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ORIGINAL ARTICLES

- 109 **Urological Complications in Patients with Voiding Dysfunction Managed by Percutaneous Trocar Suprapubic Cystostomy**
Bunchong Seubsung
- 115 **Risk Factors for Surgical Site Infections at Vietduc Hospital During a 4-Month Period**
Nguyen Duc Chinh, Tran Tuan Anh, Nguyen Tien Quyet, Pham Gia Anh, Trinh Hong Son, Ninh Viet Khai, Phan Thi Dzung, Minoru Akiyama
- 119 **Mortality Due to Trauma in Patients Treated at Viet Duc Hospital during a 2-Year Period**
Nguyen Duc Chinh, Pham Gia Anh, Tran Tuan Anh, Bui Trung Nghia, Trinh Hong Son, Nguyen Tien Quyet
- 123 **Button Battery Ingestion: An Analysis of 40 Pediatric Patients**
Rangsan Niramis, Varaporn Mahatharadol, Achariya Tongsin, Niyada Vithayasai, Wannisa Poocharoen, Veera Buranakitjaroen, Maitree Anuntkosol
- 129 **Improving Knowledge and Skill for the Management of Trauma Patients in the Emergency Rooms of Three Southern Border Provinces of Thailand**
Preecha Siritongtaworn, Rattaplee Pak-Art, Raywat Chunhasuwankul, Narain Chotirosniramit, Burapat Sangthong, Nopadol Wora-Urai

ABSTRACTS

- 133 **Abstracts of the 38th Annual Scientific Congress of the Royal College of Surgeons of Thailand, 20-23 July 2013, Ambassador City Jomtien Hotel, Jomtien, Pattaya, Choburi, Thailand (Part II)**

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Original Article

Urological Complications in Patients with Voiding Dysfunction Managed by Percutaneous Trocar Suprapubic Cystostomy

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Abstract

Objective: To study the quality of life and urological complications in patients with voiding dysfunction managed by percutaneous trocar suprapubic cystostomy.

Materials and Methods: A total of 50 patients who underwent percutaneous trocar suprapubic cystostomy (SPC) between 2006 and 2012 were retrospectively reviewed. Demographic data, comorbidity, urine culture, glomerular filtration rate (CKD-EPI formula), indication for SPC, complications, and quality of life were compared between patients who had previous urethral catheterization and those who had SPC.

Results: Glomerular filtration rate before SPC was higher than that after SPC, but not statistically different ($P>0.05$). The incidence of symptomatic urinary tract infection (UTI) after SPC was lower than that before SPC (20% vs 48%), a significant difference ($P<0.05$). The most common pathogen found on urine culture was *Escherichia coli*. Patients' satisfaction rate for SPC was 86%. Reasons for preference included less frequent symptomatic urinary tract infection (UTI), less discomfort, easier catheter management, and improved daily activity.

Conclusions: Percutaneous trocar SPC is a simple and effective outpatient procedure for long-term bladder drainage in patients with voiding dysfunction. But clinicians should be aware of complications related to SPC, and attempt to reduce these complications. SPC had lower symptomatic urinary tract infection (UTI), and greater patient satisfaction compared with urethral catheterization.

Keywords: Voiding dysfunction, percutaneous trocar suprapubic cystostomy, complication, quality of life

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INTRODUCTION

Voiding dysfunction is defined by the inability to completely empty the urinary bladder. In a normal voiding cycle the bladder stretches easily when it is filled with urine and contracts fully during voiding. During the normal emptying phase there should be no premature contractions of the bladder or increase in pressure and the external urethral sphincter muscle should be completely relaxed so the urine released from the bladder could flow smoothly and completely without interruption. Interrupted or intermittent flow of urine and incomplete emptying are symptoms of voiding dysfunction.

There are three different methods of bladder drainage used for spinal shock or spinal cord injury patients, namely, suprapubic fine-bore cystostomy, indwelling Foley catheter, and intermittent catheterization. Patients on intermittent catheterization or cystostomy had fewer complications than those treated with indwelling Foley catheter¹. Suprapubic cystostomy (SPC) has been reported to be superior to intermittent catheterisation because the rate of urinary tract infection is significantly lower². Barn et al. in 1993 found that in neuropathic bladder patients managed by SPC, after a follow-up of more than two years, accelerated renal deterioration did not occur and acceptance by patients was high (84%)³.

But long-term complications of SPC drainage in patients with neurogenic bladder were reported by Nomura et al. in 2000, which included formation of bladder calculi in 25%, and urinary leakage through the urethra in 10%, although no fatal complication occurred⁴. In the same year Mitsui et al. reported a comparative study of SPC and clean intermittent catheterization in spinal cord injury patients where no significant difference in complications was found between the two groups, except for bladder stones, which were significantly more frequent in patients with SPC ($P < 0.01$)⁵. McPhail et al. in 2006 reported that the suprapubic route for bladder drainage in general surgery was more acceptable to patients and reduced infectious morbidity compared with transurethral catheterization⁶. In 2007, Nwadiaro et al. also reported that in neurogenic bladder and spinal injury patients, SPC was a superior option since it was associated with a lower morbidity, better quality of life and longer life expectancy than urethral catheterization⁷.

The objective of the present study was to measure the quality of life and the frequency of long-term urological complications in patients with voiding dysfunction managed by percutaneous trocar SPC.

MATERIALS AND METHODS

Between 2006 and 2012 a total of 50 patients underwent and retained percutaneous trocar SPC because of voiding dysfunction for at least 1 year. Data were collected retrospectively. Collected data include patients' demographics, comorbidity, urine culture, glomerular filtration rate (CKD-EPI formula), indications for percutaneous SPC insertion, complications and quality of life.

Symptomatic urinary tract infection (UTI) was defined by the presence of clinical symptoms and signs (fever, chill, suprapubic pain, flank pain, dysuria, etc.) with a positive urine culture of $> 10^5$ microorganisms/mL of urine, with no more than two species of microorganisms.

In this study, percutaneous SPC was performed as follows. The patient is placed in the lithotomy position. The bladder is palpated, and if not distended, then 200 - 300 mL of Normal Saline Solution (NSS) is pushed through the urethral Foley catheter to distend the bladder. A 4 cm skin incision is made at the suprapubic region above the symphysis pubis in the midline (Figure 1). One percent lidocaine is used to anesthetize the skin, subcutaneous tissues, rectus fascia and retropubic space. At the site of bladder puncture, a 1 cm incision is made with a No.11 blade. A trocar with sheath is then advanced towards the bladder. Two hands are used to provide a forceful, but controlled, push through the abdominal wall. One hand can be positioned on the obturator at a site marking the depth of the bladder. Once the bladder is penetrated, urine leakage can be seen through the sheath, and the entire system is advanced 2 to 3 cm. The trocar is then removed (Figure 2), and a Foley catheter No.16 Fr is inserted through sheath into the bladder. Ten mL of NSS is used to blow the catheter balloon. The sheath is then removed, the Foley catheter gently withdrawn until the catheter balloon is against the anterior bladder wall, then advanced 2 cm back into the bladder to allow for movement, and pulled away from the bladder trigone to reduce bladder spasm. The Foley catheter is fixed to skin using nylon 3/0 (Figure 3).



Figure 1 Skin incision



Figure 2 Trocar and sheath insertion



Figure 3 Foley catheter is fixed to skin.

Contraindications to percutaneous trocar SPC included a nonpalpable bladder, previous lower abdominal surgery, coagulopathy, known bladder tumor, and clot retention. Statistical analysis was done using paired *T*-test and McNemar chi-square test. Statistical significance was defined as a *p*-value less than 0.05 ($p < 0.05$).

RESULTS

There were 50 patients in the study, all of whom were men. The mean age was 70 years (range, 23 to 92 years). The mean follow-up time was 25 months (range, 12 to 72 months). All patients had some medical comorbidities as indicated by a mean ASA (American Anesthesiologist Association) score of 3.6 (range, 3 to 4). Patients' demographics, baseline glomerular filtration rate, and presence of UTI are given in Table 1. Indications for SPC included neurogenic bladder (28 or 56%) and bladder outlet obstruction (22 or 44%). The most common primary cause in this study was inoperable benign prostatic hyperplasia (Table 2). All patients had urethral indwelling catheter before SPC. Almost all patients (47 or 94%) had SPC insertion as an outpatient procedure.

The most common urological complication in this study was symptomatic urinary tract infection (UTI) in 10 patients (20%). Intraoperative complications occurred in 4 cases (8%) (Table 3).

Glomerular filtration rate before SPC was slightly higher than that after SPC (74.7 ± 31.8 and 74.5 ± 31.8 , respectively), which was not clinically or statistically significant. The incidence of symptomatic UTI after

Table 1 Characteristics of patients

Characteristics	Summary (n = 50)
Age (years): mean (SD) [range]	70 (16.33) [23 to 92]
Mean follow up time (months): mean (SD) [range]	24.8 (15.2) [12 to 72]
Mean ASA scores: mean (SD) [range]	3.6 (0.5) [3 to 4]
Glomerular filtration rate (mL/min): mean (SD) [range]	74.7 (31.8) [12.7 to 120]
Symtomatic urinary tract infection (yes): number (%)	24 (48)

Table 2 Indications for percutaneous suprapubic cystostomy and primary causes

Neurogenic bladder	Number (%) N = 28	Bladder outlet obstruction	Number (%) N = 22
Lower spinal cord injury	12 (24)	Inoperable BPH	20 (40)
Cerebrovascular accident	5 (10)	Prostate cancer	1 (2)
Diabetic cystopathy	5 (10)	Urethral stricture	1 (2)
Spinal stenosis	4 (8)		
Parkinsonism	1 (2)		
TB meningitis	1 (2)		

BPH: benign prostatic hyperplasia

Table 3 Urological complications of percutaneous suprapubic cystostomy

Complications	Number (%) N = 50
Intra operative	4 (8)
- Catheter malposition	2 (4)
- Urethral leakage	2 (4)
Postoperative	21 (42)
- Symptomatic urinary tract infection	10 (20)
- Catheter blockage	9 (18)
- Skin infection	2 (4)

SPC was lower than baseline UTI (20% vs 48%), which was a statistically significant difference ($P < 0.001$).

Urine culture in patients who had symptomatic UTI before and after SPC, showed that *Escherichia coli* was the most common pathogen in this study. More bacteriuria developed in the patients before SPC than after SPC (Table 4).

An outpatient satisfaction survey revealed an 86% satisfaction rate. Reasons for the preference for SPC included less frequent symptomatic UTI, less discomfort, easier catheter management and increased daily activity.

DISCUSSION

The goals of management in patients with voiding dysfunction should consist of preservation or improvement in upper urinary tract function, absence of infection, and maintenance of a low pressure bladder⁸. Continuous intermittent catheterization (CIC) is still considered the ideal management for voiding dysfunction if the patient is willing physically and mentally to perform the task. This is due to increasing possibility of complications associated with in dwelling catheterization compared with CIC, such as UTI, renal failure, bladder and ureter stones, urethral fistulas or strictures and erosion, and bladder cancer⁹⁻¹⁰.

SPC is also a popular alternative method of long-term bladder drainage in voiding dysfunction^{11-14,17-19}. In the present study all patients had urethral catheterization before SPC, so the rate of symptomatic UTI was higher before SPC than after (48% vs 20%). This was similar to a report by Nwadiaro et al. in 2007 where urethral catheterization was associated with a UTI rate of 65% while this was 14% for SPC ($P < 0.05$)⁷.

In the present study we found more voiding dysfunction patients with neurogenic bladder than those with bladder outlet obstruction. This was similar

Table 4 Urine culture results in patients with symptomatic urinary tract infection

Microorganism	No. of positive urine culture (> 105 CFU/ml)		
	Before SPC Number (%); N = 50	After SPC Number (%); N = 50	P-value
<i>Escherichia coli</i>	21 (42)	10 (20)	0.001
<i>Enterobacter</i> species	2 (4)	0	0.050
<i>Proteus</i> species	1 (2)	0	0.999

Table 5 Comparison of urological complications after SPC

Complications	Present series Number (%) N = 50	Ahluwalia et al. ¹¹ Number (%) N = 219	Park et al. ⁹ Number (%) N = 46
Intraoperative			
- Catheter malposition	2 (4)	6 (3)	-
- Urethral leakage	2 (4)	-	3 (6)
Postoperative			
- Symptomatic urinary tract infection	10 (20)	10 (5)	5 (11)
- Catheter blockage	9 (18)	5 (2)	7 (15)
- Skin infection	2 (4)	8 (4)	3 (6)
Total	25 (50)	29 (13)	18 (39)

to the report by Ahluwalia et al.¹¹ where the most common type of voiding dysfunction was also neuropathic bladder, followed by bladder outlet obstruction (56% and 38%, respectively). But the most common primary cause was different; in our series this was inoperable benign prostatic hyperplasia while in the Ahluwalia et al. series it was urethral stricture.

Although SPC insertion is a safe and simple procedure, and can be done in an outpatient setting there can be a few complications. Ahluwalia et al.¹¹ and Park et al.⁹ reported urological complications related to SPC which could be compared with those of our series (Table 5).

From Table 5, our series had more urological complications than Ahluwalia et al. (50% and 13%, respectively). However, when compared with the report of Park et al. the urological complication rates were similar (50% and 39%, respectively). The incidence of symptomatic UTI was more common in our series because all our patients had previous indwelling urethral catheters, but patients in Park's series were on CIC prior to SPC. Thus our patients were predisposed to urinary bacterial contamination. Singh et al.¹⁰ also reported that the incidence of UTI and other urological complications was lower in spinal cord injury patients on CIC when compared with the incidence in patients on indwelling catheters¹⁰.

We found the incidence of catheter malposition to be 4% comparable to the 3% in the series of Ahluwalia et al. The two series consist most commonly of neurogenic bladder patients (56% vs 56%). It is particularly difficult to insert a SPC catheter in this group of patients, because their urinary bladders are

severely contracted and often inadequately distended. We suggested distending the bladder with 100-200 mL of NSS before SPC.

The incidence of catheter blockage was 18% in our series, compared with 15% in the series of Park et al. which was similar. The most common cause of catheter blockage was catheter encrustation¹⁵. Strickler et al.¹⁶ reported that infection by *Proteus mirabilis* was the main cause of the crystalline biofilm that encrust and block Foley catheters. He suggested elimination of *Proteus mirabilis* as soon as it appears in the urinary tract by antibiotic therapy. For patients with persistent blockage and recurrent stones, increasing fluid intake with citrated drinks could control the problem until the bladder stone can be removed¹⁶.

In our series the patient satisfaction rate for SPC was 86%, similar to the rate reported by Ahluwalia et al. (89%) in 2006, and patients with previous urethral catheter reported preference for SPC drainage¹¹.

CONCLUSIONS

Percutaneous trocar SPC is a simple and effective outpatient procedure for long-term bladder drainage in patients with voiding dysfunction. Clinicians should be aware of the potential complications related to SPC and focus on ways to reduce these complications. The procedure should be performed by experienced surgeons. In the present study, we found that SPC had less symptomatic UTI and more patient satisfaction compared to patients with previous retained urethral catheter.

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Risk Factors for Surgical Site Infections at Vietduc Hospital During a 4-Month Period

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Abstract

Objective: Surgical site infection (SSI) is a common complication associated with serious morbidity, mortality, and high cost. The aim of the present study was to estimate the incidence of SSI among surgical patients at Viet Duc Hospital and to identify risk factors for SSI.

Materials and Methods: A prospective cross-sectional study of surgical patients treated at the Viet Duc Hospital from February 2009 to April 2009 was done. Patients in all specialties of surgery were included. Information was collected using a form created by the Japanese International Cooperation Agency (JICA).

Results: Of 1,004 operations, 85 developed SSIs (8.5%), of which 64.7 % were superficial SSIs, and 35.3 % deep SSIs. SSI incidence was 9.3% for emergency operations, and 16.8% for diabetic patients. SSIs for patients with wound classes III and IV were higher than for those with classes I and II. Most common organisms isolated included *E.coli* (27.7%) and *K. pneumoniae* (16.7%). Prophylactic antibiotics was given in 19% of patients. Combinations of a betalactam or a cephalosporin with metronidazole were the most commonly used antibiotic regimens.

Conclusions: The overall incidence of SSI at Viet Duc Hospital was 8.5%. The correlation between SSIs and risk factors such as ASA score, associated pathologies, surgical wound classification, and antibiotic prophylaxis was not clearly established. In order to reduce SSIs in our hospital, the study suggested that SSI surveillance and guidelines for antibiotic prophylaxis are required.

Keywords: Surgical Site Infection, risk factor, Vietnam

INTRODUCTION

Surgical Site Infections (SSIs) are still common and can be associated with serious morbidity, mortality, longer hospital stay and high costs. According to the Centers for Disease Control and Prevention (CDC) in

the United States, these infections number approximately 500,000 per year, among an estimated 27 million operations, and account for approximately one quarter of the estimated 2 million nosocomial infections. Despite improvements in operating room

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practices, instrument sterilization methods, better surgical techniques and the best efforts of infection prevention practitioners, SSI remains a major cause of nosocomial infection and rates are increasing globally^{1,2,3}.

As for almost all developing countries, SSI in Vietnam is also a major issue. With the assistance from the Japanese International Cooperation Agency (JICA), we conducted a cross-sectional study at Viet Duc Hospital, one of the biggest centers of surgery in Vietnam, to estimate the incidence of SSI and identify risk factors or interventions associated with SSIs, and thus make recommendations for the prevention of SSI and improve the quality of care for surgical patients in Vietnam.

MATERIALS AND METHODS

A prospective cross-sectional study of the incidence of SSI was conducted between February 2009 and April 2009 at Viet Duc Hospital. All surgical specialties were included. Patients with pre-existing SSI were excluded from the study. The survey form was designed and created by JICA. The information collected included gender, age, medical history, previous surgery, surgical procedure performed, emergent status of the operation, antibiotic prophylaxis regimen, associated comorbidities such as obesity, diabetes, cancer, and infection at other sites, immunocompromised status, surgical wound classification, drains used, and implants used. Signs and symptoms of SSI as well as the bacteriological examination results were also collected. Patients with SSI were identified with the use of ICD10 diagnostic codes, or positive microbiological cultures of specimens from the wound. SSI was defined as

wound infections developing within 30 days after an operation, and classified as superficial (skin and subcutaneous tissue), deep (deep soft tissue-muscle and fascia) and organ-space infections⁴. Data were collected by head nurses responsible for SSI surveillance.

RESULTS

The study included 1,004 operations. There were 370 female patients (37%), 620 (62%) were aged above 50 years, 114 patients (11%) had cancer, 143 (14%) had diabetes, and 260 (26%) were trauma patients. Nineteen patients had previous operations in other hospitals. Pre-operative antibiotics was used in 406 operations (40%), however, prophylaxis antibiotics was used in only 191 operations (19%).

The most common antibiotic used was a beta-lactam in 234 operations, a cephalosporin in 183 operations and Metronidazole in 87 operations. There were 713 elective operations (71%), and 291 emergency operations (29%). Wounds were classified as contaminated or dirty in 143 operations (14%), patients were classified as American Anesthesiologist Association (ASA) classes III to V in 225 patients (22%). Drains were used in 728 operations (73%) and implants were used in 227 operations (23%).

Of the 1,004 operations included in the study, 85 operations, or 8.5%, developed SSI. Superficial SSI was seen in 55 or 65% of all SSI, the rest (35%) was deep SSI. In Table 1 the incidence of SSI for various subgroups of patients are listed. The highest incidence of SSI was seen in patients with diabetes.

While we did not test for any significant correlation between ASA score, sex, age and SSIs, the preparation for surgery could be important. The

Table 1 Incidence of SSI for various subgroups (risk groups) of patients

Risk factor	Incidence of SSI		
	Total	Number	Incidence (%)
Age > 50 years	620	23	3.7
Female	370	15	4.1
ASA score \geq 3	225	15	6.6
Trauma patients	260	14	5.4
Diabetic	143	24	16.8
Cancer	114	9	7.9
Emergency operations	291	27	9.3

incidence of SSI in emergency operations was as high as 9.3%. The incidence of SSI for wound classes III and IV was higher compared with that for wound classes I and II. It was twice as high for diabetic patients.

A single microbial agent was identified and isolated in all cases of SSIs. The most common agents were *E. coli* in 28% of operations, *K. pneumoniae* in 17%, and *A. baumannii* in 11%. The proportion of ESBL-producing *E. coli* was 45%. Combinations of betalactam or cephalosporin and metronidazole were the most commonly used antibiotic regimens.

DISCUSSION

Surgical site infection is a heavy burden on patients and the social health care system. SSIs are among the most common hospital acquired infections, comprising 14% to 16 % of inpatient infections^{5,6}. In the United States, the incidence of SSI varies from zero to 15% depending on types of surgical procedure, surgical site, surgical instruments used, as well as antibiotic prophylaxis. For example, SSI incidence in spinal surgery in various hospitals in the US was from 1.3% to 2.1%, while the SSI incidence in abdominal surgery was 15%, compared with 7.3% in Nepal^{5,6,7}.

In Vietnam, studies have shown that SSI incidence varied from 3% to 20%, according to different surgical procedures and hospitals. A recent investigation of SSIs in five central hospitals in Hanoi in 2008 conducted by the Ministry of Health, has noted that the incidence of nosocomial infection was 10% among inpatients, with SSIs ranking among the top of three nosocomial infections. At Viet Duc Hospital, Nguyen and Nguyen (unpublished, 2003), found the SSI incidence to be 20%, similar to the results of another study⁸. Risk factors for SSI included type of surgical procedures, emergency surgery, antibiotic prophylaxis, ASA class, and postoperative patient care. In the present study, out of 1,004 operations, 85 or 8.5% developed SSI, which was lower than the incidence found in previous studies.

In one study, risk factors associated with SSI included age above 45 years, female gender, underlying diabetes, and certain types of surgery such as gastrectomy, prostatectomy, hysterectomy, cholecystectomy and appendectomy⁵. Another study of orthopedic spinal surgery in a tertiary care hospital found an overall SSI incidence of 2% (46 of 2316)⁹. It was

concluded that diabetes was associated with the highest incidence of spinal SSI, while elevated preoperative and postoperative serum glucose levels were also independently associated with an increased risk. At an Iranian teaching hospital, the overall SSI incidence was 17.4%.⁶ The rate of wound infection in 15 to 24 year-old patients was only 10%, but increased significantly in those over 65 years of age. Finally, in another study, risk factors for SSI included ASA classes III or IV, presence of diabetes, and clean-contaminated wound¹⁰.

