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### Selected abstracts
Evidence-based practice, a must in medical practice

'A being of supernatural powers or attributes, believed in and worshiped by a people, especially a male deity thought to control some part of nature or reality', this is one of the definitions of 'God', given in the Oxford English dictionary. This definition may also be taken up by some surgeons, by themselves or by others and on occasion this maybe entirely appropriate. Although this maybe the case we all have a duty of care to the patients we treat and thereby are responsible in providing them with the best possible care available. To do this we must follow an evidence based practice hand in hand with a multidisciplinary approach. Add this to changing times and the availably of vast amounts of freely available information we are also dealing with a new breed of patients who come with pre formed expectations and demands.

Evidence-based medicine has been defined as 'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patient. It has arisen from the critical need of bridging the gap between research and clinical practice, and combines the use of qualitative evidence and applying it to the art of clinical decision making. This form of decision making takes into account the individuality of the patient and their condition, the clinician's expertise and best available research evidence. We have a duty to our patients to provide them with the best possible treatment available and evidence based practice enables us to achieve this goal.

In the past, we have relied greatly on the experience of individual doctors or 'gods' in our profession to guide us to the right decision, although this experience is invaluable it maybe suboptimal on its own in the overall treatment options available especially in the current information era.

So how do we follow evidence based practice? The literature describes five steps. Translation of uncertainty to an answerable question and thereby in the first place asking the question. Then retrieval of the best evidence available, this could be through journals, peer discussion and multidisciplinary approach. Critical appraisal of the information gathered. Application of the results obtained finally evaluation of the performance. The systematic review of published research studies is a major method used for evaluating particular treatments. The Cochrane Collaboration is one of the best-known, respected examples of systematic reviews.

It is also essential that we assess the quality of the evidence available to us and for this a system has been established by the U.S. Preventative services task force, describing levels I to III. Taking into account these systems and evidence clinical guidelines and protocols can be set up to provide uniform care. These too have their good and bad points and should never be considered as rigid structures and here is where the experience of a clinician comes in to provide the best available treatment.

With the establishment of evidence based medicine, a multidisciplinary approach to patient management is an integral part of delivering patient care. Multidisciplinary approach to patient care was first established in the treatment of cancer patients. The main aim was to ensure that patients received timely care from appropriately skilled professionals, that there is continuity of care, and that patients get adequate information and support. Unlike in yester years patient care should be a 'team approach'. Although overall there should be a lead clinician who is responsible. This team should not only treat the patient's condition but also take into account the patients well-being after discharge thereby ensuring a rapid and complication free recovery. The team should include clinicians of primary, secondary and tertiary care as well
as allied professionals.

Surgery as a profession is changing, for the better. Training methods have changed from being apprenticeships to structured learning but still retaining the traditions of teacher-trainee. Teaching is evidence based and research is encouraged amongst the trainees. A multidisciplinary approach to patient care is encouraged and in some units is becoming the norm. Discussing morbidity and mortality in units provides a platform to discuss complicated cases and pitfalls to avoid. This also encourages a transparency and a 'no blame culture' which provides the best care for the patient. The current problems of not accepting responsibility and asking for help even as consultants when faced with a challenging case does not provide the best outcome for the patients. Patient care is a privilege bestowed upon us, to abuse this is ethically wrong, therefore we must take all available measures to provide the best possible care available, taking into account the resources available to us.

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Multi-parametric MRI of the Prostate
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Keywords: Prostate carcinoma; detection; staging.

Introduction

One in six men will develop prostate cancer in their lifetime [1]. The most consistent risk factors for the development of prostate cancer are advancing age, family history and race [2]. Interestingly, men in South East Asian countries have a lower incidence of prostate cancer that increases rapidly after immigration to the West suggesting that the pathogenesis of prostate cancer reflects both hereditary and environmental components [2]. It has been suggested that chronic inflammation might be important in prostate carcinogenesis. Intraprostatic inflammation might be caused by infections such as sexually transmitted agents; cell injury from exposure to chemical or physical trauma from urine reflux and prostatic calculi formation; hormonal variations or exposures and dietary factors such as charred meats. This may directly injure the prostate epithelium, resulting in histological lesions known as proliferative inflammatory atrophy (PIA). Transitions between areas of PIA and high grade prostatic intraepithelial neoplasia and adenocarcinoma have been observed [2]. Furthermore, PIA lesions may be a manifestation of the 'field effect' caused by environmental exposures [2]. In fact, prostate cancer is histologically heterogeneous and multifocal in as many as 85% of patients [3].

Clinical screening of the prostate is performed with digital rectal examination (DRE) and serum prostate specific antigen (PSA) measurement. DRE has a low sensitivity in the detection of prostate cancer while elevated PSA has a high sensitivity but low specificity in the detection of cancer with elevated levels seen in the presence of prostatitis, benign prostate hypertrophy (BPH) and post-instrumentation [4]. Positive predictive values for the detection of early prostate cancer have been reported as 21% for DRE and 32% for PSA [4]. In patients with abnormal DRE or elevated PSA, trans-rectal ultrasound (TRUS) guided biopsies are performed for histological diagnosis and to determine Gleason grade which is an indicator of tumour aggressiveness. These systematic random biopsies are prone to undersampling with 35% of cancers missed on first biopsy [5] and underestimation of Gleason grade in 46% of cases [6].

Hence, multi-parametric magnetic resonance imaging (MRI) plays an increasingly important role in the evaluation of prostate carcinoma. A combination of anatomic imaging with T1-weighted imaging (T1WI) and T2-weighted imaging (T2WI) and functional imaging with diffusion weighted imaging (DWI) with apparent diffusion coefficient (ADC) map calculation and dynamic contrast-enhanced MRI (DCE-MRI) are routinely performed. MR spectroscopic imaging (MRSI) may also be performed as an optional technique.

Indications for MRI

MRI plays a vital role in the detection and staging of
prostate carcinoma. A combination of T2WI, DWI and DCE-MRI has an increased sensitivity of 81% and specificity of 96% in prostate cancer detection compared to use of T2WI alone which has a sensitivity of 61% and specificity of 91% [7]. MRI is particularly helpful in guiding repeat TRUS biopsies in patients with elevated PSA and negative initial biopsies as sometimes seen with anterior and apical tumours which are easily missed on random biopsy. MRI is used to determine extracapsular and locoregional tumour infiltration, this is vital in treatment planning, for instance in planning of nerve and continence sparing surgery or focal therapy. Functional MRI can also be used to determine tumour volume and foci of more aggressive disease enabling targeted TRUS biopsies for more accurate estimation of Gleason grade. Studies have shown that ADC values have an inverse relationship with Gleason grade in peripheral zone prostate cancers [8]. MRI is also vital in the detection of post-prostatectomy and post-radiotherapy tumour recurrence.

**Normal Anatomy of the Prostate**

The normal prostate weighs 15 to 20g and is shaped like an inverted pyramid with its base directed superiorly and its apex inferiorly. It surrounds the urethra between the neck of the urinary bladder superiorly and the urogenital diaphragm inferiorly. Laterally the prostate borders the middle portion of the levator ani muscles. The paired seminal vesicles extend from the top of the prostate in a superolateral direction. Inferior to the seminal vesicles the neurovascular bundle fibres penetrate the prostate capsule posterirolaterally. The prostate is separated from the rectum by the Denonvilliers fascia. Anterolateral to the prostate there is an extensive venous complex [9]. These structures should be evaluated when determining locoregional tumour spread.

The prostate can be divided into several zones with the urethra as the anatomical landmark. Anterior to the urethra is the fibromuscular zone (FMZ) which is histologically non-glandular. Posteriolaterally is the glandular part of the prostate consisting of an inner periurethral glandular region and transitional zone (TZ) which is at the level of the proximal urethra above the seminal colliculus; the central zone (CZ) posteriorly is wedge shaped and surrounds the ejaculatory ducts and extends from the seminal colliculus to the bladder neck; the peripheral zone (PZ) is contiguous with the CZ at the base while its distal portion from below the seminal colliculus to the prostate apex surrounds the urethra. The CZ and TZ are commonly referred to as the central gland as it cannot be differentiated on MRI while the PZ is referred to as the peripheral gland. A pseudocapsule separates the central gland from the peripheral gland while the true prostate capsule surrounds the peripheral gland [9].

Many prostate diseases have a zonal distribution, for example 70% of adenocarcinomas arise in the PZ, with 20% in the TZ and 10% in the CZ [3]; BPH usually involves the TZ [3].

**MRI of the Normal Prostate**

MRI of the prostate can be performed with a body phased-array coil. The following sequences are performed: Axial T1WI of prostate; Axial T2WI of whole pelvis; Axial, sagittal and coronal T2WI of prostate; Axial DWI of prostate with b-value of 1000 s/mm2 with ADC map calculation; Axial DCE-MRI of prostate following administration of gadolinium-based contrast medium with image acquisition continued for 5 minutes for analysis of dynamic enhancement curves; Axial post contrast image of whole pelvis at 5 minutes. MRSI is not routinely performed. Bowel motion artifact can be reduced by administration of an anti-peristaltic agent.

On T1WI the prostate has homogeneously intermediate signal intensity slightly hyperintense to muscle. The prostate zonal anatomy is best appreciated on T2WI, the
PZ is homogeneously hyperintense, the central gland has heterogeneous areas of high and low signal intensity and the FMZ is isointense to muscle. The prostate capsule is seen as a line of hypointensity surrounding the PZ in the low and mid portions of the prostate. The neurovascular bundles are seen as triangles at the posteriolarateral margins of the prostate [9]. The seminal vesicles are isointense to the prostate on T1WI. They are better evaluated on T2WI where the lobular glandular configuration with hyperintense content and hypointense borders of the tubules and capsule are better appreciated [9].

MRI of Prostate Carcinoma

The European Society of Urogenital Radiology (ESUR) published guidelines for prostate imaging in 2012 [10]. The guidelines recommend three MRI scanning protocols for tumour detection, local staging and node and bone metastases evaluation. The ESUR propose a PI-RADS scoring system which relays the probability of a lesion being a clinically significant cancer. The scoring criteria include T2WI for the PZ and TZ, DWI, DCE-MRI and extra-prostatic disease. MRSI is given as an optional technique. A 5 point scale is allocated for each imaging sequence with a score of 1 indicating that clinically significant cancer is highly unlikely to be present and a score of 5 indicating that clinically significant cancer is highly likely to be present. Each lesion is then given an overall score to predict its chance of being a clinically significant cancer.

On T2WI, a round or ill-defined homogeneously hypointense focus in the PZ is suspicious for cancer. Bulging of the capsule, broad contact of more than 1.5cm with the capsule or extracapsular extension increases likelihood of malignancy [10] (Figure 1). A linear, wedge shaped or geographic area of hypointensity in the PZ which is usually not well demarcated is more likely to represent a benign process [10]. This may be seen in cases of prostatitis, atrophy, scarring or post treatment change.

Detection of prostate cancer in the TZ is more challenging as signal characteristics of normal TZ and cancer overlap. On T2WI, a homogeneously hypointense mass with indistinct margins giving an ‘erased charcoal sign', a lesion which is lenticular or ‘water drop' in shape or invasion of the pseudocapsule, anterior-FMZ or anterior horn of the PZ is more likely to represent malignancy [10] (Figure 1). This should be differentiated from heterogeneous TZ adenomas with well defined margins referred to as ‘organized chaos' or areas of homogeneous hypointensity with retained well defined margins originating from the TZ, this is seen in BPH [10] (Figure 2).

Prostate cancer demonstrates restricted diffusion with hyperintensity on DWI and hypointensity on ADC maps [11-12]. However normal prostatic tissue, especially in the TZ, may have restricted diffusion mimicking a tumour, using very high b values of > 1000s/mm2 has been recommended to overcome this [10]. A focal area or mass having restricted diffusion on high b-values is more likely to represent malignancy (Figure 1). A diffuse area with no focal features or an area that is linear, triangular or geographic demonstrating restricted diffusion is more likely to represent benign disease [10].

DCE-MRI is an evaluation of tissue vascularity. A region of interest (ROi) is drawn on suspicious tumour foci and dynamic contrast enhancement curves evaluated. Cancer typically demonstrates early contrast enhancement with high peak relative enhancement and contrast washout (Figure 1). However, hypervascular BPH nodules can have similar enhancement characteristics, hence it is always interpreted in combination with T2WI and DWI[10].

Biopsy related haemorrhage commonly causes artifacts that mimic cancer limiting sensitivity of MRI. This should be recognized on T1WI as areas of hyperintensity, preventing misinterpretation (Figure 3).
A time interval of 4-6 weeks between biopsy and MRI has been recommended [13], however if significant haemorrhage is still seen, postponing the study for a further 3-4 weeks to allow resolution of the haemorrhage is recommended [10].

Extracapsular extension of tumour is best evaluated on T2WI. Capsular breach by tumour may manifest as tumour abutment, bulging, loss of definition and irregularity of the prostate capsule [10]. Thickening of the neurovascular bundle, measurable extra-capsular disease and obliteration of the recto-prostatic angle may be evident [10]. Seminal vesicle infiltration may manifest as expansion, hypointensity on T2WI, filling in of the prostate-seminal vesicle angle, abnormal enhancement and restricted diffusion [10]. Tumour adjacent to the bladder neck, loss of low T2W signal of the bladder muscle and abnormal enhancement extending into the bladder neck is indicative of bladder...

