in room temperature and in body pH range. We developed the urinary cystal induction technique which is more stable and identifiable by light microscopy.

Materials and Methods: The test group is the urine from two cystinuria patients, a 30 year-old woman and a 40 year-old man, confirmed by sodium cyanide nitroprusside technique and the crystal is confirmed by infrared spectrophotometry. The control group is urine from three noncystinuric urinary stone and one without stone disease patients. About 3000 ml of 24 hrs. urine from both groups in the thymol preservative are studied by factorial design. The urine varied in pH from 2-7, incubated at 37°C for 12-48 hrs., and cooled in 4°C for 1-86 hrs. The sediments from the centrifuged urine are examined by light microscopy.

Results: The optimum factors are: at pH 3.5, 37°C incubation for 48 hrs., and cooling time at 4°C for 24 up to 86 hrs, multiple complete and typical hexagonal transparent crystals are found in the test specimens compare to none of the cystine crystal in the control group. When compare among the first group (cystinuria), the regular urinary exam find very few incomplete and decayed cystals. Much larger amount of other urinary crystals in control group is also observed when compare to the routine urinary examination of the same patients.

Conclusion: The urinary crystal induction technique could induce complete and more stable in much larger amount of cystine crystals than the routine urinary examination. However more test specimens is needed before statistical conclusion.

The Eficiency of Percutaneous Nephrostomy (PCN) Using Rajavithi Catheter Comparison with Pigtail Catheter, A Prospective, Randomised Clinical Trial

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Objective: The treatment study under prospective randomized clinical trial was carried out to determine the underlying objective signifying the comparative analysis in cost efficiency over effectiveness of PCN instruments for patients in need of PCN treatment between Rajavithi (local made) catheter and Pigtail catheter. As well as the complication study in order to distinguish and compare the performance of both catheter devices over its costs.

Materials and Methods: The study was performed over the 2-year period, between November 1, 2000 to February 6, 2002. The subjects used in the study were urinary tract obstruction patients with age over 18 years old who recieved treatment by PCN catheterization from the Department of Urology, Rajavithi Hospital. The total of 64 PCN tubes has been used for the treatment study (N=64) under the prospective randomized clinical trial on purposing sampling in which allocated by block randomization method. The randomized patients were seperated into 2 groups, the first group were treated with 32 Rajavithi catheters and 32 of Pigtail catheters for the second group. The data filing of urine output through PCN tubes and the level of BUN/Cr from blood sample taken from patients prior and after the PCN insertion were recorded and kept seperately between 2 groups. The condition of.... took place upon 4 weeks treatment period were dued or after the mulfunction of PCN tube has been detected. Each type of PCN tubes were calculated, interpreted and evaluated in term of efficiency and effectiveness from the percentage of success and non-success rate. The success rate was indicated by the satisfactory level of urine output from the PCN tubes greater than 100 ml. (output > 100 ml.) per day throughout the treatment period.

Result: The treatment of altogheter 64 PCN tubes were conducted with 45 patients. Out of 45 patients, there was 15 male and 30 female with age range between 29-79 year old (mean = 55.6). The complication of 11 tubes or 34 per cent were detected from the first group (Rajavithi Catheter) which can be categorized as followed; 1 dislodged (3.1%), 1 mulpositioned (3.1%) and 5 blocked (18.8%). The 75 per cent of Rajavithi catheters or 24 tubes used in

the first group were functioning properly. In comparision with the second group (Pigtail catheter), 15 tubes (46.9%) were mulfunctioned, 3 blocked (9.4%), 1 retained catheter fragment (3.1%), 1 infected (3.1%) and 2 mulpositioned (6.3%). While 78.1 per cent or 25 tubes of Pigtail catheters were functioning properly. The statistic test which represented statistically significant regardign the relationship between the type of catehters with the number of non-success tubes was performed by using Chi-Squares test. The result shown neither non-success rate (P-Values = 0.7679294, Odds ratio = 1.19) nor complication rate (P-value = 0.3086515, Odds ratio = 0.59,) occurence have the relationship with the treatment and usage of both bypes of catheters (Rajavithi and Pigtail). Later on, the analytical study of cost efficiency and effectiveness from each type of PCN devices in the prospective of medical service providers addressed the significant comparison of the cost of Rajavithi and Pigtail catheter. The retail price of Pigtail catheter is 1,600+baht/tube while the production cost of Rajavithi catheter is only 20 baht)/tube (estimated price).