In the present study, SSI was relatively frequent among diabetic patients, and the incidence of SSI in the group with wound classes III and IV were higher compared with the group with wound classes I and II. SSI incidence in the group of emergency operations was higher than that in the elective operation group. However, occurrence of SSI in the group with ASA class III or higher was not different compared with that of other ASA classes.

Regarding microbial profile of SSIs, one study found that *Staphylococcus aureus* (33%) and *Enterococcus* spp. (33%) were the commonest agents associated with SSIs⁵. The study suggested that third-generation cephalosporins, cefoperazone and cefotaxime, were effective against all these strains. Likewise, gentamycin and amikacin were also effective. In another study, *E. coli* was the most common organism isolated¹¹. Combinations of ampicillin and cloxacillin were the most commonly used antibiotic regimen followed by combinations of ampicillin, cloxacillin and metronidazole^{7,11,12}.

In the present study, *E. coli* was the predominant isolate, followed by *K. pneumoniae* and *A. baumannii*, respectively. Betalactams and cephalosporins were commonly given. Combinations of betalactam or third generation cephalosporin and metronidazole were the most common antibiotic regimen.

Some authors suggested the use of antibiotic prophylaxis to help reduce SSIs^{1,10}. One study found that patients who did not receive a timely prophylactic antibiotic had a SSI incidence of 5.8%, compared with 4.6% in those who received a timely prophylaxis¹⁰. According to another study, suboptimal timing of prophylaxis, defined as the administration of an antibiotic more than 60 minutes before the incision, or administration immediately after the incision, was associated with an increased risk of SSI. Other operative

variables associated with an increased risk of SSI included irrigation of the surgical wound, and the use of a drain for three days or more after operation^{9,13}.

In the present study, the incidence of SSIs in the group receiving prophylactic antibiotics was lower than that in the group which did not receive it. However, there were only 191 (19%) operations with antibiotic prophylaxis. In addition, guidelines for antibiotic use was not available.

CONCLUSION

The incidence of SSI at Viet Duc Hospital was relatively high at 8.5%. The SSIs were mostly superficial (65%). We did not find clear correlation between SSIs and risk factors such as ASA score, surgical wound classification as well as surgical procedures, except perhaps a correlation with diabetes. In order to reduce the incidence of SSI, surveillance systems for SSI and hospital guidelines for antibiotic prophylaxis are required.

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Mortality Due to Trauma in Patients Treated at Viet Duc Hospital During a 2-Year Period

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Abstract

Objective: To review and identify risk factors related to mortality among trauma patients treated at Viet Duc Hospital during a 2-year period.

Materials and Methods: A retrospective study was conducted on patients treated between 2010 and 2011. The data was collected on patients who died within 30 days from the date of injury, including those who died pre-hospital, in-hospital and those released to die at home. Information collected included: age, sex, cause of accident, time of death, and the Revised Trauma Score (RTS).

Results: There were 2,482 deaths - 3.9% of all trauma patients. Of these deaths, 337 occurred in the hospital, while 2,145 deaths occurred at home. The average ages for patients in these 2 groups were 36.4 and 38.2 years respectively. Most were men (83% and 80%, respectively). Road traffic accidents were the leading cause of death in 82% of all deaths. RTS were mostly (83%) less than 9. During the first 24 hrs, 77% died, and pre-hospital deaths occurred in 6%.

Conclusion: Trauma remains a major problem at Viet Duc Hospital. We recommend improving community education on injury prevention for high risk groups of young men. In addition, legislation and a change in the attitude of the policy-makers should be considered for preventing road traffic accidents.

Keywords: Trauma, mortality, Vietnam

INTRODUCTION

The World Health Organization has ranked trauma as one of the top five causes of death, and accounting for 30 to 50% of patient admissions globally. Injuries are responsible worldwide for the deaths of about 5 million people every year, or 16,000 deaths per day on average. In Southeast Asia, for every death due

to trauma, 20 are hospitalized, among the more than 100 patients visiting the hospital. All expenses on trauma care, including personal care as well as family and social care, were estimated at 2% of per capita GDP^{1,2}.

In the last 10 years, trauma in Vietnam was ranked highest on causes of death among patients, even though

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the prevention of trauma at the national level has improved significantly. Vietnam is still one of the leading developing countries with high rates of morbidity and mortality due to trauma³.

Viet Duc Hospital is one of the leading surgical referral centers in the Northern part of Vietnam, receiving many injury-related cases annually. The main cause of death of patients treated at Viet Duc Hospital was injury-related. The aim of this study was to identify risk factors related to mortality among trauma patients.

MATERIALS AND METHODS

A retrospective study was conducted on patients treated during the period between 2010 and 2011. Data were collected from all death records as well as autopsy reports, including records on pre-hospital deaths, records of deaths of patients released to die at home, but excluding records of patients who died due to other causes or who had incomplete records. To be included are deaths which occurred in the hospital within 30 days from the date of injury. The information collected included the following: age, sex, time of death, cause of accident, and the Revised Trauma Score (RTS).

RESULTS

There were 64,455 trauma cases treated at the hospital during the study period, of which 36,544 were due to road traffic accidents (57%). There were 2,482 deaths, constituting 3.9% of all trauma cases. Of these, 337 died in the hospital, and 2,145 were mortally injured and released to die at home. Table 1 provides some baseline data of patients in the two groups. The

Table 1 Age and sex of patients who died in the hospital or released to die at home.

	Total	Male	Average age, years (SD)
Released to die at home	2145	1716 (80%)	38.2 (18.0)
Death at the hospital	337	280 (83%)	36.4 (24.1)

data, both of patients released to die at home and of those who died in the hospital, showed that most deaths occurred in men.

Causes of injury included road traffic accident in 2,042 deaths (82%), occupational injuries in 117 (5%), injuries during leisure and sports in 318 (13%), and others injuries in 5 (1%). Parts of body injured are given in Table 2, in which a comparison between patients who died in the hospital and those who died at home is also shown.

There were 1,260 (51%) patients with RTS less than 6, and 787 (32%) with RTS between 6 and 9, and 435 (17%) with RTS of 9 or more. Most patients who died in the hospital died within the first 24 hours of injury (259 of 337 or 77%), 17% (59 of 337) died after 24 hours, and only 6% (9 of 337) died on arrival (pre-hospital).

DISCUSSION

Statistics from the Vietnam Health Environment Agency showed that injury was the leading cause of death during the period from 2005 to 2009 and represented 15% of all deaths that occurred in hospitals in Vietnam. Motor vehicle accidents were the main cause of death, with high rates between 18 and 20 deaths per 100,000. This is 2.4 times higher than

Table 2 Parts of body injured

	Died at home		Died in hospital	
	Number	Percentage	Number	Percentage
Head trauma	1,585	74	152	44
Multiple trauma	472	22	160	47
Abdominal trauma	23	1	9	3
Thoracic trauma	13	1	10	3
Spinal trauma	42	2	2	1
Limbs trauma	10	1	10	3

deaths due to drowning and poisoning, and 5 times higher than those due to suicide attempts and other causes. One VNIS study (VNIS 2010) conducted recently in Vietnam in association with the Public Health Schools, showed that nearly 35,000 deaths annually were due to injuries. This has declined significantly, from 88 deaths per 100,000 in 2001 to 38.6 per 100,000. However, this mortality rate is still relatively high compared to that of other countries³.

In the present study, injury-related deaths occurred in 3.9% of all trauma cases, a number similar to that of a research study in the Philippines, where the trauma-related deaths were at 4.7%. Another study from India investigated injury-related deaths in 11 villages from 1993 to 2002 and found that the death rate was at 11% of all deaths, and this was the third leading cause of death. Road traffic accidents were the leading injuries, with a proportion of 26% in men and 4% in women^{4,5}.

Road traffic accidents cause up to 25% of trauma-related deaths. As high as in Vietnam, there were 12,000 people who died every year in Thailand, compared with 17,000 children and young people killed by traffic accidents in the US^{1,2,6}. Motor vehicle-related mortality from 2000 to 2004 in Canada also showed that these accidents remain a leading cause of death among young people. In that report, there were 44,192 accident-related deaths; 32% of which (14,082) were the result of motor vehicle accidents. In the 15 to 24 years age group motor vehicle accident deaths (3,417) accounted for 70% of all accident deaths⁷.

The present study showed that trauma patients were mostly men (80% to 83%). The highest proportion of patients were young, and their average age was 36.4 years (the group who died in the hospital) to 38.2 years (the group released to die at home). These results were similar to those of other studies.

Occupational injuries were the second most common cause of trauma-related deaths in the present study. Khieu Thi Quynh Trang⁸ has conducted a study on trauma-related deaths from 2005 to 2009 in Vietnam, and reported that there were 1,883 occupation-related deaths, which accounted for 5.3% of all trauma-related deaths. In the present study, occupational injuries caused 5% of all trauma-related deaths.

Previous studies at Viet Duc Hospital revealed that, despite proper intensive care provided to trauma patients, the mortality rate was relatively high due to

the serious nature of the injuries, almost all of which were a result of head trauma. According to the report of Cao Doc Lap (2001), head trauma was the leading cause of death at 50.8%. In the report of Do Ngoc Hieu, deaths due to head trauma occurred in 22.3% and 26.6% of multiple injuries. In the report by Nguyen Duc Chinh (2003) the occurrence of head trauma was as high as 76.2%^{9,10,11}. Statistics from the US showed that there were 1.4 million head trauma injuries annually, and of these there were 50,000 deaths, 80,000 to 90,000 disabilities and nearly 235,000 cases hospitalized¹. In another American study, head trauma and hemorrhage were the leading causes of trauma-related deaths¹².

Do Ngoc Hieu et al.¹³ have studied the trauma score among trauma patients, using the RTS methodology, which was based on blood pressure, Glasgow Coma Score for head trauma, and respiratory distress, to show that RTS scores below 6 was associated with a death rate of almost 100%. Patients with RTS scores between 7 and 9 had a mortality rate of 60 % to 90%. This finding implied that head trauma was the most serious injury, usually resulting in death. In the present study, head trauma was associated with the highest proportion of deaths in the group released to die at home.

A study from San Antonio¹³ of 753 patients who died at the Trauma Center in 2003 found that 40% of the deaths occurred within a short time or upon arrival, and these were due to cardiac arrest in the Emergency Department. Head trauma accounted for up to 51% of these patients, with the Glasgow Score between 3 or 4. Similarly, a study from the Phillipines found that 63.7% died within the first 24 hours after arriving at the hospital, due to hemorrhage, and 25.8% died within 24 to 72 hours due to head injury. After 72 hours, deaths were due to severe infection or multiple organ failure⁵.

In the present study, 77% died in the first 24 hours due to serious bleeding or head trauma, with the Glasgow Score below 3. The RTS score was below 9 in 83% of all patients who died. Death occurring within one week were due to serious infections or multiple organ failure. In comparing the group who died in hospital with the group released to die at home, deaths in the first group were mostly caused by multiple injuries. However, head trauma was more common in the second group.

CONCLUSION

Although the overall picture concerning trauma injuries is not as dismal as it used to be in the past, trauma remains a major problem in Vietnam. Deaths resulting from trauma injuries during the 2 years between 2010 and 2011 at Viet Duc Hospital numbered 2,482 cases or 3.9% of all trauma patients. They were mostly young men with an average age between 36.4 and 38.2 years. Road traffic accidents were the leading injuries (82%). Most (77%) died within the first 24 hours, and pre-hospital deaths occurred in 6%. The cause of death in the group of patients released to die at home was mostly head injury. Multiple trauma was the most common cause of death in the group that died in hospital.

Improving community education on injury prevention for the high risk group of young men is what is needed in order to reduce the incidence and mortality of trauma injuries. In addition, legislation and a change in attitude of the policy-makers should be considered for preventing road traffic accidents.

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Button Battery Ingestion: An Analysis of 40 Pediatric Patients

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Abstract

Objective: Button battery ingestion poses a special problem in children because of its potential for significant morbidity and mortality. It may leak or burst within 24 hours of ingestion and cause corrosive alkaline burn or poisoning from heavy metal salt. The aim of this study was to evaluate clinical characteristics, management and outcomes of children with button battery ingestion over the last eight years at our institute.

Materials and Methods: Medical records of 40 patients who were admitted to Queen Sirikit National Institute of Child Health due to button battery ingestion from January 2004 to December 2011 were reviewed. The diagnosis of button battery ingestion was based on history, clinical symptoms, and results of radiological findings. Clinical data were reviewed including demography, clinical manifestations, imaging findings, management, and outcome.

Results: Of the 40 patients, male to female ratio was 1.4:1. Approximately 50% of patients were under 2 years of age (range, 8 months to 4 years). Only eight patients developed symptoms of dysphagia, vomiting or abdominal pain. Thirty cases (75%) were brought to the hospital within six hours after button battery ingestion. One patient had a battery impacted in the esophagus but spontaneously passed into the stomach. This button cell passed through the rectum three days later. Twenty three cases had button batteries lodged in the stomach on admission. Sixteen cases underwent gastroscopy with successful retrieval, whereas the remaining seven cases were conservatively treated. Button batteries were lodged at the small and large intestine in 17 patients; these passed through the rectum successfully within two days. There were no morbidity and mortality among these 40 patients.

Conclusions: Button battery ingestion is a common problem in children under five years of age. Batteries lodged in the esophagus should be immediately treated by endoscopic removal. Treatment of button batteries lodged in the stomach is controversial; either endoscopic removal or conservative management might be appropriate. Once the button cells are found in the intestine, they will spontaneously pass through the rectum within two days in most cases.

Keywords: button/disc/disk battery ingestion, endoscopic removal

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INTRODUCTION

Button or disc or disk batteries are small, coin-shaped batteries used in toys, watches, calculators and hearing aids. They contain mercury, silver, manganese, cadmium, lithium, zinc, copper, sulfur oxide, brass and steel. These are the components of the anode and cathode of the battery. Sodium or potassium hydroxide is contained in the button batteries in order to facilitate the electrochemical reaction¹. Over the past decade, ingestion of button batteries has been seen with increasing frequency in children. Most cases of button battery ingestion result in an uneventful course²⁻⁴. Button batteries lodged in the alimentary tract is potentially hazardous in some cases, especially if lodged in the esophagus⁵⁻⁸. The battery may leak or burst within 24 hours after ingestion, and may cause corrosive alkaline burn or poisoning from heavy metal salt.

Management of button batteries in the alimentary tract according to guidelines ranged from aggressive treatment such as surgery in the past, to conservative management at the present time^{5,9}. We herein analyzed 40 pediatric patients with button battery ingestion treated at our institute during an 8-year period.

MATERIALS AND METHODS

The medical records of 40 patients with ingestion of button batteries who were admitted to Queen Sirikit National Institute of Child Health between January 2004 and December 2011 were reviewed. The study began after the research proposal had been approved by the Institutional Review Board (Document No. 55-075). Medical records were abstracted for information on gender, age, clinical, presentations, radiological findings, hospital course and results of the treatment.

RESULTS

Forty patients, consisting of 23 males and 17 females, with a history of button battery ingestion were admitted and treated at our institute during the study period. Their ages ranged from 8 months to 4 years and 52% of patients were under 2 years of age (Table 1). Approximately 80% of cases had no symptom after button battery ingestion. Vomiting, dysphagia and abdominal pain were noted in three, three, and two cases, respectively. The interval from ingestion to admission varied from one hour to five days. Thirty

cases (75%) were brought to the hospital within six hours after ingestion. Most of the ingested button batteries (90%) were used for toys and only 10% were used for electrical devices such as calculators and watches.

Forty-three ingested button batteries were seen on radiological imaging, one battery per patient in 38, and 2 and 3 batteries in the 2 remaining patients (Figure 1 and 2). From the initial radiographs, 25 of the 43 button batteries were found in the stomach (Table 2). The remaining 18 batteries were lodged in the small and large intestine in 10 and 7 cases, respectively, and one in the esophagus. One boy ingested two button batteries; one was found in the lower esophagus and the other in the stomach (Figure 1). He was admitted by a pediatrician and a surgical consultation was made a few hours later. He was conservatively treated and the two batteries were passed from the rectum within three days.

Of the 23 patients with 25 button batteries lodged in the stomach, 16 (18 button cells) underwent gastroscopy with successful retrieval (Figure 3). Only mild erosion of the gastric mucosa was noted in five cases during gastroscopic removal of batteries. The remaining seven cases (seven button cells in the stomach) were conservatively treated, with spontaneous passage of all batteries from one to three days. The decision to endoscopically remove or conservative

Table 1 Demographic data and clinical presentation of 40 patients

Clinical data	No. (cases)	Percent (%)
Sex		
Male : female	23 : 17	58 : 42
Age (years)		
0-1	7	17.5
1-2	14	35.0
2-3	10	25.0
3-4	9	22.5
Clinical presentations		
Vomiting	3	7.5
Dysphagia	3	7.5
Abdominal pain	2	5.0
Absence of symptom	32	80
Time from ingestion to admission (hours)		
0-3	20	50.0
3-6	10	25.0
6-24	5	12.5
> 24	5	12.5

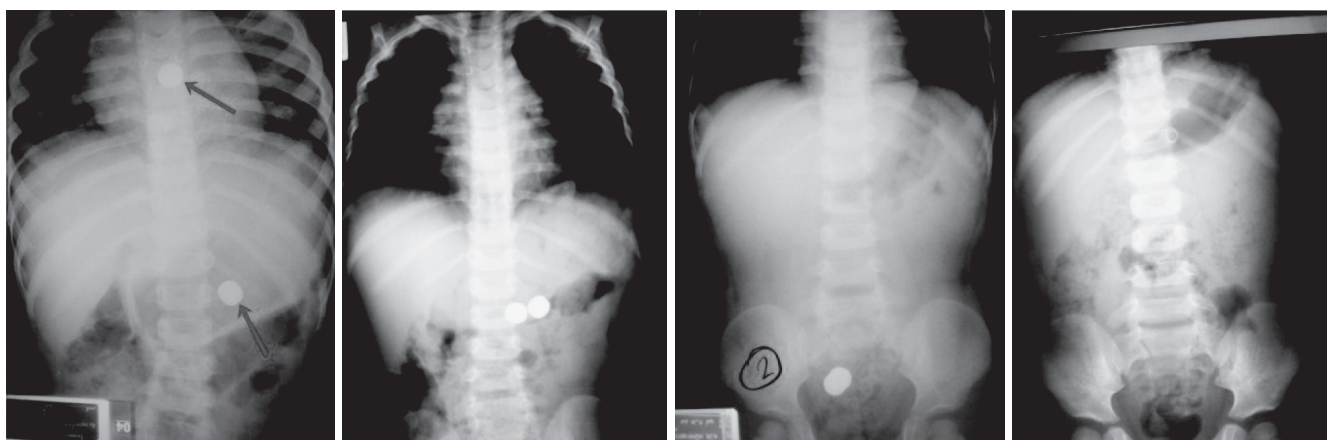


Figure 1 Two button batteries lodged at the lower esophagus and the stomach. Battery in the esophagus spontaneously passed into the stomach within a few hours. This patient was conservatively treated and the two batteries were expelled from the rectum within 48 hours.

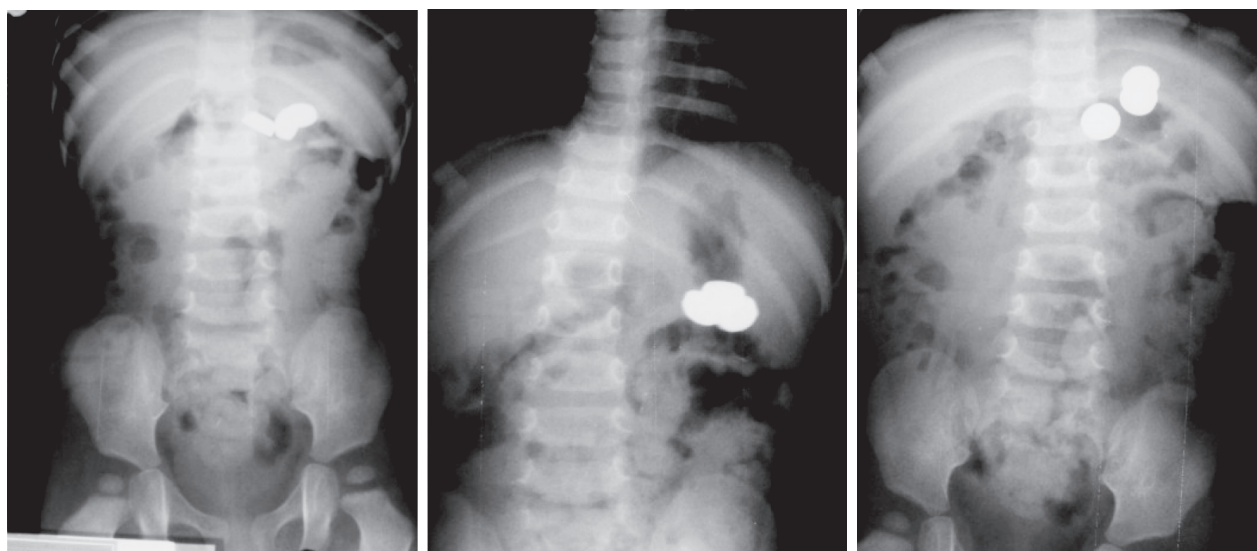


Figure 2 A boy with three button batteries in the stomach, which was successfully removed endoscopically

Table 2 Site of initial button battery lodging and clinical outcomes

Sites of lodging	No. (cases)	Successful endoscopic removal	Successful conservative treatment
Esophagus	1*	-	1*
Stomach	23	16	7
Small intestine	10	-	10
Large intestine	7	-	7

*One patient ingested two button batteries, one seen at the lower esophagus and one in the stomach. Battery at the esophagus spontaneously passed into the stomach and was conservatively treated.

