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Abstracts
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GENERAL SURGERY

Gastric Pull-up Reconstruction for Laryngo-pharyngo-Esophagectomy in Head & Neck and Cervical Esophageal Cancer Patients

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Objective: To determine the results of gastric pull-up reconstruction following laryngo-pharyngo-esphagectomy

Setting: At Department of Surgery, Department of Otolaryngology, Faculty of Medicine, Prince of Songkla University, Had Yai, Songkhla, Thailand. Between March 1992 and March, 2000.

Materials and Methods: Retrospective review of 47 patients who underwent gastric pull-up reconstruction for carcinoma of the hypopharynx, larynx, and cervical esophagus. The primary sites, stages of tumor and associated lymph nodes, patient demographics, complications, mortality, and details of pre-and post-operative body weights were analyzed.

Results: The average age was 55.9 years. The male to female ratio was 34:13. The site of origin of the tumor was the hypopharynx in 36 cases (76.6%) cervical esophageal cancer in 4 case (8.5%), laryngeal cancer in 4 cases (8.5%) and double primary sites of cancer in 3 cases (3.3%). Most of them were in advanced diseases. The average operative time was 7 hours and 14 minutes. The incidence of pleural tear was 51.1 per cent. Operative complications were found in 14 cases (29.8%), the most common was radiological leakage, 4 cases (8.5%) which healed spontaneously. There was one hospital death (2.1%) 3 months after operation from carotid blow out. The average body weight increased in post-operative period when compared with pre-operative period.

Conclusion: The gastric pull-up reconstruction was a safe, effective operation with a low mortality rate and good functional results for patients with extensive carcinoma of hypopharynx larynx and cervical esophagus.

Chronic Active Gastritis in Asymptomatic Gallbladder Stone Patients: Is There Any Correlation to *H. pylori* Infection?

P Tomtitchong, S Tiemtanom, S Eiamtrakul, T Sundu, S Srisuko, M Mikix, T Matsuhisay, N Yamadat

Objective: Aim of this study is to find out the correlation to *H. pylori*-induced gastritis in asymptomatic gallbladder stones patients compared with controlled group. This may give some information that, in the preoperative period, gallstone formation might correlate to *H. pylori* infection and the latter might contribute to the post-cholecystectomy syndrome in the postoperative period.

Methodology: The method consisted of gastroscopic examination in volunteers, diagnosed as the known cases of asymptomatic gallbladder stone detected by the gallstone survey project in Chaing Mai, Thailand from 1989 to 1999. In this period, more than 12,000 patients received gallstone surveillance by ultrasonographic method. About 3 per cent of the population were diagnosed to have asymptomatic gallbladder stone patients. During the follow-up period, some patients developed symptom and had been treated with cholecystectomy while the remaining patients received

ultrasonographic study annually. Fifty-six patients of this group, without any symptom, were enrolled to the study. All of patients were volunteers under consent for gastroscopic examination. Mean age of the patients and mean time of follow-up were 58.8 years and 18.2 months respectively. The results were compared with the age (55.7 years) and sex-matched controlled group (84 patients) without gallstone who received gastroscopic examination for check-up during the same period. We histologically determined *H. pylori* infection and grading of chronic active gastritis using modified Sydney System.

Results: Endoscopically, peptic ulcer was more common in gallstone group (2/11 patients; 18.2%, control = 2/17 patients; 11.8%), but without statistical significance. Histologically, while prevalence of infection in asymptomatic gallstone patients was equal to controlled group (45/56 patients; 80.4%, control = 64/84 patients; 76.2%), presence of gallstone was associated with increasing gastritis severity (grade 0, 20%, grade 1, 1.8%, grade 2, 18.2%, grade 3, 60%; grade 2 & 3 > grade 0 & 1, p = 0.048, Fisher's exact test; one-tailed).

Conclusion: We concluded that *H. pylori*-related chronic active gastritis in asymptomatic gallstone patients was very common. Moreover, when compared with control group, we found more activity of inflammation histologically that might develop further gastric pathology. If this group of the patients becomes symptomatic, a meticulous examination before the operation is needed so that we can prevent unnecessary operations for the patients as well as postcholecystectomy syndrome. Furthermore, gastroduodenal pathology is common especially for the post-operative period since we found these findings before operations even before occurrence of biliary symptom.

An Impact of *Helicobacter pylori* Eradication after Simple Closure of Perforated Peptic Ulcer: A Prospective Randomized Trial

P Kasetsuwan, S Thanasitthichai, W Krailadsiri

Aim: This study was carried out to evaluate the relationship of *Helicobacter pylori (H. pylori)* infection in perforated peptic ulcer patients and the benefit of *H. pylori* eradication on ulcer healing and ulcer recurrence after simple closure of perforated ulcer.

Methods: Sixty-six patients with perforated peptic ulcer were treated by simple closure with omental patch and intraoperative esophagogastroduodenoscopy (EGD.) to assess *H. pylori* infection status. Patients were randomized into two groups; control group (group 1) received Omperazole regardless of *H. pylori* status whereas the study group (group 2) *H. pylori* positive patients received a course of anti - *H. pylori* therapy. Follow-up EGD was performed at 2 months, and at 1 year after hospital discharge to evaluate ulcer healing and ulcer recurrence respectively.

Results: *H. pylori* infection rate was 86.3, 50 and 92.8 per cent in overall perforated ulcer, perforated gastric ulcer and perforated duodenal ulcer respectively. Ten patients did not return at 2 months endoscopic follow-up. Of the remaining 56 patients, 29 in group 1 and 27 in group 2, underwent EGD at 2 months follow-up and revealed initial ulcer healing rate of 65.5 and 88.8 per cent respectively (P = .038). At one year follow-up, ulcer recurrence rate of patients in group 1 was significantly higher than patients in group 2 (36.8% and 5%, P=.02).

Conclusion: This study confirms a close relationship between *H. pylori* infection and perforated peptic ulcer. *H. pylori* eradication after simple closure and omental patch can promote initial ulcer healing and prevent ulcer recurrence as well. Immediate acid reduction surgery should be reserved only for patients who have obvious risk of gastric outlet obstruction.

A New - Hand - Made Operative Assisted Instrument for Gallbladder and Common Bile Duct Surgery: Is It Useful in Clinical Practice?