Figure 1. 76-yr-old man with raised PSA. TRUS biopsy confirmed prostatic acinar adenocarcinoma, Gleason grade 3+4=7. (a) Axial T2WI shows lenticular shaped area with ‘erased charcoal sign’ in the right anterior central gland invading the FMZ likely representing cancer. A second hypointense lesion is seen in the left PZ with irregularity of the prostate capsule and thickening of the left neurovascular bundle (arrow) in keeping with tumour infiltration. (b) ADC map shows both lesions have restricted diffusion. (c) DCE-MRI with two ROIs placed on the central gland lesion. (d) Graph of relative enhancement versus time. The dynamic enhancement curves show rapid contrast enhancement with high peak relative enhancement and contrast washout in keeping with carcinoma. Note that ROI1 has been placed on part of the lesion with lower ADC value and has a higher peak relative enhancement and washout in keeping with a more aggressive focus of cancer. (e) Axial T2WI more inferiorly in the prostate again shows the lesion in the central gland with irregular margins. The second lesion in the left PZ is seen as a rounded mass with bulging of the capsule consistent with capsular infiltration. (f) ADC map shows both lesions have restricted diffusion involving a large volume of the prostate. (g) DCE-MRI with ROI1 placed on the lesion in the left PZ and ROI2 placed on contralateral lobe for comparison. (h) Graph of relative enhancement versus time. ROI1 shows rapid enhancement with high peak relative enhancement and contrast washout in keeping with cancer. In comparison ROI2 in the contralateral lobe has gradual enhancement with low peak relative enhancement and no significant contrast washout in keeping with benign PZ.
neck invasion [10]. Similar imaging features may be seen in local tumour infiltration of the levator ani or rectum (Figure 4). Lymph node staging of prostate cancer on MRI is unreliable as 70% of metastatic lymph nodes are less than 8mm [10].

In post-prostatectomy patients with rising PSA, a focal lesion in the surgical bed, having restricted diffusion and typical dynamic contrast enhancement curve would most likely represent tumour recurrence.

On MRSI, the relevant metabolites are citrate which is a marker of benign tissue, creatine which is insignificant for diagnosis but difficult to resolve from choline and choline which is a marker of malignancy. In quantitative analysis, a choline-plus-creatine-to-citrate (CC/C) ratio is estimated, with ratios of >0.86 in the PZ and >0.94 in the central gland indicative of malignancy [10]. In qualitative analysis the peak heights of citrate and choline are visually compared. A choline peak height exceeding a citrate peak height by >1 times is likely to represent clinically significant cancer [10].

**Conclusion**

Clinical screening for prostate cancer with DRE and PSA measurements has its limitations. Random TRUS-guided biopsies may miss cancers and may
underestimate tumour aggressiveness. A combination of anatomical and functional MRI techniques is vital in the detection, staging and follow up of clinically significant prostate cancer.

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"If you steal from one author it is plagiarism, if you steal from many it is research" this is a quote by Wilson Mizner and I would like to start by saying that I have done a lot of research to compile this oration. The more I read of the life and work of Dr. Noel Bartholomeusz the more I am made aware of his greatness, his passion for surgery and his passion for perfection - how small I am in comparison!

If you ask anybody who knew Dr. Noel Bartholomeusz as to what was distinctive about him, the unanimous answer would probably be that he wore a white satin drill suit with an orchid on his lapel. Indeed, this orchid was on his photograph on the cover of the book, “Reflections on the life of Dr. Noel Bartholomeusz - Eminent Surgeon” authored by Ms. Nirmali Hettiarachchi and myself.

The first phase of my research was to show this photograph to three leading florists in Colombo to identify it, but they failed to do so. A visit to Google brought up the image and it was aptly named “the Scorpion” orchid. Another visit to the florists to get some scorpion orchid flowers resulted in a strange response, “it is a common orchid and not in much demand, hence it is rare to find”. A visit to the Botany Department of the University of Colombo, now renamed “The Department of Plant Sciences” to get the correct botanical name came with the response that I should email the picture and requirements to a member of the staff specializing in orchids. Two emails were sent and there was no reply! So we went back to Google and we came up with the name Scorpion Orchid, Aranthera (Genus Arachnis), which was the closest we could get to the identity of this “common” orchid.

These incidents are not without relevance. The true dedicated professional that he was, Noel would have pursued this or a similar problem with even greater zeal or passion than I did, and which applied to whatever else in his life or profession.

Next, common becomes uncommon or rare because of its commonality, what a paradox! I wonder whether there is a similarity in surgery. Take the specialty of General Surgery, for instance. Few want to take it up as a career – we must not let it become a forgotten specialty. Another example is the care of the diabetic foot. As the incidence of diabetes is assuming epidemic proportions in the country, the problems of the diabetic foot will become very common and may often be relegated to the care of junior doctors and nurses. I remember assisting Batho (as Dr. Bartholomeusz was fondly called) as a third year medical student one Monday afternoon during an incision and drainage of an abscess of the big toe in a diabetic patient. He asked me to drape the towels, and I did this, but not in the way he wanted it done. Patiently he showed me his way of draping the towels and proceeded to complete the minor operation with major care. He went on to teach me that if this operation had not been done with care, there would be a chance of the patient losing his toe, or even his foot or leg, or even his life.
“In the hearts of people a healer is second only to the gods. However those quiet and dignified men, who throughout centuries devoted their lives to easing the lot of their fellow beings, are often relegated to cursory mention in history books, their achievements viewed with dispassionate objectivity.”

Healers fall into two categories, those who are pioneers and others who follow in their paths. The catalyst that spurs them, be it science, courage or humanism, to attain that degree of achievement has indeed been of immense succor to many patients. Dr. Noel Bartholomeusz falls into this category of pioneers.

To explore the path of a life devoted to service whose only reward is excellence and to place it in the context of history, is to say the least, a rewarding experience” - Nirmali Hettiarachchi

Noel Bartholomeusz was born during the last stage of British Colonial rule. It can be said that of the three western conquerors, i.e. the Portuguese, Dutch and British, the British had the greatest and most lasting influence on Ceylon. Descendants of the latter two formed the influential Burgher community. Noel was a Burgher of Dutch origin [1].

The genealogy of Noel starts in 1750s when a Dutch citizen Daniel Bartholomeusz arrived in Jaffna and married Helena Darius on 1st January 1760. They had 7 children. Daniel died in 1798 aged 68 years [2]. Seventy three documented generations later, Hugh Hamilton Bartholomeusz married Alice Maud Jansz at St Paul's Church, Milagiriya on 27th April 1908 - they had 5 children. The first was Hugh Hamilton and the second Lucien Noel born on 25th December 1910. Their father died aged 47 years, Hugh Hamilton the eldest son died in 2012 aged 92 years and Noel in 1977 aged 67 years. We know that Dr Noel Bartholomeusz suffered from polycystic kidney disease - an autosomal dominant inherited disease. “His father apparently died after suffering a lot of discomfort” and one could only speculate whether he too had the disease.

Noel was educated at Royal College Colombo. He was quiet and studious and, in the late 1920s, entered university for a “Pre Medical Course” also called the 1st MB. In 1935 he qualified as a doctor and the marks sheet reads: R.L.Spittel 67%, L.D.C.Austin 68% and L.N.Bartholomeusz 74%. It is interesting to note that the top three went on to become legendary surgeons.

Dr. Bartholomeusz’s basic surgical exposure was under the tutelage of Sir Arthur de Silva, a surgical giant of that time [1]. Sir Arthur was described by the late Dr. Shelton Cabraal (Neurosurgeon) thus: “his fingers were short and stubby, yet he used these same fingers with such precision and deftness that his operations were described as masterpieces of surgery. His punctuality was such that one could set one’s watch by his arrival for his rounds at 8am and 3 pm. He was a man of few words but when he spoke he was listened to with avid interest”.

Following this period Noel then worked in Nuwara Eliya, Badulla, and finally at Avissawella. He was essentially a self taught surgeon, and even before he passed the FRCS, he set up operating theatres wherever he worked and his reputation as a clever, meticulous and safe surgeon spread fast.”He worked round the clock for his patients. He transformed the Avissawella Hospital into a haven for surgery. Patients from adjoining villages flocked to this hospital” - Mr. A.T.S.Paul [1].

Dr Philip Veerasingam, who has now retired and works at Avissawella in his private capacity, adds: Dr.Bartholomeusz was “DMA” at Avissawella Hospital in the 1940s (the time of the world war). He had become very friendly with a gentleman farmer of the area by the name Sardiris Appuhamy. Sardiris had a son and two daughters. The son Somasiri is resident now at Avissawella. Somasiri, who has since retired, worked in the Municipality here and told me the following stories. Sardiris had become very attached to Dr.Bartholomeusz and his wife. He used to take rice pounded from paddy
from his first harvest to Dr. Bartholomeusz. When Dr Bartholomeusz went on transfer to Badulla, Sardiris had collected the best fruits of the season like rambuttan, mangoosteen and mangoes transported by train to for Dr Bartholomeusz in Badulla. The Kelani Valley narrow gauge train transported the fruits as parcel to Colombo Fort and from there it went by the Badulla train to be collected by Dr. Bartholomeusz at Badulla. Shown below is a photostat copy of a letter sent by Nora Bartholomeusz to Sardiris.

Travelling from one province to another apparently needed a permit from the authorities during war time. That explains the last part of the letter and shows how 'Batho' was prepared to stick his neck out for Sardiris.

In later years after Dr. Bartholomeusz went to the UK and came back with his FRCS qualification, he was posted Surgeon at the General Hospital Colombo. Sardiris used to visit 'Batho' and during these visits he would take Sardiris around his garden to get advice on horticulture from Sardiris. Sardiris had received an earlier model of a Singer sewing machine which worked without a shuttle, as a present from Batho. He had also gifted Sardiris a 'Rudge' bicycle which the proud Sardiris rode all the way from Colombo to Avissawella.

At one point, 'Batho' had asked whether he would be willing to give his son Somasiri for adoption by him. Since Somasiri was Sardiris' only son the latter had politely declined the offer. Somasiri told me jokingly that if he had been adopted by 'Batho' he would have been the owner of the house now occupied by the College of Surgeons!

Noel married Nora Bevan on 26th November 1936. They had been meeting at St Michael's Church, Polwatte on Sundays. Although they had no children they led an extremely happy and mutually supportive life. Nora ran a comfortable home for Noel wherever he was posted and even at Avissawella she had a small but elegant house with a beautiful garden, helped no doubt with the horticultural wisdom of Sardiris.

When Noel assumed duties as Consultant Surgeon at the General Hospital, they initially lived in a two storey house at Horton Place. This was most inconvenient and tiring for Noel as he had to keep coming downstairs very frequently to answer the telephone - wanting a house of their own, they had commissioned a reputed architect Bevis Bawa, to build a house for them. The records are as follows:


"The office had originally been planned as a doctor's house, but by the time the foundations had grown to ground level he had decided to stay where he was and Bawa was able to buy the property and convert it into an office” [4].
This contract had been terminated presumably as this too was a two storey house. It was later sold to Mr. Shan Fernando and is now a popular high end restaurant at Alfred House Avenue, Kollupitiya, and the Gallery Café. It is remarkable that, historically speaking, the College of Surgeons was fortunate that Sardiris did not agree to give Somasiri, his son, to Noel for adoption and that Bevis Bawa's masterpiece was not occupied by the Bartholomeusz as it would have been most inappropriate for the College as its Headquarters.

They loved children. They supported the Nayakakanda Home for orphaned and abandoned children and Nora visited this home regularly to help bath and care for the babies. Nora would always come back in time to be with Batho during his lunch, which would have been a daunting task nowadays considering the traffic congestion on the roads!

We now have to go back a little in history to the making of Batho into a qualified surgeon.

“Following the cessation of hostilities in World War II, the government of Ceylon advertised scholarships for training of doctors in general and specialist subjects in England. Noel Bartholomeusz, P.R.Anthonis and L.D.C.Austin were the first choices for surgery.”- (Mr. A.T.S.Paul [1].

“Noel passed the Primary FRCS and the Final FRCS within two years. His experience in Ceylon stood him in good stead, and when in the final examination he was questioned on the technique of splenectomy, after describing it, Noel had told the examiner that he had not encountered any problems with any of the number of cases he had personally operated on!”[1].

Noel returned to Ceylon in 1949 and was appointed Consultant Surgeon to the General Hospital, Colombo until he retired in 1969. He worked round the clock both at the government hospital and private practice. A remarkable feature was his punctuality. “The morning operating list started at 8a.m.” meant that knife was on skin at eight and not induction of anaesthesia at that time!

Anaesthesia was chloroform, oxygen and ether. There were no ventilators or intensive care units. Penicillin had just been discovered, and a little later, Streptomycin and Chloramphenicol, antibiotics that Noel widely used. Laboratory facilities were minimal and manually estimated. Only whole blood was available for transfusions, there were no blood components. Emergency operations were done for acute appendicitis, acute retention of urine, strangulated inguinal hernia, intestinal perforation (often typhoid), acute cholecystitis, ruptured liver abscess and perforated peptic ulcers, ruptured oesophageal varices. These were common admissions almost on a daily basis. Elective operations were for large goiters, malignancies of the breast, stomach, colon and rectum, mouth, penis and gastric or duodenal ulcers and their complications. Urological operations ranging from urolithiasis, malignancies and prostatic hyperplasia and orthopedic surgery took up a considerable part of his operating time. All were open operations and the outcomes were remarkable. Working under what would now be called “primitive conditions” Noel achieved remarkable results.