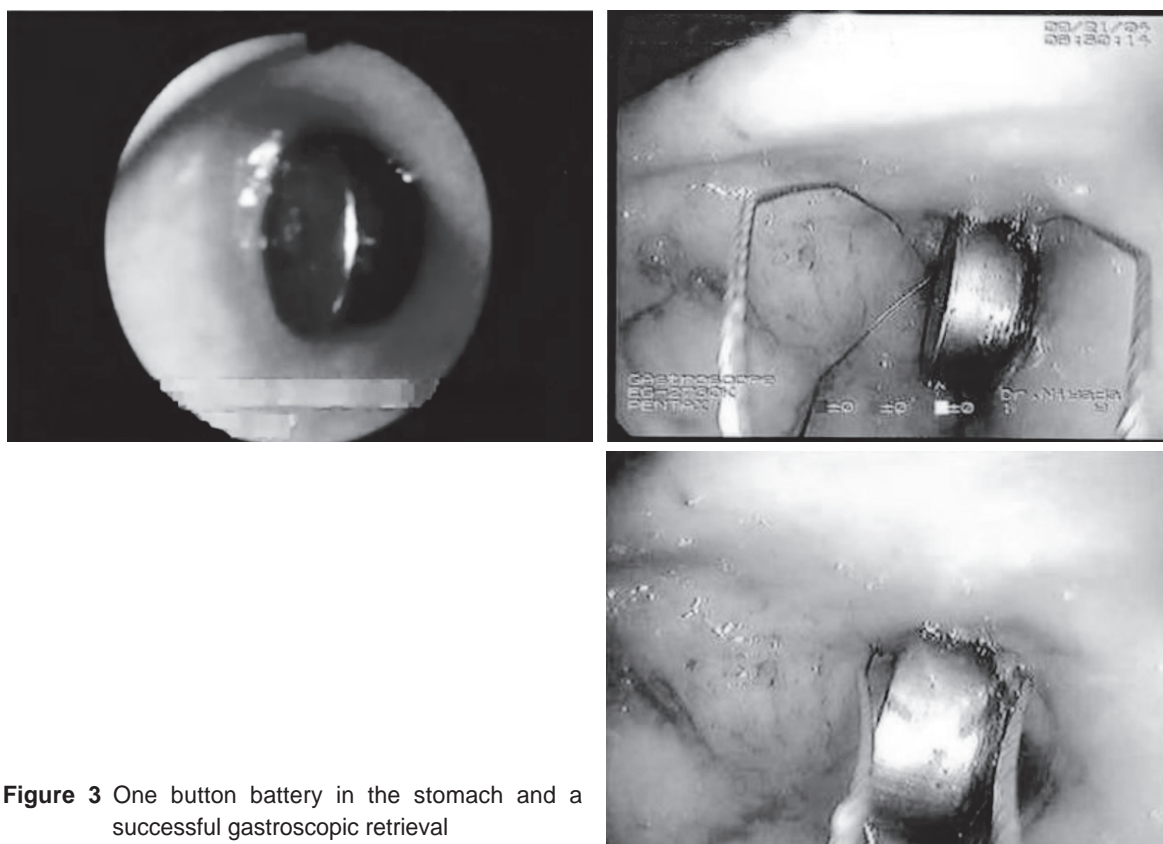


Figure 3 One button battery in the stomach and a successful gastroscopic retrieval

waiting for spontaneous passage of button batteries in the stomach was based on the judgement of each consultant surgeon. Seventeen patients who had button batteries located in the small and large intestine were successfully treated in a conservative manner, without the use of prokinetic drugs or laxatives. All button batteries were passed within two days.

The mean diameter of button batteries was approximately 12 mm (range 8 to 20 mm). The diameter of the button battery impacted at the esophagus was 18 mm. One battery impacted in the stomach for five days, and measured approximately 20 mm in diameter. The duration of hospitalization ranged from one to five days. All 40 patients made complete recovery after discharge.

DISCUSSION

Several previous reports stated that button battery ingestion is most often seen in children aged five years or younger^{2,4,10}. All patients in the present series were less than 5 years old and approximately 50% were 2 years or younger. Most children (80%) were

asymptomatic after button battery ingestion. Only 20% of patients had symptom of vomiting, dysphagia and abdominal pain. According to the studies of Litovitz² and David¹¹, button batteries were mostly used in hearing aids, watches, games and toys, and calculators before being ingested. However, most of the ingested batteries in our patients were previously used in toys such as toy mobile telephones and remote controls of electric toy cars.

Almost all of the button batteries in the present study were small with the average diameter of 12 mm and fortunately can readily pass into the stomach and intestines. One of 40 patients was demonstrated to have a button battery lodged in the lower esophagus on admission, which spontaneously passed into the stomach within a few hours. No battery capsule separation was noted in our patients, even when the batteries were lodged in the gastrointestinal tract for as long as five days.

David and Ferguson¹¹ reported that 5% of their patients ingested more than one battery, and suggested that both chest and abdominal radiographs be obtained in every case. Button battery lodged in the esophagus

is a serious condition which may lead to sudden death, esophageal burn, esophageal perforation and tracheoesophageal fistula^{4-8,11-14}. Most authors suggested that button batteries lodged in the esophagus require emergency esophagoscopy removal without delay^{2,4,6,9-18}.

The management of button batteries lodged in the stomach is more controversial: gastroscopic removal and conservative management are both advocated in the literature. Litovitz² suggested that button batteries arrested in the stomach were corroded more severely and fragmented more frequently than those arrested in the small and large intestine. Most investigators suggested that button batteries which have passed beyond the esophagus need not be retrieved^{2,16-18}. Endoscopic removal of button batteries in the stomach should be done for patients presenting with vomiting, abdominal pain and other acute abdominal symptoms, or for a lodged battery of size greater than 20 mm in diameter or those remaining in the stomach for over 48 hours^{2, 16-18}.

A recent management guideline from the National Battery Ingestion Hotline (NBIH) has recommended conservative treatment in a child less than 6 years of age who had a small battery less than 15 mm in diameter lodged in the stomach. Gastroscopic removal should be done in patients with symptoms, or for batteries remaining in the stomach four days after ingestion⁹. We agree with the above criteria for conservative treatment, but would recommend endoscopic removal as soon as possible for the following: patients who are symptomatic, button batteries with a diameter larger than 15 mm that are lodged in the stomach, or button batteries lodging in the stomach for over 48 hours. Button batteries lodging in the small and large intestines conservatively treated will usually be passed with stool in 1-2 days.

Prevention plays an important role in button battery ingestion. The battery could be made more durable, suitable for prolonged lodging in the alimentary tract without rupture of the capsules. Labeling on the packaging could draw attention to the need to keep button batteries away from the reach of children^{3,11}. Manufacturers could produce smaller button batteries (less than 16 mm) instead of larger ones (over 20 mm) in order to prevent lodging in the esophagus¹⁹.

CONCLUSION

Children younger than five years are at risk for button battery ingestion. Batteries lodged in the esophagus should be immediately treated by endoscopic removal. Button batteries found in the stomach could be treated by endoscopic removal or conservative management. Most clinicians recommended that batteries arrested in the stomach for over 48 hours should be treated by endoscopic removal. Once the button cells have passed into the intestine, most will spontaneously pass through the rectum within 48 hours.

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Improving Knowledge and Skill for the Management of Trauma Patients in the Emergency Rooms of Three Southern Border Provinces of Thailand

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Abstract

Objective: The three southern border provinces of Thailand are prone to frequent terrorist attacks. A large number of ensuing deaths and disabilities are reported each year. There is a standard training program (Advanced Trauma Life Support, or ATLS) to prepare emergency room (ER) doctors to take care of patients with acute injuries. The objective of this study was to improve the standard of care provided by ER physicians using the ATLS training course.

Methods: An ATLS training course was set in the southern part of Thailand to train ER physicians from the three southern border provinces.

Results: Of the 32 participants (2 courses), 17 failed their pre-training examination but only 11 failed in the post-training examination. All participants passed the practical skills examination.

Conclusion: This result suggested that ER doctors who are working in the three southern border provinces needed extra training to improve their management of trauma patients. The ATLS course can improve their abilities and confidence in the management of severe injuries.

Keywords: ATLS, trauma service, emergency room

INTRODUCTION

Terrorism in southern Thailand is active mainly in the three border provinces, namely Narathiwat, Pattani and Yala. There are also some terrorist activities in parts of Songkhla and Satun^{1,2}. Many civilians were

injured or killed, or have gone missing while Thai authorities have been trying to find an effective new approach to solve problems³. In order to save lives, a standard treatment guideline is important for doctors when attending to injured patients in the emergency

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room. They have to conduct surgical procedures in an environment with limited access to advanced medical equipment. Some healthcare personnel may not have adequate skills in caring for trauma victims. Patients with acute life threatening traumatic injuries are thus often referred to other hospitals with more experienced doctors and proper medical equipment.

Presently, there is a standard program for training ER doctors to take care of patients with acute injuries. It is the Advanced Trauma Life Support (ATLS) program that was developed by the American College of Surgeons^{4,5}. It is an internationally recognized standard training program for initial assessment and acute injury management^{6,7}. The purpose of the ATLS course is to provide practical education and training to handle severe trauma and to establish a standard protocol of resuscitation. This standard training course was implemented in the three border provinces to provide doctors with effective approaches to treating severe injuries. In this study, improvement of skills was reported by the participants after the ATLS training. The effectiveness of the training was also evaluated by comparing the multiple choice questions (MCQ) test scores before and after participating in the training programs.

MATERIALS AND METHODS

Two groups of ER doctors applied to participate in the ATLS program in the three border provinces of Southern Thailand. Two courses of the ATLS program were conducted during two separate periods: 17th to 19th August 2011 (Group 1) and 27th to 29th April 2012 (Group 2). All participants sat for the pre- and post-training MCQ tests.

The ATLS program consisted of 2 sections. The first section was on theory. In this section, skilled trauma surgeons share their experiences with the participants, which included knowledge of resuscitation, patient assessment and preliminary treatment. The instructors explained the key concepts with a presentation of photographic slides.

The second, practical section consisted of two parts. The first part was on general skills, which included airway maintenance and ventilation, management of shock, practical X-rays for thoracic and spinal injuries, head, neck and musculoskeletal trauma, and initial assessment and management. The second part was on

surgical procedures, which included cricothyroidotomy, needle thoracostomy and thoracostomy tube insertion, pericardiocentesis, and diagnostic peritoneal lavage (DPL).

After completion of the practical section, participants were evaluated using the initial assessment skills station, with a cognitive and skills performance evaluation form. Using a checklist, the instructors graded and provided scores for the test simulations. To pass, participants must score 80 percent or more on the post-training MCQ paper examination, and also pass the practical skills examination on the initial assessment and management scenarios.

The effectiveness of the ATLS program was tested by comparing participants' performance scores in the theoretical section before and after training (pre-test and post-test), and percentage of participants passing the practical skills assessment.

Three months after completion of the ATLS course, participants were asked to complete a questionnaire grading the usefulness of the course. This questionnaire contained a theoretical and a practical part. The theoretical part had questions with four-grade response, and the practical part had questions with checklist tick boxes.

The test scores were reported as mean and standard deviation. The number and proportion of participants who passed the practical section in ATLS training program were also reported. The results of applying the usefulness questionnaire were given as percentages. For the before-after comparison, paired t-test was used to compare the mean scores of MCQ in the theoretical section, and the McNemar chi-square test was used to compare the number of participants who passed the test. A p -value < 0.05 was considered statistically significant.

RESULTS

There were 16 participants in each group. All candidates sat for a pre-training MCQ test before attending the lectures. The overall mean pre-training score was 30.7 ± 4.7 points. The score of the two groups were similar (30.9 ± 3.9 for the first group and 30.5 ± 5.4 for the second group, $p > 0.05$). There was improvement of their performance after training. The mean post-training test score increased to 31.9 ± 3.0 points, which was significantly better than the mean pre-training

Table 1 Result of the response to the questionnaire on the usefulness of the ATLS course

Theoretical Part	Grade of usefulness (%)			
	Highest	High	Some	Least
Airway	100	0	0	0
Shock	100	0	0	0
Thoracic Trauma	100	0	0	0
Abdominal Trauma	91	9	0	0
Burn and Cold Injury	69	31	0	0
Head Trauma	100	0	0	0
Musculo-skeletal Trauma	94	6	0	0
Spine and Spinal cord	100	0	0	0
Trauma in women	63	37	0	0
Pediatric Trauma	88	12	0	0
Trauma in the Elderly	91	9	0	0
Stabilization and Transport	100	0	0	0

Practical Part	What have you practiced after training?	
	Yes (%)	No (%)
Chest decompression	59	41
Diagnostic peritoneal lavage	19	81
Pericardiocentesis	0	100
Cricothyroidotomy or tracheostomy	0	100
X-rays in trauma	97	3
Splinting	91	9
Triage	75	25

scores ($p < 0.05$). There was no statistically significant difference between the post-training scores of the two groups (32.8 ± 3.2 and 31.8 ± 2.8 points, respectively). A score of at least 80 percent of the total MCQ score was considered to be a pass in the training. In the pre-training test, 15 participants (46.9%) passed (7 and 8 participants from the first and second group, respectively). After training, the number of participants who passed the MCQ test was 21 (65.6%; $p < 0.05$). In the practical section, all participants passed the examination which was approved by the American College of Surgeons ATLS subcommittee.

After three months, participants were asked to fill a questionnaire on the usefulness of the course. In the theoretical part, more than 90 percent of participants graded the topics of airway, shock, thoracic trauma, abdominal trauma, head trauma, musculoskeletal trauma, spine and spinal cord trauma, trauma in the elderly, and stabilization and transport, as being of highest usefulness. None graded any topic as being less than highly useful.

In the practical part, there were three areas in

which most doctors had the occasion to later apply the knowledge obtained from the training (X-rays in trauma, splinting and triage). But there were other topics from the training that were not so useful (Table 1).

DISCUSSION

The ATLS training program was conducted in the three border provinces of Thailand in order to improve the ER doctors' performance in trauma management. The ATLS training consisted of two sections. Experienced instructors lectured on standard knowledge in the theoretical section. Participants then practiced in various simulation stations.

In the present study, the post-training MCQ tests scores were higher than the pre-training scores on the average. All participants gained more skills and confidence in managing severely injured patients.

Efficient management implies that the trauma team be ready to provide resuscitative care both at the site of accident and at the emergency room.

Experienced doctors are the key to help patients with life threatening injuries. The ATLS training program will be useful in improving the doctors' knowledge and skills and enhance their confidence. In the present study, less than 50 percent of doctors passed the pre-training MCQ test, but the test results improved after training.

The scores from the practical training section were also encouraging. Most doctors accepted the advantages of training. Nonetheless, there were certain skills in the practical part which doctors did not apply after completion of the course, and these included diagnostic peritoneal lavage, pericardiocentesis, cricothyroidotomy, and tracheostomy. It might be because most doctors decided to refer some of the more severely injured patients to other hospitals.

Because most participants noted the usefulness of training for emergency management, more of these training programs should be offered to other physicians in these and other provinces. These extra courses could help more doctors in the initial assessment of severely injured patients and improve their skills in other lifesaving procedures.

CONCLUSION

The ATLS training course can improve the ER doctors' skills and confidence in the management of the severely injured patients.

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SURGICAL EDUCATION

MATRIX TRAINING PROGRAM

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The training of a surgeon in Hong Kong is based mainly on the United Kingdom model being related to the history of Hong Kong. The beginning of formal surgical training can be dated back to about 50 years ago when the Royal College of Surgeons of Edinburgh conducted Fellowship Examination in Hong Kong. The training program is basically a time based program and it is on job training with Part 1 and Part 2 Examinations. When Hong Kong returned to China in 1997, we had to make changes in terms of post-graduate education. The College of Surgeons of Hong Kong was established in 1990 to oversee surgical education and standard of practicing surgeons in Hong Kong. It is by law that post-graduate training not less than 6 years with an intermediate and then final examination leading to Fellowship and Specialist Registration in Hong Kong. It is still a time based model with reference to training program of Royal College of Surgeons of Edinburgh and the 2 Colleges conduct conjoint examinations. As time changes, the time based on job training model becomes inadequate to equip our young surgeons with the skills required for their practice in particular with the emergence of work hours limitation. The trend is moving towards a competencies based learning where teaching of a surgeon becomes more structured. Competencies that we expect our trainees learning from their trainers role modelling such as communication skills and team work are now included in the training program where courses are

available. Training of a surgeon includes technical and non-technical skills where both are of equal importance. Despite the world trend of competencies based learning, our College found that clinical exposure in terms of training in technical and non-technical skills still plays an important role. Therefore we proposed a matrix model in training where a trainee can complete his/her training only when all competencies are met and also completing a minimal time frame in terms of clinical exposure. The time frame chosen is 6 years as at present. We will monitor the standard achieved by our trainees to refine our training program as there are still challenges ahead like limited work hours, aging population and the increasing knowledge and complexity of surgical operations.

THE CHALLENGES OF POST GRADUATE SURGICAL TRAINING AND EDUCATION IN DEVELOPING ECONOMY

Ranil Fernando M.S. (Col), FRCS (Edin), FRCS (Eng), FCPS (Pak), FASI (India)

President of College of Surgeons of Sri Lanka

The task of training and educating Postgraduates in surgery is a challenging endeavour as it has to, of necessity, evolve and change constantly. These changes must be cognizant of the resources required, the educational value of change, the health needs of the country/community, emerging global trends and the aspirations of the postgraduates. The interplay of all these factors makes the task of educating and training postgraduates in surgery a challenge even in a developed country. When there is limitation in resources, the task becomes more challenging,

if not daunting. Sri Lanka is a developing country and the state is the main provider of funding for postgraduate education and training. The state requires competent specialists to provide equitable health care for the population. The Postgraduate Institute of Medicine is the only (PGIM) organization that undertakes postgraduate training in Sri Lanka. The PGIM collaborates with the university grants commission, ministry of higher education and the ministry of health in carrying out this task. The bureaucracy and the conflicts with in this chain of command throw up challenges to training regularly. In order to overcome this, a proposal for the establishment of an Independent institute which deals directly with the ministry of finance has been proposed and accepted. The main issue in training postgraduates in surgery is to define what type of surgeon/surgeons a country needs. While the needs of the community are of importance if the aspirations of the trainee are ignored, the training programme is unlikely to be successful as no one will undertake training. Striking the right balance between the needs and the aspirations has been a constant challenge faced by the PGIM in Sri Lanka. The Ministry of health requires generalists to man the state hospitals and the emphasis in the training programme has been to provide a good overall general training. To cater to the aspirations of the trainees, some specialty training has been permitted. To make general surgery more rewarding, in keeping with the global trends, all generalists are required to select an area of special interest and obtain additional training, but they will work mainly as generalists. The other aspect that needs special emphasis is research. Research requires resources and in developing economy, this is indeed a challenge. Yet it is important to inculcate a research culture in the modern surgical trainee and hence research presentations and publications have been made mandatory in the training programme. Despite many challenges the surgical training & education in Sri Lanka attempts to maintain the right balance between academic aspirations and the health needs of the country.

SURGICAL EDUCATION & THE PHILIPPINE COLLEGE OF SURGEONS: THE CHANGING LANDSCAPE OF SURGICAL TRAINING IN THE PHILIPPINES

Alfred H. Belmonte MD FPCS, FPSGS

President, Philippine College of Surgeons

The Philippine College of Surgeons is one of the oldest Colleges in Asia, founded in 1936 with the goal of improving the standard of surgical care available in the country through continuing surgical education. At its

inception, it encompassed all specialties of surgery, ophthalmology & ENT, even Obstetrics & Gynecology. CSE found a common ground that crossed all boundaries with no problems. After celebrating its 75th Anniversary two years ago, the PCS struggled to remain relevant as an umbrella organization of the surgical specialties, with no one even sure how an umbrella was supposed to function. General Surgery, which was and remains as the backbone of the College was devolved to the Philippine Society of General Surgeons a little more than a decade previously with the College left with no training programs, no certifying Board and no accrediting bodies. Its component societies had grown in numbers and capabilities, their Fellows given the option of applying for Fellowship to the College. A good number chose to obtain membership only in their specialty, opting not to become Fellows of the College. Only the Philippine Society of General Surgeons imposed a mandatory period for entry in to the College under pain of revocation of Fellowship. This presentation discusses the path to renewed relevance taken by the College with the hope that it shall not only invite suggestions from the international gathering of surgeons who have faced similar situations but also provide lessons to those who shall encounter it in their future.

SURGICAL TRAINING WITH SIMULATION

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Surgical training has never been more difficult. The advent of work hour restrictions, fears of malpractice, and diminishing surgical volume have made the traditional see one - do one - teach one apprenticeship model obsolete. Surgical educators must ensure that trainees are highly competent independently functioning experts who can perform as advertised. The training of trauma surgery has fallen on even harder times as most trauma cared for in 2013 is managed non-operatively. One potential solution for this problem is to use non-patient models to train to a proscribed level of proficiency before being allowed to practice on a living human. Animals provide one such mode and are excellent for bleeding and tissue tool interaction, but are poor for teaching human anatomy and are politically incorrect. Cadavers are another viable alternative but are limited by cost, availability, and variable quality/anatomy. Surgical simulation will likely provide a solution to many of the problems described above. Though this field is in its relative infancy it is rapidly expanding and new simulators are being developed and validated. This

presentation will review the current state of surgical simulation for trauma surgery training as well as the near future which will include standardized physical or virtual reality models with surgically correct human anatomy which bleed and that one can operate with actual surgical instruments and techniques. The key to success of these simulators will be incorporating them into robust and validated curricula that will eventually allow for training of trauma surgical skills and high stakes testing.

PROCEDURE BASED ASSESSMENT: CURRENT SITUATION IN THAILAND

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PBA (procedure based assessment) is a tool for assessing the competency of surgical trainees in terms of clinical skills (factual knowledge, psychomotor, decision making and communication skills). PBA requires agreement of developing, using, and collecting the data among the training program hospitals. This process should be highlighted. To develop each PBA is crucial, demanding brain storm, knowledge and the agreement to mandate the PBA as the universal assessment tool. This tool also requires the validity and should be collected as the formative evaluation which is easily to retrieved and analyzed regularly by the training program director. Without agreement to have this mandatory assessment, PBA will never be possible. The current situation of PBA in Thailand is in the phase of developing the indicative PBAs and trials. In plastic surgery training program, there is the agreement to develop 4 indicative procedures, cleft lip repair, fixation of zygomatic fracture, upper blepharoplasty and neck dissection. The pilot using of this PBA gain the positive feedback from the trainers and trainees. The data collection for the formative

evaluation should be computerized as much as possible to be easily retrieved for analysis. The development of application is still under constructed in the same software of the resident E-logbook. The success of the PBA is deeply depended on the cooperation among the training program hospitals.

TRAUMA SURGERY IS NOT EMERGENCY GENERAL SURGERY: THE TRAINING OF A TRAUMA SURGEON

K. D. Boffard

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Traditional surgical training has required a very strong knowledge of anatomy, and pathology. Increasingly, the training has been biased towards an anatomical approach using such technological advances laparoscopy, diagnostic imaging, and computer simulation. It is mandatory to have an understanding of the pathology which is the focus of the surgical intervention. Although increasingly non-operative, trauma surgery has become more "scientific" and much more strongly based in the intensive care unit. The modern trauma surgeon must not only have an appreciation of the surgical problems associated with both blunt and penetrating trauma, but must also have an appreciation of the physiology of the human body, how it reacts to metabolic and physical stressors, and the trauma surgeon must understand and support the physiological requirements which result. Consequently the training of the trauma surgeon has diverged from that of the general surgeon, including that of emergency surgery, and would now include the management of major trauma, including its prevention, Burns surgery, and disaster management. The modern needs of this training will be analysed in the light of global trauma training experience.