V Suwanruangsri, C Euanorasetr, A Wongmekiet, T Aungkulpakdeekun

Background: In GB or CBD surgery, at least one or two assistants are required. But in the small hospital or in the rural area, then may be only one or two nurse available (including scrub nurse).

Objective: The aim of this study is to evaluate the use of a new hand-made operative assisted model for GB and CBD surgery with only one scrub nurse.

Materials & Methods: The model was modified from polyvinylchloride (PVC) materials. There were nine sizes and two patterns. Twenty three patients were included in this study with the diagnosis of symptomatic gallstone (SGS) 10 patients, acute cholecystitis 9 patients and CBD stone 4 patients.

Results: Using this new-hand-made instrument, the procedure could be performed successfully with only one scrub nurse in 22 patients. There was one failure.

In cholecystectomy alone, the mean incisional wound length was 7.30 ± 2.43 cm; the mean operative time was 40.09 ± 14.38 minutes.

In cholecystectomy + CBD exploration and T-tube drainage groups, the mean incision length was 10.67 ± 2.27 cm; the mean operative time was 63.33 ± 10.33 cm.

In cholecystectomy + choledochoduodenostomy groups, the mean incision length was 11.70 ± 0.98 cm; the mean operative time was 61.00 ± 6.25 cm.

There was no intraoperative no postoperative complications.

Conclusion: The new hand-made operative assisted instrument enabled the surgeon to perform GB and CBD surgery with only one scrub nurse as assistant. The operative times, incision and complications were not different from the conventional technique.

Electrohydraulic Lithotripsy in Difficult Bile Duct Stones

A Manomaipiboon, W Thanapongsathorn, S Wattanasirichaigoon, T Hutachoke, S Srisaovajate, Y Sangpayup

Background: Intra-hepatic bile duct (IHD) stones which are common in East Asia are usually associated with IHD stricture. In Thailand, this condition is uncommon but still a troublesome problem in management. There are many therapeutic options e.g. hepatic resection, hepaticocutaneous-jejunostomy and percutaneous transhepatic cholangioscopic lithotripsy.

Objective: To describe and report an alternative approach in management of IHD stones.

Materials and Methods: Four patients with combined extra and intra - hepatic bile duct stones presented with obstructive jaundice and cholangitis were managed in Department of Surgery, Vajira Hospital between March 1995 to April 2000. The investigation included ultrasonography, CT scan and ERCP showing numerous extra and intra-hepatic bile duct stones. All patients underwent endoscopic sphincterotomy at the same session of ERCP and open common bile duct exploration on the next session. IHD stones were removed as much as possible by stone forceps and saline irrigation. Then, flexible choledoscope was used to evaluate the residual stones and anatomical structure of bile duct. Via choledochoscope, no IHD stricture was demonstrated in all patients. The residual stones were removed by basket and balloon extraction. Consequently, electrohydraulic lithotripsy flexible probe was inserted through the working channel of choledochoscope to fragment the residual stones impacted in the segmental bile duct. The small stone fragments were totally cleared by saline irrigation. Then, choledochotomy incision was closed over a T-tube. The fifth patient presented with impacted distal common bile duct stone which could not be removed by routine common bile duct exploration. Without transduodenal sphincteroplasty, the impacted stone was successfully removed using electrohydraulic lithotripsy via the choledochoscope.

Results: All patients had uneventful recovery.

Conclusion: This technique is safe and satisfactory. Nowadays, more than 25 unitnXof electrohydraulic lithotripsy suits are available in Thailand. All of these equipments are used by urologists. The size of flexible conduction probe are 1.6, e and 4.5 Fr, which are small enough to pass through the working channel of the choledochoscope. General surgeons should be able to use this equipment in the management of difficult bile duct stones.

Preoperative Portal Vein Embolization for Rt. Hepatectomy

K Leelawat, W Imsamran, S Trubwongchareon

Introduction: One of the major surgical problems in liver cancer patients is liver failure after major hepatectomy. This is due to insufficient residual liver tissue to function after the completion of operation. The study was therefore aimed at minimising (or preventing) the risk of liver failure in the patients. This can be achieve by applying the knowledge that hepatocytes have a great replicative capacity if they lose their cell mass due to various (particular) mechanisms.

Accordingly, the technique of preoperative right portal vein embolization to induce left lobe hypertrophy was proposed prior to performing curative right hepatectomy in the patient with hepatocellular carcinoma in the right lobe of liver whose left lobe of liver tissue was probably insufficient to function following a curative resection.

Materials:

1. Embolized material, mixing 2 g of gelfoam with radio-opaque contrast solution.
2. 5-F-size Balloon tip cather.
3. Intraoperative X-Ray machine.

Methods: Right portal vein embolization was performed by inserting the balloon tip catheter from the iliocolic vein to the right branch of portal vein. This vessel was occluded by embolising the gelfoam via the catheter until complete redistribution of the portal venous blood flowing to the left portal vein was achieved. Thereafter, right hepatectomy was performed 3 weeks later.

Results: Right portal vein embolization was performed successfully without any complication. The liver enzyme increased within the first 3 days after the completion of operation and then returned to the base line (*SGOT/PT = 329/126-46/42).* The calculated volume of the right lobe decreased from 725 ml to 535 ml before and after embolization respectively. In contrast, the corres-ponding volume of the left lobe increased from 350 ml to 450 ml.

The patient to whom right hepatectomy was

performed 3 weeks after portal vein embolization tolerated well with the operation. The level of his liver enzyme increased within 4 days and then return to base line (*SGOT/PT = -309/196-33/35*). Thereafter, the patient was discharged from the hospital at 7 days after the completion of operation.

According to the specimen obtained, the volumes of hepatocyte from left and right lobe liver were calculated and compared. The mean volume of hepatocyte from the left lobe was found to be significantly larger ($P<0.05$) than that from the right liver.

Conclusions: The results obtained may lead to the conclusion that such technique of right portal vein embolization is not only safe but also useful for preoperative induction left lobe of liver to hypertrophy before performing major right hepatectomy.

Hydatid Cyst of Liver: A CaseReport

W Imsamran, S Panpimanmas

We herein, report a 30-year-old Bhutanese woman who was referred to our hospital with the symptom of fullness at epigastrium and vomiting. The liver function test and serum amylase were within normal levels. Hepatitis B surface antigen and hepatitis C antibody were negative. For the tumor markers, all of them (AFP, CEA, CA 19-9 and CA125) were within normal levels. The hemagglutination test for echniococcosis was positive and the patient was given medical treatment until the test result was negative but her symptoms still persisted. The U/S, CT scan showed a cyst in the left lobe of liver with internal septation. The intraoperative ultrasonography (IOUS) clearly showed the same result and segmentectomy II, III was performed. The specimen showed internal daughter cyst. The postoperative course was uneventful.

