STUDY OF SHORT TERM OUTCOME AND INCIDENCE OF RECURRENCE OF INGUINAL HERNIA REPAIR IN HOSPITAL UNIVERSITI SAINS MALAYSIA

By

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LATAR BELAKANG

Tujuan kajian ini adalah untuk menganalisa komplikasi-komplikasi kepada pembedahan hernia dan kaitannya dengan faktor-faktor yang ada pada pesakit dan faktor-faktor surgeri itu sendiri. Ia adalah bertujuan untuk memperbaiki praktis yang dijalankan.

CARA DAN KEPUTUSAN

Unit Surgeri Hospital Universiti Sains Malaysia menawarkan perkhidmatan pembedahan untuk inguinal hernia. Kajian retrospektif ini dilakukan ke atas 600 pesakit yang telah menjalani pembedahan tersebut. Kajian ini bermula dari Januari 2000 sehingga Januari 2005. Seramai 580 pesakit lelaki dan 18 pesakit wanita menjalani pembedahan hernia dalam tempoh ini. Didapati purata umur pesakit ialah 52 tahun, dengan standard deviation 18.2 tahun. Kami dapati umur pesakit yang melebihi 50 tahun lebih cenderung menghadapi komplikasi jangka pendek dan komplikasi keseluruhan selepas pembedahan. ($p<0.05$). 364 orang mempunyai hernia di sebelah kanan, 200 pesakit mempunyai hernia di sebelah kiri, dan 36 pesakit mempunyai kedua-dua belah hernia. 494 pesakit mempunyai indirect hernia, 93 pesakit mempunyai direct hernia, 7 pesakit mempunyai direct dan indirect hernia dan 6 lagi pesakit mempunyai sliding hernia. Indirect hernia lebih tinggi risiko untuk datang semula sebagai kes recurrent hernia ($p<0.05$)

Majoriti pesakit datang ke hospital untuk rawatan selepas mempunyai symptom 1 hingga 6 tahun. 460 pesakit menjalani pembedahan Lichtenstein, 121 menjalani pembedahan Darning, 10 menjalani pembedahan Bassini dan 9 menjalani pembedahan Laparoskopik. Jenis-jenis pembedahan ini tidak mempengaruhi insiden komplikasi dan

recurrent yang berlaku selepas pembedahan. 537 pesakit menjalani pembedahan elektif, 63 pesakit lagi kecemasan. Tempoh pembedahan adalah lebih lama dalam pembedahan kecemasan di mana tempoh melebihi 2 jam adalah 17.7% dalam kes elektif berbanding dengan 49.2% di dalam kes kecemasan. ($p<0.05$) dan pesakit yang dibedah secara kecemasan tinggal lebih lama di hospital berbanding dengan pesakit elektif ($p<0.05$). 87 pesakit mempunyai penyakit COAD(chronic obstructive airway disease), 45 mengalami sembelit kronik dan 39 mengalami BPH (benign prostatic hypertrophy). Pesakit yang mempunyai COAD berisiko lebih tinggi untuk datang sebagai kes kecemasan dan mempunyai komplikasi jangka pendek selepas pembedahan ($p<0.05$).

Terdapat 23 insiden jangkitan kuman kepada luka pembedahan. Insiden jangkitan kuman pada luka pembedahan adalah pada kadar 3.8%. Doktor yang mempunyai kurang pengalaman mempunyai insiden jangkitan kuman awal yang lebih tinggi berbanding kumpulan doktor bedah yang lebih berpengalaman ($p<0.05$).

Terdapat 19 kes mempunyai hernia yang recurrent. 6 pesakit mengalami recurrent seawal kurang daripada 6 bulan, 6 mengalami recurrent selepas 6 bulan dan kurang daripada setahun,7 lagi mengalami recurrent selepas setahun ke lima tahun daripada tarikh pembedahan. Hernia Indirect mempunyai kadar recurrent yang lebih tinggi. Begitu juga dengan pesakit yang mengalami pelbagai komplikasi selepas pembedahan, kadar recurrent dalam kes-kes ini adalah lebih tinggi. ($p<0.05$).

KESIMPULAN

Kami dapati bahawa komplikasi yang paling lazim kepada pembedahan hernia adalah jangkitan kuman pada luka pembedahan, hematoma skrotum dan recurrent kepada hernia yang telah dibedah. Umur pesakit melebihi 50 tahun, pesakit yang mempunyai COAD

dan doktor bedah yang kurang pengalaman meningkatkan risiko komplikasi selepas pembedahan. Pesakit yang mempunyai hernia indirect dan komplikasi selepas pembedahan meningkatkan risiko recurrent kepada hernia.