These successes could be attributed to a precise knowledge of anatomy and the operating technique, fast surgery as dictated by primitive anaesthesia and meticulous haemostasis. Dr. Michael Abeyratne, one of his trainees, recounts the “tie and cut” technique to control blood vessels at which he was a master. The term equipment was a joke, and he had developed techniques that depended on sheer skill rather than on sophisticated instruments. His instructions on preoperative preparation were precise and meticulous as were those for postoperative management and this total care allied to his elegant surgery gave Dr. Bartholomeusz his amazing results”[1].
Praise from an anaesthetist is praise indeed. The late Dr. B.S. Perera recalls being called to Fraser Nursing Home to operate on an unconscious patient of British nationality. Noel performed a porto-caval anastomosis and Dr. Perera was amazed to find that the patient was nearly awake at the end of the operation! The next day, he had been boisterous demanding a glass of beer! This patient left the hospital ten days later and retired from his managerial post to return to England [1].

Noel excelled at whatever he did and this is exemplified by his technique for operations on the thyroid gland. Professor Geri Jayasekara, who had taken time off to assist him, said that the operation was a bloodless masterpiece. At the time, the popular technique was to isolate the upper pole of thyroid followed by mass ligation of the artery and veins using No.1 silk. The standard instruments on the trolley for thyroidectomy were an aneurysm needle, McDonald's dissector and a curved Sawtell's forcep to assist in this maneuver. Noel always tied off the vessels in the upper pole individually to spare the external branch of the superior laryngeal nerve. The other popular belief at that time was that there was a greater possibility of damaging the recurrent laryngeal if one goes looking for it! Noel always looked for it, and the gentlemen that he was, would only chuckle when this topic came up for discussion, making no comment. A patient recently brought a diagnosis card written for a patient he had operated on for a solitary nodule of the thyroid. The meticulous record of the operation and the remarks reveal more than what is said in it.

The late Professor Christopher CanagaRetna reminisced his training at the hands of Noel. “He taught me the use of the scalpel to perfection so that the mark left behind was almost invisible. His stitches were always immaculate. He used to perform plastic surgery (long before any other in Sri Lanka) and perfected the art of subcuticular sutures. These were the days when only nylon, silk and catgut were the suture materials available for surgeons. Noel's often reiterated motto was “to teach by example” [1].

Another of his trainees recalls Noel's humility. Dr. Joe Fernando, the Plastic surgeon received the following letter from Noel after the former had delivered a lecture on burns at one of the sessions of the Sri Lanka Medical Association. It reads “I want to tell you how well I enjoyed your lecture and how thrilled I was to see some of the results of your work”. Dr Fernando adds that it shows Noel's humility as he used the skin grafting technique that he himself had learned from Noel. The letter ends “congratulations on your excellent presentation on a subject that has always been of interest to me and for the excellence of your results”. Not many General Surgeons, who had to manage burns patients in their wards during that era, could in all honesty make such a statement regarding interest in patients with burns [1].

His surgical versatility is illustrated by another case recalled by the late Dr. B.S. Perera. An English Government Archivist had been admitted with “a large fungating rodent ulcer involving half his head, right ear, right cheek, right eye and more than half his neck”. Dr. Perera had been trained in hypotensive anaesthesia and Noel had challenged him to take on the case. Four hours later, and with minimal blood loss, a complete excision and skin graft was successfully carried out with hundred percent take and the patient returned to England minus one eye, of course [1].

Professor Channa Ratnatunga records how Noel's surgical spectrum included vascular surgery: In the late 1960's, one saw quite a few successful femoro – popliteal bypass grafts done by Dr. Noel Bartholomeusz and the surgeons of the “Hope Ship”; Dr. Kradijan in particular. It was Professor A.H.S. Sheriffdeen of the university surgical unit in Colombo, in the early 1970's having trained at St. Mary's London under Eastcott and others, who should be credited with the development of
reconstructive arterial surgery in this country. His unit not only performed with success emergency and routine vascular procedures, but trained many young surgeons to do so. The university surgical unit at Peradeniya followed in the mid 1970's and maintained an audit which helped to unravel the complex patterns of presentation in Sri Lanka [5].

A test of any one's character is the honesty that person displays when under stress. Dr Philip Verasingam recalls a story related to him by Dr. Burhan (who was in his early days compared to Dr. Noel in his dress, conduct and surgical prowess), that Noel had presented a case at a clinical meeting of the Ceylon Medical Association, where he had carried out an abdomino-perineal resection mistakenly for carcinoma when the histology later came as Crohn's disease. He did not hide the case as most of us would have been tempted to [3].

Dr. Vimala Navaratnam, who was a regular assistant in most of his difficult operations, states how he taught his students to be “bold and fearless in their diagnosis” and, at the same time, to accept their mistakes and take responsibility for them. “He was the embodiment of three Ps…Politeness, Punctuality and Perfection,” she adds.

One day, after a partial gastrectomy for bleeding peptic ulcer at the Joseph Fraser Nursing home, the sister had meekly announced “Sir, we are short of a towel” - the peritoneal cavity was searched, still one towel short. “You know what that means? I will have to open the stomach!” - “yes sir” said the trembling theatre sister almost in tears. The sutures of the stomach were opened step by step and no towel was found in the stomach! Finally Dr. Batho's probing fingers located the towel snugly wedged in the pylorus. After the operation, Dr. Batho went up to the sister, shook her warmly by the hand and thanked her for her professionalism [6].

He set the bar high for himself in whatever he did, be it surgery, dress, punctuality, work ethic, inter personnel relationships or moral and ethical standards. Noel could be immediately identified from any distance in his sparkling white suit and the legendary orchid on his lapel, a fresh one every day! And to complement this attire he behaved with equal dignity, always greeting even the most menial of labourers to the highest of administrators with a nod, smile and a “Good morning”. The respect he received was complementary. He would often end the ward round in the female ward and at the end of the round single out the most ill looking and poorest looking patient to present the orchid from his lapel. This usually brought out a smile of joy and happiness from the patient and others around.

A former theatre sister, Annabelle Karunaratne recalls “on graduating in 1952 I was assigned to operating theatre “C” at the General Hospital to scrub for Dr. Bartholomeusz. “I found him to be the kindest of men. He never shouted, never threw instruments around, and never uttered a bad word”. “Once when I took a trolley for the medical students' practicals, I realized that an artery forcep had gone missing. Correspondence between the Sister, medical stores and the Medical Superintendent went back and forth but the article was not replaced. Dr. Noel happened to see the correspondence in the Sister's office and promptly replaced the instrument with one of his own, much to my relief. Otherwise, I would have been surcharged for it. He never failed to make light hearted conversation and discuss the merits and demerits of a concert or play we had both been to and ask what I thought about it - It made my day!” [1].

Professor Arjuna Aluwihare, in a lecture on Noel (he was an intern house officer in Dr. Bartholomeuz's unit), recalls his unfailing courtesy and “minimal shouting, if at all”. Batho was witness at Arjuna's wedding, and thereafter, the young couple became regular guests at Batho's house at meals. Arjuna praises him “for an exemplary life and career” [7].
Deloraine Brohier also recalls times with Batho as a host. “Nora's recent death, my mind goes back to the evenings my father and I spent with Dr. Noel Bartholomeusz and his wife Nora. Their home so elegant and beautiful, their hospitality so charming and gracious, it was sheer pleasure to be there. Conversation ranged over a variety of subjects - books and antiques, anecdotes of places and of mutual friends. Never a word there was that was ugly or harmful or hurtful to the people we knew. There was a warm glow that surrounded the four of us - as dusk settled over the well-tended garden and the birds took to their nests, when the soft lights within the sitting-room we sat in, came on. I was of the younger generation but I wrapped myself and absorbed every word and soaked in the atmosphere of fellowship and friendship. Forever, will remain the memories of those evenings”[8].

My first encounter with Noel was when, as a third year medical student, five of us walked into Operation Theatre “D” of the general Hospital, to “watch” an operation. Anne Ranasinghe, recently, at her 88th birthday, recalled how her husband Professor D.A.Ranasinghe was diagnosed with “gall bladder cancer” and how all the doctors had advised them to go to the U.K. for treatment. Noel had been amused and this was the first operation that I watched as a third year medical student in operation theatre “D” of the General Hospital, Colombo! After surgery, Professor Ranasinghe was left in the corridor alone on a metal stretcher. This was the recovery unit of that time. From time to time, the anaesthetist Dr. Laddie Fernando would come and slap him on the cheeks shouting “Raney, put your tongue out” and Professor Ranasinghe would oblige. Noel too came once and slapped him on his cheek and again said “Raney, put your tongue out”. We had a rather mischievous batch mate who then told us “machan, this is the only time we will get to slap the Professor of Obstetrics, and making sure no one was around he went up, slapped him on his cheek and shouted “Raney, put your tongue out” Professor Ranasinghe obliged. We others fled the scene!

Another time, my mother needed a surgical consultation when I was a fourth year medical student. At the end of a meticulous and thorough assessment my brother gave me a brown envelope with the fee and asked me to give it to Noel. He smiled and said I don't take money from doctors”. “But Sir”, I said, “I am only a medical student”. “You will soon be one” he said smiling as he turned away into his office.

He did, however, fight fiercely to preserve both his dignity and that of the profession.

“I still remember the post-election euphoria of 1956 when S.W.R.D. Bandaranaike came into power. As a medical student together with two others, Susil Manukulasuriya, now a Consultant Psychiatrist in UK and Lal Jayasena who became a Professor of Pharmacology, we were in the crowd that "stormed" the Parliament (near Galle Face) that memorable morning when “Ape Anduwa” came into being. The crowd surged into the chamber and I believe Susil sat on the chair before he was unceremoniously "unseated" by the huge strapping Sergeant-at-Arms, H.S. Ismail. Such was the euphoria that people power generated, that people attempted to enter the operating theatre of the General Hospital. Outraged by this, Dr. Noel Bartholomeusz, one of the leading surgeons removed his cap and gown and offered his scalpel, saying "Here are the people's cap and gown and scalpel, now operate" and was about to leave the theatre when the patient's relations implored him to continue the operation!

Unfortunately, the euphoria died down with constant strikes and the Prime Minister's inability to make Sinhala the state language in twenty four. Ultimately, he was gunned down by a man in yellow robes. The rest is history[9].

The latter part of his life was not very pleasant as he had to cope with complications of the renal problem he had...
and the dialysis that he needed. He developed pain in his hips and walked with a limp. He often bled from a peptic ulcer after dialysis as heparin was used. Batho used iced water down a nasogastric tube, after aspiration of the blood. Once there were no nasogastric tubes and Batho wanted a junior colleague to cut holes in a sterile IV giving set as an alternative! Fortunately this doctor had gone to Joseph Frazer Nursing home where the matron had given her two tubes. Joseph Frazer nursing home at this time was reserved exclusively for Europeans although the doctors were locals. However the Matron had said that if Batho needed hospitalization, she could bend the rules as the wife had a British Passport. She was prepared to stretch her neck out to help him. Such was the awe and respect they had for him. On another occasion, when he needed a blood transfusion, there was a problem. A private patient had been nasty to a medical officer in the Blood bank of the General Hospital and issue of blood to private patients was banned. A lady medical officer had a brilliant idea that since Castle Street Maternity Hospital was not under the purview of the Superintendent of the General Hospital, they could be approached. Again the Medical officer there gave the blood “gladly and willingly” for the great surgeon.

He was a true friend and never flinched in his duty, which to him was more sacred than his personal life or comfort. Dr. Batho had made arrangements to go to London for treatment of his renal failure; the appointment with his doctor in London had been made and even his flight arranged. Herbert Tennakoon, who was at that time Governor of the Central Bank and a close friend, unaware of Dr. Batho's problems, had sought advice regarding a perianal abscess, which needed immediate incision. Without hesitation, Dr. Batho had arranged the surgery, postponing his trip and rescheduling his appointment with his doctor in London. Mr. Tennakoon was in complete ignorance of the personal sacrifice made by his friend.

In spite of his infirmity, his commitment to his patients was extreme. This was an era when surgeons were at a premium and Batho could have been arrogant and laid down the rules. He had scheduled a patient for a thyroidectomy and on that day he had dialysis and bled from his peptic ulcer. Nora, his wife had wanted their friend and doctor to be at the operation to see that nothing went wrong. Dr. Laddie Fernando his anaesthetist had agreed to say that he wanted the extra doctor to help with intubation in case Batho queried why she was there. However, Batho had been glad to have an extra pair of hands to help, and the operation had taken over double the usual time, but had been as meticulous as ever [6].

Noel Crusz, a former priest who assisted in the Direction of the movie “The Bridge on the River Kwai”, himself a patient with chronic kidney disease, on a radio talk show in Australia on kidney diseases: “In a Sri Lankan hospital in Colombo some years ago, I was setting up my camera and lights to film a major surgical operation. It was for a brilliant Fellow of the Royal College of Surgeons, London. His name was Noel Bartholomeusz. ‘Sorry’, he said, as he walked late into the theatre, 'I was on dialysis at home.’ Throughout the years, he had lost normal kidney function, and here he was now to begin a five hour operation on the jaw of a young man” [10].