Thermo-regulation Assistged Device (TRAD)

A Dejamornthan, S Thanasitthichai

Hypothermia was one of the major problems faced by surgeons which brought adversed outcome of critically traumatized patients. This condition would cause not only platelet dysfunction, coagulopathy but also the cardiac arrythmia and increased amount of fluid resuscitation. Concerning of these effects, the initial surgical exploration should be expeditionaly performed and if necessary a planned reoperation proposed. The patients should be admitted into ICU for proper care. Radiation lamps and blood warmer had been commonly use for preventing hypothemia but the process was inconvenience because the devices usually came in separated set and also expensive. We would like to introduce the thermo - regulated assisted device (TRAD) which combined hyperthermic ceiling and blood products warmer in the same machine. This system was made from simple and inexpensive technology. The machine was developed by Bhumibol Adulyadej Hospital in 1999. It was composed of utraviolet lamps and automatic adjustable temperature - controlled hyperthermic coils to produce heat for blood products and intravenous line before infusing into the patient. We suggest that this machine would be a part of standard care in ICU of our country to improve the outcome of patients.

Splanchnic Decompensation during Hemorrhagic Shock: A Pivotal Role of Endogenous-derived Nitric Oxide

S Wattanasirichaigoon, MP Fink

Objective: This study was designed to identify the role of nitric oxide (NO) in the pathogenesis of hemorrhagic shock (HS)-induced splanchnic decompensation.

Study design: Experimental study.

Subjects: Twenty-one male Sprague-Dawley rats (250-300g)

Methods: We employed a non-heparinized pressure-controlled model of HS to investigate changes in intestinal mucosal function. Rats (n = 7/each group) were received either of intraluminal administration of Krebs-Henseleit bicarbonate buffer (B, as a control group), N-intro-L-arginine methyleaster (L-NAME, 2 mM) and S-nitroso-N-acetylpenicillamine (SNAP, 5 mM) for 30 min prior to shock induction. The animals were bled to 40 mmHg until mean arterial pressure was unstable (systemic compensation endpoint; SyCE)

Main outcome measures: To identify the splanchnic compensation endpoint (SpCE), mucosal blood flow, which was continuously monitored at the terminal ileum could not symchronously rise up to increased blood pressure immediately after blood withdrawal. Intestinal permeability was assessed using an everted gut sac technique by measuring the mucosal-to-serosal clearance of FITC-dextran (M.W. = 4 kDa).

Results: L-NAME-treated rats reached SpCE, SyCE earlier than the two groups. All three groups showed: 1) no increased intestinal permeability at SpCE but increased thereafter, 2) a significant decrease in plasma nitrate at SpCE time point and back to baseline thereafter, 3) maintenance of tissue adenosine triphosphate (ATP) at SpCE and a significant drop thereafter, 4) upregulation of tissue glutathione at SpCE (except SNAP group) and back

to baseline thereafter.

Conclusions: Endogenous-, not exogenous-derived NO plays an important role to preserve epithelial mucosal function during early phase of shock, but only exogenous sources would be beneficiary to gut protection during late phase of shock.

Hibitane Skin Scrub: Essential or Ritual?

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Background: Reduction of skin flora is one of the main factors in prevention and reduction of surgical wound infection. Hibitane scrubbing, Providine and Alcohol paintings are the usual practice before an incision is made. Providine is a very effective antiseptic agent. It can cover both gram positive and gram negative organisms including the spores very effectively. Its practical draw-backs are its colour and stickiness left on the skin. These however are cleared up nicely with 70% alcohol. Moreover the alcohol itself also can act as bactericidal very rapidly on both gram positive and gram negative although not the spores. An important question then arises: Are not Providine and Alcohol enough as a combined antiseptic agents prior to skin incision?

Objectives: To answer the following questions:

(1) What is the contamination incidence of the skin in the operating field of the patients prior to antiseptic skin preparation?

(2) What is the remaining contamination incidence in the operating field following the completion of the antiseptic skin preparation with and without additional Hibitane soap scrubbing?

(3) What is the contamination incidence of the skin after the surgical manipulation and skin closure just completed?

(4) What are the useful informations that can be deducted from the above data?

Method: A prospective randomized trial study was made on 104 patients subjected to major open abdominal operations in the same surroundings: operating theatre, and operating team. Alternative allocation was assigned into 2 groups of preoperative antiseptic skin preparation.

Group I Scrub: beginning with 0.5% Hibitane soap scrubbing, 10% Providine painting, Drape and followed by 70% Alcohol cleansing of the exposed skin area, left dry before the skin incision.

Group II Scrub: without 0.5% Hibitane soap scrubbing, beginning with 10% Providine painting, Drape and followed by 70% Alcohol cleansing, left dry before the skin incision.

In both groups, three bacteriological swabs for culture were taken from the operating field skin: Culture I before skin preparation, Culture II at the end of Alcohol cleansing and left dry, Culture III after skin closure.

Results: There were 104 patients: 52 scrub and 52 non-scrub. Culture I there were 18 positive growth in scrub and 21 in non-scrub. Culture II, 3 positive in scrub and 5 in non-scrub. Culture III, 5 positive in scrub and 9 in non-scrub.

Regarding to wound infection there were 7 in scrub and 4 in non-scrub. No statistic different in culture I prior to any skin preparation in both groups (P=0.685). Both scrub and non-scrub regimes show significant colony reduction (P=0.001) but insignificant difference in efficacy (P=0.95). This is further supported by the insignificant difference in wound infection of the two groups (P=0.339).

Conclusion: Hibitane scrubbing probably is an unessential addition in skin preparation regime. Providine painting and 70% Alcohol cleansing are quite adequate at least among the Thai surgical patients.

Limb Salvage Distal Bypass: A-seven-year Personal Experience

W Tirapanich, P Trairatvorakul

Objective: To assess the long term results of arterial bypass distal to the popliteal artery in patients with critical limb ischemia.

Summary Background Data: Since 1993, with refinement in angiographic and surgical technic, distal arterial bypass has become a common procedure in our institute. We previously reported early results of these bypass procedures in 1996. This report represents our experience with more patients and longer follow-up period.