Conclusion: Analysis revealed no real relationship between the type of catheters from Rajavithi and Pigtail in occurrences regardign to the level of non-success and complication ratio. It can be concluded that the assessment of cost effectiveness analysis between 2 type of PCN tubes with the equivalent treatment performance, Rajavithi catheter is far more economy. In the aspect of medical service providers, the cost implication of Rajavithi catheter would offer the lowest cost possible and likely to lower the operation cost of the PCN treatment of the Urology Department if the full-line production could be initiated.

Comparative Study of Renal Function Between Standard and Modified Anatrophic Nephrolithotomy by Radionuclide Renal Scans

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Objective: To compare preoperative and post-operative renal function between standard and modified anatrophic nephrolithotomy by Technetium-DTPA renal scan in selected patients with complex staghorn calculi.

Materials and Methods: From July 2001 to March 2002, standard anatrophic nephrolithotomy (sANL) was performed on 7 patients with complex staghorn calculi. Modified anatrophic nephrolithotomy (mANL) was done in another group of 8 paitents with the same condition. Preoperative and postoperative renal function were assessed with Technetium-DTPA renal scan.

Results: Mean patient age was 41 years in the sANL group and 45 years in the mANL group. M : F ratio was 4 : 3 in the sANL group and 5:3 in the mANL group.; Median surgical time was 205 minutes in the sANL group compared with 180 minutes in the mANL group (P = 0.03). Median estimated blood loss was 300 ml in the sANL group and 275 ml in the mANL group (P = 0.17). Median per cent reduction of GFR on operated kidney was 9.12 (-30.03 to -3.15) in the sANL group and 27.25 (-41.81 to 1.55) in the mANL group (P= 0.13). Residual small stone was seen in one patient of the sANL group and ESWL was used for stone framentation. There were no serious short term complications.

Conclusions: sANL seemed to preserve more renal function than mANL but not statistically significant. Operative time was significantly longer for the sANL group. In patients with poor renal function, sANL should be the procedure of choice. However further study should be done to confirm the results of this study.

Surgery for Stress Urinary Incontinence : A Prospective Randomized Trial of Pubovaginal Sling and Vaginal Wall Sling

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Purpose: To compare the results of Pubovaginal sling and Vaginal wall sling for the treatment of stress urinary incontinence in female.

Materials and Methods: Between February 2001 and December 2002, a prospective randomized trial study was done to compare safety and efficacy of pubovaginal sling versus vaginal wall sling in the management of women with urinary incontinence due to intrinsic sphincter dysfunction or anatomical incontinence. Twenty-six women 42 to 68 years old (mean age 51 years) were treated consecutively for stress urinary incontinence (SUI). Fifteen were treated with fascial slings (group A) and 11 with vaginal wall slings (group B). Twenty-one patients had type II SUI and 5 patients had type III SUI (ISD); none had preoperative detrusor instability. Measures of outcome included efficacy based on SEAPI-QMN, post operative presence of stress or urge incontinence, frequency of complications, operative times, postoperative pain, length of hospitalization, length of CIC time and mean global evaluation.

Results: All patients were followed for at least 3 months after surgery (median 7 months). A total of 20 and 6 women received spinal and general anesthesia, respectively. SEAPI-QMN decreased from 6.3 to 0.8 for group A and from 6.09 to 0.9 for group B. No patient in either group

had persistent stress incontinence. Urge incontinence was present in two of group A patients and one of group B patient. No serious postoperative complications were encountered in both groups. Post operative pain and operative times for group B patients were significantly lower than for group A patients. Length of hospitalization, length of CIC time and mean global evaluation were not statistically significant between the two groups.

Conclusion: In the short term follow-up, both pubovaginal sling and vaginal wall slings were effective in treating women with SUI. However, the use of vaginal wall sling resulted in significantly shorter operative times and lower post operative pain when compared with pubovaginal sling. Therefore, the vaginal wall sling should be the preferred surgical method of treatment for SUI.

Microsurgical One-Layer Vasovasostomy in King Chulalonngkorn Memorial Hospital

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Objective: To present a simplified microsurgical one-layer vasovasostomy for the treatment of a patient with obstruction of the vas deferens.