Somewhere in 1972, I was pleasantly surprised to get a call from Dr. Batho, wanting to see me regarding a problem. His radio cephalic fistula had clotted and he wanted to know whether I could re establish flow. After much discussion, I advised him to go to London and meet his surgeon Mr Ossie Fernando. I am glad I did this as I was not aware then as I am now that the correct treatment for this is to create a Brachio cephalic fistula and not to try and recanalize it.

I firmly believe that all Professionals must “plan for retirement” and that early in life they must cultivate interests and hobbies they could indulge later in life. These interests could be in fine arts like music theatre,
painting, writing, reading, or sport, travel, gardening, photography, religion etc. Surgery was not the only interest in Noel's life. He had a passion for fine arts, the theatre and classical music. Collecting antiques was another of his interests as was pet animals. His other less spoken of hobby was fishing. His love for orchids is of course, legendary. Everyone who knew him had nothing but praise for bar he set for his ethical standards. “Soft spoken”, “gentleman surgeon par excellence”, “generous to a fault”, “if you got late you insulted not only your anaesthetists but also your patient”, “Gentle and kind”, are some of the quotes that described him. Finally, his wife Nora said of him “Although, from time to time, he may have had differences with a few people, he never allowed this to cloud his judgment. He had no enemies”.

This inaugural oration meant to honour Noel Bartholomeusz for the magnificent gift of his house to the College is not complete if we do not also recognize others who were instrumental in setting the process off and unraveling the legal tangles involved in such an exercise. There were three trustees, Ms Anne Ranasinghe, Dr. Vimala Navaratnam and Professor Harsha Seneviratne, together with Mr. M. Senathiraja of Ms. Julius and Creasy, a well known and respected law firm. If not for their cooperation and tireless work, this gift may not have become a reality.

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Prospective randomized trial of low pressure versus standard pressure pneumo-peritoneum in laparoscopic cholecystectomy

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Key words: Low pressure laparoscopic cholecystectomy (LPLC); standard pressure laparoscopic cholecystectomy (SPLC); cholelithiasis; pneumoperitoneum.

Abstract

Background

Low pressure pneumo-peritoneum in laparoscopic cholecystectomy is of advantage in patients with cardio-pulmonary co-morbidity. This study aimed to compare low pressure (LP- 7 mmHg) pneumo-peritoneum with standard pressure (SP-12mm Hg) pneumoperitoneum in a prospective randomized clinical trial.

Methods

100 Consecutive patients who qualified for laparoscopic cholecystectomy (LC) for uncomplicated symptomatic gallstones were randomized to either standard pressure laparoscopic cholecystectomy (SPLC) or low pressure laparoscopic cholecystectomy (LPLC). They were comparable for sex, mean age, body mass index (BMI), ASA grade, operative time, complication rate, conversion rate, postoperative pain assessed by the Visual Analogue Scale of Pain (VAS), including the incidence of shoulder-tip pain, postoperative hospital stay, recovery time, and the quality of life (QOL) within 7 days following LC. Statistical analysis was done using chi-square and student's t-test.

Results

Mean operative time was longer in LPLC compared with SPLC, but this difference was not significant (p<0.05). Tachycardia was present in both groups after creation of pneumo-peritoneum; the difference was not significant. Conversion to open cholecystectomy occurred in 8.0% in LPLC and 4% in SPLC (p<0.05). Shoulder tip pain was similar in both groups, while the difference in mean hospital stay (2.56 days in SPLC vs. 2.72 days in LPLC), and consumption of analgesics in the two groups, was not statistically significant.

Conclusion

Laparoscopic cholecystectomy, though safe to perform at low intra-peritoneal pressure (7 mmHg), took a longer time to complete compared with standard pressure pneumo-peritoneum of 12 mm Hg. Post-operative pain and analgesic requirement were not altered at low pressure.

Introduction

Cholelithiasis continues to be a national and international health disorder. Gallstones found in a young Egyptian mummy have confirmed that cholelithiasis plagued mankind for over 2000 years (1). In the last one hundred years open cholecystectomy remained the gold standard and the definitive management of symptomatic cholelithiasis. Nevertheless high costs, prolonged hospitalization, prolonged recovery time, pain and morbidity associated with open major surgery resulted in laparoscopic cholecystectomy emerging as the preferred option (2).

Laparoscopic surgery is not risk free as it requires creation of pneumo-peritoneum. Carbon dioxide is used which may cause hypercarbia that can only be avoided
by compensatory hyperventilation by increasing the tidal volume during ventilation. Increase in intra-abdominal pressure during pneumo-peritoneum triggers several patho-physiological mechanisms independent of the type of gas used. Furthermore, when laparoscopic cholecystectomy was performed at 15 mm Hg or greater, cardiovascular changes resulting in increased systemic and pulmonary vascular resistance and reduction of cardiac index were reported [2]. This prospective study was performed to compare laparoscopic cholecystectomy at low versus high pressure pneumo-peritoneum in an Indian hospital.

Materials and method

One hundred patients comprising mainly women, mean age (standard deviation) 45.5 (12.3) years and 43.6 (14.5) years, were randomized to undergo low pressure laparoscopic cholecystectomy (LPLC) or standard pressure laparoscopic cholecystectomy (SPLC) respectively. The ration of men and women and body mass index of patients was comparable in both groups (Table 1).

Inclusion criteria were those patients with symptomatic gall stones between 18 and 70 years old, who were fit to undergo laparoscopic cholecystectomy under general anaesthesia and who gave fully informed consent. Exclusion criteria in this study were; pregnant women, lactating women, previous open abdominal surgery, prolonged administration of non-steroidal anti-inflammatory drugs, patients with cirrhosis of the liver, bleeding disorders, acute cholecystitis, and a previous history of peritonitis. Furthermore, those with an empyema of the gall bladder and suspected gall bladder cancer with stones were excluded.

Randomization was based on each patient receiving a sealed envelope containing a random number selected from a table assigning a given individual to one of two equal groups of 50; LPLC, where a low pressure 7 mm Hg pneumo-peritoneum was employed, and SPLC, where standard 12 mm Hg pneumo-peritoneum was used. The study was approved by the local Ethics Committee.

All procedures were performed by a single team of experienced laparoscopic surgeons involved in the study. In brief, in all patients, access was achieved using four ports - a 10 mm port created below the umbilicus (camera port), two 5 mm ports at subcostal (midclavicular line) and right anterior axillary line, at the level of the umbilicus, and another 10 mm port, which was inserted from just below the xiphoid process (working port). The patient was placed supine on the operating table. Nasogastric intubation was performed after induction of anaesthesia to decompress the stomach and the urinary bladder was previously emptied by patients passing urine before entering the operating room. The operating surgeon stood on the left side of the patient with the first assistant and scrub nurse on the patient's right side and camera operator to the left of the main surgeon. Pneumo-peritoneum was created using a Veress needle inserted through a skin incision in the infra-umbilical / supraumbilical region. After creating the 12 mm Hg pneumo-peritoneum, a 10 mm port was inserted at the umbilicus. The remaining ports were inserted under laparoscopic direct vision. After introducing all four ports, in the LPLC group, the pressure of pneumo-peritoneum was decreased to 7 mm Hg, while in the SPLC group, pneumo-peritoneum remained unchanged. The rest of the operative procedure was performed as per standard.

Data obtained were sex, age, BMI, medical history prior to operation, gall bladder thickness, the quality of surgical field exposure, the ability to use the LP pneumo-peritoneum technique, the need for placing the patient in the reversed Trendelenberg position, increasing the pressure of the pneumo-peritoneum and the duration of surgery. Postoperative pain using a visual analogue scale [VAS] and the course of rehabilitation and quality of life in the early
postoperative period were assessed. The number of patients needed to treat was estimated based on the principle of detecting a 10% difference in pain intensity with a 90% probability at \( p \) assumed to be < 0.05. Statistical analysis was based on the chi-square and student’s t-test.

Postoperative pain was assessed using VAS, with evaluation at 2, 8, 24 and 48 h postoperatively which was marked on a vertical line, with 0 described as no pain at all and 10 described as insufferable pain. Neither the patients nor the nurses knew the group assignment; also, the patient did not know the pressure the pneumoperitoneum had been set at. Nursing staff recorded episodes of vomiting and nausea. Patients were allowed to sit up, mobilized and fed 12 hours after surgery. All subjects were seen by the surgeons involved in the study at follow-up visits at the outpatient surgical department one week and three weeks after the operation.

Statistical analysis was done using percentages, mean values, standard deviation, standard error, \( \chi^2 \) test [Chi-square test] [with Yates correction], and t-test [unpaired]. The level of significance used was 0.05 levels for the corresponding degree of freedom to draw the inference. A p-value < 0.05 was considered statistically significant and <0.01, highly significant.

**Results**

Of 100 patients studied, 50 underwent LPLC procedure (Group A) and 50 underwent SPLC procedure (Group B). The sex ratio in both groups was similar (Table 1). Mean age in group A was 45.58 years as compared to 43.62 years in group B (Table 1). Group A had a mean BMI of 26.74 (+3.66) kg/meter\(^2\) while the mean BMI of group B was 25.67 (+4.15) kg/meter\(^2\). Blood pressure recorded before and during procedure in group A (125.4/74.44 & 124.4/72.26) was not statistically different to group B (122.4/74.42 & 120.52/75). The radial pulse rate recorded before and during procedure in group A was also similar to group B. Laparoscopic cholecystectomy was completed in 46 (92%) patients in group A compared with 48 (96%) in group B (Table 2).

Gall bladder perforation occurred in 16% in the LPLC group [Group A] and 22% in the SPLC group (Group B). Some cases were managed by placing the gallbladder in an endo-bag before extraction, while in others the grasper was repositioned to occlude the perforation. All spilled stones were removed and peritoneal lavage was performed with normal saline until clear fluid drained out.

In our study most patients experienced abdominal pain on the day of the surgery (74% in group A and 78% in group B; \( p \geq 0.05 \)). Pain was of low intensity at 2 hours and increased to a maximum at 8 hours postoperatively. After 8 hours the intensity of pain began to decrease such that very few patients had pain after 24 hours. The intensity of pain ranged between a pain score of 1 to 6 in the first 24 hours, which did not exceed 6 at any time. In our study there were no statistically significant differences in consumption of analgesics in either group.

**Discussion**

Foremost of our concerns in this study was the limitation of visualization that may have occurred in patients undergoing low pressure pneumo-peritoneum laparoscopic cholecystectomy. Poor visualization,

| Table 1 - Sex ratio, mean age (standard deviation) and body mass index (BMI) of patients (kg/m\(^2\)) |
|-------------------------------------------------------|-------------------------------------------------------|
| **Group A (LPLC)** | **Group B (SPLC)** |
| Sex (M:F) | 4:21 | 4:21 |
| Age (years) | 45.58±12.37 | 43.62±14.53 |
| BMI (kg/m2) | 26.74±3.66 | 25.67±4.15 |
specifically of the structures around Calot's triangle, has the potential for surgical error resulting in injury to the common bile duct. However, in our study, there was no injury to the common bile duct. Wallace et al [3], Barczynski et al [4] and Chok et al [5], also reported no injury to the common bile duct in their studies. We believe that the chief reason for no bile duct injury in the present study are clear definition of the gallbladder neck cystic duct junction, the cystic duct and the cystic artery before ligation or cutting. Perforation of the gall bladder during dissection occurred in both groups and was not confined to the low pressure laparoscopic group.

The result in our study showed that most patients after laparoscopic cholecystectomy experienced abdominal pain on the day of surgery (74% in group A; 78% in group B). The post-operative pain score was low at two hours and increased to a maximum score of 6, eight hours after operation. After eight hours the intensity of pain decreased and very few patients had pain after 24 hours. The pattern of pain is similar to that shown by Chundrigar et al [6] Joris et al [7]. In our study, there was no difference in consumption of analgesics in both groups and in the rate of conversion to open cholecystectomy.

Hence it is concluded that laparoscopic cholecystectomy can be safely performed at low pressure (7mm Hg) pneumo-peritoneum, although it did not confer a specific advantage over standard pressure (12mm Hg) pneumo-peritoneum. By contrast, the time taken to complete the procedure is greater if pneumo-pressure is kept low. Thus standard pressure pneumoperitoneum at 12 mm Hg. should be the preferred option during laparoscopic cholecystectomy for symptomatic gall stone disease that is uncomplicated.

References


Single incision laparoscopic surgery (SILS): Challenges at population level based on an initial experience
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Key Words: Single incision; laparoscopy; cholecystectomy; SILS.

Abstract

Introduction
Currently, single incision laparoscopic cholecystectomy, which is being proposed as an alternative to standard four port laparoscopic cholecystectomy, has not been embraced universally as the procedure of choice for removal of the gall bladder.

Aim
We aimed to evaluate the feasibility of SILS and report our initial experience of undertaking SILS cholecystectomy in a district hospital where laparoscopic cholecystectomy yet remains the standard, despite the limitation in resources.

Methods
Six patients underwent SILS cholecystectomy for gall stone cholecystitis as an elective procedure. Except for previous exposure of the surgeon to SILS cholecystectomy, for the rest of the hospital team, the SILS procedure was a new experience. All procedures were performed as standard under general anaesthesia and positive pressure ventilation.