Methods: Data of 114 consecutive distl bypass procedures performed by the authors between January 1993 and December 1999 were collected and analyzed. The indication for surgery was limb-threatening ischemia in all patients. Limb viability and patency of graft were followed until amputation, die or loss to follow-up.

Results: The causes of arterial occlusive disease in these patients were artherosclerosis in 98 cases (86%), thrombo angiitis obliterans in 11 cases (9.6%) and others in 5 cases (4.4%). Diabetes mellitus was present in 75 cases (66%). Distal bypass procedures were performed by in situ saphenous vein bypass in 93 cases (81.6%), reversed saphenous vein bypass in 19 cases (16.7%) and nonreversed translocated saphenous vein bypass in 2 cases (1.8%).

Postoperative morbidity included graft complication (16%), wound complication (15%) and other complications (17%). Perioperative mortality occurred in 6 patients (5%). The causes of death were acute myocardial infarction, sepsis, acute pancreatitis with multiple organs failure and tetanus. Cumulative limb salvage and secondary graft patency rate at 5 years were 83 per cent and 65 per cent respectively. Graft patency and limb salvage rates were better in atherosclerotic than thromboangiitis obliterans, better in diabetes than non diabetes, and better in insitu sapenous bypass than reversed saphenous bypass. But the differences were not statistically significant except in diabetes group which had statistical significance of better graft patency rate than non diabetes.

Conclusion: Distal arterial bypass is an effective and durable procedure to save limb in patients with critical limb ischemia.

Early Experience in Surgical Revascularization in Kawasaki Disease

S Sriyoschati, P Laksanabunsong, J Soongswang, T Subtaweesin, T Phanchaipetch, P Sakiyalak, S Pornvilawan

Kawasaki disease was first reported in 1967. It is a relatively common pediatric disease throughout the world. Its bacteriology and the mechanism of immune arteritis are not fully understood. Ischemic heart disease due to coronary aneurysms and obstructive lesions, aneurysm of the abdominal aorta and larger peripheral arteries are also reported sequelae of systemic arteritis. The use of R-globulin therapy for acute disease has reduced the coronary complications to 15 per cent, but lesions continue to occur. Surgical revascularization has proved effective for selected cases of coronary aneurysm and obstruction. This is a case report of a $4\frac{1}{2}$ year-old boy referred to Siriraj Hospital for proper management of coronary artery aneurysm. He had a history of under diagnosis and management of Kawasaki syndrome 2 years ago. Last year he experienced chest pain and was treated as acute myocardial infarction at a private hospital. His physical examination was unremarkable. Electrocardiogram revealed significant Q wave in mid precordial leads. Aneurysm of proximal RCA, not well visualized LAD, and dyskinesia of interventricular septum were demonstrated in echocardiogram. Radionuclear myocardial perfusion scan showed septal myocardial infarction which corresponded to severe stenosis of multiple portions of LAD in coronary angiogram. Aneurysm of proximal RCA was also demonstrated in angiogram. He underwent uneventful coronary bypass graft of LAD, and proximal RCA plasty. Repeated coronary angiogram 3 months later showed patent coronary bypass graft with LAD terrritorial perfusion and normal blood flow in LCx and RCA. Repeated echocardiogram revealed improvement of LV function.

Duodenal Diverticulization and Pyloric Exclusion By-pass: a Comparative Study of Intraluminal Pressure in Animal Model

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Background: In severe duodenal injury, duodenal diverticulization and pyloric exclusion by-pass are both acceptable surgical procedures. The aim of each procedure is to reduce post-operative leakage followed by sepsis. The main factor predisposing this post-operative leakage is the increase of intraluminal pressure in the early post-operative period.

Objective: Using the animal model to answer the following questions:

1. Are there any reductions of intraluminal pressure following duodenal diverticulization and pyloric exclusion by-pass procedures?
2. If so which one has the better efficacy?

Method: Eighteen selected healthy hamsters aged 3-4 months, mean body weight 185.8 grams were selected and divided into 3 groups of six: one as a control, one as a duodenal diverticulization, and another pyloric exclusion by-pass. Intraluminal pressure was induced through transducers one in the stomach and the other in the second part of the duodenum. Measurements were made at resting stage and then after the 3 ml air injection through orogastric tube.

At resting stage both duodenal diverticulization and pyloric exclusion by-pass groups had the pressures significantly reduced, *p value* of both were 0.05

Again following air injection, gross changes of pressure were found in the control, both in the stomach and in the duodenum (*p-stomach* = 0.002, *p-duodenum* = 0.002) but minimal changes of pressure were noted in stomach and duodenum of both duodenal diverticulization (*p-stomach* = 0.008, *p-duodenum* = 0.741) and pyloric exclusion by-pass (*p-stomach* = 0.006, *p-duodenum* = 0.748).

	Control		Diverticulization		Pyloric exclusion	
	Stomach	Duo-denum	Stomach	Duo-denum	Stomach	Duo-denum
Resting (mmHg)	6.70	6.70	4.92	4.45	3.10	2.28
Air injection (mmHg)	10.42	9.75	5.30	4.46	4.33	2.51
Increasing pressure (mmHg)	3.72	3.05	0.38	0.01	1.23	0.23

Conclusion: Both precedures can achieve the

reduction of the duodenal pressure and the pyloric exclusion by-pass is better in efficacy.

Pharmacological Amelioration of Ischemic/reperfusion (I/R) - Induced Gut Epithelial Hyper-permeability

S Wattanasirichaigoon

Introduction: We evaluated five different pharmacological approaches for preventing gut barrier dysfunction following mesenteric I/R.

Methods: In groups of rats (n=6/each), a 50-cm intestinal segment was filled with vehicle (Krebs-Henseleit bicarbonate buffer), a superoxide dismutase (SOD)/catalase (CAT) mimetic (EUK-8; 0.1 mM), a poly-ADP-ribose polymerase (PARP) inhibitor (3-aminobenzamide, 3 ABZ, 1 mM), an NO/O_2 donor (SIN-1; 1 mM), an NO donor (SNAP; 5 mM), an iNOS synthase inhibitor (aminoguanidine, AMG; 20 mM) or an isoform nonselective NOS inhibitor (L-NAME; 5 mM). The superior mesenteric artery was clamped for 60 min followed by 60 min of reperfusion. Gut epithelial permeability to FITC dextran (M. W. = 4kDa) was assessed using an everted gut sac technique.