Method: Video presentation

Technique: With 10-0 nylon cutting needle at 30 cm lengths with two arms, we devide into 2 sutures, the first suture going through the whole layer from outside of the proximal end passing intima to inner layer of the distal end and coming out as one layer suture, running the suture to the second and third stitch as the simple continuous stitch. Then we cut the nylon string between the first and second stitch, ligating the first stitch with surgical knot then proceed with second and third stitches in order, also recognizing that the 10-0 nylon needed to be very gentle, tender, loving care handling.

Once the sutures were on 3 or occasionally 4 stitches, we then turn the vascular approximater to the opposite side, at this stage we can see the sutures made on the back wall, and try to reassure the intima not to occlude the lumen. The same technique was done in the other side. Additional sutures can be made on the vasal wall. It is not necessary to include the whole layer because the cutting edge of the needle may rupture the previous stitches.

Results: From January 1998 to December 2000, 33 post-vasectomized patients received vasovasostomy by this microsurgical techniques in King Chulalongkorn Memorial Hospital showed surgery results of 21 successful patients with 64 per cent patency rate and 40 per cent pregnancy rate. The average operative time was 102 minutes.

Conclusion: The technique of microsurgical one layer vasovasostomy in King Chulalongkorn Memorial Hospital is simplified with low cost and short operative time, and has a good outcome of patency rate and quite good outcome of pregnancy rate when compared to other studies. We proudly present a simplified microsurgical one-layer vasovasostomy that yields good results even though in new urologist.

PEDIATRIC SURGERY

Physical Abuse in Children: A Surgen's Perspective

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Background: Physical abuse in children is one category of child abuse which the surgeons are usually consulted. Its prevalence is anticipated to be increased as a result of the more stressful society. The natures of the victims, the perpetrators, the injuries, the management and its outcomes are the crucial data for the handling of this complicated problem.

Materials and Methods: Retrospecitve data collection was carried out from the records of all children diagnosed with physical abuse, who were admitted to the Children's Hospital, Bangkok, during a recent ten-year period (1992-2001).

Results: Of the 12 intentionally injured children, all but one were younger than 5 years of age, and half were younger than 1 year of age. Two-thirds of which occurred in the last 4 years. Ten abusers were males. Head injury, abdominal injury, fractures, skin and soft tissue injuries were seen in 4, 6, 7 and 11 patients respectively. Several of which had multiple injuries. Seven patients required surgical intervention; two for head injury, and five for abdominal injury. One patient died from massive hemorrhage. Of the eleven who recovered, two were discharged home, but nine ended up in charitable institutions.

Conclusion: Direct blows were the usual mechanism of trauma. Head and abdominal injuries were often severe and required surgery. Fractures were mostly multiple and thus were a good clue to the diagnosis. Long-term fate of these victims are miserable.

Acute Scrotum in Children : A 10-year Review

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Objective: To study clinical presentation and outcome of acute scrotum patients who had underwent scrotal exploration.

Material and Method: A retrospective review of patients who underwent scrotal exploration for suspected testicular torsion between January 1992-December, 2001 at the Queen Sirikit National Institute of Child Health was made.

Results: Thirty-six patients were included with ages ranged between 19 days and 16 years. Of these, 15 (42%) were found to have testicular torsion with a testicular salvage rate of 53 per cent, 6 (16%) had a torsion of testicular appendage, 8 (22%) suffered from epididymoorchitis, the others were hernia, hydrocele and undescended testis. The common symptoms of testicular torsion were pain (15/15; 100%) and scrotal swelling (13/15; 86%). Five had torsion of the undescended testis. Mean duration of symptoms before surgery was 2.7 days. In this study, all testes of patients whose symptoms presented within 24 hr before surgery had been recovered, the others had a testicular loss rate of 70 per cent (7/10).

Conclusion: Scrotal exploration should be performed in acute scrotum urgently because time is the dangerous enemy of the testicular survival in torsion of testis.

Congenital Duodenal Obstruction: A Review of 304 Cases

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Three hundred and four children were treated for congenital duodenal obstruction during 1985-2001. There were 177 boys and 127 girls. Fifty-three out of 262,791 neonates born at the Rajavithi Hospital were found to have congeniital duodenal obstruction (1:4958). Prematurity was noted in 129 patients (42.4%). Two hundred and thirteen had an intrinsic cause (atresia, stenosis or web), 82 had an extrinsic cause (malrotation or congenital bands), while 13 had various combinations of these.