Results
Six patients (1 male; 5 female; age range 28 to 42 years) underwent SILS over a twelve month period from 2010 to 2011. The main end points were time taken to complete the SILS cholecystectomy and conversion to 4-port laparoscopic cholecystectomy. In 5 (83%), surgery was completed using SILS and the time taken ranged from 100mins to 180mins (median 120mins). Subjective assessment revealed that SILS was a more difficult procedure compared with laparoscopic cholecystectomy, chiefly due to lack of familiarity of the team and limitation in mobility due to the lack of triangulation that is otherwise available with 4-port laparoscopic cholecystectomy.

Conclusion
SILS is feasible in a district hospital with facilities available mostly for laparoscopic 4-port cholecystectomy. Surgical teams may perform better in their initial SILS experience if the entire team is taken through training. The cost efficacy of SILS needs to be addressed.

Introduction
Single incision laparoscopic surgery is the current topic of debate in the world of minimal access surgery. Although it offers better cosmesis, the practical benefit of the procedure to the masses cannot be evaluated until it can be reproduced with safety and success in basic centres where a routine four port cholecystectomy can be performed. The operating surgeon must also be skilled to overcome the difference in approach to the surgery in SILS. The aim of our study was to evaluate the feasibility of performing SILS in a Government Hospital with facilities that are available for basic laparoscopy.

Materials and method
The study was conducted in Wenlock Hospital which is
a 750 bed district level hospital attached to Kasturba Medical Hospital (Manipal University) in Mangalore, India. Between August 2010 and July 2011 six patients underwent single incision laparoscopic cholecystectomy. The surgery was performed by single surgeon who had over five years of experience in performing a variety of laparoscopic procedures including colorectal procedures. Prior to the study cases the surgeon had performed one SILS operation in a private hospital with use of an energy source and the challenge was to reproduce the success in a basic set up in the district hospital. The hospital is equipped with a single chip (Karl Storz, Tuttingen, Germany) camera with a xenon light source, a 30 degree telescope, Karl Storz insufflators and Karl Storz hand instruments. There is no energy source such as an ultrasonic dissector or bi-polar vessel sealing device available for use in the hospital. One male and five female patients underwent SILS Cholecystectomy. Of the six, one patient was converted to the conventional four port cholecystectomy. None of our patients was converted to open cholecystectomy. In three cases, an additional port was used toward the end of the procedure, to facilitate dissection of gall bladder from the liver bed, due to need for retraction of a floppy gall bladder. In four cases, a silicon port with multiple openings (one 10mm, two 5mm port) was used, while in two patients a 5mm port was introduced through a separate fascial defect just next to the 10mm optical port, a modification which comprised a single skin incision which incorporated multiple fascial defects. Additionally, we used a fundal traction suture in one patient, while in the remainder, Hartman’s pouch alone was retracted with forceps. The cystic duct was divided between double ligatures knotted extracorporeal, as a 5mm clip applicator is not available in the hospital. In the first three cases we used conventional straight instruments where as in subsequent cases we used rigid bent instruments. The gall bladder was elevated from its bed using a monopolar hook and additional ports were placed in three cases for better traction on the gall bladder, to facilitate quicker dissection. The side port also allowed for placement of a 14 Fr Ryles tube as a drain if required. The gall bladder was delivered via the umbilical incision in all cases. All patients recovered without complication and continue to remain on regular follow up.

Results

The demography of the patients is shown in table 1. Four cases underwent single port laparoscopic surgery and two underwent single incision multiple port laparoscopic cholecystectomy. The outcome of procedures is as shown in table 2.

All procedures were performed by the author using traditional laparoscopic instruments in the first three cases and a fixed, bent hand instrument in subsequent cases. No energy source was used. The operative time was higher in the first three cases because the camera assistant and the surgeon could not co-ordinate movements (Figure 1). However, in subsequent cases, the surgeon adapted to the situation of limited mobility to undertake only precise required dissection that was required to perform the procedure. Blood loss was negligible in all cases. Following surgery, all patients were ambulant the same evening and were discharged within twenty four hours of surgery. Sutures were removed on the eighth post-operative day, during which, we observed that there were no wound infections. The surgeon found using single incision multiple port technique easier to perform than using single access port, especially since conventional instruments were used.

Discussion

SILS is the newest entrant in minimal access surgery. Although gynecologists have performed procedures like tubal ligation using a single incision laparoscopic technique for long, the new found enthusiasm among
general surgeons is recent [1,2]. Like every change in surgery it too is bound to be met with criticism. Navarre et al. in 1997, and later Piskun et al. in 1999, described single access surgery for the gall bladder but it failed to generate enthusiasm among surgeons [3,4]. This technique was used in our series for the first three cases, while the next three cases were performed by the technique refined by Curcillo and King in 2007 [5, 6]. The usefulness of a procedure depends on several factors such as availability of equipment, ease of performing and reproducibility – both of which depend on ergonomics of the surgical team and surgical expertise, patient safety and surgical cost effectiveness. In our experience, we determined that single incision

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Technique</th>
<th>Operative time (in min)</th>
<th>Callot’s triangle dissection</th>
<th>Additional ports</th>
<th>Drain</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SPLS</td>
<td>180</td>
<td>Easy</td>
<td>Nil</td>
<td>Nil</td>
<td>Success</td>
</tr>
<tr>
<td>2</td>
<td>SPLS</td>
<td>150</td>
<td>Easy</td>
<td>Yes</td>
<td>Yes</td>
<td>Success</td>
</tr>
<tr>
<td>3</td>
<td>SPLS</td>
<td>120</td>
<td>Difficult</td>
<td>Yes</td>
<td>Yes</td>
<td>Success</td>
</tr>
<tr>
<td>4</td>
<td>SILS</td>
<td>Not applicable</td>
<td>Difficult</td>
<td>Yes</td>
<td>Yes</td>
<td>Convert to 4 port</td>
</tr>
<tr>
<td>5</td>
<td>SILS</td>
<td>100</td>
<td>Easy</td>
<td>Nil</td>
<td>Nil</td>
<td>Success</td>
</tr>
<tr>
<td>6</td>
<td>SILS</td>
<td>100</td>
<td>Easy</td>
<td>Nil</td>
<td>Nil</td>
<td>Success</td>
</tr>
</tbody>
</table>

# Symptoms of right hypochondrial (RHQ) pain, biliary colic and previous similar episodes.

*Pre-operative ultrasound findings.

Table 1 – Patient demography

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Age(Years)</th>
<th>Sex</th>
<th>BMI</th>
<th>Symptoms#</th>
<th>GB wall*</th>
<th>Stone *Size/No.</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>42</td>
<td>Female</td>
<td>22</td>
<td>Yes</td>
<td>Not thickened</td>
<td>Multiple, up to 6mm</td>
<td>SILS</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>Female</td>
<td>26</td>
<td>Yes</td>
<td>Thickened</td>
<td>Single,12mm</td>
<td>SILS</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>Male</td>
<td>24</td>
<td>Yes</td>
<td>Not thickened</td>
<td>Multiple, up to 8mm</td>
<td>SILS</td>
</tr>
<tr>
<td>4</td>
<td>42</td>
<td>Female</td>
<td>26</td>
<td>Yes</td>
<td>Thickened</td>
<td>Multiple, up to 5mm</td>
<td>Convert to 4 port lap chole</td>
</tr>
<tr>
<td>5</td>
<td>33</td>
<td>Female</td>
<td>22</td>
<td>No</td>
<td>Not thickened</td>
<td>Single, 18mm</td>
<td>SILS</td>
</tr>
<tr>
<td>6</td>
<td>28</td>
<td>Female</td>
<td>23</td>
<td>No</td>
<td>Not thickened</td>
<td>GB Polyp</td>
<td>SILS</td>
</tr>
</tbody>
</table>
surgery is technically more demanding due to an unfamiliar working angle (parallel axis of instruments and telescope), lack of triangulation, the tendency for crowding of instruments at the access site, especially with the use of standard hand instruments and a standard 33 cm telescope. Additionally, a major limitation was the inability of the assistant to keep up with his surgeon.

When a new technique or device is launched there will always be a limited number of people who are capable of using it. Only surgeons with adequate experience and sufficient zeal to embrace newer modalities will be able to make the transition to the newer procedure. There is a lag interval between the emergence of technology and new procedures in specialised centres to it being available to the general public. Such time is usually spent in development of products and refinement of technique, and currently, several new instruments and devices are available for performing single incision surgery each having their proponents [7]. There are several reviews to show that SILS can be performed safely and in a manner that is equivalent to conventional laparoscopic cholecystectomy but the reviews fail to sufficiently discuss the cost of the procedure to patients and the health system [8-11]. The acid test is if a technique can be cost effective to the general public with the same safety profile as the current available modality. Cosmesis may not be a criterion in people at large when SILS is compared to traditional laparoscopic surgery. In comparative procedures, when the pain factor, recovery time and time to work are similar, it will be cost, which we have not addressed in our study, and availability, that ultimately determines the choice of procedure. However, in practical terms, single incision surgery is yet to be made available at similar cost as conventional laparoscopy. It is the author's perception that even though SILS is an attractive option in selected cases, it cannot be used at community level where a four port cholecystectomy is gold standard.

References


Thoracoscopy: beyond the key hole
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2Department of Anaesthesiology, Faculty of Medicine, University of Peradeniya, Sri Lanka

Key words: Thoracoscopy; thoracotomy; median sternotomy.

Abstract

Background
Lateral thoracotomy or median sternotomy causes significant morbidity. Thoracoscopy reduces the morbidity of the incision and provides a clear and magnified display of anatomy. It involves a learning curve.

Objectives
To evaluate the safety, efficacy and advantages of thoracoscopy.

Method
A retrospective analysis of 67 thoracoscopic procedures performed at the university surgical unit, Teaching Hospital, Peradeniya.

Results
The total number of 67 procedures included thymectomy, lymph node biopsy, lymph node excision, excision of retrosternal goitre, sympathectomy, splanchnicectomy, oesophagectomy, lung biopsy and diagnostic procedures. The time taken was acceptable with minimum blood loss and selective use of intercostal drainage. There were no conversions. Intensive care was needed only for oesophagectomy, thymectomy and excision of retrosternal goiter. The need for narcotic analgesics was minimal. Feeding, mobilization and discharge from hospital were early except after oesophagectomy. There was a mortality of 13% in the oesophagectomy group. No morbidity or mortality was recorded among others.

Conclusion
Thoracoscopy permitted a wide range of surgeries to be done safely with reduced morbidity.

Introduction
Diagnostic and therapeutic procedures of the thorax are performed by thoracotomy or median sternotomy. Open access causes significant morbidity, due to long incisions and division of muscles/ bone, use of prolonged retraction and significant post operative pain which affects breathing. The result may be prolonged ventilatory support and extended intensive or high dependency care. Due to poor respiratory effort and coughing, chances of respiratory infections are higher [1]. The risk of wound infections and wound dehiscence, especially in sternotomy, may have disastrous outcomes [2,3,4,5]. Furthermore patients’ return to work and resumption of a normal life is delayed [6].

Thoracoscopy is an established technique with the potential to minimise the morbidity of open access [7,8,9,10,11]. Clear display of anatomy is an added advantage. The image is magnified and it is possible to get a closer view by zooming in.

Lack of tactile sensation, difficulties of hand eye coordination, obtaining space for dissection and methods of haemostasis are challenges [9,10,11]. Specimen retrieval should be planned. Also an initial high cost will
be incurred for equipment. The objective of this audit was to evaluate the safety, efficacy and advantages of thoracoscopic procedures performed at the university surgical unit, Teaching Hospital Peradeniya, Sri Lanka.

**Materials and methods**

A retrospective analysis was made of 67 thoracoscopic procedures done in the unit. In every case, the position of the camera and the working ports were planned with the computerized tomography images. All procedures were performed under general anaesthesia and endotracheal intubation. Space for dissection was obtained by collapsing the lung which was achieved by single lung ventilation or insufflation of carbon dioxide while ventilating both lungs. During single lung ventilation capnothorax was required initially to assist with collapse.

We used laparoscopic equipment available in the hospital. Bipolar diathermy and ultrasonic dissectors were used to achieve haemostasis and dissection. Larger vessels like the azygous vein and the thymic vein were controlled with Titanium clips or intracorporeal ligation.

Specimens were retrieved as follows.