Results: (shown in Table) are expressed an nl/min/cm^2. Abbreviations:*, $p<0.05$ versus time-matched value in the vehicle-treated group; BL, baseline permeability; I-30 and I-60, permeability after 30 or 60 min of ischemia, respectively; R-30 and R-60, permeability after 30 or 60 min of reperfusion, respectively.

Drug	BL	I-30	I-60	R-30	R-60
Vehicle	6.6 ± 1.1	46.8 ± 6.2	50.0 ± 8.8	48.7 ± 6.2	30.4 ± 5.9
EUK-8	4.6 ± 0.6	11.9 ± 3.4*	24.1 ± 4.2*	11.2 ± 2.7*	7.9 ± 2.4*
SIN-1	5.6 ± 0.7	16.2 ± 3.3*	32.3 ± 5.0	28.2 ± 9.3	16.5 ± 5.6
SNAP	4.2 ± 0.5	12.4 ± 2.2*	29.8 ± 6.3	18.9 ± 3.1*	14.6 ± 2.3*
3-ABZ	6.3 ± 0.9	7.9 ± 1.8*	19.7 ± 4.5*	12.0 ± 3.7*	10.0 ± 2.8*
AMG	5.5 ± 0.8	8.4 ± 1.3*	35.1 ± 6.2	23.4 ± 5.7*	13.2 ± 2.8*
L-NAME	6.4 ± 1.1	48.6 ± 10.4	86.1 ± 11.9*	72.0 ± 3.9*	83.6 ± 13*

Conclusions: These data support the view that iNOS inhibition is protective, whereas nonselective NOS inhibition is deleterious in this model. Scavenging oxidants with SOD/CAT mimetic or blocking PARP are very protective strategies. Exogenous NO donors are protective.

Endoscopic Intra-gallbladder Cystic Duct Obliteration and Mucosal Ablation

Y Sangpayup, S Srisavajate, S Wattanasirichaigoon, T Hutachoke, A Manomaipiboon

Several methods have recently been introduced clinically to reduce the invasiveness of treatment for cholecystolithiasis. However, recurrent gallstone formation must be expected after any of these procedures because of intact gallbladder mucosal protection from formation of gallstones.

We present an 84-year-old Thai male patient who was referred to our hospital from a community hospital. One month ago, he was admitted with a history of acute cholecystitis and septic shock. He underwent an emergency mini-cholecystostomy under local anesthesia. Postoperative cholangiogram via the cholecystostomy tube revealed one distal common bile duct stone. His associated diseases were hypertension and atrial fibrillation. Echocardiogram revealed diastolic dysfunction (restrictive) and hypokinesia of inter-ventricular septum. The patient was categorized as high risk for major operation after evaluation by cardiologist and anesthesiologist. After admission, we successfully performed an endoscopic sphincterotomy and stone extraction. Three days later, the patient received prophylactic antibiotic prior to endoscopic intra-gallbladder cystic duct obliteration and mucosal ablation. Intra-gallbladder endoscopy revealed multiple small gallstones formation. Under fluoroscopic guidance, the distal cystic duct was occluded using a balloon catheter. Isolated gallbladder volume was assessed and then instilled with an equal volume of 95% ethyl alcohol for 5 minutes. The balloon catheter was left in place for one day and the Redivac drain was removed on the third day post-ablation. One month later, ultrasonographic study showed a very small gallbladder, about 1.2×4.4 cm in size. He had an uneventful recovery without mucocele or fistula formation.

The technique of mucosal ablation requires further investigation because intact mucosae in Rokitansky-Aschoff sinuses could escape chemical denaturation.

Endoscopic Stenting Versus Surgical Bypass in Advanced Malignant Distal Bile Duct Obstruction: Cost-effectiveness Analysis

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Objective: This study aimed to compare the endoscopic stenting with surgical bypass in terms of clinical outcome, complication, hospital stay, survival and cost.

Materials and Methods: The clinical data of 69 patients with unresectable malignant distal bile duct obstruction due to CA pancreas, ampulla of Vater or bile duct who received palliative treatment by endoscopic plastic stent drainage (straight double-flapped polyethelene, 10 Fr) or biliary-enteric surgical bypass at Prince of Songkla University

between 1992 and 1997 were reviewed and analysed.

Results: There was no significant difference between stenting and surgery in terms of hospital stay (22.8 vs 26.9 days), survival time (3.88 vs 5.99 months), and cost per procedure (48,269 vs 40,710 baht). The problem of stenting was stent blockage (means = 3.2 months) that made higher total cost in lifelong than surgery (100,098 vs 68,200 baht)

Conclusion: Both stenting and surgery were equally effective in the biliary drainage but stenting is suitable for patient who has short-life expectancy or is unfit for surgery, and vice versa.

Protective Role of Human Recombinant p-selectin Glycoprotein Ligand-1 Immunoglobulin Chimera (rPSGL-Ig) on Amelioration of Intestinal Ischemia/Reperfusion-Induced Intestinal Hyperpermeability and Lung Injury

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All three selectin family members (P, E and L) have been implicated as mediators of leukosequestration caused local or distant ischemia/reperfusion (I/R) injury. We hypothesized that treatment with recombinant P-selectin glycoprotein-Ig chimera (rPSGL-Ig), a homodimeric mucin which can bind P selectin, would ameliorate intestinal mucosal hyperpermeability in a rat model of superior mesenteric artery (SMA) occlusion and reperfusion. Four groups of animals were studied (n=6/group): (1) sham; (2) I/R (60 min R); (3) I/R with rPSGL-Ig (0.4 mg/kg i.v. bolus) administered 5 min prior to I and 1 min prior to R (Protocol 1); and (4) I/R with rPSGL-ig (0.4 mg/kg i.v. bolus) administered 5 min prior to I and 1 min prior to R plus a continuous infusion of rPSGL-Ig (0.4 mg/kg/h) (Protocol 2). Intestinal permeability was assessed using an everted gut sac technique by measuring the mucosal-to-serosal clearance of FITC-dextran (M.W. = 4kDa). Both protoclos provided early protection of ischemia-and I/R-induced mucosal barrier dysfunction, but only Protocol 2 provided durable protection. Mucosal (but not serosal) blood flow of rats polymorphonuclear leukocytes (PMN) influx into the intestinal tissue was prevented by both Protocols. To evaluate remote lung injury, FITC-albumin (M.W. = 70 kDa; 5 mg/kg, i.v. bolus) was employed as a marker of pulmonary capillary permeability (n=6/group). Bronchoalveolar lavage (BAL) of the right lung was obtained at the end of R. Peripheral blood leukocytosis was found in control and Protocol 1 groups. Although pulmonary capillary hyperpermeability was not detected in any of the groups, intraalveolar sequestration of PMNs was prevented by Protocol 2. These data indicated that; 1) selectins play a role of pathogenesis of I/R-induced gut mucosal hyperpermeability, 2) intra-alveolar influx PMNs may be the earliest sign of I/R-induced lung injury.