SURGICAL INFECTION

SPECTRUM OF ABDOMINAL TUBERCULOSIS

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Abdominal tuberculosis is a great mimicker of intestinal inflammatory diseases. Despite considerable progress in therapy, it remains one of the single largest cause of intestinal obstruction. This study aims at describing the clinical presentation and surgical management,

including minimal access surgery, of abdominal tuberculosis in a tertiary referral hospital in a developing country. This descriptive study was conducted on histopathologically diagnosed cases of abdominal tuberculosis. Detailed history and clinical examination was performed in all cases. Preoperative anatomical site and type of lesion was noted. Variable clinical presentations were seen. Abdominal pain, fever, vomiting and weight loss are the commonest symptoms. The commonest lesion was ileocaecal mass and ileal

strictures. The main surgical options were definitive surgical procedures like resection and anastomosis, stricturoplasty and right hemicolectomy. Minimal access surgery has a definite role in the diagnosis and management of abdominal

tuberculosis. Surgeons should be aware of the entire spectrum of abdominal tuberculosis - clinical and pathological - so as to avoid misdiagnosis and offer prompt and adequate surgical treatment.

SURGICAL QUALITY IMPROVEMENT

SURGICAL QUALITY IMPROVEMENT: LESSONS FROM THE AIRLINE INDUSTRY

Siew Kheong LUM, MBBS, FAMM, FRCSEd, FACS, FRACS(Hon), FAMS(Hon)

The recently released Francis report in the UK gives valuable insights on the discordance between the public view of quality compared with the tunnel vision view of quality held by many in the health profession. Robert Francis QC opined, 'This is a story of appalling and unnecessary suffering of hundreds of people. They were failed by a system which ignored the warning signs and put corporate self interest and cost control ahead of patients and their safety..... There was lack of care, compassion, humanity and leadership. The most basic standards of care were not observed and fundamental rights to dignity were not respected.' There was no mention of specifics like MRSA infection rate, volume-outcomes and anastomotic leak rate of each surgeon etc. It is important to understand quality in the way we rate an airline experience. Every step of the passenger encounter is factored into the perception of QUALITY. The check-in experience, the punctuality of the take off and landing time, the in-flight experience, the interaction with the stewardess, the response time of the stewardess to pressing of the overhead light, the quality of the food, the functioning of the headset, TV and working toilets are important. The passenger also records unconsciously the leadership structure in the plane between the pilot, chief steward and stewardesses, the professionalism and collegiality among the stewardesses, their teamwork, their communication skills and their commitment to hospitality. This comprehensive experience is always subjective and as the saying goes, "you can easily recognise quality care when you experience it." It is unlikely that a passenger will ask for information like, "How many times has the pilot flown this aircraft. Is he competent?" A passenger has explicit trust that a reputable airline would have done the right thing to ensure the plane is air worthy, the pilot is fit and healthy, not fatigued, had regular simulation practice to clock a certain number of hours and followed checklists for key operations. Quality is dependent on comprehensive perception. It is not the work of one outstanding individual but the result of teamwork. When

one weak link fails, the entire system fails. This is the direction to follow in improving quality care. The lecture will focus on the areas the Health authorities and surgeon can improve quality with lessons from the airline industry.

DELIVERING EQUITABLE SURGICAL CARE IN A DEVELOPING ECONOMY

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President of College of Surgeons of Sri Lanka

The delivery of surgical care is a complex and demanding task. It tends to be labour intensive and resource driven. Delivering such care in a developing economy such as in Sri Lankan economy is indeed a formidable challenge. Delivering equitable care seems almost a utopian concept. The state sector is the main provider of health in Sri Lanka with the private sector playing an increasing role in larger cities. The State health care system is free to all patients and it is indeed commendable that a reasonable standard of surgical care is available in most parts of the country. The country has a state hospital network which caters to the surgical needs of the majority particularly from the lower socio-economic strata. The main problem encountered is the dearth of surgeons to man the hospital and the lack of infrastructure facilities to provide surgical care in the more distant parts of the country. The total number of general surgeons available in the country does not exceed 150; if all the surgical specialties are included and the surgeons employed in universities are counted the number would not exceed 250. This is indeed a low surgeon/patient ratio compared to some countries, yet most patients have access to surgical services with a radius of about 50 miles from their home. The main question is; is it equitable care? This is difficult to assess both in terms of the quality of services and the general care received by the patients. "The brain drain" where the country loses many surgeons to developed countries has made the provision of equitable care a problem. Trauma constitutes a significant portion of the emergency workload, yet the availability of ambulances and other transport facilities are not satisfactory. Efforts have been made to eliminate single man stations and develop centres of excellence where tertiary and high level

care can be delivered to the surgical patients and even a transplants are done free of charge in the state sector hospitals. The training programme too has undergone revisions to accommodate the changing needs of the country. General surgery with special interest is the main area of emphasis while opportunities are provided for training of subspecialties as well. Training of more surgeons and the provision of infrastructure facilities such as better hospital facilities, better housing and other incentives for surgeons and development of centres of excellence with an organized referral system will be required to provide equitable surgical care in the future.

TRAUMA QUALITY IMPROVEMENT PROGRAM-WHO INITIATIVE

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The World Health Organization has extended its help in many ways towards developing and improving trauma care globally. Apart from fulfilling its primary function of advocacy, the WHO strives to provide guidance to its member nations through the resolutions passed in the World Health Assembly. Although the organization acts as a catalyst for the advancement of trauma care globally, its influence is most helpful for those in the developing world. The WHO identifies injury prevention and care as one of its foremost priorities, which has resulted in a number of commendable initiatives. One such measure, the VIP short course on Quality Improvement in Trauma Care was formulated by the Violence and Injury Prevention department in 2009. A major portion of the work is carried out by the Trauma Emergency Care Service Committee, along with other stake holders such as IATSIC. The Trauma Quality Improvement Program is a short course spanning 2-3 day and is structured along a modular format. 8 such modules cover a wide range of techniques of Trauma QI which are applicable in any country or context. The program addresses the appropriateness of different techniques at different health care facilities whilst stressing on the importance and methods of data collection and usage. It includes PowerPoint presentations and facilitator's guide. The course manual is printed in English, Spanish and Portuguese to facilitate language accessibility.

SURGICAL QUALITY IMPROVEMENT IN AUSTRALIA AND NEW ZEALAND

Ian Civil

Immediate Past President, Royal Australasian College of Surgeons

Quality surgical care is an expectation of patients, funders and the providers of healthcare but there are many examples where the quality of healthcare has been sadly lacking and intervention by those aware of the limitations absent. In both Australia and NZ there are organisations such as the Clinical Excellence Commission in NSW and the Health Quality and Safety Commission (HQSC) in NZ that have been established to stimulate quality improvement. In both countries introduction of the WHO surgical safety checklist has occurred to reduce error around the time of surgery and simultaneously initiatives to increase VTE prophylaxis, decrease SSI, reduce in-hospital falls and medication errors are all designed to improve the quality of the surgical journey. While there are few examples of a surgical quality improvement process such as run in the USA under the auspices of the American College of Surgeons, the development of Australian Trauma Quality Improvement Program (AusTQIP) under the auspices of the National Trauma Research Institute has been developed to identify process and outcome markers of quality surgical care and allow hospitals to monitor and benchmark their performance in the delivery of trauma care. The HQSC in NZ similarly has developed a set of process and outcome markers for similar reasons and appropriate timing of antibiotic and VTE prophylaxis and the frequency of these adverse events are being monitored and fed back to healthcare providers. Sentinel event recording and the investigation of these events similarly provides important feedback to providers. Surgical quality requires a process where a standard is set, markers of that standard are developed, and data is recorded. Without data, baselines are unknown and the effect of any change speculative. Once data is available this must be used to inform change in an evidence based way. Presently there are many examples where standards have been set but many fewer where relevant process and outcome markers are recorded. There is still a long way to go to ensure process which can guarantee a quality surgical experience for patients in Australia and NZ.

CPD AND REVALIDATION IN AUSTRALIA AND NEW ZEALAND

Ian Civil

Immediate Past President, Royal Australasian College of Surgeons

An intrinsic component of professionalism by both the traditional and modern definitions is maintenance of competence. This expectation of the professional has been largely filled in the past by tacit expectations laid at the foot of the practitioner with a framework described by Colleges' continuing professional developments. Society

is no longer satisfied with this as it does not necessarily confirm the competence of the individual practitioner. Thus revalidation, a concept whereby some form of appraisal allows a third party to determine the currency, competence and fitness to practice of a practitioner. Within Australia and New Zealand this process is in its infancy. CPD requirements are becoming more specific and in particular demonstration of some form of multisource feedback is now a requirement by the RACS on an annual basis. While revalidation in some time away, assessment in the form of practice visits is a recommendation of the Medical Council of NZ. The NZ Orthopaedic Association has had such a practice visit scheme running for some years and is enthusiastic while simultaneously noting that it is resource intensive. Intrinsic to revalidation must be a process to assist those who struggle with the process. Until the resource implications as well as a range of options for the various outcomes are considered and available, targeted CPD and a reliance on professionalism to ensure competence will of necessity remain.

INTERNATIONAL COLLABORATION IN SURGERY “SURGICAL LEADERSHIP”

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Surgeons, by themselves are specially gifted individuals; to provide leadership to this special class requires many extraordinary qualities. I have suggested 10 Commandments for a Surgical Leader:

1. You shall strike the right balance between clinical/ surgical work, teaching, and academics/ research!
2. You shall choose your working style carefully: graceful and elegant!
3. You shall be ambitious, proud and humble at the same time!
4. You shall innovate not emulate!
5. You shall empower other team members!
6. You shall know your resources and optimize them!
7. You shall not stop learning and moving forward!
8. You shall be a good mentor!
9. You shall be knowledgeable as well as wise!
10. You shall be a leader, not a boss!

GOOD JUDGEMENT COMES FROM EXPERIENCE. EXPERIENCE COMES FROM BAD JUDGEMENT: THE NEED FOR GLOBAL COLLABORATION

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The world is a safer place. At least in some places. In the developed countries of the first world, good trauma prevention programs, and effective law enforcement, have resulted in a dramatic fall in the incidence of major trauma particularly that associated with motor crashes, as well as reduction in interpersonal violence. In developing countries and those that are resource challenged, trauma is much more prevalent; however these same countries do not have the infrastructure to deal with the burden of the trauma disease, nor do they have the resources including diagnostic and therapeutic, to manage it well. These countries are often short of manpower, including doctors, nurses, and support staff, and as a result the patients do not always get the treatment that they deserve. Recent conflicts as well as terrorist incidents have shown that, unfortunately, doctors in the major countries of the West have less and less experience in the management of major trauma and in some situations, patients have suffered as a result. Thomas L Friedman in his renowned book, “The World is Flat”, analysed the effects of globalisation on world markets. In a landmark lecture given at the International Society of surgery in 2009, Donald the Trunkey in his lecture “The Medical World is Flat Too” explored this concept, and showed that the medical world has to adapt to this and embrace the same concept. The ways in which the trauma community can become global to mutual benefit will be explored.

THE AMERICAN COLLEGE OF SURGEONS, QUALITY AND SURGICAL CARE: LIVER SURGERY AS A PARADIGM

John M. Daly

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Throughout its history, the American College of Surgeons (ACS) has espoused quality in patient care, education and research. The American healthcare system is undergoing major changes whereby pay for performance and quality indicators are becoming transparent to medical personal and patients alike. The ACS is leading the medical profession in setting standards, creating new paradigms of care, creating risk-adjusted benchmarks and educating practicing surgeons and surgeons of the future. One area of surgical care is that of the treatment for patients with metastatic colorectal cancer. The evaluation, operative management and postoperative multidisciplinary care of these patients are described. Quality of surgical care, professionalism, communication and continuing education are the hallmarks of the American College of Surgeons and its programs.

CREW RESOURCE MANAGEMENT: ARE THE LESSONS APPLICABLE TO SURGERY?

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Crew Resource Management has been defined as “the ability to turn a potentially dangerous situation or environment into a safe one, by a combination of risk management, crew management including crew interaction, and environmental management”. The flying environment has many similarities to that of the surgical environment, including the use of surgical checklists, staff interaction, and high stakes, including death, should something go wrong. For that reason there has been a large degree of exploration of the similarities between Crew resource management in the flying environment and the philosophies of the management applied to the surgical environment. These similarities and differences will be explored, and ways in which the philosophy of the pilot’s environment can be brought into that of the surgeon’s will be discussed.

SURGICAL INNOVATION IN AUSTRALIA

A/Prof. Michael Hollands

President, Royal Australasian College of Surgeons, Australia

The history of surgery is one of innovation leading to better outcomes for patients. When considering innovation it is tempting to approach it purely as technological change. Change however is not just the opportunity to do something new. It comes with responsibility. How do we assess innovation, is it safe, cost effective? How do we train surgeons in its correct application? Do we license them to use it? How do we ensure patient safety? How do we monitor its incorporation into surgical practice? The role of surgical Colleges as responsible lead organisations in this process is crucial. My presentation will consider these questions with a focus on the Australian environment.

HONG KONG INNOVATIONS IN SURGERY

Hung-to Luk, MBBS (HKU), FRCS (Ed), FRCPs (Glas), FCSHK, FHKAM (Surg)

President, The College of Surgeons of Hong Kong

Hong Kong is just a small city with a population of over 7 million. The practice of western medicine is based on United Kingdom model relating to our history. With different ethnic group, social culture and environment; we

are having different disease pattern or problems that we cannot take reference to foreign experience and hence we have to device our own protocols and the following are some examples. Tuberculosis had been endemic in Hong Kong in mid twentieth century. It affects multiple organs and the spine is an example. It causes bony necrosis and obviously it is necessary to remove the necrotic bone and to bridge the gap left afterwards. Anterior spinal fusion with introduction of bone segments from iliac crest was developed.

Tuberculosis causing cystitis and fibrosis of urinary bladder markedly reduced the bladder volume and part of the stomach or colon was used to replace the shrunken urinary bladder. In hepatobiliary system, recurrent pyogenic cholangitis had been a condition causing might mares to local surgeons. The biliary tree with multiple strictures and filled with mud and stones causes recurrent life threatening infections. The classical triad of right upper quadrant abdominal pain, fever and jaundice was a common presentation. Surgeries to improve bile drainage like hepaticoduodenostomy and hepaticojejunostomy were performed and that is of course before the era of ERCP. Liver transplantation is a local problem because of lack of cadaveric donors.

Hence surgeons in Hong Kong based at Queen Mary Hospital, the only liver transplant centre in Hong Kong had made much contribution in living related liver transplantation. Squamous cell carcinoma of esophagus is an entity common locally. Esophagectomy is still the choice of management in early cases. Prof. GB Ong showed that the stomach tube is best serving as a conduit after esophagectomy and it becomes norm of today. Nasopharyngeal carcinoma is another common malignancy in Hong Kong. Surgical excision is extremely difficult because of location of the tumour. Prof. William Wei developed the maxillo-facial swing approach leading to direct access to tumour making surgical resection of nasopharyngeal carcinoma possible. The above are just some examples of contributions from Hong Kong and we look forward to collaboration with world surgical community to improve on surgical care to patient world-wide.

QUALITY AND SAFETY IN THE OPERATING THEATRE

Dr. Leo G. Spierenburg

Business Development/Technical Manager Sterile Barrier Solutions Pty. Ltd.

Postoperative complications are more often happening and are seemingly unavoidable. However postoperative complications are preventable and can be brought back to a minimum calculated risk.

With new strains of Methicillin-resistant *Staphylococcus aureus* (MRSA) being detected almost every day, more awareness needs to be created and new measures need to be put in place to prevent postoperative complications from becoming unavoidable. Most of the postoperative complications are caused by the introduction of harmful pathogens into a human body during surgical procedures by surgical instruments, appliances and devices. Contamination of surgical instruments, appliances and devices take usually place during the transition between the place of sterilization and the hand of the surgeon who is using it during an invasive surgical procedure. Postoperative complications in general can be quite expensive to cure in the event there is a cure available. A prolonged stay in the ICU as well as an extensive use of medication is not a desirable option but in most cases unavoidable. Administering large volumes of postoperative medication, antibiotics, is only weakening an already compromised immune system caused by the procedure and anesthetics. Prevention is therefore the best option. The best way of prevention is to make sure that all surgical instruments, appliances and devices are sterile when introduced into the human body. Surgeons should be aware of the preventive measures that can be taken to make sure that all the surgical instruments, appliances and devices that they using are sterile and should be able to advise the Theatre and other hospital staff how to pack, wrap and handle surgical instruments, appliances and devices in order to avoid contamination. Prevention is the best cure, saves lives, reduces cost and improves Patient care and safety.

INNOVATION IN A RESOURCE-POOR HOSPITAL: VIRTUE OR NECESSITY?

Professor Dhananjaya Sharma MS, PhD (Doctor of Philosophy), DSc (Doctor of Science), FRCS (Glasgow), FRCST (Hon)

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Innovation means “something new, which makes it better”; however, in a resource poor setting it means something which lowers cost, and increases benefit. Innovation is needed to produce quantum change. Six easy steps to innovation are as follows:

1. Identify a problem which needs solution
2. Brainstorming with Idea makers (Team) + Research (Read) + Enthusiasm
3. Identify a “good” idea (Learn from your failures)
4. Insure safety/ Get approval of ethics committee
5. Cadaveric study/ Pilot run/ Clinical trial
6. Disseminate/ Publish/ Peer acceptance

Prognosticating tools and surgical techniques can be modified in such a way that they do not need expensive equipment. This is “affordable/ appropriate technology” for developing countries. These include simplifying prognostic scoring systems for daily use, simple and economical biochemical test to assess liver dysfunction, usage of economical alternatives for dressings and accessories, operations for Portal hypertension (Devascularization procedure), Cancer of esophagus (Easy technique for trans-hiatal resection) and Cancer of rectum (Low Anterior Resection). Working in sub-optimal conditions the philosophy has to be “Modify-Simplify-Apply”. Even when working on a shoestring budget, standard results can be provided with the help of simple innovations in science and by striking the “right balance between science and technology”.

TRANSPLANTATION SURGERY

THE FIRST SUCCESSFUL SIMULTANEOUS PANCREAS-KIDNEY TRANSPLANTATION AT KING CHULALONGKORN MEMORIAL HOSPITAL: A CASE REPORT

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Background: This report described the first successful simultaneous pancreas-kidney transplantation (SPK) at King Chulalongkorn Memorial Hospital. A 45-year-old male patient who suffered from diabetic retinopathy and end staged renal disease (ESRD) requiring hemodialysis due to type I diabetes was offered for SPK.

Methods: The operation was performed on November 12, 2012. The graft was obtained from 15-year-old man cadaveric brain-death donor. The donor had group B blood which was identical to the recipient. T cell-cross

match was negative but B cell IgM was weakly positive. HLA typing also was done. Regarding our immunosuppression protocol, we used thymoglobulin, IL-2R (simulect) and methylprednisolone for induction and tacrolimus, MMF and prednisolone for maintenance. Cytomegalovirus prophylaxis and anticoagulant to prevent vascular anastomosis thrombosis were also applied. The operation was performed via a midline incision. The kidney transplantation was carried out first on the left iliac fossa. The ureteric anastomosis was withheld until the pancreatic transplantation was completed on the right iliac fossa to minimize ischemic time of pancreatic graft. Porto-systemic anastomosis and enteric drainage was performed for pancreatic transplantation. Total ischemic time for the kidney was 9 hr 49 min and 11 hr 36 min for the pancreas.

Total operative time was around 8 hr.

Results: Postoperatively, his blood sugar has been normal without the need of insulin injection. His serum C-peptide level was also normal (7.4, normal range 0.9-7.1) on the first postoperative day. Three months after the operation, the HbA1C level returned to normal (5.8 mg %). He remained dialysis free with adequate urine output but a high normal serum creatinine (Cr 1.4 mg/dl), which might be explained by relatively small transplanted kidney size. Until now, the patient's condition remains well without the need of insulin and dialysis and he has no surgical complications.

Conclusion: In case of diabetes type I and ESRD, SPK should be considered as the first line of treatment to cure both conditions whenever possible.

TRAUMA, BURN, CRITICAL CARE

TRANCERVICAL GUNSHOT WOUNDS: PRACTICAL APPROACH TO A POTENTIALLY DIFFICULT PROBLEM

Col (ret) Mark W. Bowyer, MD, FACS, DMCC

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The neck is in military parlance "a target rich environment" containing many vital structures that when injured have high propensity for morbidity or mortality. Gunshot wounds to the neck in particular may result in significant damage and can be associated with high mortality. This presentation will review a practical approach for managing patients with these particularly challenging injuries with an emphasis on the principles of damage control. When confronting a patient with a suspected transcervical GSW priority must be given to the ABC's associated with trauma. Any hemorrhage or swelling in the neck can result in compromise of the airway and early intubation or surgical cricothyroidotomy may be lifesaving. Injuries to the airway may also occur and initial treatment may well be intubation, either orotracheally or through the injury or via separate surgical approach. Bleeding from carotid arteries or jugular veins may be torrential and rapid control with direct pressure, utilization of massive transfusion protocols and urgent surgical exploration is key to successful outcomes. Contamination from the oropharynx or the esophagus must also be aggressively ruled in or out as contamination from these structures can lead to significant consequences if not diagnosed and treated. Additionally the neck contains the cervical spine

and injuries to either the bony structures or nerves must also be identified and treated as appropriate. A pragmatic approach to the initial and subsequent surgical control of these injuries will be presented.

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MEDIASTINAL TRAVERSE

Kenneth L. Mattox

Distinguished Service Professor

Michael E. DeBakey Department of Surgery, Baylor College of Medicine
Chief of Staff/Chief of Surgery, Ben Taub General Hospital, Houston, Texas

The majority of patients with gunshot wounds traversing the mediastinum die prior to arrival at treatment facilities or are hemodynamically unstable upon presentation. These arriving unstable require an immediate thoracotomy via an incision deemed to be the most expeditious based on the initial imaging studies.

In general, incision is made on the side with the most

severe injury. For stable patients with mediastinal traverse, a methodical workup is done to determine if an operation is needed, position for surgery, incision choices, and treatment options.