1. Small lymph nodes, sympathetic chain - via 10mm port.
2. Large lymph nodes, thymus - retrieved in a fashioned endobag, at times requiring a mini incision over the lateral chest wall.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Supine position</th>
<th>Prone position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thymectomy, Thyroidectomy for retrosternal goitre, Lung biopsies, Lymph node biopsy</td>
<td>Oesophagectomy, Thoracic sympatheticectomy, Splanchnicectomy</td>
<td>Oesophagectomy, Thoracic sympatheticectomy, Splanchnicectomy</td>
</tr>
</tbody>
</table>

3. Retrosternal goitre - through a neck incision
4. Oesophagus - through a neck incision or mini laparotomy.

**Table 1: Patient position and procedure.**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>One Lung ventilation</th>
<th>Both Lung ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymph node biopsy</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Lymph node dissection(secondary lymph node deposits in medullary carcinoma)</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Thymectomy</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Thoracoscopy assisted excision of retrosternal goitre</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Thoracic sympathectomy</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Splanchnicectomy</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Lung biopsy</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Mobilization of thoracic esophagus in three stage oesophagectomy</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Diagnostic thoracoscopy</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 2: Ventilator strategy.**
Table 3: The procedures performed and operative details

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Number</th>
<th>Use of additional ports for Retractors</th>
<th>Mean Blood loss</th>
<th>Conversion to open Surgery</th>
<th>Intercostal drainage</th>
<th>Time range</th>
<th>Average time taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymph node biopsy</td>
<td>10</td>
<td>Nil</td>
<td>Minimal</td>
<td>Nil</td>
<td>-</td>
<td>25 - 40min</td>
<td>30 min</td>
</tr>
<tr>
<td>Lymph node dissection (secondary lymph node deposits in medullary carcinoma)</td>
<td>2</td>
<td>Nil</td>
<td>150ml</td>
<td>Nil</td>
<td>-</td>
<td>3.5 - 4.5hr</td>
<td>4 hr</td>
</tr>
<tr>
<td>Thymectomy</td>
<td>8</td>
<td>One</td>
<td>150ml</td>
<td>Nil</td>
<td>Yes</td>
<td>3 - 4.5hrs</td>
<td>3.5 hr</td>
</tr>
<tr>
<td>Thoracoscopy assisted excision of retrosternal goitre</td>
<td>2</td>
<td>One</td>
<td>150ml</td>
<td>Nil</td>
<td>Yes</td>
<td>3 - 5.5hrs</td>
<td>4.5 hr</td>
</tr>
<tr>
<td>Thoracic sympathectomy</td>
<td>8</td>
<td>Nil</td>
<td>Minimal</td>
<td>Nil</td>
<td>-</td>
<td>25 - 40min</td>
<td>30 min</td>
</tr>
<tr>
<td>Splanchnicectomy</td>
<td>6</td>
<td>Nil</td>
<td>Minimal</td>
<td>Nil</td>
<td>-</td>
<td>50 - 80min</td>
<td>1 hr</td>
</tr>
<tr>
<td>Lung biopsy</td>
<td>14</td>
<td>Nil</td>
<td>Minimal</td>
<td>Nil</td>
<td>-</td>
<td>15 - 25min</td>
<td>20 min</td>
</tr>
<tr>
<td>Mobilization of thoracic oesophagus in three stage esophagectomy</td>
<td>15</td>
<td>Nil</td>
<td>100-150</td>
<td>Nil</td>
<td>Yes</td>
<td>1.5 - 3hrs</td>
<td>2 hr</td>
</tr>
<tr>
<td>Diagnostic thoracoscopy</td>
<td>2</td>
<td>Nil</td>
<td>Minimal</td>
<td>-</td>
<td>-</td>
<td>25 - 35min</td>
<td>30 min</td>
</tr>
</tbody>
</table>

Once the procedure was completed the lung was expanded under visual guidance of the camera using hand ventilation.

Results

A total of sixty seven operations were performed. Patients were positioned supine for anterior and...
Table 4 - Post operative outcome

<table>
<thead>
<tr>
<th>Procedure</th>
<th>ICU stay</th>
<th>Narcotic analgesics</th>
<th>Mobilization out bed</th>
<th>Feeding (hrs/days after op)</th>
<th>Morbidity</th>
<th>Mortality</th>
<th>Discharge from hospital Post op day</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN biopsy</td>
<td>nil</td>
<td>Nil</td>
<td>12 hrs</td>
<td>6 hrs</td>
<td>Nil</td>
<td>Nil</td>
<td>1-3</td>
</tr>
<tr>
<td>LN dissection</td>
<td>nil</td>
<td>Nil</td>
<td>24 hrs</td>
<td>6 hrs</td>
<td>Nil</td>
<td>Nil</td>
<td>3</td>
</tr>
<tr>
<td>Thymectomy</td>
<td>24 hrs</td>
<td>24 hours</td>
<td>24 hrs</td>
<td>6 hrs</td>
<td>Nil</td>
<td>Nil</td>
<td>5</td>
</tr>
<tr>
<td>Retrosternal goitre</td>
<td>1 pt for 24 hrs</td>
<td>24 hours</td>
<td>24 hrs</td>
<td>6 hrs</td>
<td>Rt phrenic nerve palsy(1 pt)</td>
<td>Nil</td>
<td>5</td>
</tr>
<tr>
<td>Thoracic sympathectomy</td>
<td>Nil</td>
<td>Nil</td>
<td>12 hrs</td>
<td>6 hrs</td>
<td>Nil</td>
<td>Nil</td>
<td>1-2</td>
</tr>
<tr>
<td>Splanchnicectomy</td>
<td>Nil</td>
<td>Nil</td>
<td>12 hrs</td>
<td>6 hrs</td>
<td>Nil</td>
<td>Nil</td>
<td>2</td>
</tr>
<tr>
<td>Lung biopsy</td>
<td>Nil</td>
<td>Nil</td>
<td>12 hrs</td>
<td>6 hrs</td>
<td>Nil</td>
<td>Nil</td>
<td>2</td>
</tr>
<tr>
<td>Mobilization of Thoracic esophagus</td>
<td>2 -5 days</td>
<td>48 -72 hours</td>
<td>48 -36 hrs</td>
<td>5 -7 days</td>
<td>Anastomotic leak- 1 Pneumonia 1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>Nil</td>
<td>Nil</td>
<td>24 hrs</td>
<td>6hrs</td>
<td>Nil</td>
<td>Nil</td>
<td></td>
</tr>
</tbody>
</table>

superior mediastinal procedures and the prone position was used for posterior mediastinal procedures. These positions allowed the collapsed lung to fall away from the field of dissection.

Two diagnostic procedures were performed in planned oesophagectomy which were abandoned as the tumours were deemed non-resectable.

Discussion

Thoracoscopy reduces the trauma of access and has the
advantage of clear display of anatomy. Specific challenges were: obtaining space for dissection, dissecting technique, haemostasis and specimen retrieval.

Irrespective of the ventilator strategy of single or double lung ventilation, we found that working space obtained by lung collapse was adequate. Furthermore, a capnothorax of 6-8mmHg used for lung collapse was well tolerated. Bipolar diathermy and the ultrasonic dissector allowed meticulous haemostasis and dissection. Larger vessels were controlled with clips and intra-corporeal ligation. Average blood loss was about 100 - 150 ml in major procedures and was negligible in minor procedures, while we used intercostal drainage selectively. Specimen retrieval, although challenging, was not unusually difficult. The operating times were acceptable-a reduction in time was facilitated by avoiding the time taken to open and close the chest. Only operations which involved major dissection required intensive care. Post operative ventilation was needed only after oesophagectomy and after one retrosternal goitre procedure. Except in oesophagectomy and thymectomy, all other patients were managed with oral analgesics. Early feeding, mobilization and discharge was possible except after oesophagectomy. Post operative complications were minimal in contrast to respiratory and wound complications reported after open surgery [1,2,3,4,5].

Conclusions
A diversity of procedures were possible by thoracoscopy. Absence of a large incision reduced the time of procedure and resulted in less morbidity. Clear, magnified and zoomed views permitted a safe anatomical dissection in acceptable time, with resultant diminutive blood loss and less complications.

Conflict of interest statement
None declared

References

Editorial note

This audit of thoracoscopic procedures reveals the variety of surgical operations that may be performed in the thoracic cavity using a minimally invasive approach. While the effort from this very experienced team of surgeons is commendable, it may not be advised for all general surgeons without sufficient training, sans a multi-disciplinary team. Despite the availability of a specialist thoracic surgery unit in the country, the workload presented here makes a case for increasing the number of thoracic surgeons who undergo training.

Editor in chief

Announcement of Sri Lanka Journal of Surgery Case Reports issue in 2014

Each year the journal receives an overwhelming number of case report submissions which results in considerable delay in publication from the time of acceptance. To facilitate earlier publication of accepted case reports we are pleased to announce a new issue - Sri Lanka Journal of Surgery - Case Reports. This issue will be published annually in October commencing 2014.

Editorial Team
Quiz 1
L. Paranalhewa
Consultant Radiologist, Asiri Surgical Hospital, Sri Lanka
A 46 year old male patient presented with acute haematemesis. An upper gastrointestinal endoscopy showed haemobilia.

1: What is the investigation shown in Figure 1?
2: What arteries are indicated by the arrows?
3: What is the abnormality seen in Figure 2?
4: What is the treatment?

Quiz 2
P. Shetty, L.F. Tauro, A. Alva
Department of General Surgery
Father Muller Medical College and Hospital, Mangalore, Karnataka, India.

A 6-year-old girl was admitted complaining of difficulty articulating speech and inability to protrude her tongue. On oral cavity examination, there was a string of tissue attached to the tip of her tongue to the floor of the mouth, restricting her tongue movement [Fig 1]. The rest of her physical examination was normal. She attained mile stones at appropriate age and has no family history of similar complains.

1. What is the diagnosis?
A case of penile fracture caused by self manipulation to achieve detumescence
K. H.Palliyagiru, S. Suvendran, A.M. Abeygunasekera
Colombo South Teaching Hospital, Kalubowila. Sri Lanka

Key words: Penis; fracture; self manipulation.

A 47-year old man was admitted to the surgical emergency close to midnight with a painful swelling of his penis. He had been practicing self manipulation of the erect penis to achieve a rapid detumescence from early morning erections regularly for many years. He had forcibly bent the penis at mid shaft level on that particular morning. There had been a cracking sound and he experienced pain with gradual swelling of the penile shaft. Neither voiding difficulties nor haematuria was observed. Wet ice packs had been placed on the shaft to control the swelling and diclofenac sodium tablets were taken to control the pain. After 17 hours he admitted to the hospital as the swelling got worse and pain became severe despite analgesics.

Physical examination revealed a tender and swollen penis. We could not palpate a defect in the corpora/ shaft of the penis due to swelling and tenderness. A clinical diagnosis of acute penis due to penile fracture was made and consent was taken to explore the penis.

A circum-coronal incision was made after applying a tourniquet at the root of the penis, under general anaesthesia. The penis was degloved to expose the corpora cavernosa. There was a haematoma deep to the Buck's fascia over the proximal part of the right corpus cavernosum near the root of the penis (Figure 1). Evacuation of the blood clot revealed a rupture of the right corpus with a defect confirming the presumptive diagnosis of a penile fracture (Figure 2). The contused and irregular fascial edge was trimmed. The defect was repaired using 4/0 polyglactin sutures in two layers. There was no damage to the left corpus cavernosum. The corpus spongiosum with the urethra was intact. A circumcision was done and a urethral catheter was kept in situ for five days. Intravenous co-amoxiclav was given to avoid sepsis with oral non-steroidal analgesics for pain control.

The patient was experiencing good erections without pain or angulation when reviewed three weeks after surgery and had been so for the last two years.

Discussion

Acute pain and swelling of the penis is known as acute
The usual causes of an acute penis are penile fracture or rupture of a dorsal vein of penis. Fracture is the commoner cause. Its incidence varies in different communities due to cultural differences. Certain cultures are associated with various manoeuvres related to the erect penis which can predispose to fracture. Fracture of the penis is defined as disruption of the tunica albuginea and rupture of the corpus cavernosum. During erection the tunica albuginea thins from 2 mm to 0.25 mm and loses its elasticity which predisposes it to injury if abnormal forces are applied. It has been suggested that previous trauma could predispose to rupture at lower pressures than with a healthy tunica [2].

Fracture of the penis is defined as disruption of the tunica albuginea and rupture of the corpus cavernosum. During erection the tunica albuginea thins from 2 mm to 0.25 mm and loses its elasticity which predisposes it to injury if abnormal forces are applied. It has been suggested that previous trauma could predispose to rupture at lower pressures than with a healthy tunica [2]. The mechanism of injury is usually a direct blunt force and sudden bending of the penis. It may occur during hasty sexual intercourse when the rigid penis slips from the vagina striking the partner's perineum or pubic bone. In Middle-eastern countries a common cause of penile fracture is self inflicted injury [3]. This is a practice termed taghaandan and occurs when the erect penis is bent to achieve detumescence. This practice has not been reported from a South Asian country. This patient was a Sri Lankan who belonged to the Sinhalese ethnic group where a similar practice has not been reported before.

While intercourse and self-manipulation account for most cases of penile fracture, there have been reports of fracture following a fall from bed with an erect penis, attempting to correct congenital chordee, disentangling the erect penis from a garment, forceful contact with the dashboard of a stopping car, masturbation or even unconscious nocturnal manipulation [4].

The events following penile fracture are characteristic and include a cracking or popping sound accompanied by pain, rapid detumescence, swelling and deviation of the penis to the side opposite of the injury. The defect at the fracture site may be palpable and represents a firm, mobile, tender mass where the penile skin can be rolled over the blood clot – ‘rolling sign’ [5]. The diagnosis is mainly clinical and investigations like cavernosography, ultrasonography and MRI are reserved for uncertain or atypical cases. In cases of suspected urethral injury a urethrogram may become useful though not essential. Rupture of the deep dorsal vein is rare but the mechanism and clinical features are similar to penile fracture. Rupture of the superficial dorsal vein spreads through the subcutaneous tissues of the genitalia resulting in scrotal ecchymoses. Haematoma after rupture of the deep dorsal vein or penile fracture is deep to the Bucks fascia and thus remains within the penile shaft. Rarely urethral injury may occur with fracture of the penis. The reported incidence of associated urethral injury varies from 9 – 20%. Mostly the laceration is unilateral and involves one corpus carvernosum only, but in 2-10% of cases it may be bilateral.