Hormonal Receptor Status in Female Breast Cancer Patients at Maharaj Nakorn Chiangmai Hospital

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Objective: 1. To study the prevalence of hormonal receptor in female breast cancer patients by Ligand-Binding Assay technique.

2. To compare the clinical parameters such as age, menopausal status, TNM classification, histology and hormonal receptor status between the receptor-positive group and the receptor-negative group.

Method: A retrospective review of female breast cancers between 1 January 1995 to 31 December 1998 was made. Only cases with hormonal receptor determined by Ligan-Biding Assay Technique were evaluated.

The collected clinical parameters were age, menopausal status, TNM classification and histology. The statistic method used was logistic regression.

Result: During 1 January 1995 to 31 December 1998, one thousand and seventy-three female breast cancers were treated at Maharaj Nakorn Chiangmai Hospital of which 355 patients were evaluated for hormonal receptors. The results were positive for ER 127 (35.77%), positive for PGR 45 (12.68%), and positive for both ER and PGR 27 (7.61%). There were no statistic significance between the clinical parameter such as age, menopausal status, TNM classification, histology and the hormonal receptor status.

Conclusion: This study showed no correlation between clinical parameters and hormonal receptor status. Thus, the clinical parameters can not be used to predict hormonal receptor status.

Early Experience of Endoscopic Intramammary Cystic Exploration

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Excisional biopsy is highly recommended for a breast cyst which persistently and rapidly refilled. In addition, pathological diagnosis is strongly indicated in a cyst containing blood stained fluid as well as a persistent residual mass after aspiration to rule out intracystic carcinoma. We develop a minimally invasive approach to evaluate and to provide a proper treatment of breast cyst using a 3-mm endoscopy.

Four patients presented with breast cysts were admitted to Vajira Hospital during May 2000. Under local anesthesia, 3-mm endoscope was introduced into the breast cyst through a small stab incision at the peri-areolar skin. After cystic content was removed, insufflation was initiated up to a pressure of 7 mmHg. Discard fluid was observed in two cases with smooth epithelium-lined cyst and one of them underwent needle biopsy under endoscopic vision. The third case with multi-septated cyst underwent septotomy using a No 20G needle. The remaining one containing sero-sanguinous fluid and intracystic leaflike papillary growth which was biopsied for histologic diagnosis. Cytologic examination of fluid taken from all four patients was negative for malignancy. In the former three benign cysts, 2 ml of fibrin glue was instilled into the cyst cavity by two separated-syringe punctures under endoscopic vision. Pressure dressing was applied after closure of the stab incision by a single stitch of non-absorbable suture. Patients were discharged in the same day without any immediate complication except the fourth case with phylloides lesion in which definitive surgery was needed.

This is our first report of a minimally invasive approach to active management of a blood-stained containing cyst for early detection of incidental intracystic lesion. In addition to direct biopsy under vision, intracystic fibrin glue instillation may be used to reduce the recurrent rate of breast cyst. However, it is not recommended in cases of small cyst (<2 cm) and presence of residual mass after cyst aspiration. Due to requirement of local anesthesia, one-day surgery, scar-free breast and excellent cosmetic results, endoscopic intramammary cystic exploration may be considered as alternative approach for the cystic breast lesions.

Is Coagulopathy a Manifestation of Abdominal Compartment Syndrome?

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Abdominal compartment syndrome (ACS) has been recognized since 19th century but has only been reported clinically in the past 2 decades. This syndrome is defined as a clinical situation wherein intra-abdominal hypertension co-exits with dysfunction of major organ systems e.g. pulmonary, renal, cardiovascular system, etc. There are scanty reports on liver dysfunction due to ACS in the literature. Only one animal experiment to show the deleterious effect of ACS to its blood supply was found. These authors had observed in their patients to have coagulopathy not as a cause of, but probably a result of ACS. The following case presentation served to illustrate the point.

We recently have encountered 3 cases of ACS with concomittent coagulopathy. The first case involved a 45-year-old policeman who was shot through rt. costal margin, rt lung, rt, diaphragm and right lobe of the liver. During the course of treatment he developed ACS. He was operated in the face of coagulopathy to correct the mechanical bleeding and survived. The 2nd case was another policeman who sustained gun shot wound of the terminal ileum, urinary bladder and sacrum. Bowel resection and repair of urinary bladder were done but sacral packing was necessitated because of presacral venous bleeding. Three days later he developed ACS and was re-explored successfully in the presence of coagulopathy. The 3rd patient was a 60-year-old female with chronic mesenteric occlusion. Her gangrenous small bowel was resected. Post operatively she continued to have abdominal pain, mesenteric revascularization was then attempted. After the second operation she developed ACS and coagulopathy. She was surgically explored and mechanical bleeding was found and rectified.

This small series of patients may serve as a conscious raiser that ACS may cause coagulopathy and not vice versa. Celiotomy in the face of coagulopathy when mechanical bleeding is suspected should be carried out without delay.

Contributions of Heparin and Blood Reinfusion to Amelioration of Intestinal Mucosal Barrier Dysfunction Induced by Profound Hemorrhagic Shock

S Wattanasirichaigoon, MP Fink

Heparin sulfate has been shown to protect various organs during hemorrhagic shock. We tested the ability of heparin to maintain intestinal barrier function during prolonged hemorrhagic shock in anesthetized rats. Some rats received 400 U/kg of heparin i.v. 30 min prior to shock, whereas other rats were not heparinized. All animals were bled to a mean arterial pressure (MAP) of 30 mmHg until MAP was unstable, then 40% of shed blood volume (SBV0 was returned in form of Ringer's lactated solution (RLS) to maintain pressure at 30mmHg. The animals were divided into 4 groups: 1) pre-heparinized animals infused with blood (NHB), 2) non-heparinized animals infused with citrate-phosphase-dextrose blood (NHB), 3) pre-heparized animals infused with RLS alone (H), and 4) non-heparinized animals infused with RLS alone (NH). MAP was maintained at 30 mm Hg until the end of study (5 hrs). Intestinal barrier function was determined using an everted gut sac technique that measured mucosal permeability to FITC-unconjugated dextran (M.W. = 4 kDa). Tissue and blood

samples were obtained every 60 min and ATP levels were determined using a commercial luciferase assay.