VII ABSTRACT

Background

The purposes of this study are to evaluate the complications arise from the inguinal hernia repair and their correlations with the patients' factors and surgical procedure's factors. The aim is to improve our service.

Methods and Results

Surgical Unit in Hospital Sains Malaysia offers the surgery for inguinal hernia repair. This retrospective study was done on 600 patients who undergone the hernia repair. This study started from January 2000 until January 2005. About 580 male patients and 18 female patients had undergone hernia repair within the time frame. Mean age was 52 years old with standard deviation of 18.2 years. We found patients more than 50 years old tend to develop short term complications and overall complications after the surgery ($p<0.05$). 364 patients have right sided hernia, 200 patients have left sided hernia and 36 have bilateral hernia. 494 patients have indirect hernia, 93 patients have direct hernia, 7 patients have both direct and indirect hernia and 6 patients have sliding hernia. Indirect hernia have higher risk to develop recurrent hernia ($0<0.05$). Majority of patients came to hospital for the treatment after 1 to 6 years of symptoms. 460 had undergone Lichteinstein repair, 121 had undergone Darning repair, 10 had Bassini and 9 had laparoscopic hernioplasty. Type of surgery does not alter the incidence of complications and recurrence after the surgery. 537 patients had elective surgery and 63 patients had

emergency surgery. Duration of operation was longer in emergency surgery in which the duration of more than 2 hours were 17.7% in elective cases comparing to 49.2% in the emergency cases ($p<0.05$) and emergency cases stayed longer in hospital comparing to elective cases ($p<0.05$). 87 patients had COAD (chronic obstructive airway disease), 45 had chronic constipation and 39 had BPH (benign prostatic hypertrophy). Patients who had COAD tend to come as emergency and develop short term complication after the surgery ($p<0.05$). There were 23 wound infections. Our wound infection rate was at 3.8%. The less experienced surgeons had shown to have higher early infection rate comparing to the more experienced surgeons ($p<0.05$). There were 19 recurrent cases. 6 patients recurred as early as less than 6 months. 6 recurred after 6 month but less than 1 year, 7 recurred after 1 year to 5 years after the surgery. The indirect hernia have higher recurrent rate. Similarly with patients who develop post operative complication, the recurrent rate was higher in this group ($p<0.05$)

CONCLUSION

In summary, the commonest complications post hernia repair were wound infection, scrotal hematoma and recurrence. Patients age of more than 50 years old, patients who have COAD and less experienced surgeons had increased the risk of post operative complications. Patients who have indirect hernia and who developed post operative complications have higher risk to develop recurrence.

1 INTRODUCTION

Operations to cure inguinal hernia are among the most common surgical procedures. Most surgeons do not know their individual rate of hernia recurrence or complications. This would require complete and long term follow up, denied by constraints of time and other clinical commitments. To compare the results of different hernia repairs requires similar attention to follow up, but would need a large number of patients in a randomized trial. The present study used indicators of outcome to provide evidence that the transition from herniorrhaphy to hernioplasty mesh repair was worthwhile.

2 LITERATURE REVIEW

2.1 HISTORY OF HERNIA REPAIR

2.1.1 The Evolution of Hernia Repair

Hernia has caused troubles to human throughout recorded history, and descriptions of hernia reduction was long explained back to era of the Hammurabi of Babylon and the Egyptian papyrus (Figures 1 and 2).

The current modern surgical techniques result from the contributions of early surgeons (table 1), but it was not until the late 19th century that hernia surgeon Edoardo Bassini known as the father of modern day hernia surgery who gave a degree of success in repairing hernias.

Figure 1 : ancient techniques using various trusses to contain the groin hernia

Figure 2: ancient techniques in reduction of incarcerated hernia

Table 1. Milestones in Hernia Repair: The Listerian Era

Marcy (1871)	Publication of original paper on antiseptic herniorrhaphy ("A New Use of Carbolized Catgut Ligature")
Czerny (1876)	Described ligating and excising the indirect peritoneal sac through the external ring
Kocher	Twisted and suture-transfixed the peritoneal sac in the lateral muscles. through the external ring
MacEwen (1886)	Reefed the peritoneal sac into a plug to block the internal ring.
Lucas-Championniere	Opened the external oblique aponeurosis to expose the entire inguinal canal.