Surgical intervention and repair of the injury produces better results than conservative measures like ice packs, compression bandages, fibrinolitics, anti-inflammatory agents and anti-androgens [6]. Early repair within 24 hours has been the recommendation traditionally for an
optimum outcome [7]. However there are recent large studies with long-term follow-up which show that repair up to a week later produce equally good results [8]. Hence fracture of the penis may be considered a urological emergency anymore. Repair can be undertaken electively during the next seven days. Intravenous antibiotics and a urethral catheter for 24 to 72 hours are recommended. In the event of a repair of a urethral injury the urethral catheter should be retained for an extended period.

If untreated, patients after penile fracture may develop infection, urine extravasation, abscess formation and long-term complications like penile pain and deformity. Erectile dysfunction after penile fracture is uncommon. When rupture of the deep dorsal vein or superficial vein is the cause for an acute penis, ligation of the ruptured vein after evacuation of haematoma would suffice.

References


Key learning points

- Acute pain and swelling of the penis (acute penis) is commonly due to penile fracture or rupture of a dorsal vein of penis.
- The diagnosis is essentially clinical.
- Surgical intervention and repair of the injury produces better results and can be undertaken electively during the next seven days.
Vesico-ureteric reflux: An unusual cause of urinoma after total nephrectomy

D. Sharma
Department of Surgery, Government Medical College and Allied Hospitals, Jabalpur (MP), India

Keywords: Urinoma; vesico-ureteric reflux

Abstract

Most urinomas are known to occur after partial or nephron sparing nephrectomy. We report a case of a 52 year old female with a large chronic post-nephrectomy urinoma due to leakage from the ureter due to vesico-ureteric reflux (VUR).

Case Report

A 52 year old female who had undergone a left sided total nephrectomy for a non-functioning kidney due to a stag horn calculus 18 months ago presented with persistent dull pain in her left iliac and lumbar region that began one month after surgery. The patient had noticed the swelling gradually increasing in size over the past month. Physical examination revealed a large, tender, tense cystic lump in the left iliac fossa extending upto the lumbar and hypochondrial regions, and medially upto the umbilicus. Ultrasonography (USG) and contrast enhanced CT scan (CECT) showed a 12 × 9cm size, multi-locular collection with multiple septations in the left iliac fossa and pelvis. USG guided aspiration drained 1400 ml of urine like fluid. The swelling refilled within the next two days, and an USG guided 10 Fr percutaneous nephrostomy tube was placed in the cavity which drained 700 ml of urine per day. As CECT failed to delineate the site of the leak, a micturating cystourethrogram (MCU) was done. The MCU showed a leak from a dilated left ureteric stump (Figure 1). Laparotomy was undertaken with an oblique flank incision and the dilated ureter was dissected out, divided close to the vesicoureteric junction, and repaired using continuous interlocking sutures of 2-0 polyglactine. A tube drain was left in situ. (Figure 2). The drain became dry on the fifth post operative day and the patient was sent home with a per-urethral Foley's catheter in situ which was removed after three weeks.

Discussion

A urinoma is a cyst formed by extravasation of urine from any part of the urinary tract; i.e., via the kidney, ureter, urinary bladder or the urethra. It may vary in its presentation according to the aetiology, point of extravasation, and duration [1]. Three essential factors are required for the formation of a urinoma: a
functioning renal unit, breach in the pelvicalyceal system, and distal obstruction [2]. It is generally associated with trauma to the kidney or collecting system. Unlike renal urine leaks, leaks from the ureter most commonly occur as a result of iatrogenic injury following genitourinary, retroperitoneal, pelvic or gynaecological surgery.

The treatment of a urinoma requires prompt diagnosis with delineation of the cause so as to prevent complications such as urinary peritonitis, parapelvic urine granuloma, periureteral fibrosis, abscess formation, and sepsis[3]. Once the underlying obstruction is relieved, most urinomas are expected to resolve spontaneously. Percutaneous drainage, endoscopic ureteric stent placement and application of glue to the leaking site are accepted management strategies for persistent urinary leaks [4].

Urinomas are mostly noted after partial or nephron sparing nephrectomies or rarely from residual renal tissue following a nephrectomy [5]. Formation of a urinoma from a leaking ureteric stump following total nephrectomy due to VUR has not been previously reported in the literature. Proper attention to the lower end of the ureter would have prevented this rare complication.

References

Key learning points
- Evaluation of the entire upper urinary tract is important prior to decision making in a non functioning kidney
- Proper attention to the distal end of the divided ureter during nephrectomy is essential to prevent complications.

Editorial note
The authors highlight an important step in total nephrectomy which is ligation of the distal end of the divided ureter, especially to prevent bleeding. An alternative conservative measure which could have been attempted is percutaneous...
Questions on Pathology (Page 35 - Quiz 1)

1. Selective angiogram of the Gastro-duodenal artery (GDA)

2. 1. Hepatic artery
   2. Common hepatic artery
   3. Gastro-duodenal artery

3. Pseudoaneurysm arising from the GDA

4. Endovascular Embolisation of the GDA, proximal and distal to the aneurysm using coils and glue.

Answers to images in surgery (Page 35 - Quiz 2)

Ankyloglossia, also known as tongue-tie, is a congenital oral anomaly characterized by restriction of movement of the tip of the tongue which cannot be protruded beyond the lower incisor teeth. It is due to an abnormally short and tight lingual frenulum. It varies in degree, from a mild form to a severe form in which the tongue is completely tethered to the floor of the mouth. The exact cause is not known but genetic propensity is hypothesized as it runs in family [1].

Many tongue-ties are asymptomatic but can affect feeding and speech. Breastfeeding difficulties arise as a result of the inability to create and maintain effective suction leading to improper feed and poor infant weight gain. Tongue tie leads to difficulty in articulation and also leads to compensation depending on the degree of severity. [2] Treatment varies from non-operative management to surgery. Surgery involves dividing the tissue under the tongue, it is called as frenulotomy. If it is plastered to the floor of mouth a surgical reconstruction procedure called a Z-plasty closure is done. Bleeding and infection are post-operative complications.[3]

References


Urinoma as an initial presentation of rectosigmoid cancer

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Maulana Azad Medical College, New Delhi, India

Key words: Urinoma; ureter; adenocarcinoma; signet ring cell cancer; rectosigmoid.

Abstract
Colorectal cancer is the most common primary malignancy of the gastrointestinal tract and may present with a myriad of symptoms. We describe a case of a 36 year old man who presented with a urinoma on the right side secondary to ureteric obstruction at the pelvic brim. The urinoma did not resolve by conservative measures and a laparotomy was performed which revealed an unsuspected recto-sigmoid adenocarcinoma compressing the right lower ureter producing the urinoma. An anterior resection, along-with en bloc resection of the involved ureter and a ureteroureterostomy, was performed. This case illustrates that a rectal cancer may masquerade as a urinoma and surgeons should keep in mind pelvic causes, particularly a mitotic lesion of the rectosigmoid, as a differential diagnosis in such cases so that proper management ensues.

Introduction
The colon and the rectum are the most common sites of primary gastrointestinal malignancy [1]. There are various presentations of rectosigmoid malignancies, include bleeding, constipation, tenesmus, change in the caliber of stools and altered bowel habits. Cases may also present as a mass in the left iliac fossa, large bowel obstruction or as feecal peritonitis following perforation. These presentations reflect various stages of a locally expanding tumour [1]. We report a case of recto-sigmoid (signet ring cell) adenocarcinoma found unexpectedly in a patient who presented to us with urinary symptoms and was diagnosed to have a urinoma on the right side. To the best of our knowledge this is only the second case report in the literature.

Case presentation
A 36 year old male presented to the emergency department with a three week history of pain in the right lumbar region, radiating to the groin. Clinical examination was unremarkable except for fullness in the right flank. Baseline blood investigations were normal. Abdominal ultrasonography was done and revealed a fluid collection in relation to the right kidney. An ultrasound guided diagnostic tap revealed an aspirate suggestive of urine which was confirmed on biochemistry. An urgent intravenous urogram revealed hydronephrosis on the right side with a column of contrast in the proximal part of the right ureter. Extravasation of contrast was noted around the kidney extending up to the lower one third of the ureter (Figure 1). Cystoscopy with right retrograde pyelography revealed an extrinsic compression without intraluminal pathology. A contrast enhanced computed tomogram (CECT) of the abdomen confirmed the presence of a homogenous fluid collection, with contrast enhancement, in relation to the right kidney extending inferiorly (Figure 2). A preliminary diagnosis of a right sided urinoma secondary to lower ureteric obstruction was made.
The urinoma was drained percutaneously under ultrasound guidance. An attempt to place a cystoscopic guided ureteric stent on the right side was unsuccessful. After two weeks, the patient re-presented with the same symptoms. The urinoma had re-accumulated and the patient underwent right lower ureteric exploration which, revealed a recto-sigmoid growth causing extrinsic compression of the lower right ureter. A formal laparotomy was performed. There was no clinical evidence of metastatic disease in the abdominal cavity. A high anterior resection of the rectum was performed with en-bloc ureteric resection and reconstruction over a stent. Pathological examination revealed a poorly differentiated adenocarcinoma of the recto-sigmoid with signet ring cell pattern. The patient recovered uneventfully and was discharged on the seventh post-operative day with a plan to receive adjuvant chemotherapy. This patient completed six cycles of chemotherapy successfully, and is well thirteen months later.

**Discussion**

A urinoma is an encapsulated extra-pelvicalyceal collection of urine that forms due to leakage through a tear in the collecting system or the proximal ureter when ureteric obstruction is present. The extravasated urine causes lipolysis and inflammation of peri-renal fat with formation of a fibrous capsule around the collected urine [2]. Most commonly, renal urine leaks result from blunt or penetrating renal trauma - the so called non-obstructive urinomas [3].

A colorectal malignancy presenting initially as an urinoma has been reported only once in the English literature and on two occasions in non-English literature [4]. Sayeed et al reported a case of urinoma due to a rectal cancer but said the patient was already suffering from Hodgkin's disease and metastatic disease [4]. Guzman-Fernandez et al reported a sigmoid cancer locally infiltrating the ureter and causing a urinoma but the primary tumour was sought only postoperatively after the histopathology revealed involvement of the ureter; despite the patient giving a history of constipation [5]. Sakaguchi et al reported the occurrence of a urinoma due to retroperitoneal lymph node metastases secondary to adenocarcinoma of ascending colon [6]. Signet ring cell cancers (SRCC) are aggressive and tend to involve the full thickness of the bowel early [7]. Therefore it has a high propensity to infiltrate adjacent structures. Our patient did not have clinical features suggestive of colorectal malignancy at presentation, which is a feature of SRCC [8]. Histopathology failed to show infiltration into the ureter and there were no distant metastases on laparotomy or subsequent metastatic work-up.

Abdominal ultrasound can identify a urinoma as an anechoic localized collection [2]. A CECT scan reveals a homogenous hypodense well encapsulated lesion in relation to kidneys with increase in attenuation values upon intravenous contrast injection [9]. Renal scintigraphy with 99mTc-DTPA may delineate the site and estimate the leakage rate [10]. Treatment of urinoma is dependent on its cause. Most non-obstructive urinomas resolve with aspiration, stenting or percutaneous nephrostomy [9]. However, in obstructive causes, surgery may be indicated [2]. In this patient there was an obstruction to the distal ureter through which a ureteric stent could not be negotiated, so a decision for exploration was taken. In rare cases a nephrectomy may be warranted to treat an urinoma.

**Conclusion**

Despite previous reports, such a presentation of rectal adenocarcinoma is not recognized widely, and may cause delays in diagnosis and management. Hence, we are of the opinion that whenever a patient with urinoma is being evaluated, pelvic causes, particularly a mitotic lesion of colon should be considered in the differential diagnosis.
References


Key learning points

- The left ureter is more likely to be infiltrated by a rectosigmoid tumour compared with the right ureter.
- Quality contrast enhanced computerized tomography should enable identification of extra-ureteric aetiology of ureteric compression.
An experience of laparoscopic common bile duct exploration
G.D.S.R.Wijerathne, B.G.N.Rathnasena, S.Rajeev
National Hospital of Sri Lanka

Key words: Common bile duct; stones; laparoscopy

Introduction
A previously healthy 57 year old female presented with right hypochondrial pain, fever and jaundice of 3 days duration. Examination findings were suggestive of acute cholangitis which was confirmed by ultrasound abdomen, which showed multiple gall bladder calculi with dilatation of both intra hepatic and common bile ducts (CBD).

Endoscopic retrograde cholangiopancreatography (ERCP) showed a large CBD calculus, but endoscopic extraction failed.

Laparoscopic CBD exploration (LCBDE) was done under general anaesthesia. Port placements were done according to the standard configuration of laparoscopic cholecystectomy with a 5th port in the left hypochondrium.

The supra duodenal CBD appeared grossly dilated with a hard stone just below the Calot's triangle.

Exploration of the CBD started after completion of the cholecystectomy. The part of the CBD which contained the stone was visualized by retracting the duodenum away. A small vertical slit was made in the CBD over the stone which was then extracted (transcholedochal approach [1]). The CBD was closed with 3/0 polyglactin over a T tube.

An intraoperative cholangiogram was not performed since ERCP clearly showed a single stone.

We do not have facilities for choledochoscopy.

She was discharged on day 5. T tube cholangiogram was done on day 10 was normal.

Discussion
CBD calculi are present in 10% of the patients [2] and can be approached in several ways including ERCP and open or laparoscopic CBD exploration. Recently described methods including lithotripsy and dissolving solutions need more clinical evaluation [1].