Preheparinization lead to markedly increased maximal bleedout time (HB vs NHB, p =0.021). Survival was significantly prolonged in the pre-heparinized groups (HB vs NHB, p = 0.002; H vs NH, p = 0.003). Pre-heparinization also prevented intestinal barrier dysfunction, a decrease in tissue ATP levels, and a decrease in intestinal blood flow in animals receiving either blood or RLS. In conclusion, heparin can ameliorate shock - induced hyper-permeability of the intestinal mucosa. presumably by increasing perfusion of the gut during severe shock.

A Randomized Comparison of Oral Sodium Phosphate with Oral Magnesium Sulfate Plus Oral Bisacodyl Plus Sodium Phosphate Enema in Bowel Preparation for Colonoscopy

S Charoensethamaha

Objective: To compare the effectiveness of bowel preparation for colonoscopy between oral sodium phosphate (NaP) and oral magnesium sulfate plus oral bisacodyl and sodium phosphate enema (combined method).

Study design: Prospective, randomized controlled study.

Subjects: Patients underwent colonoscopy with various indications in 116 elective cases at the Department of Surgery, Vajira Hospital from October 1998 to September 1999 (one year period).

Methods: The author enrolled 116 patients (both out-and in-patients) in this study. All patients were randomly allocated into two groups, 65 cases in the NaP group and 51 cases in the combined method group. After the colonoscopy, the endoscopist scored the cleanliness of the bowel without knowledge of the method of bowel preparation. The patient was interviewed for side effects, taste of the oral drugs and methods of bowel preparation. The data were recorded and analyzed statistically after completion of the study.

Main outcome measures: Cleanliness score of the bowel and frequency of the side effects.

Results: Cleanliness score of the bowel prepared by the NaP and the combined method were 3.03 ± 1.33 (0-5) and 2.71 ± 1.15 (0-5) respectively (p>0.05). The side effects were found more frequently in the NaP group than the combined method group. These were nausea (58.5% vs. 23.5%, p=0.000), vomiting (53.8% vs. 9.8%, p=0.000), thirsty (50.8% vs. 19.6%, p=0.001) and abdominal pain (33.8% vs. 15.7%, p=0.027).

Conclusion: The efficacy was not different in each group. The benefits of NaP preparation were convenient, fast and economical. Whereas the benefit of combined method preparation was low incidence of the side effects.

Hight Ligation Technique Can Decrease Complications of Multiple Hemorrhoidal Rubber Band Ligation

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Purpose: Multiple rubber band ligation for hemorrhoids is a safe, effective, and economical treat hemorrhoids. However, it has higher complications than a single ligation. The aim of this study was to compare the effectiveness and the complications between multiple and signle ligation using high ligation technique.

Methods: All first-visit, patients with bleeding internal hemorrhoids were studied and randomly divided into multiple and single ligation groups. High ligation technique was used. Patients made visit to our office in the second week andat one year after the procedure. For those who failed to visit the office, they were requested to complete questionnaire after one year.

Results: Sixty one patients had multiple ligation and 48 patients had single ligation. Bleeding cessation resulted in 96.7 per cent of patients in multiple group and 79 per cent in single group (*P*=0.004). There were no differences between the multiple group and single group about postligation pain and tenesmus (6.5% vs 2%, p= 0.532), urinary hesitancy and frequency (6.5% vs 4%, p=0.904), and rebleeding in one year (27.9% vs 34%, p=0.710). No major complications such as massive bleeding and pelvic sepsis were noted.

Conclusion: Using high ligation technique, multiple ligation in one session for bleeding internal hemorrhoids had better results in cessation of bleeding than single ligation and caused no more complications such as pain and urinary problems than single ligation. Less early rebleeding in one month occurred in multiple ligation than in single ligation.

Advancement Flap in Treatment of Horseshoe Ischiorectal Fistula

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Background: Herseshoe ischiorectal fistula is the most common type of complex fistula. Complications of surgical management are incontinence and recurrence or unhealed fistula. Endorectal advancement flaps seem to be the most successful technique in the present time. We reported our experience in using this technique with Hanley's fistulotomy

for treatment of these complex fistula.

Materials and Methods: Retrospective study was made in 46 patients with horseshoe ischiorectal fistula, 40 males and 6 females, during the period from April 1993 to March 2000 at the Colorectal Division, Department of Surgery, King Chulalongkorn Memorial Hospital. Incontinence and recurrence were recorded for each procedure given.

Results: The patients were classified into two groups; unilateral and bilateral horseshoe ischiorectal fistula.

In unilateral horseshoe fistula, the procedures performed in to 34 patients were Hanley's fistulotomy in 14 patients, hanley's fistulotomy with Setons in 14 patients and Hanley's fistulotomy with endorectal advancement flap in 6 patients. Recurrence (unhealed) was detected in 3, 7 and 0 patient, respectively. Incontinence was not seen in all groups.

In bilateral horseshoe fistula, the procedures performed in 12 patients were Hanley's fistulotomy for 5 patients, Hanley's fistulotomy with Setons in 6 patients, and Hanley's fistulotomy with endorectal advancement flap in one patient. Recurrence (unhealed) was detected in 1, 3 and 0 patient, respectively. Incontinence was not seen in all groups.

Conclusion: Hanley's fistulotomy with endorectal advancement flap is the promising procedure that achieves that best outcome and becomes the technique of choice for these complex fistula at King Chulalongkorn Memorial Hosptial.

LAPAROSCOPIC SURGERY

Open Minimally Invasive Cholecystectomy

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Background and objective: The laparoscopic approach is the procedure of choice for cholecystectomy, unfortunately the cost of such operation is very high because the need of expensive special instruments. Laparoscopic cholecystectomy (LC) also associated with higher risk of biliary injury when compared with conventional open cholecystectomy (COC). Open minimally invasive cholecystectomy (OMC) is an alternative procedure that composed of the benefits of LC and COC. This study was performed to prove that OMC has short operative time, small incision, minimal blood loss, less postoperative pain, short postoperative hospitalization. The most important benefit is the cost of operation is not high.