Symptomatology included bilious vomiting (77%), non-bilious vomiting (11%), jaundice (39%), dehydration (36%) and abdominal distension (26%). Although all of duodenal atresia were diagnosed by classic double-bubble sign, 8 patients with incomplete obstruction had normal finding in initial plain film. One hundred twenty-six had associated anomalies, including Down's syndrome (26%), cardiac defect (19%), genito-urinary defect (5.2%) or imperforate anus (4.6%). The operative repair of the various defect included duodenoduodenostomy (48%), web excision with duodenoplasty (16%), duodenoplasty (5.9%), Ladd's procedure (25.9%) or combination of the above (3.9%).

The overall mortality rate was 14.8 per cent. The causes of death included sepsis, cardiac anomalies and pneumonia. The morbidity included pneumonia (16.3%), sepsis (11.3%), anastomotic leakage (3.6%) and wound infection (8%).

Malignant Peripheral Nerve Sheath Tumor Arising in Previously Irradiated Neuroblastoma : A Case Report

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Objective: To report a rare case of malignant peripheral nerve sheath tumor arising in a previously irradiated neuroblastoma and review of literature.

Introduction: We studied a 19-year-old girl who at the age of 7 months was diagnosed with neuroblastoma stage IVs. She received chemotherapy with deep radiation therapy as treatment without operation and had been followed up regularly. Until the age of 13 years old she was dismissed from pediatric OPD where she was signed cured of disease. Following an 18 years interval, she returned to ER with right flank pain and was prescribed with muscle relaxant for treatment of myofascial pain for 1-2 years. She developed a firm mass protruding from beneath her right rib cage. Imaging study showed an inhomogenous mass at right suprarenal area. Biopsy from the mass was reported as malignant peripheral nerve sheath tumor. The mass was later then totally removed and the girl received radiation therapy afterwards.

Conclusion: The routine clinical and imaging follow up of patients with neuroblastoma especially those with prior history of irradiated neuroblastoma is mandatory throughout their childhood into adult life. Because not only they risk of recurrence but they also may develop a second malignancy such as malignant peripheral nerve sheath tumor in which early detection can provide better prognosis.

Corrosive Ingestion in Children : A 10-year Retrospective Study

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Objective: To analyse the clinical feature, investigation, treatment and complication of corrosive ingestion

in children.

Materials and Methods: The records of 40 children hospitalized following corrosive ingestion at Queen Sirikit National Institute of Child Health (QSNICH) from 1992 to 2001 were reviewed.

Results: Thirty-three patients were admitted initially at QSNICH after ingestion and 7 patients were referred after developing complications. There were 24 boys and 16 girals with ages ranged from 3 months to 12 years. Seventeen patients ingested acid while 22 patients ingested alkali. The causes of ingestion were accident, child abuse, and suicidal attempt in 37, 2, and 1 respectively. Thirty-two patients were admitted within 24 hours after ingestion. The most common symptom was vomiting (64%) and most common sign was burn of the oral mucosa (48.5%). Esophagoscopy was performed in 17 patients and esophageal burn was noted in 15 patients. Twelve of whom were treated with antibiotics and steroids. Six patients in 33 patients developed complications, in addition to 7 patients who were referred because complications, the complications were esophageal stricture in 8 cases, gastric outlet obstruction in 4 cases, and esophageal leak in one. Only acid ingestion patients developed gastric outlet obstruction. All esophageal strictures were treated by esophageal dilatation and one of them needed esophageal replacement. Three cases with gastric outlet obstruction were treated by resection with gastroduodenostomy and phyloroplasty in the other one.

Conclusion: Corrosive ingestion in children is not uncommon and the surgeons have a major role in its management.

Correlation of Manometry Profiles and Functional Outcome of the Neorectum

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Introduction: After the definitive surgery, a significant amount of pediatric patients with congenital anomalies of anorectum suffered from constipation. Whether congenital dismotility of rectum or surgical dissection accounted for the pathophysiology of this condition remains to be elucidated.

Objective: To compare the manometry profile of the neorectum between the cases with constipation and cases with satisfied results.

Materials and Methods: From February 2001 and April 2002 twenty-two anorectal manometre evaluations were conducted as a part of follow-up procedure in 19 cases of anorectal malformations. Manometric profiles studied were mean anal pressure (mrAP), mean rectal pressure (mrRP), mean resting anorectal gradient (mrARG), peak squeeze pressure (pSq) and presence of rectoanal inhibitory reflex (RAIR). Anal cutaneous sensation was also tested. The patients were grouped into 'good functional result' and 'constipation' by clinical evaluation and clinical scoring. Manometric profiles of the two groups were compared by unpaired Student-T-test for parametric data and Chi-square test for non-parametric data. Statistical significance was set at the p-value less than 0.05.