RESUSCITATION AND INTERVENTIONAL RADIOLOGY

Ian Civil

Immediate Past President, Royal Australasian College of Surgeons

Innovations in resuscitation and developments in interventional radiology have seen both areas of practice converge in the area of stabilisation and haemostasis in the trauma patient. Resuscitation is no longer just a matter of getting the right amount of volume into a patient to restore circulation. Recognising that coagulopathy is part of the presenting biochemistry of patients with severe trauma and shock, resuscitation is increasingly being cognisant of point of care coagulation testing and resuscitating patients with products designed to address the specific deficiencies in their coagulation profile. This approach may deal with each patient as a individual or the data in general may be used to establish a massive transfusion protocol which, when activated, will see patients resuscitated with appropriate proportions of red cells and components of the coagulation cascade and may include tranexamic acid. Interventional radiology is also changing dramatically, with technologies available to recognise and treat bleeding in many different areas of the body in a prompt and less invasive way than with traditional open surgery. Point of care radiology and immediate targeted intervention can see early arrest of haemorrhage, decrease in the need for volume infusion, and a decrease in the collateral damage (ARDS, TRALI, ACS) previously seen in massive haemorrhage. These new paradigms of care are dramatically changing the way trauma patients are approached in the Emergency Department and are making different demands on hospital infrastructure and personnel. More than ever, Trauma Committees, team leaders, and pre-emptive decision-making are required to maximize the benefits inherent in these advances.

CRITICAL JUDGEMENT IN TRAUMA: DO OR DIE.

K. D. Boffard

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“Good judgement comes from experience; experience comes from bad Judgement”

In the trauma environment time is of the essence, and

it is not always possible within the time available, to fully explore the possibilities or analyse what might be wrong. In many situations the surgeon is faced with the situation of “Any decision is better than no decision at all”. Cases which fall into this situation will be analysed with audience participation.

THORACOABDOMINAL WOUNDING

Kenneth L. Mattox

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Historically, combined thoracoabdominal wounds have brought fear, indecision, confusion and frustration to surgeons relating to which cavity to operate on first, positioning, incisions, traps, and priorities. A significant number of legacy tactics should be abandoned. A number of new advanced techniques are available to the acute care surgeon. In up to 50% of patients with thoracoabdominal wounding, the wrong cavity is operated upon first. Three anatomic transition areas exist (thoracic outlet, diaphragmatic region, and abdominal outlet), and each presents special diagnostic, exposure, and management challenges.

RESUSCITATION FROM SEVER SHOCK

GREGORY J. J, MD, FACS

Chief of Surgery, Denver Health and Hospitals, Vice-Chairman and The Rockwell Distinguished Professor of Surgery, University of Colorado, Denver, Colorado

Shock is the clinical end result of inadequate tissue perfusion and end organ oxygen utilization. The currently accepted concept was first described in 1918 by Walter B. Cannon. There are multiple causes of shock; however the common pathway is an imbalance in oxygen delivery and utilization, and ultimately cellular dysfunction. Cellular hypoxia induces the production of inflammatory mediators that may further compromise tissue perfusion through changes in the microvasculature. If this vicious cycle is not interrupted, multi-organ failure and death result. transfusion of banked blood. There are three priorities in the treatment of shock. First, the diagnosis and underlying cause of shock must be diagnosed and corrected. Second, resuscitation for shock must rapidly restore tissue perfusion and optimize oxygen delivery, hemodynamics and cardiac function. Third, end-organ failure must be prevented or replenished. Often resuscitation will be initiated prior to or

simultaneously with identifying the underlying etiology. For resuscitation, a reasonable goal of therapy is to achieve normal mixed venous oxygen saturation and arteriovenous oxygen-extraction ratio, while simultaneously, the elevated systemic vascular resistance should return to normal. Oxygen delivery may be enhanced by improving haemoglobin concentration, arterial oxygen saturation and cardiac output, individually or simultaneously. An algorithm for the resuscitation of the shocked patient is shown in the figure (from: Hsu JM and Maier RV: in *Acute Care Surgery*. Ed: Britt, Peitzman, Barie and Jurkovich, Wolters Kluwer, Philadelphia, 2012, pp 34-47).

EXSANGUINATING PELVIC TRAUMA

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Modern management of severe pelvic bony trauma includes the recognition of the high likelihood of exsanguinating hemorrhage occurring from the pelvic vessels. Managing this hemorrhage can include bony fixation and stabilization, packing of the retro-peritoneum, interventional radiology and embolization, or direct operative attack on bleeding vessels. The following algorithm is one method of addressing this complex problem. But this discussion will suggest the alternatives in management and decision making in this complex and life-threatening entity.

EARLY EXCISION AND BURN DEBRIDEMENT

Att Nitibhon, MD.

Major burn injury needs multiple aspects of treatment. Closure of the wound is one of the most complicated management in burn. The conservative approach awaits spontaneous separation of burn eschar was conventional practiced. Aggressive surgical debridement to remove necrotic tissue before it becomes infected shows some advantage over conservative approach. Excision of necrotic tissue is performed by sharp instrument such as dermatome, knife or scissors and hydrosurgery. Tangential excision is for deep partial and full thickness burn wound and fascial excision for deep down to muscle burn wound. Skin grafting should be done as early as possible after excision. For burn less than 20% TBSA, it may be done immediately after complete necrotic tissue excision. But for burn more than 20% TBSA may need to be delayed until infection is

definitely cleared, and should be done as sequential grafting, each time about 20% TBSA. Early excision of necrotic tissue in operating room within the first week after injury, although needs more blood transfusion, demonstrates reducing mortality, length of hospital stay and leaving time from work.

EMERGENCY CENTER THORACOTOMY

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Because of an immediately unavailable operating room or the extreme urgency of a thoracic injury, a surgeon may elect to perform a thoracotomy in the emergency center, most often using a 4th interspace anterolateral thoracotomy. Specific indications and contraindications exist. Logistic, procedural, timing, and safety considerations are as important as are the specific technical steps of thoracotomy. Complications exist with regard to logistics and instrument choice and are inherent when performing procedures in areas of chest wall, posterior mediastinum, pericardium and heart. A detailed review of each of these aspects will aid surgeons in being better prepared for the urgent emergency center thoracotomy.

CARDIAC OUTPUT MONITORING DURING TRAUMATIC SHOCK RESUSCITATION USING A TOTALLY NONINVASIVE METHOD: RESULTS OF A PROSPECTIVE STUDY

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Purpose: Cardiac output (CO) is regarded as one of the most important haemodynamic variables for the assessment and guidance of shock resuscitation in trauma patients. The invasiveness of the standard CO monitoring technique however often precludes the use. We conducted the study to determine the accuracy of a bioimpedance-based Non Invasive Cardiac Output Monitoring (NICOM) system by comparing it with the transpulmonary indicator dilution (TPID) technique as a reference method during active shock resuscitation.

Methodology: We enrolled 10 critically ill trauma patients meeting shock resuscitation protocol requiring TPID cardiac output measurement. The resuscitation protocol was a goal-directed process to attain an oxygen

delivery index (DO₂I) ≥ 500 mL/min/m² and/or to reduce blood lactate to <2.5 mmol/L within 24 hrs. The patients were also monitored by the NICOM system and cardiac index (CI) values obtained by the two systems were recorded continuously. Linear regression and the Bland-Altman statistics were used for analysis.

Results: Continuous recording was performed on 10 patients, providing 5,294 simultaneous measurements for each device. Overall, CI was 4.3 ± 1.3 L/min/m² for CI(TPID) and 3.9 ± 1.2 L/min/m² for CI(NICOM). Linear regression revealed no evidence of correlation between CI(TPID) and CI(NICOM) ($r = -0.01$, $p = 0.312$). The mean bias between the two techniques was -0.3 ± 1.7 L/min/m². Conclusion: Despite the noninvasiveness, CI values obtained with the NICOM system still showed a limited agreement with the reference method. The technology is not suitable to replace invasive CO monitoring at present in trauma patients during active shock resuscitation.

THE UTILITY OF SERUM BASE DEFICIT MONITORING IN TRAUMA RESUSCITATION: HELP OR HYPE?

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Purpose: The use of serum base deficit monitoring in trauma resuscitation remains controversial. We conducted the study to determine the prognostic value of serum base deficit measurements after haemorrhagic shock resuscitation in trauma patients.

Methodology: All trauma ICU patients meeting shock resuscitation protocol during August 2009 to July 2012 were reviewed. The protocol was a goal-directed process to attain an oxygen delivery index (DO₂I) >500 mL/min/m² and/or to reduce blood lactate to <2.5 mmol/L within 24 hrs. Serum base deficits were measured at admission and every 8 hrs for 24 hrs. To evaluate the prognostic values of base deficits on admission (T₀) and at 24 hrs (T₂₄) after resuscitation, receiver operating characteristic (ROC) curves for mortality were constructed with corresponding area under the ROC values (AUC).

Results: There were 388 patients (35 + 15 years old, 80% male, 74% blunt, ISS 26 + 12) during 3-year study period. Reduction of base deficit was associated with an improved survival. Two hundred and sixty-nine of 302 patients (89%) whose base deficits normalized in 24 hrs survived. Only 44 of the 86 patients (51%) who did not normalize their base deficits by 24 hrs survived ($p < 0.001$). The serum base deficits on admission and at 24 hrs after

resuscitation reliably predicted mortality (T₀AUC = 0.739 and T₂₄AUC = 0.745).

Conclusion: Normalization of serum base deficit within the first 24 hrs is associated with improved survival. Prognostic value of serum base deficit monitoring during this critical period is ascertained.

A STAINLESS STEEL-GRATING TOP TABLE AS A MOVEABLE STERILIZED BURNED WOUND DRESSING AND OPERATING TABLE

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A stainless steel-grating top table can be used as a moveable sterilized table for burned wound dressing or an operating table. Stainless steel-grating top can be sterilized by autoclaving as others surgical instruments and after sterilization, burned patients can lie on this sterilized area for burned wound cleansing or surgical manipulation. This sterilized area was easily controlled wound infection, few pain and comfortable for patients. The table can move from room to room like a trolley by wheel and its brake at each leg???. At Surgery Department of Prapokklao hospital, we used the stainless steel-grating top table as a sterilized table for burned wound cleansing with sterile solutions, warm saline and 4% chlorhexidine scrub, and when surgical intervention was indicated, we turned the table to sterilized operating table. This study covering a total of 88 patients, 213 times for wound cleansing (bathing, dressing) and 141 times as an operating table (excision, skin coverage operations) had shown to be easily used, comfortable for patients, less infection rate with good healing process, during October, 2009 to August, 2012. Standard burned wound care with early excision of burned tissues, infection controlling with nanocrystalline silver dressing, strict infection control practices and regular microbial burn wound culture were appropriated done until healing success.

TRAUMATIC OCCLUSION OF RIGHT EXTERNAL ILIAC ARTERY AFTER BLUNT ABDOMINAL INJURY

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Background and objective: Blunt vascular trauma is rare as compared with penetrating vascular trauma. The incidence of iliac artery injury has been reported as low as 0.4 percent of total arterial trauma. We reported an interesting case presented with abdominal pain and right leg pain with distal pulse deficit after blunt abdominal injury.

Materials and Methods: A 75-year-old man presented

with abdominal and right leg pain after blunt abdominal injury. Physical examination revealed generalized abdominal tenderness and absence of the right femoral and distal pulses. FAST showed small amount of fluid collection at hepatorenal recess and cul de sac. CT angiography showed occlusion of Rt. external iliac artery. He was transferred to operating room rapidly for revascularization and laparotomy. We decided to do the femorofemoral bypass with an 8-mm reinforced-ring PTFE graft first because of avoiding contamination in peritoneum. Then, laparotomy was performed; mesenteric injury was

found and mesenteric repaired was made.

Results: After the operation was finished, all of right lower extremity pulses could be palpated. The patient was fully recovery and discharged after 1 week. The CT angiography of lower extremities at 2 months after discharge showed patency of PTFE graft.

Conclusion: Extra-anatomical bypass may be an alternative way in case of external iliac artery thrombosis associated with fecal contamination in peritoneal cavity.

UPPER GASTROINTESTINAL SURGERY

GASTRIC PLICATION

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When we talk about bariatric surgery, we think about Adjustable gastric banding, Laparoscopic Sleeve gastrectomy (LSG) or laparoscopic Roux-En-Y gastric bypass (LRYGBP). Now we have heard about gastric plication (GP) which is the one procedure become more popular in this era. Actual name of GP is laparoscopic greater curve plication (LGCP). However, many bariatric surgeons feel this title is overstated. Other simpler terms include gastric pleat and gastric imbrication. This procedure is attracting patients around the world due to no stomach stapling or removal, no bypass, no foreign body (i.e. band), potentially reversible or modifiable to another procedure if need. Furthermore this operation is lower cost than other bariatric procedures, reduces the chances for vitamin deficiency and short hospital stay. The main drivers in this practice are to lower costs, improve outcomes and reduce side effects. Patients seem to intuitively understand that there should be fewer leaks with this technique over a LRYGBP or a LSG. Patient selection criteria for GP are very similar to those for sleeve gastrectomy. In Brazil, surgeons do not perform GP on patients with a BMI greater than 50 kg/m² because they feel that without malabsorption the patients will not be able to lower their high BMIs to acceptable levels. Ramos et al., 42 patients which means BMI 41 kg/m², reported that mean operative time 50 minutes, length of stay (LOS) 36 hours without major complications, mean excess weight loss (EWL) was 62% at 18 months. In Greece, Skrekas et al., 135 patients who underwent GP which mean operative time was 40-50 minutes and LOS was 1.9 days, showed EWL 65% with mean follow up time was 22 months. In 2007, 100 cases of GP with long term follow up 4 years, this series which have been reported by Talebpour M. who is pioneer in GP, he used term ζ Laparoscopic Total Gastric Vertical

Plication (LTGVP)é, he found that mean EWL was 55%. And he also reported 12 years experiences of GP 800 cases in 2012, mean EWL was 70% and 55% at 24 and 60 months respectively. Major complication rate was 1.6% and 1% reoperation (perforation and obstruction). Shen et al., prospective non-randomized study comparison between GP and LSG, reported only operative cost was less than LSG but EWL and loss of hunger were not better than LSG. But animal study, Guimaraes et al., SG compared to GP and they found no difference in weight loss but GP group displayed lower body fat content and leptin levels compared to control. In conclusion GP appeared to be an effective emerging bariatric procedure for the treatment of obesity. Early postoperative complications are minimal, without any important late complications and major complication rate was acceptable. Variations in technique need to be addressed and GP should be considered investigational at present. Longer term outcomes data are needed to assess its potential and risk profile.

APPROACH TO ESOPHAGEAL CANCER: WHAT'S NEW

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Over the last 30 years, dramatic advances in esophageal cancer management have been achieved in Japan. In the 1980s, the easy detection of early esophageal cancer was made possible using iodine-chromo endoscopy, and new techniques, such as endoscopic musosal resection (EMR) and thoracoscopic esophagectomy, were developed in the 1990s. In the 2000s, chemo-radiotherapy was firmly established as one of the standard treatment modalities for resectable esophageal cancer and neo-adjuvant chemotherapy gained in popularity in combination with surgery. Recent topics of investigation in esophageal cancer

management include establishing effective minimally invasive treatments for esophageal cancer, e.g. clarifying the indications for endoscopic treatments (EMR, ESD, APC-SEA), popularizing the techniques of thoracoscopic esophagectomy (prone or left lateral position with pneumothorax) and CRT followed by salvage esophagectomy, and elucidating the optimal management for Barrett's adenocarcinoma. Some of the recent topics of interest regarding esophageal cancer management in Japan and at TMDU will be presented.

EARLY ESOPHAGEAL CANCER: EARLY DETECTION AND TREATMENT

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The technique of iodine-chromo endoscopy made it possible to easily detect superficial esophageal cancer lesions in the early 1980s in Japan. Concerning the early diagnosis of esophageal cancer new therapeutic modalities were needed to avoid performing unnecessary esophagectomies. Based on this situation in the late 1980s, we devised new techniques for performing endoscopic mucosal resection (EMR) for the treatment of superficial esophageal carcinoma. Since that time, various new techniques for both the diagnosis and treatment of superficial esophageal cancer have developed, including endoscopic ultrasonography, magnifying endoscopy, endocytoscopy, endoscopic submucosal dissection (ESD) and argon plasma coagulation with sub-epithelial ablation (APC-SEA), and the concept of early esophageal cancer was also established as mucosal cancer. Furthermore, the introduction of high-quality nasal endoscopy has deepened our understanding of field cancerization, including the head, neck and esophageal regions. Our experiences in the early detection and treatment of esophageal and oropharyngeal cancer have led to changes in the concept of minimally invasive treatment for esophageal cancer from the viewpoint of carrying out function-preserving management.

EARLY SURGICAL OUTCOMES OF MINIMALLY INVASIVE ESOPHAGECTOMY FOR LOCALLY ADVANCED ESOPHAGEAL CANCER: NCI EXPERIENCE

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Background: Most of esophageal cancer patients in

Thailand came with progressive weight loss from obstructive advanced cancer and carried very poor prognosis and poor quality of life. Palliative esophagectomy for these advanced cancer patients which aimed for restore oral diet and quality of life and oncologic control is remaining controversial. Esophageal stent installation may be the method of choice but the expensiveness, the problem of food impact or patency, the stent migration and without oncologic control are the main problems.

Objective: MIE or Minimally invasive esophagectomy hopes to result in better surgical outcome for these patients. We present early experience of palliative MIE in advanced obstructive esophageal cancer patients.

Materials and Method: From October 2012 to February 2013, 4 patients (age range, 50-65 years) with thoracic esophageal cancers (BMI 15-18) had investigated by endoscopy biopsy and CT scan. Patients with esophageal cancer less than 25 cm from incisor were excluded from surgery. All without pulmonary-liver metastases, celiac node metastases, aortic atrium-tracheal-bronchus invasion, and severe systemic comorbidity were included for MIE.

Thoracoscopic Esophagectomy in prone position, laparoscopic gastric conduit and cervical anastomosis were performed in 1 case. Intrathoracic anastomosis by hand sawn was performed in 1 case. FEEA (What is it??) was performed in 2 cases.

Results: There was no 30-day mortality. One patient needed re-intubation for 3 days from abdominal distention. One case had permanent hoarseness from RLN injury. One case had high output chylothorax needed re-thoracoscopic thoracic duct clipping. Anastomotic stricture needed balloon dilation in 1 case. All were discharged within 14 days and 2 cases were readmitted from severe back pain and dysphagia from anastomotic stricture. Pathological reports were T4 (with greatest diameter of 12.5cm, 12 cm, 3.5 cm and 3 cm each case) with R1 (micro positive radial margins), node metastases N0/7, 2/26, 0/10 and 4/7.

Conclusion: Palliative MIE for obstructive advanced esophageal cancer is feasible and safe procedure with acceptable morbidity and no mortality. We prefer intrathoracic anastomosis to avoid RLN injury. Intrathoracic anastomoses as FEEA by multiple endoGIA linear staplers are simpler and avoid anastomotic stricture. Proximal and distal free margins were possible even in less than 5 cm margin transection. But for radial margins, it was hard to get R0 free margin, only grossly free margins, R1, we got in locally advanced esophageal cancer. We performed only limited node dissection for these cases because of our limited experience now. Minimal invasive surgery was the

main factor for good result in these high risk patients.

THORACOSCOPIC SELECTIVE LOWTHORACIC DUCT CLIPPING IN CHYLOTHORAX FOLLOWING MIE FOR CANCER: NATIONAL CANCER INSTITUTE(NCI) EXPERIENCE

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Background: High-output thoracic duct fistula with daily drainage over 2,000ml leads to nutritional and immunological deterioration, especially in cancerous patient with esophagectomy.

In literature, the thoracic duct ligation can carry out just above the right hemidiaphragm by a mass ligation technique encircling all tissue between the azygos vein and aorta. The successful ligation will achieve immediate cessation of drainage. Identification of the fistula site is avoided by this technique.

Objective: We report the minimal invasive surgical intervention for thoracic duct injury following minimal invasive esophagectomy for locally advanced midthoracic esophageal cancer.

Material and method: A 52-year-old male with BMI 14.6 presented with obstructing midthoracic esophageal cancer of T4N1M0 by endoscopic examination and chest computer tomography. The patient underwent minimal invasive esophagectomy (MIE) and R1 resection achieved because cancer invaded left bronchus anteriorly and tissue posteriorly. High-output thoracic duct fistula began at postoperative day 2 and continued more than 2,000 ml of drainage per day. Re-operation at day 5 after esophagectomy was performed by thoracoscopic approach.

Low thoracic duct was clipped at the level just above right hemidiaphragm.

Result: Operative time for thoracoscopic selective low thoracic duct clipping was about 70 min. The high output right pleural drainage decreased abruptly to 100-200 ml per day and chest tube was removed 3 day after operation. The patient was sent for esophagography and started oral liquid diet at day 7 and discharged day 11 after esophagectomy.

Conclusion: Thoracoscopic selective low thoracic duct clipping is feasible and effective surgical intervention procedure for the management of thoracic duct injury. When urgent surgical intervention perform, difficulty in identifying and isolating structure can avoid from less pleural adhesences.

ONCOLOGIC OUTCOME OF LAPAROSCOPIC GASTRECTOMY FOR GASTRIC CANCER: EXPERIENCE IN NATIONAL CANCER INSTITUTE

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Background: Laparoscopic radical gastrectomy for gastric cancer is becoming well known procedure for early gastric cancer in minimally invasive era. In Thailand, almost gastrectomies were performed in advanced cancers as stage II or III.

Objective: We present surgical and oncological outcomes of 11 patients underwent laparoscopic gastrectomy after 3 years experience.

Materials and Methods: October 2010 to July 2012, 11 Gastric cancer patients underwent laparoscopic radical gastrectomy. 8 of 11 patients had no distant metastases. Another 3 patients, more advance cancers but resectable confirmed by laparoscopic staging, composed of an ovarian metastasis-post TAH-BSO (What is it?) in 52-year-old patient, a limited carcinomatosis in 71-year-old patient and a liver segment 3 invaded gastric cancer in 32-year-old patient. Follow up to April 2013, 10 patients had follow up to date or died, one case had loss follow up after one time of postoperative visit. The data was retrospectively collected and analyzed.