The widely practiced approach to CBD calculi is the two staged procedure which includes cholecystectomy with pre or post op ERCP. In this era of laparoscopy, CBD stones can be managed in a single staged manner with LCBDE [3].

There are no cases of laparoscopic CBD exploration reported in Sri Lanka.

ERCP has a success rate of 87-97% but about 25% of the
Figure 2. T tube cholangiogram showing free bile flow

patients need two or more ERCP treatments[1]. The

drawbacks of ERCP include the need for an experienced
endoscopist, the need for possible >1 ERCP and the
complications. The mortality from ERCP ranges from
0.2-2.3% which is mainly accounted for acute
pancreatitis [4].

On the other hand the mortality of LCBDE is <1% [1].
Its success rate is 85-95% which is comparable to ERCP
[1]. The procedure would be always a single stage one
because one can convert it to open exploration at any
time [4]. The main draw back is the need for
laparoscopic expertise [1]

The first described LCBDE was in 1989 by Petelin from
the USA [2]. LCBDE is now a commonly practiced
approach in regional [1,4] and world wide [2]
laparoscopy centers.

A successful LCBDE depends on surgical expertise,
availability of equipment, biliary anatomy, and the
number and size of CBD stones.

There are two approaches in LCBDE namely transcystic
and trancholedochal [1] and the former gives a better
outcome [4].

Meta analyses have failed to show any benefits of
having a T tube over a primary closure[5]. The
disadvantages of T tube include delayed recovery, risk
of tube displacement, risk of infection and rarely,
fracture of a tube fragment and retention in the CBD [6]

Conclusion

LCBDE is a safe and effective way of managing CBD
stones in expert hands.

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Key learning points

- Approximately 10 percent of patients with gall stones will have common bile duct stones
- Laparoscopic cholecystectomy and common bile duct exploration (LCBDE) is a single stage option for surgical treatment of gall stones in the common bile duct
- The reported incidence of post-procedure acute pancreatitis is less for LCBDE compared with endoscopic retrograde cholangio-pacreatography
SELECTED ABSTRACTS

Editor - Rohan Siriwardena

Pneumatic dilation versus laparoscopic Heller’s myotomy for idiopathic achalasia


Abstract

Background

Many experts consider laparoscopic Heller’s myotomy [LHM] to be superior to pneumatic dilation for the treatment of achalasia, and LHM is increasingly considered to be the treatment of choice for this disorder.

Methods

We randomly assigned patients with newly diagnosed achalasia to pneumatic dilation or LHM with Dor’s fundoplication. Symptoms, including weight loss, dysphagia, retrosternal pain, and regurgitation, were assessed with the use of the Eckardt score [which ranges from 0 to 12, with higher scores indicating more pronounced symptoms]. The primary outcome was therapeutic success [a drop in the Eckardt score to ≤3] at the yearly follow-up assessment. The secondary outcomes included the need for retreatment, pressure at the lower esophageal sphincter, esophageal emptying, as assessed by the height of barium-contrast column [LHM, 1.9 cm [95% CI, 0 to 6.8]; pneumatic dilation, 3.7 cm [95% CI, 0 to 8.8]; P=0.21]; or quality of life. Similar results were obtained in the per-protocol analysis. Perforation of the esophagus occurred in 4% of the patients during pneumatic dilation, whereas mucosal tears occurred in 12% during LHM. Abnormal exposure to esophageal acid was observed in 15% and 23% of the patients in the pneumatic-dilation and LHM groups, respectively [P=0.28].

Conclusions

After 2 years of follow-up, LHM, as compared with pneumatic dilation, was not associated with superior rates of therapeutic success. [European Achalasia Trial Netherlands Trial Register number, NTR37, and Current Controlled Trials number, ISRCTN56304564.]

Commentary

Aloka Pathirana – MS, FRCS.
Professor in Surgery,
University of Sri Jayawardenapura and the Colombo South Teaching Hospital.

Gastro-oesophageal reflux disease [GORD] is a common condition with a prevalence of 10% in the western world [5% in Asia]. The majority can be managed with proton pump inhibitors and life style modifications. At the outset, patients with achalasia of the cardia may present with symptoms that are similar to GORD, and it is essential to identify the possibility of achalasia since initial investigation may have to include...
a contrast swallow study. The world over, there is a reluctance in accepting surgery, both by patients and physicians. This multi center study has shown comparative results for those who balloon dilate the lower oesophageal sphincter as for those who prefer a myotomy procedure. Not addressed in this study is the cost efficacy - in Sri Lanka, balloon dilatation may be seen as a more cost-effective procedure over an operative Heller's cardiomiyotomy. Furthermore, gastrointestinal physiology measurements would need to more widely available to better evaluate potential candidates for these procedures.

**Randomized clinical trial of stents versus angioplasty for the treatment of iliac artery occlusions (STAG trial)**


**Background**

The management of total iliac artery occlusion is now undertaken routinely using percutaneous techniques but there are no controlled data to indicate whether either balloon angioplasty or stent placement is preferable. This was a multicentre randomized trial to assess whether stents confer any safety or efficacy advantage over balloon angioplasty for complete iliac artery occlusion.

**Methods**

Six participating centres recruited patients with symptoms of lower limb peripheral arterial disease due to iliac artery occlusion 8 cm or less in length. Patients were assigned randomly to either percutaneous transluminal angioplasty (PTA group) or primary stent placement (stent group) alone after the lesion had been traversed with a guidewire.

**Results**

There were 118 patients recruited to the study; six were excluded from the analysis owing to major protocol violations, leaving a total of 112 patients for analysis. Some 55 patients had PTA and 57 had a primary iliac stent. Technical success was achieved in 46 patients (84 per cent) in the PTA group and 56 (98 per cent) in the stent group (P = 0·007). There were 11 (20 per cent) major procedural complications after PTA compared with three (5 per cent) after primary stenting (P = 0·010). There were no significant differences in primary or secondary patency between the groups after 1 and 2 years.

**Conclusion**

Primary stent placement for iliac artery occlusion increased technical success and reduced major procedural complications (predominantly distal embolization) compared with balloon angioplasty.

**Commentary**

M R C W Weerasinghe MBBS, MS, MRCS. Consultant Vascular and Transplant Surgeon, Teaching Hospital Anuradhapura

The percutaneous technique is the method of choice for the treatment of most iliac vessel disease. Short segment lesions (TransAtlantic Inter-Society Consensus-TASC type A & B) can be treated successfully by angioplasty alone. This gives a comparable result to the open method with less morbidity and low cost.

TASC C & D lesions that have long stenosis or total occlusion are prone to develop thrombosis and distal embolization following angioplasty. Such complications are believed to be less after primary stenting. This multi centre randomized trial was done to investigate the safety and efficacy of primary stenting over angioplasty for the treatment of TASC C&D lesions.

The study concludes, primary angioplasty can achieve equal long-term patency rates as primary stenting of totally occluded iliac artery lesions 8cm or less. Only 9 patients (16%) required a selective stent in the former
group.

Again, the safety of the primary stenting was proven over angioplasty and selective stenting in this study as well as in previous studies. The latter group had a significantly large number of limb threatening distal embolization and immediate or early thrombosis of the treated vessel. Despite such complication, it is worthy of note that all these complications were managed successfully without limb loss. These are lesions that one would treat by open methods using laparotomy in countries with limited resources. Patients who developed distal embolization can also be managed without a laparotomy.

In conclusion, as stents are very costly and hard to come by in developing countries, primary angioplasty and selective stenting is still a viable option over primary stenting in Sri Lankan practice. Prompt detection and treatment of complications is vital to prevent limb loss.

Distance learning improves attainment of professional milestones in the early years of surgical training


Abstract

Background

The study was conducted to assess the impact of a surgical sciences e-learning programme in supporting the academic development of surgical trainees during their preparation for professional examination. In 2007, a 3-year online part-time Master of Surgical Sciences [MSc] degree programme was launched, utilizing an innovative platform with virtual case scenarios based on common surgical conditions addressed by the curriculum relating to the Membership Examination of the Royal Colleges of Surgeons [MRCS]. Multiple-choice questions with feedback and discussion boards facilitated by expert clinical tutors provided formative assessment. Summative assessment comprised written examination at the end of each of the first 2 years [equivalent to MRCS level], culminating in submission of a research dissertation in year 3 toward an MSc.

Methods

Students' age, gender, and level at entry to the programme were documented. Anonymized student feedback from 2008 to 2012 was examined using online questionnaires, and performance in the MSc programme was compared to MRCS examination outcomes for students who had consented to release of their results.

Results

A total of 517 surgical trainees from 40 countries were recruited over the 6-year period, and 116 MSc students have graduated to date. Of 368 students, 279 [76%] were foundation doctors [interns] and had not commenced formal surgical training on enrolling in the MSc programme. However, level at entry did not influence performance [P > 0.05 across all 3 years]. Average pass rates since the programme launched, for those students completing all of the required assessments, were 84% ± 11% in year 1, 85% ± 10% in year 2, and 88% ± 7% in year 3 of the MSc programme. MSc students had significantly higher MRCS pass rates than non-enrolled trainees [67% vs. 51%, P < 0.01, n = 352]. There was a significant correlation between MRCS examination performance and overall performance in the MSc [R = 58%; P < 0.01, n = 37]. Of 248 respondents, 202 [81%] considered that the MSc would improve their chances of gaining a surgical training post, and 224 [90%] would recommend the programme to their peers.

Conclusions

The online MSc programme supports academic development of trainees in the early years of surgical training, is well received by students, and is associated
with improved success in their professional examination

**Commentary**

Deepaka Weerasekera - MS, FRCS[Eng. & Edin], Professor in Surgery, University of Sri Jayawardenapura and the Colombo South Teaching Hospital.

There is considerable potential for distance learning programs to have a major impact on future delivery of surgical training. The data from this study are relatively immature to determine whether it has contributed to a major change, but it has demonstrated that this e-learning program supports the academic development of trainees in the early years of surgical training, is well received by students, and is associated with improved success in their professional examination.

Although many surgical trainees from different countries were recruited over a period of time the relevance of such a program has not been yet determined in our country. Whether this kind of distance learning programs are of any use other than the submission of a research dissertation has to be tested before it is introduced to our syllabus. The research dissertation is of great value as many individuals go on to publish their work in peer reviewed journals.

It would be a good study to undertake to set up a similar program (well-constructed with well-defined learning objectives) to see whether it is feasible as well as rewarding to the distance learner.

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**Radical prostatectomy versus observation for localized prostate cancer.**


**Abstract**

**Background**

Life time risk of prostate cancer is 17% while the risk of dying from it is 3%. This suggests that conservative treatment is an option.

**Methods**

Histologically proven clinically localized prostate cancer (T1–T2, Nx M0) were enrolled. Inclusion criteria were age ≤ 75 years, PSA high but <50 ng/ml, medically fit for radical prostatectomy, any biopsy grade, negative bone scan and life expectancy ≥ 10 years. Recruitment was from November 1994 to December 2002.

The patients were randomly assigned to Observation (OG) or radical prostatectomy (RPG). The technique for radical prostatectomy was at the surgeon's discretion. Follow-up was every six months for 10 years. Bone scans were done every 5 years or earlier if symptomatic.

Primary end points were death from any cause or due to prostate cancer. Sub analysis was done for age, race, Charlson comorbidity index, performance status, PSA level, Gleason grade and D'Amico tumor risk score.

**Results**

Among 13,022 men with prostate cancer, 731(14.6%) were randomized to RPG ( 364 men) and OG (367 men). Median survival in the RPG group was 13 years compared to 12.4 years in OG. 171 (47%) died in RPG compared to 183(49.9%) in OG. Of 52 men, who died purely due to prostate cancer, 21(5.8%) were in the RPG group vs. 31(8.4%) in the OG group. In subgroup analysis relative risk reduction of mortality with surgery was 13.2% with PSA ≥ 10 31% with Gleason score ≥ 7 and 6.7% in high risk tumours compared to OG.

**Conclusions**

After median follow up of 10 years, follow up radiocal prostatectomy for clinically localized prostate cancer did not reduce mortality when compared to observation.
Commentary

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Sri Jayawardenapura General Hospital, Kotte.

Since there was a relative risk reduction in prostate cancer mortality in PSA ≥ 10 ng/ml, in intermediate and high risk groups, radical prostatectomy should be offered as a management option. In this study only 10% of patients were below 60 years which is a small number. The follow up was too short for slowly growing cancer with localized disease. Therefore, even in low risk disease, in young patients, a surgical option should be considered since it provides an opportunity of cure until long term data is available. Also the heterogeneous nature of prostate cancer warrants wide spread use of PSA and transrectal 12-14 core biopsies for diagnosis prior to determining the treatment options in our practice. Treating patients with digitally directed biopsy and without a PSA is not justified.
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<td>Pre Congress (Kandy Society of Medicine) Workshop on Laparoscopic Colorectal Surgery –Kandy</td>
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<td>March 13th- 15th</td>
<td>Asian Association of Endocrine Surgeons International Congress.</td>
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<td>March 26th- 28th</td>
<td>Advanced laparoscopic colorectal workshop - Colombo South (26th) and Galle (28th) for specialist surgeons</td>
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<td>March 28th</td>
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<td>Basic surgical skills course by the Royal College of Surgeons, England. - Peradeniya and Anuradhapura.</td>
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<td>July (dates to be finalized)</td>
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<td>Regional surgical meeting in Galle.</td>
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