Method: During December 1998 and May 2000, 15 patients with indications for cholecystectomy of benign pathology in Department of Surgery, Faculty of Medicine, Chiangmai University were operated upon by open, minimally invasive cholecystectomy. A small incision medial to sonographically defined position of gallbladder was made. The incision length, operative time, estimated blood loss, postoperative complications, postoperative pain score, postoperative hospitaization time, cost of operations were recorded and analysed.

Results: The average operative time was 94 minutes and average estimated blood loss was 35.33 ml. The average length of incision was 30.67 mm. The patients had minimal pain (average pain score 273). The postoperative hospitalization time was 59.4 hours and there were no iatrogenic biliary injuries or complications requiring reoperation. The cost of operation averaged 3,926 Baht (about 100 US).

Conclusion: Open, minimally invasive cholecystectomy appears to be an alternative procedure for cholecystectomy because it can give good result, good consmesis, short postoperative stay, low postoperative pain score, minimal blood loss and low cost of operation. However, we need more experience to confirm these benefits in this initial study.

Antibiotic Prophylaxis Does Not Reduce Wound Infection in Low Risk Laparoscopic Cholecystectomy: A Randomized Controlled Trial

V Mahatharadol

Background/Aims: The overall septic complications following elective laparoscopic cholecystectomy (LC) are extremely low but many surgeons still use prophylactic antibiotics. The purpose of this study was to assess the result of prophylactic antibiotics administration in low risk patients undergoing LC with respect to the postoperative infections, especially wound infection.

Design: A randomized controlled clinical trial.

Setting: A tertiary hospital.

Patients: One hundred and two low risk patients (without evidence of acute inflammation, common bile duct obstruction, jaundice, ERCp manipulation or other indications for antibiotic administration) were randomized into 1 of 2 treatment arms : (1) Cefazolin 1 g iv injection after induction of anesthesia (PA group) and (2) no prophylactic antibiotics (NONE group).

Outcome Measurements: The patients were followed up for the postoperative infections, especially wound infection at least 30 days at the out-patient clinic or by telephone contact.

Results: Baseline characteristics of the 2 groups were comparable in sex, weight, American Society of Anesthesiologists patient classification score, operative time, surgical techniques, intraoperative gallbladder leakage, wound contamination and postoperative hospital stay. There was only one minor problem of superficial wound infection in the NONE group. No other major infection related problem was encountered.

Conclusion: Antibiotic prophylaxis may not be necessary in low risk patients undergoing elective laparoscopic cholecystectomy.

Simple Self-repairing Technique for Damaged Membranous Valve of Laparoscopic Port

A Manomaipiboon, W Thanapongsathrom, S Wattanasirichaigoon, T Hutachoke, S Srisaovajate, Y Sangpayup

Background: The explosive technology of laparoscopy and its increased equipment costs unfortunately coincided with the economic recession that we have been experiencing in our country. Air-sealed mechanism of laparoscopic port is definitely needed. To save the costs, reusable of disposable trocars are widely used. However, more than 95 per cent of damaged disposable trocars could not be reused because of leaking air-sealed mechanism due to damaged membranous valve.

Ojbective: To demonstrate a simple technique in repairing the damaged membranous valve of laparoscopic port.

Materials and Methods: Commercial natural rubber (Modela®, CTR Property, Bangkok) was used in this study because of good elasticity, cheaper cost and easily prepared. The cost of natural rubber is about 20 Bahts per 60 ml. We poured 4.5 ml of the natural rubber into the cover of a 9.1-cm-diameter agar plate. The thickness of the prepared rubber sheet was measured using a dial thickness gauge Model G (Peacock®, Japan). After drying to form a rubber sheet, it was cut to the desired shape. It is also punched a hole (3 mm for 5-mm port and 4.5 mm for 10-mm port) using a revolving leather (Alex®, Japan). Using acrylic glue, we fixed the new rubber sheet on the plane surface above the external valve.

Results: According to this preparation of the rubber sheet, there was no significant difference in thickness between commercial-made and hand-made membrane (average + SD : 433.17 + 25.79 vs 428.80 + 36.61 micron, p=0.755). All repaired ports were tested for air-sealed and durability of self-repairing valve.

Conclusions: In Vajira Hospital, 240 new disposable trocars are used annually. Its cost is more than 1,700 bahts per twin unit. Approximately 500,000 bahts can be saved every year. Self-repairing damaged membranous valve benefits not only in saving the cost but also saving the environment by reducing the medical wastes which are progressively increasing over time.

Gasless Needlescopic Cholecystectomy: The First Hundred Cases

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To assess the most feasible combination of instruments and to improve cosmatic result of Gasless Laparoscopic Cholecystectomy (GLLC), Galsess Needlescopic Cholecystectomy (GLNC) was planned at the Police General Hospital in Bangkok, Thailand. Since 1997, 100 cases underwent this procedure, 35 males and 65 females with mean age of 51.62 years (12-82 yrs.). For those with CBD pathology that were unable to manage endoscopically were excluded. The 2 mm instruments were used in the first 62 cases and replaced with 3 mm instruments in the remaining cases. Only two minor umbilical wound infections were encountered. The conversion rate was 12 per cent, 5 to GLLC and 7 to Open Cholecystectomy, due to dense adhesions at Calots' triangle with one cystic artery injury and liver injury each. Most of the conversion occured while using 2 mm instruments (10:2). Operating time was twice as long in the beginning but gradually decreasing, becoming less than an hour, as the surgeons become more skillful. There was no difference in post-operative pain when compared to other methods of LC. The patients' body stature bore no effect on this operation. The advantage of GLNC includes all the benefits of GLLC; being cheaper, cost-effective, comparatively safer for elderly with pulmonary or cardiac problems and cosmetically better with more patients' satisfection. Disadvantages for the time being includes more precise dissection thus requiring greater patience. Comparatively 3 mm instruments are more complete and durable and can be used in the same way as 5 mm instruments hence, resulting in lesser conversions. For the time being both 2 and 3 mm instruments are not suitable for much complicated cases. Through this study it is also proved that being gasless is no barrier to any advancements or changes in techniques and can be applied in the same manner as other methods of LC.