2.1.2 Bassini: The Father of Modern Day Hernia Surgery

Bassini's approach was to perform "a radical cure of inguinal hernia," (the title of his presentation to the Italian Surgical Society in Genoa, in 1887). During a 3-years period, out of 206 hernia repairs, he reported only 8 failures. This was monumentally important, considering that before his work, failure rates ranged between 30% to 40% in the first postoperative year and almost 100% after 4 years.

Bassini's operation opened the external oblique aponeurosis through the external ring, then resected the cremasteric fascia to expose the spermatic cord. He then divided the posterior wall canal to expose the pre-peritoneal space and did a high dissection and ligation of the peritoneal sac. Bassini then reconstructed the posterior wall canal in 3 layers. He approximated the medial structures, including the internal oblique muscle, transversus abdominus muscle and transversalis fascia to the edge of the inguinal ligament with interrupted sutures. He then placed the cord against that newly constructed wall and closed the external oblique aponeurosis over it, thereby restoring the step-down effect of the canal and reforming the external inguinal ring (Figure 3).

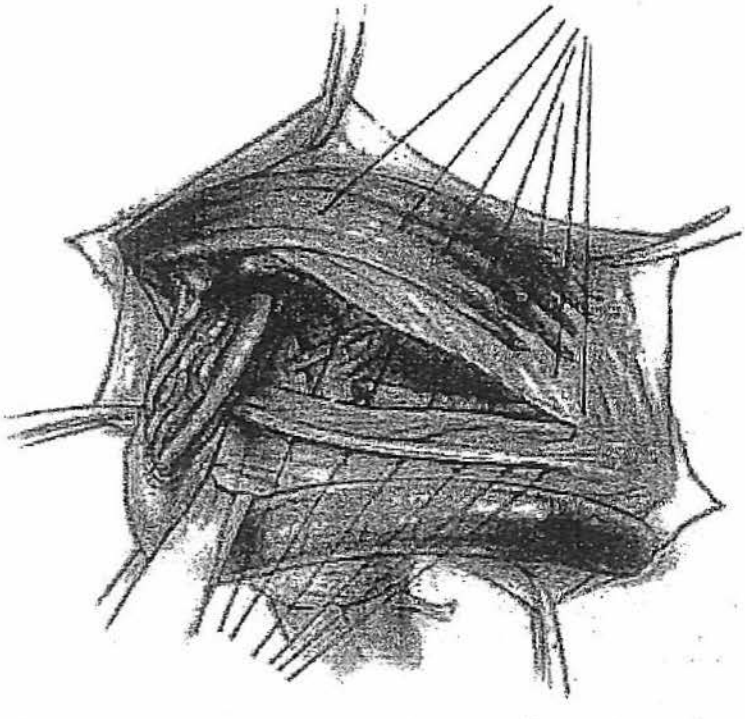

Figure 3 . Original Bassini operation.

2.1.3 Subsequent development of various techniques.

Many other innovative surgeons have contributed to improve outcomes in hernia repair. In 1920, Cheatle used the pre-peritoneal approach to repair abdominal wall defects, initially, through a lower midline incision, and later through a Pfannenstiel incision. Cheatle advocated this approach for indirect hernias and described dividing the peritoneal sac, and leaving the distal part of the sac in the cord. The proximal peritoneum was closed, and the defect of the widened internal ring was tightly sutured to prevent re-herniation through it.

This technique was not well received until Henry[1] and, later, McEvedy[2]began using it for femoral hernias. More recently, US surgeons Nyhus, Condon, and Harkins[3]adapted the pre-peritoneal approach to repair direct and indirect groin hernias (Figure 4). In their procedure, abdominal wall defects were repaired with sutures and in some cases, mesh was applied.