Results: All 11 patients, (5 male 6 female) with mean age 58.91 years. (range, 32 - 83 years), mean BMI 18.99 (15.47 - 20.80), underwent total laparoscopic total gastrectomy (TLTG) 7 cases, Total laparoscopic distal gastrectomy (TLDG) 3 cases and laparoscopic assisted distal gastrectomy (LADG) 1 case. Stages of cancer at operation were stage I, 1 case (9.1%); stage II, 3 cases (27.4%); stage III, 5 cases (45.5%), and stage IV, 2 cases (18.2%). Early complication occurred only 1 patient (9.1%), in 83-year-old patient with stage IIIB post LADG. It was gastrojejunostomy ileus and resolved after temporary stent placement. Ten of 11 cases were discharged within 2 weeks without any complication. To April 2013, only 4 of 11 patients survived, with follow-up period of 9 (47-year-old female, stage IIB), 12 (71-year-old male, stage IA), 25 (55-year-old female, stage IIB), and 26 (48-year-old female, Stage IIIA) months. Four of 11 patients died from cancer cause at 3 (71-year-old female, stage IV), 9 (32-year-old female, stage IV), 15 (52-year-old male, stage IIIB), and 24 (83-year-old male, stage IIIB) months PO. Two of 11 cases died from non-cancer at 4 (70-year-old male, stage IIIB) and 21 (67-year old male, stage IIB) months postoperatively and loss follow up 1 case.

Conclusion: Laparoscopic radical gastrectomy for

gastric cancer patients in our series had acceptable surgical and oncological outcome with no mortality and only 1 morbidity. 4 patients who survive are less advance disease of stage I, stage II and stage IIIA.

EXTREMELY LARGE GASTRIC GIST: A CASE REPORT

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Introduction: Gastrointestinal stromal tumors (GISTs) are mesenchymal tumor which most common arising from stomach. Tumor size can be varies from a few millimeters to > 30 cm. Usually, tumor size larger than 10 cm harbored malignant potential and associated with distant metastasis. We here reported an unusual case of extremely large, non-metastatic gastric GIST which successfully managed by an en bloc resection.

Methods: A 55-year-old man suffered from progressive enlarging abdominal mass for 20 years. MRI of the chest and abdomen revealed a 40 cm X 34 cm X 28 cm cystic mass in abdomen which suspected originate from stomach without lymph node enlargement or distant metastasis. His laboratories reported anemia, hyponatremia and hypoalbuminemia. En bloc resection was planned thus total parenteral nutrition and oral supplement diet was given for 2 weeks for improving nutritional status before operation.

Results: Explore laparotomy, tumor removal, partial gastric resection with distal pancreatectomy was performed. Operative time was 630 minutes and blood loss was 3000 ml. Pathological report revealed high grade gastric GIST, tumor containing necrotic tissue with blood clot and free resection margin. Post-operative course was complicated by pneumonia and respiratory distress. This required prolonged endotracheal intubation and then tracheostomy on 14th postoperative day. Length of ICU stay was 30 days and hospital stay was 60 days. He received no any adjuvant treatment. Now, he is doing well at 3 months after operation. **Conclusions:** Surgical resection is a mainstay treatment for localized GISTs especially in case of extremely large tumor.

D-DIMER IN PATIENTS WITH STRANGULATED INTESTINAL OBSTRUCTION

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Background: The strangulated intestinal obstruction

is a serious condition that has unfavorable outcome. Recently, there is no accurate test and reliable marker to detect it. The purpose of this study is to assess the role of serum D-dimer in the diagnosis of strangulated intestinal obstruction.

Method: A prospective study of 73 patients with intestinal obstruction was conducted from June 2009 to January 2012. Blood samples were taken on admission for D-dimer measurement. The diagnosis of intestinal strangulation was based on operative finding.

Results: Seventy three patients were diagnosed the intestinal obstruction. The small intestinal obstruction from adhesion band was the most common cause that was presented in 50 patients (68%), the other causes, such as colonic obstruction from tumor and volvulus were presented in 8 patients (10.9%) and hernia was presented in 15 patients (20.5%). Eleven patients (15.1%) were diagnosed strangulated intestinal obstruction which was complicated from small bowel obstruction in 8 patients (72.7%), large intestinal obstruction in 2 patients (18.2%) and hernia in 1 patient (9.1%). Intestinal resection was performed in all patients with strangulated intestinal obstruction. In this study, 8 from 11 patients (72.7%) with strangulated intestine had high level of D-dimer, while 25 from 62 patients (40.3%) with non-strangulated intestine had. The mean D-dimer level was 0.75 mg/l in patients with strangulated intestine and 0.47 mg/dl in patients with non-strangulated intestine. The high level of D-dimer (level > 0.3 mg/l) was frequently found in the cases of strangulation rather than in the cases of nonstrangulation (p=0.04). The mean D-dimer level was higher in the patients with strangulated intestine, but it was not reach statistic significance (p=0.068).

Conclusion: The high level of serum D-dimer may be useful in diagnosis of the strangulation of the intestine in patients with intestinal obstruction.

ACUTE MESENTERIC ISCHEMIA IN A HIV-POSITIVE PATIENT: A CASE REPORT

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Background: A mesenteric ischemia is a relatively rare condition but has high mortality rate. Successful treatment requires early diagnosis and surgical intervention. We reported a case of acute mesenteric ischemia in a HIV-positive woman diagnosed with MDCT and successfully treated with emergency surgery.

Case Report: A 46-year-old woman, who had a history

of HIV positive and diabetes, presented with symptoms of low grade fever, nausea, vomiting and abdominal pain for 2 days. The physical examination revealed body temperature 39.6 °C, generalized abdominal tenderness and decreased bowel sound. The patient had marked leukocytosis, high serum potassium (6.22 mmol/l) and elevated serum amylase (863 u/l). The abdominal X-ray showed generalized dilatation of small bowel. The computed tomography (MDCT) scan was found to have an intraluminal thrombus in branches of the superior mesenteric artery and dilated segment of small bowel 3.2 cm in diameter with thickening wall of small bowel 4-5 mm thickness with intramural air bubbles. Emergent exploratory laparotomy was performed. Arteriotomy of superior mesenteric artery was done. Thrombus was found in the proximal portion of the SMA

just distal to the origin of the middle colic artery. Thrombectomy was successfully performed. The patient was found to have 3 feet gangrenous segment of the small bowel. Segmental resection of necrotic bowel and end to end anastomosis were done. The operative time was 3 hours and 15 minutes. There were no intraoperative complications. Length of hospital stay was 40 days. Long term anticoagulant was continued. No recurrent disease was detected during 5 month follow-up.

Conclusion: Acute mesenteric ischemia is an emergency condition which requires prompt diagnosis and appropriate surgical treatment. This report illustrates this rare condition in a HIV-positive patient which received successful diagnosis and management.

UROLOGY

UPDATE IN STRESS URINARY INCONTINENCE

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Urinary incontinence is a common symptom experienced by significant numbers of adults in both women and men. Stress urinary incontinence (SUI) is the most frequently encountered type and affects around 50% of incontinent females. Pathophysiologies of SUI are included hypermobility of urethra and intrinsic sphincter deficiency. Recent years have seen the development of several new and popular techniques for the treatment of this condition. Once the diagnosis SUI or mixed urinary incontinence (MUI) with a predominant "stress component" is made with confidence then treatment modalities should be fully discussed with the patient and all options, both surgical and non-surgical, should be outlined. Initial management should start with lifestyle advice, physical therapies, scheduled voiding, behavioral therapies and medication. Lifestyle advice includes caffeine reduction, weight loss for the overweight person, treatment of constipation, decrease in fluid intake in patients who are over hydrating and efforts to decrease chronic cough. Pelvic floor muscle training (PFMT) should be offered as first-line therapy for SUI. Intensive and supervised PMFT is recommended if available. The benefit of biofeedback is unknown but might be helpful enhancing result of behavioral therapy. Vaginal cones can be offered for treatment for SUI or MUI, but its use may be limited due to discomfort. Pessaries may be considered in the treatment of SUI even without concomitant pelvic organ prolapsed. The injection of bulking agents sub-mucosal in the female urethra is intended

to aid continence via apposition of the urethral wall. It is thought to be most useful in the treatment of intrinsic sphincter deficiency. As well as its use in female SUI, this technique is also reported in males and children and can be carried out under local anesthesia. The advantages of this technique include the low associated morbidity. Retropubic suspension procedures are mainly intended for the treatment of SUI secondary to urethral hypermobility and a wide variety of different techniques are available. All have the common underlying principle of elevating and fixing the bladder neck and proximal urethra in a retropubic position to enhance support. The most widely used technique is the Burch colposuspension and this procedure has been used as a gold standard with which to compare newer surgical treatments for SUI. The development of the TVT led to trials of a similar low tension sub-urethral tape but using a different route of access; the trans-obturator tape (TOT) again uses midurethral tape placement but instead of anchoring supra-pubic route like a TVT, it anchors through the obturator foramen. It is not recommended for routine surgical treatment of SUI. The patient with SUI has a large number of surgical options to consider and this review can help with counseling for health care providers within this clinical area. The comparison between the proven long-term efficacy but associated risk of surgical complications of open colposuspension versus the less invasive, low morbidity but relatively scarce long term data associated with sub-urethral tapes do not clearly favor either procedure. Equivalence at 5 years has been demonstrated many urologists believe that longer term efficacy will again be comparable leading to TVT becoming the gold standard surgical procedure for

SUI on the basis of equivalent effect for reduced morbidity when compared with open colposuspension. Newer techniques should be compared to TVT and evaluated in terms of clinical efficacy, patient acceptability, and cost-effectiveness.

CURRENT MANAGEMENT OF URINARY INCONTINENCE FOLLOWING PROSTATE SURGERY

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Urinary incontinence following prostatectomy continues to be a source of significant patient dissatisfaction and some morbidity. Incontinence may occur either due to sphincteric dysfunction (most likely), bladder dysfunction, or a combination of both. Preoperative workup is critical to assessing not only to establish urinary tract functional status, but also to establish anatomic integrity and lack of obstructive phenomenon especially in the urethra. Once evaluation has been performed, intervention may be considered. The treatment of sphincteric dysfunction includes behavioral as well as surgical. The most common surgical interventions include male urethral sling and artificial urinary sphincter. Results of both procedures are beneficial for the majority of patients; however, limitations of these procedures are critical to identify an appropriate patient selection as based upon these known results. Men with superimposed lower urinary tract symptoms prior to prostatectomy, may be at greater risk for voiding dysfunction and incontinence long term regardless of therapy chosen for sphincter dysfunction.

BASIC URODYNAMIC STUDY FOR THE GENERAL UROLOGIST

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Urodynamics continues to be the most important objective evaluation of lower urinary tract storage and emptying. A variety of tailored urodynamic testing modalities exist, dependent upon patient type and problem being evaluated. The combination of non-invasive uroflowmetry in multi-channel system metrics provides the most frequently utilized tandem of urodynamic assessment for lower urinary tract symptoms in general. However specific patient types require more focused assessment. Fluoroscopy is a very useful addition in patients with neurogenic disease or lower urinary tract obstruction where the point of obstruction is not clearly identified based upon

other assessments (cystoscopy). In addition to flow and cystometry, pressure flow evaluation is critical for the assessment of presumed outlet obstruction, and also may be beneficial in the patient with dyssynergic pelvic floor function. Urodynamics provides delineation of complicated patients and postoperative failures. The assessment also provides some degree of postoperative prediction for certain types of operative intervention. The general urologist should be familiar with the different indications for urodynamics and the appropriate selection of study for unique patient and unique diagnosis.

CHALLENGING CASES IN FEMALE UROLOGY PANEL BLADDER OUTLET OBSTRUCTION IN WOMEN

Phitsanu Mahawong, M.D.

The exact prevalence of bladder outlet obstruction (BOO) in women is unknown because an acceptably diagnostic criteria is still lacking. Since voiding physiology in women is a bit different from in men, the male nomograms and bladder outlet obstruction index (BOOI) cannot be used for diagnosing female BOO. It is also difficult to construct a nomogram due to no predominant etiology of BOO in women. Even Nitti and Grazia reported their nomograms in 2000 and 2004, consecutively; their clinical applications are still debatable. The concept of obstruction is the same as in men but the acceptable cut-point values are still controversial. The detrusor pressure (Pdet) of higher than 20, 25, or 30 H₂O accompany with maximal flow rate (Q_{max}) of lower than 10, 12, 15 ml/sec have been proposed by some authors. Nowadays, videourodynamic study (VUDS) is the most important tool for diagnosis of female BOO which is able to clarify the level of obstruction during pressure-flow study. The two most common causes of female BOO are primary bladder neck obstruction (PBNO) and dysfunctional voiding (DFV). Treatments of PBNO are oral α 1 blocker, bladder neck dilation, and transurethral incision of the bladder neck (TUIBN). Treatment of DFV is complex and consisting of urethral dilation, behavioral therapy, biofeedback, pelvic floor rehabilitation and neuromodulation. The treatment outcome of DFV is variable and sometime may need clean intermittent catheterization (CIC). Long-term follow up is required for detecting complications and recurrence after treatment in these special patients.

RADIATION CONCERN IN ENDOUROLOGIC SURGERY

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International Commission on Radiation:-

The occupation limit of radiation exposure is 20 msv / yr over 5 year on average which no more 50 msv in any year. The limited dose of skin / extremity is 500 msv and the lens of eye is 150 msv. Factors of radiation induced malignancy risk are sex, age of exposure, amount of radiation and life expectancy. Factors effect fluoroscopic time (FT): Reduction of FT is female, distal ureteral stone and feedback system and the increase of FT is presence of hydronephrosis (URS), ureteral access sheath usage, ureteral balloon dilatation and placement of ureteral stent. Prevention is very important

- Feedback system:-After receive feedback; Fluoroscopic time decrease 24% during URS.
- Protocol of the as-low-as-reasonably achievable (ALARA) principle
- Use some technique such as visual and tactile guidance (Fluorless URS, PCNL).

Conclusion

- The awareness of hazard effect of radiation exposure for surgeon and team, minimizing the radiation exposure is very important.
- Patients with calculi usually received ionizing radiation studies during preoperative, intraoperative, postoperative studies.
- Feedback system and protocol of the as-low-as-reasonably achievable (ALARA) principle is one the key of reduction radiation
- Fluorless URS and ultrasound guide PCNL are the alternative technique for reduction the radiation exposure.

HOW DO I DO IT? [LAPAROSCOPIC NEPHRECTOMY, CYSTECTOMY, PROSTATECTOMY, PERCUTANEOUS NEPHROLITHOTOMY (PCNL), URETERORENOSCOPY (URS)]

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In the era of laparoscopic and endoscopic urology, urologists have moved toward from tradition of open surgery approach to minimal invasive approach. To date, numerous article and literature have been report about technique and efficacy in laparoscopic and endoscopic surgery that can be benefit same or superior to traditional open surgery.(1-11) Before those changes can be come available, surgeon must be gain experience to develop the new technique with less morbid treatment for disease. The most of the operation with laparoscopic and endoscopic surgery can be record with video recorder. This element is more important to review your operative

technique and complication that can be improve your experience in laparoscopic and endoscopic urology. This video session will be share my experience in laparoscopic and endoscopic urology especially, critical and important step on each procedure in laparoscopic and endoscopic urology. Laparoscopic nephrectomy I was preferred transperitoneal approach because excellent visualization of anatomic landmark and large workspace. The procedure are include: trocar placement, incise the line of Toldt and mobilize the colon, identify and secure the ureter, mobilized the lower pole kidney within Gerota's fascia. secure the hilar vessel, dissect upper pole and lateral attachments, divide the ureter, entrap the specimen, remove specimen through a small incision, and closed the incision. Laparoscopic radical cystectomy procedure include; trocar placement, bilateral pelvic lymph node dissection, identify both ureter and ligation, dissect posterior aspect of bladder until apex of prostate gland, ligation of bladder and prostate vascular pedicle, created Retzius space, control dorsal vein complex, transection of urethra to complete radical cystectomy, entrap the specimen, remove specimen through minimal incision of umbilicus. The urinary diversion procedures are perform extracorporeal through mini incision of umbilicus except total intracorporeal urinary diversion procedures are perform in selected case.(7) Laparoscopic radical prostatectomy was preferred extraperitoneal approach because this approach don't disturb intestine that made patient is early to return normal intestinal function. The procedures after create Retzius space and trocar placement are include; identify and dissect bladder neck, open bladder neck, dissect seminal vesicle and vas deference, posterior prostate dissection, control vascular pedicle and neurovascular bundle preservation, control dorsal vein complex, prostatic apical dissection and division of urethra, vesicourethral anastomosis, insert Foley catheter, insert tube drain, entrap specimen and remove through mini incision, and close incision.(8) PCNL procedure include; cystoscopy and insert ureteric catheter, access percutaneous tract under fluoroscope, dilate tract by metal dilator, insert ampuz sheath, insert nephroscope, identify stone and perform lithotripsy.(10) URS procedures are include; cystoscopy, identify the ureteric orifice, dilated ureteric orifice over guide wire, insert ureteroscope, identify ureteric stone, remove stone by stone basket or lithotripsy by Holmium LASER. The gold of this video session is to share experience in different operative techniques learned through repetition, mistakes, and perseverance. I hope this session will be benefit for improve the surgical technique to treat our patient in the future.

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PERIOPERATIVE COMPLICATION AND MORTALITY FOLLOWING RADICAL CYSTECTOMY AND URINARY DIVERSION IN TREATMENT BLADDER CANCER IN RAMATHIBODI HOSPITAL

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Background: Morbidity after radical cystectomy is common and associated with increased health care resource use. Accurate characterization of complication after cystectomy, associated patient specific risk factor, and perioperative process of care are essential to direct changes in perioperative management that will reduce morbidity and improve the quality of patient care.

Objective: To review perioperative complication

and mortality rates after radical cystectomy in elderly patients and the relationship among age, pathological stage and outcome after this procedure

Methodology: Between 2005 and 2011, 106 medical charts were retrospectively reviewed. All patients underwent radical cystectomy with urinary diversion by resident and staff at Ramathibodi Hospital. Major complication and 90-day postoperative mortality rate were analyzed. Univariate and multivariate analysis were used to define predictor of complication and mortality.

Result: Age significantly affected perioperative morbidity and mortality rate of the patients undergoing radical cystectomy. 32.1% of patient experienced complication within 90 days after surgery and infectious complications were most common (15.9%), followed by wound-related complication (11.2%) and DVT (4.7%). The 90-day mortality rate was 8.4%.

Conclusion: Although age does not preclude radical cystectomy, careful surveillance is required. Excellent perioperative management may contribute to the prevention of morbidity and mortality of radical cystectomy, supplementary to the skill of the surgeon, and is probably a reason for the better perioperative result obtained in high-volume center.

THE EFFICACY AND THE SAFETY OF OPEN LABEL TADALAFIL 5 MG ONCE DAILY VERSUS OPEN LABEL TADALAFIL 20 MG TWICE WEEKLY IN THAI MALES WITH ERECTILE DYSFUNCTION

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Background: Tadalafil is a PDE5-inhibitor that used for restore erectile dysfunction, It is approved by the U.S. Food and Drug Administration (FDA) in October 2011. Tadalafil is used to treat patients with benign prostatic hyperplasia and/or erectile dysfunction. Tadalafil have long half-life (17.5) hours that result in longer duration of action, and so partly responsible for "The Weekend Pill". The recommended starting dose in men is 10 mg before sexual activity that may be increased to 20 mg or decreased to 5 mg. Tadalafil 5 mg once daily is used in order to avoid the inconvenience of having program and plan for his sexual activity. The benefit and risk when taking tadalafil 5 mg once daily in a period of time will be evaluated.

Objective: To evaluate the efficacy and safety of tadalafil 5 mg once daily for 60 days compare with Tadalafil 20 mg twice a week in men with erectile dysfunction

Methodology: This randomized, open labeled, parallel group study was randomized in 30 patients who

visited at our out patient urologic surgery department. Patients who were diagnosed as post operative erectile dysfunction, low testosterone level have been excluded.

In this study, Patients were received tadalafil 5 mg or 20 mg for 2 months. Primary outcome was to evaluated the improvement of IIEF15 at 1 month and 2 months after received Tadalafil. Secondary outcome was to evaluated the improvement of IPSS assessment.

Result: Patients who received tadalafil 5, 20 mg have improved in clinical and IIEF score in both groups. One patient experienced headache and flushing that cannot continue in medication. Half of patients received tadalafil 20 mg on demand, all have significantly improved in sexual function. Patient who received tadalafil 5 mg once daily also have significantly improved in sexual function without serious side effect. Only one was drop out due to headache which improved after terminate tadalafil.

Conclusion: Tadalafil have successfully improved in clinical ED and IIEF score which no significantly difference in both groups. The side effect was minimalize for both 5 and 20 mg tadalafil.

A PROSPECTIVE, MULTICENTER STUDY ON EFFICACY OF LONG ACTING TESTOSTERONE UNDECANOATE, IF DESIRED IN COMBINATION WITH VARDENAFIL, IN LATE ONSET HYPOGONADAL PATIENTS WITH ERECTILE DYSFUNCTION

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Background: There is substantial evidence suggesting the additive effect on erectile function (ED) of testosterone and phosphodiesterase (PDE)-5 inhibitors. But the combination of long-acting testosterone undecanoate (TU), in combination with the PDE5-I vardenafil in men with late-onset hypogonadal patients (LOH) with (ED) has not yet been studied.

Objectives: To evaluate the effects of TU i.m., and if desired, the PDE5I- vardenafil in LOH patients with ED measured with the International Index of Erectile Function (IIEF-5).

Materials and Methods: A prospective study was performed following four administrations of TU in week 0, 6, 18, 30. If no improvement of ED assessed with IIEF-5 or the Global Assessment Questionnaire (GAQ) in week 12, the PDE5 inhibitor vardenafil was added. The final

evaluation was in week 46. Aging Male Symptom (AMS) score, IIEF-5 score, and International Prostate Symptoms Score (IPSS) at each visit were summarized as mean with standard deviation; while GAQ was summarized using frequency and percentage. Scores at each visit were also categorized into different levels of symptom severity.

Results: AMS score decreased significantly at week 12, 30 and 46. IIEF-5 score increased but a significant change was found only at week 30 and 46. The GAQ assessment indicated erection and sexual intercourse already improved at the first assessment continuing thereafter. IPSS score decreased from baseline at week 46. Levels of total, free and bioavailable testosterone had increased significantly from baseline at all visits. Hematocrit, hemoglobin and prostate specific antigen increased significantly from baseline. Adverse events were rare with pain at injection site found in one patient. The two events were non-serious in type, mild in their intensity and recovered.

Conclusions: Therapy with TU, and if desired, combined with the PDE5 inhibitor vardenafil improved sexual activity in LOH patients with ED.

UROLOGIC LAPAROSCOPIC SURGERIES IN ELDERLY: ANALYSIS OF PRE-OPERATIVE RISK FACTORS AND POSTOPERATIVE COMPLICATIONS

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Introduction: The aging of the population leads to increases in the prevalence of symptomatic urologic diseases.

Objectives: The aim of this study is to analyze pre-operative risk factors and postoperative complications in patients over the age of 60 years undergoing elective laparoscopic urologic surgery.