Results: Age, type of the malformations and type of operation did not significantly differ. Clinical scores in cases considered as 'good result' ranged from 10-13, whereas the scores in cases of 'constipation' were 6-9. There was significant difference in the mean clinical between two groups ($p<0.01$). mrAP, mrRP, mrARG, and pSq in cases with good result were 30.21, 9.17, 21.04 and 66.78 cm-water, respectively. mrAP, mrRP, mrARG, and pSq in cases with constipation were 32.44, 8.56, 24.11, and 112 cm-water, respectively, and there were no significant different in these profiles. Ten out of 13 studies in good result had RAIR detected whereas none was found in constipation group ($p<0.01$). Eleven in 13 examinations in good result revealed responses to sensation test whereas 4/9 in constipation group did so (p 0.017). One case who had clinical conversion from constipation to good result also showed positive conversion of the RSR.

Conclusion: Rectoanal inhibitory reflex and rectal sensation plays crucial roles in rectal function. Awareness in preservation of these functions should be practiced during the reconstruction techniques and postoperative bowel rehabilitation.

Peri-Operative Factors Predicting Outcome of Hepatic Porto-Enterostomy

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Introduction: Without hepatic transplantation, hepatic porto-enterostomy is the only definitive surgical therapy for an infants whith biliary atresia. Unfortunately, clearance of jaudice by the procedure is not promising. Pre-operative data that may predict the outcome is of great value in selection of the surgical candidates. Early post-operative determinants of outcome also help in follow-up planning.

Objective: To determine peri-operative factors influencing jaundice clearance after hepatic porto-enterostomy in infnats with biliary atresia.

Patients and Method: Clinical and laboratory data of pediatric patients undergoing hepatic porto-enterostomy

in Songklanagarind Hospital during the year 1988 and 2001 were reviewed regarding age at manifestation, age at operation, signs of portal hypertension, surgeon, anatomic type of biliary atresia, liver function profiles and their changes after the procedure, and liver pathology. Univariate analysis were made against clearance of jaundice, which were classified as good clearance or jaundice free (TB < 2 mg%), fair clearance (TB 2-5 mg%) and poor clearance (TB > 5 mg%). Death within the 30th post-operative day was classified as operative death and excluded from the result analysis. Statistics used were Chi-square of Fisher's exact test for non-parametric variables, Student-t test for parametric variable with normal distribution and Mann-Whitney test for the other parametric variables. Statistical significance was set at p-value less than 0.05.

Results: There were 62 infants operated during the 13-year period. Four cases of operative death and a case that lost to follow-up before the second post-operative month were excluded. The median age at the operation was 78 days (34 - 326 days). Twenty-four cases (42.1%) presented with signs of portal hypertension. After the operation, 18 cases (34.6%) had jaundice free, 6 cases (11.1%) had fair clearance and 32 cases (54.2%) had poor result. Considering fair and good clearance as 'improved' result, factors that significantly associated with this result were age at operation (p 0.01) and duration of jaundice (p 0.03). Signs of portal hypertension were not demonstrated to be a risk factor for poor outcome. Decline of total bilirubin at the first week and the first month period was significantly correlated with the outcome (p<0.01). Cholangitis within the first post-operative month significantly had adverse effect on jaundice clearance (p0.02).

Conclusion: Age of the infants and decline of total bilirubin were the key predictors of the successful hepatic porto-enterostomy.

Slide Tracheoplasty: The Technique for Managing Tracheal Stenosis in the Infant

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Background: Congential tracheal stenosis is the rare occurrence of an intrinsic narrowing of the trachea due to complete cartilaginous ring. This malformation is difficult to manage and can be life threatening. The symptoms were the manifestation of large airway obstruction, including inspiratory - expiratory stridor, recurrent pneumonia, dyspnea and cyanosis. The onset may start at birth or few months later. Because of the narrow diameter of the infant trachea and long segmental involvement make the repair is difficult and dangerous.

Objective: The purpose of this presentation is to report our experience with the approach to congenital tracheal stenosis in four infants, including the diagnosis, investigation, operation and result.