Patients and Methods: A retrospective study was conducted of 113 patients 60 years of age or older who underwent urologic laparoscopic surgery by a single surgeon. The preoperative physical status and systemic complications, operation time, postoperative complications, postoperative hospital stay and other clinical features of the patients were reviewed.

Complications were classified according to the recently revised Clavien classification system. Statistical analysis was done using the Fisher Exact test and Relative risk.

Results: Laparoscopic urologic surgery was performed on 113 patients who were 60 years old and over, with an average age of 69.6 years. Associated diseases were found in 92% of them. Pelvic surgery (65, 57.5%) was the main reason for surgery. There were 5 (4.4%) conversions

to open surgery and 0% mortality. The overall complication rate was 10 patients (8.8 %). Among 9 (7.96%) patients with post-operative complications; Grade I, II, IIIa, IIIb and V complications were observed in 1.77%, 12.8%, 3.53%, 0.88% and 0.88% of cases, respectively. Complications correlated with male, operative time ≥ 250 and cancer with high-risk ratio (2.76, 2.11 and 3.02, respectively); however,

the correlations of all of preoperative risk factors and postoperative complications showed no statistically significant differences.

Conclusions: Laparoscopic surgical treatment of urologic disease in elderly patients performed is feasible and well tolerated, with low perioperative morbidity and a good overall survival rate.

VASCULAR SURGERY

CRITICAL LIMB ISCHEMIA: UPDATE ON ENDOVASCULAR THERAPY

Venkatesh Ramaiah, MD, FACS

Medical Director - Arizona Heart Hospital, Director - Peripheral Vascular and Endovascular Research

Objectives:

1) Understanding the magnitude of the problem and the socio economic cost to society

2) Reviewing the data and limb salvage rates with traditional and endovascular approaches

3) Learning the current techniques and technology available to save limbs including latest endovascular options. Chronic critical limb ischemia (CLI) occurs as a result of reduced arterial blood flow resulting in: (1) ischemic limb pain at rest, (2) non-healing ischemic ulceration, or (3) gangrene. CLI is a chronic condition that must be differentiated from acute limb ischemia, which is an acute medical emergency related to abrupt arterial occlusion requiring emergency treatment. The pathophysiology of CLI is related to inadequate arterial limb perfusion that is below the threshold needed to meet the metabolic demands of the limb, resulting in resting ischemia with skin breakdown and eventual tissue necrosis. If untreated, gangrene ensues with the eventual loss of the limb (from amputation or mummification) and perhaps life (from sepsis). The severity of symptoms from limb ischemia may be classified using either the Fontaine or Rutherford schemes. Chronic CLI is associated with systemic atherosclerotic vascular disease involving the coronary and cerebral vascular beds. It is a progressive disorder associated with a high morbidity and mortality. As many as 24% of the patients with CLI will die within the first year after presentation. In addition to revascularization, atherosclerotic risk factor modification, lifestyle changes and pharmacological therapies must be aggressively implemented in this population to minimize morbidity and mortality. The optimal treatment for CLI is prompt revascularization.

In selected patients, percutaneous transluminal

angioplasty (PTA) is the initial therapy of choice to avoid the morbidity associated with vascular surgery. Endovascular intervention does not preclude the possibility of subsequent candidates for surgery, such as those with poor distal targets, a lack of adequate saphenous vein for bypass grafting, and those with severe medical comorbidities, endovascular therapy may offer the only opportunity for limb salvage. The Bypass versus Angioplasty in Severe Ischemia of the Leg (BASIL) trial compared PTA with surgery in 452 patients with rest pain, ulceration or gangrene of the leg secondary to infra-inguinal disease. The primary end-point, amputation free survival, was similar for PTA and surgery at 1 year (71% vs 68%, $p = \text{NS}$) and 3 years (52% vs 57%, $p = \text{NS}$) (Figure 2). Although there was no significant difference in mortality between the groups at 30 days, surgery was associated with a higher post-procedure morbidity. The mortality within the entire cohort over the course of the study (5.5 years) was 37%, which underscores the poor prognosis due to cardiovascular diseases of patients who present with CLI. During the initial hospitalization, almost three times as many patients treated with surgery required admission to the intensive care or high dependency unit compared to those treated with angioplasty (27% vs 7.5%), which resulted in the cost of hospitalization being higher in the surgical group. PTA was associated with a higher immediate failure rate and 12-month re-intervention rates in the BASIL study. This did not affect the patients' candidacy for a second percutaneous procedure or subsequent surgery. Post hoc analysis demonstrated that surgery was associated a lower rate of amputation and death (hazard ratio 0.34, CI 0.17-0.71) in patients alive at 2 years with the treated limb intact. The authors suggested that healthier patients (i.e. those with a life expectancy exceeding 2 years) may benefit from surgical intervention as an initial therapy for limb-threatening ischemia. BASIL demonstrated that endovascular therapy and surgery were comparable as first-choice therapy for CLI, but that PTA was less expensive and did not preclude subsequent treatment with surgery. Therefore, PTA should be chosen first if a patient is a candidate for either procedure,

particularly if the patient's life expectancy is less than 2 years and death (hazard ratio 0.34, CI 0.17-0.71) in patients alive at 2 years with the treated limb intact. The authors suggested that healthier patients (i.e. those with a life expectancy exceeding 2 years) may benefit from surgical intervention as an initial therapy for limb-threatening ischemia. BASIL demonstrated that endovascular therapy and surgery were comparable as first-choice therapy for CLI, but that PTA was less expensive and did not preclude subsequent treatment with surgery.

Therefore, PTA should be chosen first if a patient is a candidate for either procedure, particularly if the patient's life expectancy is less than 2 years.

Endovascular Therapy:

Endovascular treatment has indeed become the primary line of treatment in CLI. The latest endovascular techniques and modalities will be discussed. Available data on these modalities will be highlighted. A brief synopsis of how we manage patients with critical limb ischemia AT Arizona Heart Institute and our results will be presented.

EVAR FOR RUPTURED AAA

Venkatesh Ramaiah, MD, FACS

Medical Director - Arizona Heart Hospital

Director - Peripheral Vascular and Endovascular Research

Objectives:

- 1) Understanding the mortality and morbidity associated with rupture and results of open surgical repair
- 2) Evolution and Acceptance of EVAR and Supporting Data
- 3) Tips and Tricks and Establishing a Ruptured AAA Program

In recent years, major improvements have been made, making elective repair of abdominal aortic aneurysms (AAA) a safe procedure. In selected series, mortality rates are less than 5%¹. Many of the patients with AAA, however, remain asymptomatic until they present with rupture². Once rupture has occurred, the overall mortality approaches 90%^{3,4}. Despite many advances in the management of ruptured AAA, the mortality rate of conventional open surgery has not improved significantly during the last 50 years and remains around 48%⁵. Over the last decade, endovascular techniques have been used increasingly to repair AAA, and there is now evidence that elective endovascular aneurysm repair (EVAR) is technically feasible and safe for AAA exclusion⁶⁻⁸, with a reduced physiological impact^{9,10}. Two recent randomized studies have demonstrated that EVAR can be performed on good risk and asymptomatic patients with less perioperative mortality

than conventional surgery^{11,12}. The feasibility of EVAR for ruptured AAA was proven in a case report by Yusuf et al in 1994¹³. Since then there have been reports from specialized vascular units limited to selected and stable patients. A variety of aortic ruptures have been included, such as aorto-caval, aorto-renal vein and enteric fistula, ruptured false aneurysms following open repair. Recently, larger series¹⁴⁻¹⁶ and prospective studies^{17,18} have been reported, showing that EVAR could offer another option to patients with a ruptured AAA.

ENDOVASCULAR MANAGEMENT OF DEEP VENOUS THROMBOSIS

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Director - Peripheral Vascular and Endovascular Research

Objectives:

- 1) Understanding the magnitude and pathophysiology of DVT
 - 2) Learning the indications for intervention
 - 3) Review of Current Endovascular modalities and relevant data
- Deep vein thrombosis (DVT) is a manifestation of venous thromboembolic (VTE) disease. VTE encompasses both DVT and pulmonary embolism (PE). DVT itself refers to thrombus which has formed in the deep veins of the body which usually parallel an artery of the same or similar name and follow a deep course within an extremity. Formation of thrombus in these vessels frequently results in local and systemic complications leading to significant morbidity and mortality.

The Acting Surgeon General Steven K. Galson, MD, MPH, recently released a call to action to reduce the number of cases of DVT and pulmonary embolism in the United States, stressing that collectively DVT and PE contribute to at least 100,000 deaths each year.¹

An often overlooked yet significant complication of DVT is the post-thrombotic syndrome (PTS - formerly postphlebotic syndrome). PTS is characterized by chronic pain and swelling in the affected limb. PTS patients are considered a subset of those with chronic venous insufficiency. They are prone to the skin changes of chronic venous stasis disease, namely hyperpigmentation, lipodermatosclerosis, and atrophie blanche. In the most advanced cases, venous stasis ulcers may occur. Overall, PTS leads to lower quality of life.^{2,3}

This article focuses on the epidemiology and treatment of DVT and PTS, including the most recently updated management guidelines from the American College of Chest Physicians (ACCP 2008) and the Acute Venous Thrombosis:

Thrombus Removal with Adjunctive Catheter-Directed Thrombolysis Trial. The goal is to enable the reader to understand the appropriate management of DVT and recognize the indications for more aggressive treatment of acute symptomatic DVT.

Epidemiology

Approximately 350,000 individuals are affected by DVT/PE each year in the United States. Many cases are not recognized and the actual number of cases could be twice as high.¹ Studies show that patients with PE demonstrate a 3 month all-cause mortality of 15% to 30%.^{1,4,5} As many as 4% of patients with PE will progress to chronic thromboembolic pulmonary hypertension (CTEPH).⁶ PTS will affect nearly 30% of individuals with DVT over a five-year period.⁷ It is estimated that the annual direct cost in the United States for PTS is \$200 million, with an indirect cost of 2 million lost work days annually due to leg ulcers.⁸

Ultrasound studies have shown that patients with symptomatic venous thromboembolism are most likely to have DVT in the proximal deep veins of the legs; however, only 11% will have upper extremity clot and 15% will have isolated calf DVT.⁹ There is general agreement that proximal or iliofemoral distribution DVT is clinically significant and warrants treatment with anticoagulation and/or more aggressive measures for severe cases; however, there is with less uniform agreement on the management of calf or infrageniculate DVT.¹⁰

Furthermore, patients with an initial episode of symptomatic DVT are at high risk for recurrent episodes. In a study of 355 patients followed for 8 years after a symptomatic DVT, the cumulative incidence of recurrent VTE was 17.5% after 2 years, 24.6% after 5 years, and 30.3% after 8 years.¹¹ Recurrence rates are higher if there is residual thrombus in the vessel.¹² Recurrence, particularly of ipsilateral DVT, is a strong risk factor for PTS.^{2,7} The cumulative incidence of PTS in these patients increased likewise from 22.8% at 2 years to 29.1% at 8 years.

DIAGNOSIS AND MEDICAL MANAGEMENT OF ACUTE PULMONARY EMBOLISM

Asst. Prof. Nattapong Jaimcharyatam, MD, MS, FCCP

Acute pulmonary embolism (Acute PE) is not uncommon and is often a fatal condition. It is a relatively common cardiovascular emergency. Emboli may lead to acute life-threatening condition with potentially reversible right ventricular failure.

The most common cause is thrombus which originated elsewhere in the body, less common causes include air bubbles, fat droplets, or tumor and parasites (this topic will focus on acute PE due to thrombus). It can be easily classified into massive, submassive and small PE with

pulmonary infarction. Massive PE causes hypotension associated with right ventricular dysfunction (RVD), PE associated with RVD but hypotension will be classified as submassive PE. Nevertheless, acute pulmonary embolism, unfortunately, usually manifests non-specific and highly variable symptoms including dyspnea, cough, hemoptysis, chest pain, or syncope, rendering accurate diagnosis more difficult. Thus, additional tests are helpful to further confirm or exclude diagnosis of acute PE. Acute PE is found to be associated with mortality rate of approximately 30% without treatment, primarily due to recurrent emboli. However, the mortality rate can be reduced to 2 to 8% in case with prompt diagnosis and appropriate treatment.

When acute pulmonary embolism is suspected, the patient should undergo appropriate tests. The modified Wells criteria should also be applied to determine whether PE is likely (score >4) or unlikely (score ≤4). On the other hands, Wells score can be used to classify PE into high clinical probability (score >6), moderate clinical probability (score 2-6), and low clinical probability (score <2). The criteria includes deep vein thrombosis [DVT] (3 points), other diagnosis less likely than PE (3 points), heart rate >100 (1.5 points), immobilization ≥3 days or surgery in previous four weeks (1.5 points), previous DVT/PE (1.5 points), hemoptysis (1 point), and malignancy (1 point). The patients classified as PE unlikely should undergo D-dimer testing with a quantitative rapid ELISA assay or a semiquantitative latex agglutination assay. The diagnosis of PE can be excluded if the D-dimer level is <500 ng/mL or negative. The patients classified as PE likely and patients classified as PE unlikely who have a D-dimer level >500 ng/mL should undergo computer tomography pulmonary angiography (CTPA). A positive CTPA confirms the diagnosis of PE and negative CTPA may exclude PE. Ventilation-perfusion lung scan (V/Q scan) is alternatively used in patients with contraindication for undergoing CTPA or in the setting of CTPA unavailability. Normal V/Q scan, or low probability V/Q scan plus low clinical probability can exclude PE; since high probability V/Q scan plus high clinical probability confirm PE. In rare situation in which CTPA and/or V/Q scan is inconclusive, other modalities including pulmonary angiography may be helpful to further investigate. In cases of massive PE, hypotensive state may prevent patients from obtaining CTPA or V/Q scan. Accordingly, echocardiography is increasingly utilized to confirm diagnosis of PE, particularly in hypotensive state where CTPA or V/Q scan may not be suitable candidate.

When the patient is suspected for acute PE, initial management should focus on stabilize patients in terms of oxygenation and hemodynamics. Oxygen supplementation,

intravenous fluid and vasopressor administration should be prompt, when appropriate. Anticoagulation is the mainstay therapy for acute PE. When the diagnostic tests confirm PE, the patient should prompt initiation of anticoagulation therapy; however, empirical anticoagulant therapy is sometime initiated during the process of diagnosis and resuscitation depending on the likelihood of PE and risk of bleeding. Thrombolytic treatment is often indicated in the setting of massive or refractory submassive PE. Patients who fail thrombolysis or have contraindications to thrombolysis, should undergo catheter or surgical embolectomy.

Long term anticoagulant therapy usually depends on risk for recurrent PE. The inferior vena cava filter is alternatively option for patients with acute PE who have a high risk for bleeding, complications of anticoagulation, or recurrent PE despite adequate anticoagulation.

MID-TERM OUTCOMES OF FENESTRATED ENDOVASCULAR GRAFTING FOR JUXTARENAL ABDOMINAL AORTIC ANEURYSMS

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Objective: To evaluate outcomes of the Zenith Fenestrated AAA endovascular graft (Cook Medical, Bloomington, Ind) incorporating the visceral aortic segment with graft material in the setting of juxtarenal aneurysms.

Materials and methods: A prospective analysis of patients undergoing implantation of an endovascular device with graft material proximal to the renal arteries was conducted. All patients were deemed unacceptable candidates for open surgical repair. Fenestrations were customized to accommodate aortic branch anatomy based upon CT angiography. Selective visceral ostia were treated with balloon expandable covered stents following endograft deployment. All patients were evaluated with CT angiography and/or duplex ultrasound, at 1, 6, 12 months and annually.

Results: A total of 14 patients (85.7% men; mean age, 74.4 years) with a mean aneurysm size of 54.7 mm were enrolled in the trial. Endograft design included bifurcated (9) and aortic tube (5) systems. In these 14 patients, 34 visceral vessels (mean of 2.43 per patient) were accommodated by fenestrations located within the sealing segment of the grafts. The most commonly included both renal arteries and the SMA. Technical success rate was 97% (33/34 branch graft). One renal artery was lost. The mean

follow-up was 9.35 months (range 1- 23 months). No type I or type III endoleaks were observed. The endoleak type II rate was 7.1% (1/14) at 1 and 6 months. There was no aneurysm sac expansion during follow-up period. There were no secondary interventions. Two patients had transient elevation of serum creatinine without requiring hemodialysis. Of the 33 vessels incorporated, there were no visceral stent occlusions during follow-up. Two patients died of unrelated causes during the follow-up period.

Conclusions: The mid-term outcome of the fenestrated endovascular grafts is safe and effective. It remains critical to follow the status of stented visceral vessels, and establish the long-term efficacy of this type of repair.

RADICAL SUPERFICIAL VEIN REMOVAL FOR THE TREATMENT OF VENOUS ULCER

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Background: Previous studies suggested that the characteristic of chronic venous insufficiency (CVI) in Thai may differs from the west as they trend to be younger and has higher prevalence of superficial venous reflux. The deep vein reflux coexist in the majority of these patients. The role of superficial venous surgery has been suggested. **Objective:** This study aimed to assess healing and recurrent rates after treatment with superficial venous eradication combining with compression therapy in Thai patients.

Material and methods: A retrospective cohort of patents with healed or active venous ulcer (C5-6) who had complete duplex doppler ultrasonography, history and physical examination record according to the standard protocol and had refluxive superficial veins remove with stripping or vein excision were reviewed.

Results: Between October 2006 and February 2013, There were 34 C5-6 legs in 27 patients with complete follow up for analysis with the median follow up time of 20 months. Of the 32 C6 legs, 24 legs had primary surgery and 8 legs (6 patients) had the superficial venous removal for the recurrent ulcer after previous surgery. The operation performed was 14 groin to ankle GSV removal, 6 groin to knee GSV removal, 4 knee to ankle GSV removal, 4 SSV removal, 3 combined groin to knee GSV and SSV removal and 3 combined knee to ankle GSV and SSV removal. The wound healing was achieved in 29 legs (91%) with the median healing time of 21 days (mean 44 day). The 30 days healing rate was 69% (20 legs) and the 14 days healing rate was 41% (12 legs). Only 3 legs in two patients that the ulcer

healed beyond 60 days. The post operative venous severity score and venous disability score of the 35 C5,C6 legs, were significantly improved compare with pre-operative value (pre-operative and follow up VCSS and VDS were 12 (6-19), 3.6 (0-13) and 1 (0-3), 0.4 (0-2) respectively, $p=$ for VCSS $p<0.0001$ and for $p=0.0042$ VDS). The recurrent ulceration was found in 4 legs at the mean follow up time of 30 months (ranges 1-76 months). The 2- and 3-year recurrent rate were 4 percent and 25 percent respectively.

Conclusion: In contrast to many western series, satisfactory results from superficial vein surgery could be obtained in Thai patients. The radical removal of peri-ulcer refluxive vein in this series may responsible for this results.

THE RATE AND MORTALITY OF POSTOPERATIVE VENOUS THROMBOEMBOLISM OF MODERATE RISK SURGERY IN ASIAN PATIENTS WITHOUT THROMBOPROPHYLAXIS: SYSTEMATIC REVIEW WITH META-ANALYSIS

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Background: The general, gynecologic and neurologic surgeries are regard as carrying moderate risk for postoperative venous thrombo-embolism. This review analyzed the postoperative VTE rate of these surgeries in Asia.

Materials and Methods: Inclusion criteria were: prospective study; DVT diagnosed by venography ultrasonography or radionuclide scan and no thromboprophylaxis. The pooled proportion was back calculated from Freeman-Tukey variant transformation, using random effect model.

Results: Medline, EMBASE, Cochrane Library, and KoreaMed were searched. Fourteen studies (total population of 1625) published from 1974 to 2008 were included. In general surgery, the pooled rate of all sites, proximal, isolated distal DVT was 13.4%, 2.1%, and 14.0% (radionuclide scan). The cancer patients carried higher all site DVT rate (19.7% radionuclide scan and 17.4% ultrasound). The gynecologic and neurologic surgery had 3.1% (ultrasound) and 3.8% (radionuclide scan) all site DVT rate. The pooled rate of symptomatic DVT were 1.5%, 0.2% and 1.0% for general, gynecologic and neurologic patients and the overall pooled rate of symptomatic PE were 0.3%. No patients die from PE (pooled rate 0.2 %).

Conclusions: None of these Asian patients dies from VTE. Pooled rates of proximal and symptomatic DVT were lower than in Western reports.

OUTCOMES OF INTRAOPERATIVE THROMBOLYSIS IN LATE ACUTE ARTERIAL EMBOLISM OF LOWER EXTREMITY

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Background: Acute limb ischemia is an emergency condition which may cause limb and life threatening in case of delayed or failed revascularization. Acute arterial embolism tends to produce more acute and limb-threatening ischemia than arterial thrombosis due to the lack of collateral circulation. In late presentation of acute arterial embolism which was the major group of patients presented with acute embolism, success rate of embolectomy with no adjunctive treatment was only 60-70% compared with more than 90% in early setting. Intraoperative intraarterial thrombolysis following embolectomy has been proved from many studies in improving the outcome of treatment in this group of patients without an increase in bleeding complications. However, in Thailand, intraoperative thrombolysis was not widely used due to lacking of recommended method and guideline for such treatment.

Objective: The objective of this study is to demonstrate the outcomes of intraoperative thrombolysis combined with surgical embolectomy in late acute arterial embolism of lower extremity presented with immediately threatened severity (Rutherford IIB) to use as a preliminary information to establish future limb ischemia management guideline for Thai patients.

Material and Method: Medical records of 33 late acute arterial embolism patients presented with immediately threatened severity who underwent embolectomy with intraoperative thrombolysis from January 1995 to December 2010 at the Faculty of Medicine Siriraj Hospital were reviewed. Data were recorded including patients' demographic data, intraoperative data, postoperative complications, limb salvagability rate and mortality rate within 1 year.

Results: 33 patients were enrolled in this study. Mean duration before revascularization is 16.85 days (1-120). 22 patients (67%) were treated with streptokinase while 11 patients (33%) received rt-PA. The limb salvagability rate within 1 month is 78.8% (26/33) and 60.9% (9/23) within 1 year. While the mortality rate within 1 month is 3% (1/33) and 16.7% (4/24) within 1 year. The postoperative

complications include bleeding in 5 patients, rethrombosis in 6 patients, wound hematoma in 3 patients, postoperative MI in 1 patient, surgical site infection in 1 patient and infected gangrene in 1 patient.

Conclusion: Intraoperative thrombolysis can be safely used as an adjunct to embolectomy in order to increase limb salvagability rate in late acute arterial embolism patients.