Materials and Methods: From April 2001 to February 2002, 4 infants underwent repair of congential tracheal stenosis, using slide tracheoplasty technique. This procedure was performed by dividing the stenosis at the midpoint, splitting the proximal and distal narrowed segment on the opposite surfaces and sliding to fix together. Cervical approach with minimal upper median stenotomy was adequate in one case. The others need complete median sternotomy approach. Two patients were put on assisting cardiopulmonary bypass because of associated cardiovascular anomalies. The others could be operated successfully under modification of conventional general anesthesia.

Results: There was no operative mortality. Three patients were weaned off ventilatory support within 4 days post operatively. The longest follow-up, one year after the first patient's operation, did not show any sign of recurrent stenosis and all of our patients still alive.

Conclusion: Our preliminary result shows that slide tracheoplasty is simple, attractive and suitable for reconstruction of congenital tracheal stenosis in the infant.

Risk Factors of Failed Fundoplication for Gastroesophagel Reflux in Pediatric Patients : A Case-control Study

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Background/Purpose: Most studies on risk factors for recurrent gastroesophageal reflux disease (rGERD) after fundoplication have not controlled for potential confounding factors making it difficult to infer causal relationship. The purpose of this study was to identify significant risk factors while controlling for significant confounding factors.

Methods: A chart-based, matched case-control study was conducted at a teaching children's hospital. Cases (n = 116) were identified as rGERD meeting one of the following criteria: 1) reoperation for rGERD, 2) symptomatic rGERD confirmed by UGI series, esophagogastroduodenoscopy (EGD), or pH monitoring, or 3) postoperative reinstitution of antireflux medication for >8 weeks. Controls (n=209) were matched for surgeon, surgical approach (laparoscopic or open), fundoplication technique (partial or complete), and approximate operative date. The

multivariable associations were analyzed by conditional logistic regression with a p value of < 0.05 considered significant.

Results: Significant risk factors for rGERD were age < 6 months (OR = 3.6, 95%CI: 1.7, 7.5), pre operative hiatal hernia (OR = 3.2, 95%CI: 1.4, 7.3), postoperative retching (OR = 5.1, 95% CI: 2.6, 10.0), and postoperative esophageal dilatation (OR = 10.8, 95% CI: 1.8, 65.4). Significant associations were not found with neurological impairment, gender, race, socioeconomic status, nutritional status, pulmonary disease, steroid use, nor other perioperative incidents such as seizures, or acute exacerbation of pulmonary disease.

Conclusion: This study identifies young age, hiatal hernia, post-operative retching and postoperative dysphagia requiring dilatation as important risk factors for rGERD following pediatric fundoplication. Further systematic prospective studies are required to confirm the validity of these findings. Also, searching for appropriate strategies to reduce the risk from these risk factors could not be overemphasized.

Properative Predictors of Peri-Operative Red Blood Cell Transfusion in Major Pediatric Surgical

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Background: Unnecessary pre-operative prescription of blood cross-matching causes unnecessary medical expenses. To reduce the 'cross' to "transfuse' ratio needs data regarding the actual use of blood in certain group of patients.

Objective: To determine the preoperative predictors of peri-operative red blood cell transfusion in major pediatric surgical procedure. The data will be valuable in establishing practice guideline for blood request in our service.

Materials and Methods: Medical records of pediatric patients aged 0-14 years who underwent elective major surgery in the pediatric surgical service, Songklanagarind Hospital from May 1996 to June 2001 were reviewed regarding preoperative clinical and hematologic status, operation, blood request and blood transfusion. Univariate exploration for crude association was done, using Pearson Chi squared test. Multivariate analysis used logistic regression models and stepwise exclusion. Statistical significance was set at p-value less than 0.05.

Results: There were 366 patients (operations) included in the analysis. Blood were requested for 334 cases whereas 115 cases (34.4%) received transfusion. Univariate exploration showed possible associations (P<0.2) with red blood cell transfusion of associated pulmonary disease, associated renal disease, diagnosis, type of operation, ASA score, operative time and estimated blood loss. The multivariate analysis finally exhibited preoperative hemoglobin level and type of operation as the significant preoperative predictors for red blood cell transfusion (p<0.05).

Conclusions: Multivariate analysis of various factors associated in the red blood cell transfusion practice in a pediatric surgical service was done. Type of operation and pre-operative hemoglobin level were found to be the key transfusion predictors.