OUTCOME IN MANAGEMENT OF CHRONIC VENOUS LEG ULCER WITH COMPRESSION THERAPY

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Background: Chronic venous leg ulcers are considered to be one of problems in the public health system because of their difficulties of healing. The incidence of these leg ulcers in United Kingdom is more than 1%. The standard management of this condition is complicated and has a high cost of treatment. The compression therapy that consists of compression bandaging and graduated compression stocking is one of the effective treatments and the ulcer can be healed about 50-70%.

Objectives: The purpose of this study was to assess the outcome in management with compression therapy.

Material and Methods: The retrospective chart review of patients with chronic venous leg ulcer between July 2004 and June 2009 at leg ulcer clinic, Siriraj hospital was established. The patients who had chronic venous ulcers and palpable distal pulses at ankle or ankle brachial pressure index (ABPI) more than 0.85 were included in this study. The patients were divided in healing within 24 weeks (H) and delayed healing more than 24 weeks (DH) groups. In healing group, they were also divided in non-recurrent (NR) and recurrent within 12 months (R) groups. The factors that may affect the healing or recurrence of the ulcers were studied.

Results: A total of 163 patients were studied. The 24-week healing rate was 60.12% and the duration of healing was 11.26 weeks. The 12-month recurrent rate was 26.53% and the duration of recurrence was 6.04 months. Factors that had significant statistical differences between healing and delayed healing groups were medial side of right leg (39.80% vs. 24.61%, $p = 0.045$), superficial reflux detected from Duplex scan (70.93% vs. 52.83%, $p = 0.031$) and history of varicose veins (64.29% vs. 46.15%, $p = 0.022$). Factor that had significant statistical differences between non-recurrent and recurrent groups was liver cirrhosis (2.77% vs. 15.38%, $p = 0.022$).

Conclusions: This study revealed that patients treated

with compression therapy at Siriraj's leg ulcer clinic is effective and comparable with the other studies.

MIDTERM OVERALL SURVIVAL RATE OF EMERGENCY ENDOVASCULAR AORTIC REPAIR (EVAR) IS COMPARABLE TO ELECTIVE EVAR

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Objective: To compare the outcomes of endovascular aortic repair (EVAR) between elective and emergency situation.

Materials and Methods: All abdominal aortic aneurysm (AAA) patients who underwent EVAR in Siriraj Hospital from August 2003 to December 2011, were retrospectively reviewed and analyzed. A total 100 consecutive patients were enrolled (78 men, mean age 74). Emergency cases were defined as ruptured AAA (10 cases) and acute non-ruptured (11 cases) who underwent repair within 24 hours. Seventy-nine patients were treated as elective cases and 21 patients were emergently repaired.

Results: The mean follow up time was 2 years and there was no difference between emergency and elective case in term of 30-day mortality rate (5% vs. 1%, $p = 0.378$), and midterm survival (60% vs. 80%, $p = 0.109$). But survival free from additional procedure was lower in emergency group (44% vs. 82%, $p = 0.017$). The operative time, contrast used, and blood loss were comparable between each group. Emergent EVAR were more likely performed under local anesthesia (33% vs. 3%, $p < 0.001$) and less likely fixed by bifurcated stent-graft (43% vs. 73%, $p = 0.026$). Higher complication rates in emergency group include infected graft (14% vs. 0%, $p = 0.008$) and bleeding (14% vs. 1%, $p = 0.028$), whereas there was no significant difference in other implant complication/ deployment complication/ systemic complication and endoleak rate. Greater regression rate of maximal aneurysm sac diameter was found in emergency group (37% vs. 13%, $p = 0.008$).

Conclusion: Despite higher additional procedure rate, emergency EVAR might offer a comparable outcome compared to elective repair in term of survival rate.

A COMPARISON OF THE PARTY BALLON ASSISTED VALSALVA WITH CONVENTIONAL VALSALVA MANEUVER IN DIAGNOSIS OF SUPERFICIAL VENOUS VALVULAR REFLUX OF LOWER LIMB

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Background: The conventional valsalva maneuver (CV) is a standard procedure to exhibit reverse venous flow for valvular reflux examination by duplex ultrasonography (DUS). However, some patients especially the elderly patients could not perform CV to demonstrate the reverse flow. It has been reported that blowing party balloon can produce the same effect as CV in various conditions. However, valsalva by blowing party balloon has not been evaluated in venous reflux examination.

Objective: This study was designed to compare the results of DUS in diagnosis of superficial reflux of lower limb by PBAV and CV induced reverse venous flow for valvular incompetence examination.

Design of study: The study design was a prospective randomized controlled trial, cross over study.

Subjects and Methods: 40 patients who had symptoms and signs suspected saphenofemoral junction incompetence were examined for superficial reflux using DUS with two techniques of valsalva maneuver, PBAV and CV. Five segments of the deep and superficial veins of each affected limb were examined by DUS with CV and PBAV. Patients were randomized to 2 groups. The first group performed CV before PBAV. The other performed PBAV before CV. The timing for the instruction, reflux time, total timing of examination were compared between 2 groups.

Results: There was neither period effect nor treatment-period interaction between the PBAV and CV to examine superficial reflux. Both PBAV and CV could equally identify superficial reflux but teaching time and total examination time in PBAV was shorter than CV.

Conclusions: PBAV was the new option to exhibit reverse flow for superficial reflux examination by DUS. PBAV was easier to perform than CV and took a shorter time for examination.

EVAR IN COMPLEX AORTIC ANEURYSM

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A 64-year-old man with a history of peripheral arterial disease. His chest film was abnormal. CTA revealed saccular thoracic aortic aneurysm and two saccular juxtarenal and infra renal abdominal aortic aneurysms. He was informed about treatment options. Endovascular surgery was planned after discussion. The operation was thoracic endovascular aortic repair (TEVAR), left carotid to left subclavian artery bypass and fenestrated endovascular aortic repair at the same session. The procedure was successfully performed in hybrid operating theater.

The patient was discharged home uneventfully. Postoperative CTA showed good patency of stent graft and all branches, without endoleakage.

OUTCOME OF NORMAL SALINE FLUSHING FOR A TOTALLY IMPLANTABLE CENTRAL VENOUS ACCESS DEVICE

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Objective: To study the outcome of flushing a totally implanted central venous access device (port) with normal saline without heparin.

Materials and methods: This was a retrospective descriptive study. Data were collected from medical records of the patients who had port flushing with only normal saline at Faculty of Medicine Vajira Hospital from January 2009 to April 2012.

Results: A total of 35 patients were included. Mean age was 50.3 ± 7.1 years. Most were female (30 patients or 85.7%) and most had breast cancer (28 patients or 80.0%). Types of port were Celsite ST201 in 29 patients (82.9%) and Celsite Implantofix in 6 patients (17.1%). All ports were flushed with 20 ml of normal saline. The flushing was done once every 4-18 weeks (median 12 weeks). With a median follow up of 96 weeks (36-156 weeks), none had port occlusion which needed port removal or re-implantation. Nevertheless, there were 2 patients (5.7%) whose blood could not be aspirated through the device but only fluid injection was possible. The problem in these 2 patients was solved by an injection of 5 ml of 500 units/ml heparin which was left in the port. A follow up at 4-week in both patients demonstrated a completely patent port serving for blood aspiration and fluid injection.

Conclusion: Normal saline flushing was one of the effective flushing techniques for the port.

SURGICAL DILATATION OF ARTERIO-VEIN FISTULA (AVF) STENOTIC LESIONS

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As the prevalence of chronic renal disease increases, revision of AVF has become one of the most common

surgical service in vascular surgery. The results of endovascular surgery with balloon angioplasty or stent are suboptimal in terms of efficacy and potency rate. In addition, this procedure incurs high cost for the patients and national

health resources. This audiovisual presentation demonstrates the utilization of biliary bougie dilator and vascular clamp for the correction of AVF stenotic lesion. Brief summarization of the results are also reported.

WOUND CARE

HYPERBARIC OXYGEN THERAPY

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Introduction: Hyperbaric oxygen therapy (HBO, HBOT, HBO2) serves as primary or adjunctive therapy for a various range of medical conditions. Most of the efficacies of HBO are explained by the simple physical relationships determining gas concentration, volume, and pressure. The therapy's purpose is to increase the amount of oxygen in the blood. Problem wounds are the challenge medical conditions. Hyperbaric oxygen is a new modality of treatment that is used for hypoxic wounds.

What Is Hyperbaric Oxygen Therapy?

Hyperbaric oxygen therapy is a high dose oxygen inhalation therapy in which a patient breathes pure oxygen while inside a pressurized hyperbaric chamber at an atmospheric pressure greater than normal sea level (1 ATA). At the same time, the pressure surrounding the patient's body is slowly increased to two to three times normal atmospheric pressure. Hyperbaric oxygen therapy allows the blood to carry more oxygen to the tissues. This helps all the functions of your body that require oxygen. A high level of oxygen in the blood helps to promote new tissue and blood vessel growth, and assists in the healing process by permitting skin grafting or spontaneous healing. In addition, it helps to fight infections caused by a variety of bacteria, some that only live in the absence of oxygen. It also enables white blood cells to destroy many kinds of bacteria more efficiently. Hyperbaric oxygen therapy is a non-invasive course of treatment. Traditionally used to treat diving complications, hyperbaric oxygen therapy now has new indications from the specialties of: Surgery, Plastic Surgery, Maxillofacial & Oral Surgery, Orthopedics, Infectious Disease, Radiation Oncology and Emergency Medicine. Hyperbaric oxygen acts as a drug, eliciting varying levels of response at different treatment depths, durations, and dosages and has proven effective as adjunctive therapy for specifically indicated conditions. Indications for Hyperbaric oxygen therapy Utilizing knowledge gained from clinical experience and basic sciences research, the

Undersea and Hyperbaric Medical Society's Committee on Hyperbaric Oxygen has approved the use of HBOT as adjunctive or primary treatment for the following diseases and conditions: The Hyperbaric Oxygen Committee of the Undersea and Hyperbaric Medical Society (UHMS) has approved treatment in 2009 for these conditions⁴:

Primary treatment

1. Air or gas embolism
2. Decompression sickness (DCS)

Preferred treatment

3. Carbon monoxide (CO) poisoning and CO poisoning complicated by cyanide (CN) poisoning

Adjunctive treatment

4. Clostridial myositis and myonecrosis (Gas gangrene)
5. Crush injury, compartment syndrome and other acute traumatic ischemia
6. Arterial insufficiencies
 - Central artery occlusion
 - Enhancement of healing in selected problem wounds
7. Exceptional Blood Loss (Anemia)
8. Intracranial abscess
9. Necrotizing soft tissue infections (subcutaneous tissue, muscle, fascia)
10. Osteomyelitis (refractory)
11. Radiation tissue damage (osteoradionecrosis, soft tissue radionecrosis)
12. Compromised graft and flaps
13. Thermal burns
14. Idiopathic Sudden Sensorineural Hearing Loss (New! approved on October 8, 2011 by the UHMS Board of Directors)

Role of HBO in Problem wounds

Wound healing is arrested by decreased fibroblast proliferation collagen production, and capillary angiogenesis in an hypoxic environment. Hypoxia also allows growth of anaerobic organisms, further complicating wound healing. Investigations of problem wounds in animal models suggested that elevation of wound oxygen tension to normal enhanced wound healing. Sheffield and associates^{5,6} confirmed hypoxia in chronic, indolent, human wounds and demonstrated elevation of wound oxygen

tension with hyperbaric oxygen treatment. Transcutaneous oximetry has become increasingly popular as a method of patient selection for hyperbaric oxygen treatment. Hyperbaric oxygen therapy provides a significant increase in tissue oxygen tension. It influences to enhance fibroblastic proliferation, increase collagen synthesis, promotes neo-vascularization, and bacterial clearance in wounds. HBO may be useful when underlying osteomyelitis is present or to improve the soft tissue envelope for reconstruction. However HBO is adjunctive to standard wound care.

Conclusion

Hyperbaric oxygen therapy is a drug with well defined physiological and pharmacological effects that is used for helping all the functions of the body that require oxygen. It offers many benefits. The treatment should only be administered under the close monitoring of highly trained physicians and nurses. HBO is not designed to replace other proven methods of treatment but to supplement other forms of treatment such as surgery, antibiotics and wound care. Researches are needed and are undergoing.

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WOUND DRESSING WITH TLC-NOSF TECHNOLOGY IN CHRONIC WOUND: CASE REPORT

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Background: Chronic wound is a wound that does not heal in an orderly set of stages and in a predictable amount of time the way most wounds do. Matrix metalloproteinases (MMPs) are involved in the wound's chronicity. Excessive production of MMPs coupled with reduced expression of the tissue inhibition of MMPs, induce degradation of the extracellular matrix and inactivation of growth factor. The wound is maintained in an uncontrolled inflammatory state. Urgostart is a dressing that incorporate a MMP inhibitor, the Nano-Oligosaccharide Factor (NOSF) into lipidocolloid matrix dressing that provide wound healing in chronic wound

Objective: To demonstrate the benefit of Urgostart in chronic wound

Materials and methods: A 60-year-old man presented with chronic wound at his right foot after right big toe amputation from diabetic foot infection in 13 months ago. His underlying diseases were diabetes mellitus, dyslipidemia, and diabetic retinopathy. He had visited our hospital for wound dressing (wet dressing) for 13 months but the wound had not been healed. After no sign of infection was confirmed, we applied Urgostart to his wound and changed every 3-4 days depended on exudate from the wound. The beginning size of the wound was 8.2×5.1 cm.

Results: The wound was healed within 7 weeks after using Urgostart.

Conclusion: Urgostart can improve quality of life for patients with chronic wound due to less frequent dressing changes and accelerate wound healing. Moreover, Urgostart can save labour cost and time-consuming. In conclusion, NOSF and lipidocolloid matrix dressing (Urgostart) may promote the healing process of non-infected chronic wound.

**VACUUM DRESSING FOR SERUM OOZING WOUND:
APPLIED TECHNIQUE FROM TRAUMATIC
TEMPORARY ABDOMINAL WOUND CLOSURE**

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Objective: This study presents the outcome of vacuum dressing in open serum oozing wound.

Materials and Methods: Thirty patients who had an open wound with serum oozing required wet dressing once daily. Vacuum dressing technique was applied for wound

care and the dressing was changed every other day. Step by Step for Vacuum dressing was as follows:

- Prepared wound base
- Covered the wound base with gauze
- Placed a 12 F nasogastric tube over the gauze
- Applied the Opsite to cover the wound area
- Started the vacuum dressing

Result: All patients were satisfied with this technique (mean VAS = 9.4). No patients needed to change the dressing before the plan. No patients developed surgical site infections.

Conclusion: Vacuum dressing technique can be applied for serum oozing wound by using general nursing equipment with an acceptable result.

Improving Knowledge and Skill for the Management of Trauma Patients in the Emergency Rooms of Three Southern Border Provinces of Thailand

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Abstract

Objective: The three southern border provinces of Thailand are prone to frequent terrorist attacks. A large number of ensuing deaths and disabilities are reported each year. There is a standard training program (Advanced Trauma Life Support, or ATLS) to prepare emergency room (ER) doctors to take care of patients with acute injuries. The objective of this study was to improve the standard of care of ER physicians by providing guidelines of treatment according to ATLS.

Methods: An ATLS training course was set in the southern part of Thailand to train ER physicians from the three southern border provinces.

Results: Of the 32 participants (2 courses), 17 failed their pre-training examination but only 11 failed in the post-training examination. All participants passed the practical and skills examination.

Conclusion: This result suggested that ER doctors who work in the three southern border provinces needed extra training to improve their management of trauma patients. The ATLS course can improve their abilities and confidence in the management of severely injuries.

Keywords: ATLS, trauma service, emergency room

INTRODUCTION

Terrorism in southern Thailand is active mainly in the three border provinces, namely Narathiwat, Pattani and Yala. There were also some terrorist activities in parts of Songkhla and Satun^{1,2}. Many civilians were

injured or killed, or have gone missing while Thai authorities have been trying to find an effective new approach to solve problems³. In order to save lives, a standard treatment guideline is important for doctors when attending to injured patients in the emergency

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room. They have to conduct surgical procedures in an environment with limited access to advanced medical instruments. Some health-care specialists may not have adequate skills in caring for trauma victims. Patients with acute life threatening traumatic injuries are thus often referred to other hospitals with more experienced doctors and proper medical equipment.

Presently, there is a standard program for training ER doctors to take care of patients with acute injuries. It is the Advanced Trauma Life Support (ATLS) program that was developed by the American College of Surgeons.^{4,5} It is an internationally recognized standard training program for initial assessment and acute injury management.^{6,7} The purpose of the ATLS course is to provide practical education and training to handle severe trauma and to establish a standard protocol of resuscitation. This standard training course was implemented in the three border provinces to provide doctors with effective approaches to treating severe injuries. In this study, improvement of skills was reported by the participants after the ATLS training. The effectiveness of the training was also evaluated by comparing the multiple choice questions (MCQ) test scores before and after participating in the training programs.

MATERIALS AND METHODS

Two groups of ER doctors applied to participate in the ATLS programs in the three border provinces of Southern Thailand. Two courses of the ATLS program were conducted during two separate periods: 17th to 19th August 2011 (Group 1) and 27th to 29th April 2012 (Group 2). All participants sat for the pre- and post-training MCQ tests.

The ATLS program consisted of 2 sections. The first section was on theory. In this section, skilled trauma surgeons share their experiences with the participants, which included knowledge of resuscitation, patient assessment and preliminary treatment. The instructors explained the key concepts with a presentation of photographic slides.

The second, practical section consisted of two parts. The first part was on general skills, which included airway maintenance and ventilation, management of shock, practical X-rays for thoracic and spinal injuries, head, neck and musculoskeletal trauma, and initial assessment and management. The second part was on

surgical procedures, which included cricothyroidotomy, needle thoracostomy and thoracostomy tube insertion, pericardiocentesis, and diagnostic peritoneal lavage (DPL).

After completion of the practical section, participants were evaluated using the initial assessment skills station, with a cognitive and skills performance evaluation form. Using a checklist, the instructors graded and provided scores for the test simulations. To pass, participants must score 80 percent or more on the post-training MCQ paper examination, and also pass the practical skills examination on the initial assessment and management scenarios.

The effectiveness of the ATLS program was tested by comparing participants' performance scores in the theoretical section before and after training (pre-test and post-test), and percentage of participants passing the practical skills assessment.

Three months after completion of the ATLS course, participants were asked to complete a questionnaire grading the usefulness of the course. This questionnaire contained a theoretical and a practical part. The theoretical part had questions with four-grade response, and the practical part had questions with checklist tick boxes.

The test scores were reported as mean and standard deviation. The number and proportion of participants who passed the practical section in ATLS training program were also reported. The results of applying the usefulness questionnaire were given as percentages. For the before-after comparison, paired t-test was used to compare the mean scores of MCQ in the theoretical section, and the McNemar chi-square test was used to compare the number of participants who passed the test. A p-value < 0.05 was considered statistically significant.

RESULTS

There were 16 participants in each group. All candidates sat for a pre-training MCQ test before attending the lectures. The overall mean pre-training score was 30.7 ± 4.7 points. The score of the two groups were similar (30.7 ± 3.9 for the first group and 30.5 ± 5.4 for the second group, $p > 0.05$). There was improvement of their performance after training. The mean post-training test score increased to 31.9 ± 3.0 points, which was significantly better than the mean pre-training

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Table 1 Result of the response to the questionnaire on the usefulness of the ATLS course

Theoretical Part	Grade of usefulness (%)			
	Highest	High	Some	Least
Airway	100	0	0	0
Shock	100	0	0	0
Thoracic Trauma	100	0	0	0
Abdominal Trauma	91	9	0	0
Burn and Cold Injury	69	31	0	0
Head Trauma	100	0	0	0
Musculo-skeletal Trauma	94	6	0	0
Spine and Spinal cord	100	0	0	0
Trauma in women	63	37	0	0
Pediatric Trauma	88	12	0	0
Trauma in the Elderly	91	9	0	0
Stabilization and Transport	100	0	0	0

Practical Part	What have you practiced after training?	
	Yes (%)	No (%)
Chest decompression	59	41
Diagnostic peritoneal lavage	19	81
Pericardiocentesis	0	100
Cricothyroidotomy or tracheostomy	0	100
X-rays in trauma	97	3
Splinting	91	9
Triage	75	25

scores ($p < 0.05$). There was no statistically significant difference between the post-training scores of the two groups (34.8 ± 3.2 and 31.8 ± 2.8 points, respectively). A score of at least 80 percent of the total MCQ score was considered to be a pass in the training. In the pre-training test, 15 participants (46.9%) passed (7 and 8 participants from the first and second group, respectively). After training, the number of participants who passed the MCQ test was 21 (65.6%; $p < 0.05$). In the practical section, all participants passed the examination which was approved by the American College of Surgeons ATLS subcommittee.

After three months, participants were asked to fill a questionnaire on the usefulness of the course. In the theoretical part, more than 90 percent of participants graded the topics of airway, shock, thoracic trauma, abdominal trauma, head trauma, musculo-skeletal trauma, spine and spinal cord trauma, trauma in the elderly, and stabilization and transport, as being of highest usefulness. None graded any topic as being less than highly useful.

In the practical part, there were three areas in

which most doctors had the occasion to later apply the knowledge obtained from the training (X-rays in trauma, splinting and triage). But there were other topics from the training that were not so useful (Table 1).

DISCUSSION

The ATLS training program was conducted in the three border provinces of Thailand in order to improve the ER doctors' performance in trauma management. The ATLS training consisted of two sections. Experienced instructors lectured on standard knowledge in the theoretical section. Participants then practiced in various simulation stations.

In the present study, the post-training MCQ tests scores were higher than the pre-training scores on the average. All participants gained more skills and confidence in managing severely injured patients.

Efficient management implies that the trauma team be ready to provide resuscitative care both at the site of accident and at the emergency room.

Experienced doctors are the key to help patients with life threatening injuries. The ATLS training program will be useful in improving the doctors' knowledge and skills and enhance their confidence. In the present study, less than 50 percent of doctors passed the pre-training MCQ test, but the test results improved after training.

The scores from the practical training section were also encouraging. Most of doctors accepted the advantages of training. Nonetheless, there were certain skills in the practical part which doctors did not apply after completion of the course, and these included diagnostic peritoneal lavage, pericardiocentesis, cricothyroidotomy, and tracheostomy. It might be because most doctors decided to refer some of the more severely injured patients to other hospitals.

Because most participants noted the usefulness of training for emergency management, more of these training programs should be offered to other physicians in these and other provinces. These extra courses could help more doctors in the initial assessment of severely injured patients and improve their skills in

7) lifesaving other life-saving procedures.

CONCLUSION

The ATLS training course can improve the ER doctors' skills and confidence in the management of the severely injured patients.

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