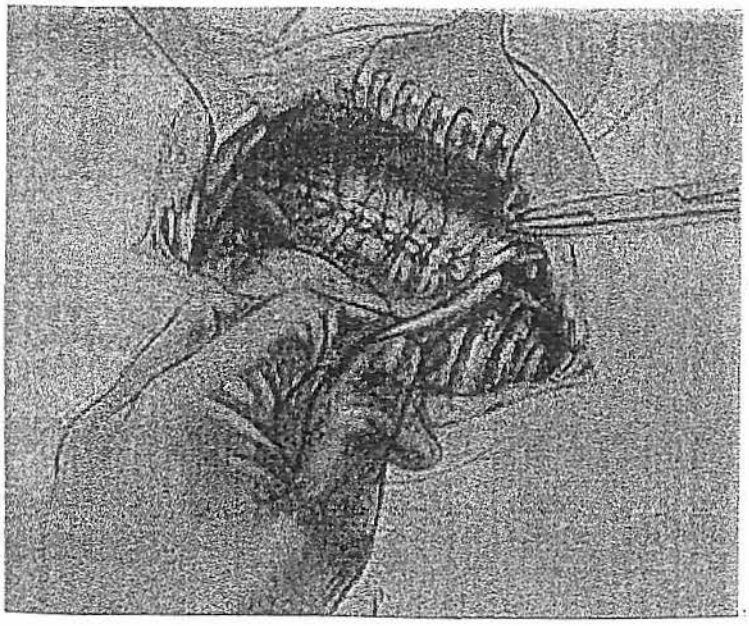

Figure 4. Pre-peritoneal suturing. The tranversus arch is sutured to the iliopubic tract.

There have been numerous modifications of Bassini's original technique

Among the most notable classic hernia repairs in the history are the Stoppa, Halsted, Shouldice and, Mc Vay (Cooper Ligament) repairs.

Stoppa and colleagues [4]used the pre-peritoneal approach to implant an impermeable barrier around the entire peritoneal bag, demonstrating that permanent repair of groin hernias does not require closure of the abdominal wall defect per se. Without having stated it, their repair used a tension-free technique. Essential to these and all subsequent tension-free repairs is the application of a barrier prosthesis, usually a permanent mesh. In Stoppa's approach, the mesh is held in place by intra-abdominal pressure, an application of Pascal's principle.

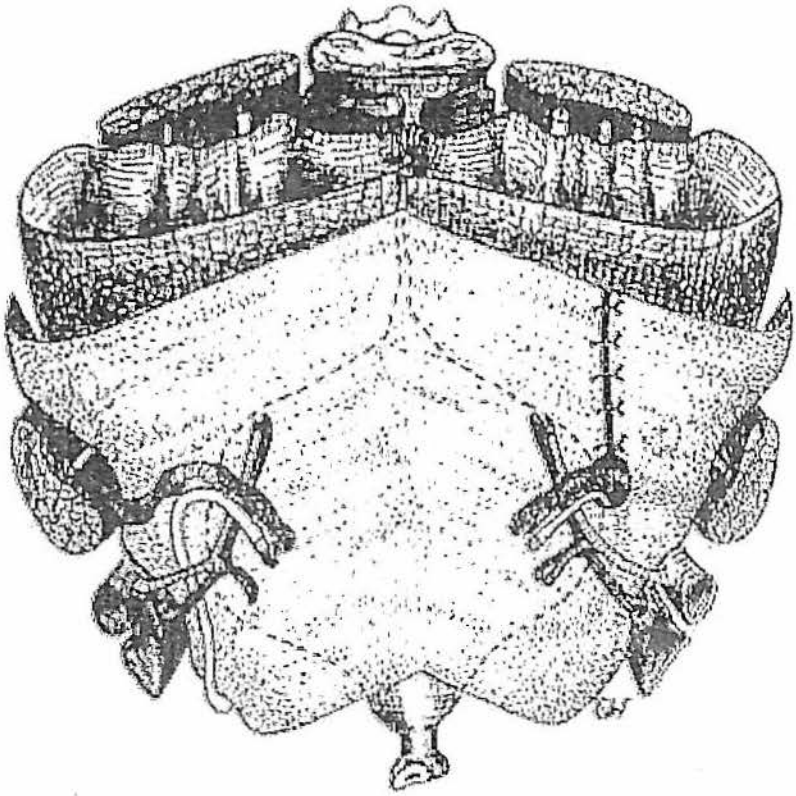

Figure 5 : Stoppa procedure.The entire peritoneal bag is wrapped with a mesh graft. Expanding intra-abdominal pressure hold the graft in place without suture fixation

Halsted opened the posterior wall to do a high dissection and ligation of the peritoneal sac in the iliac fossa. He made a point to thin the cord as much as possible and then did a 4-layer repair of the canal's posterior wall (Figure 6). The external oblique aponeurosis is closed under the spermatic cord thereby sacrificing the step-down effect of the canal.

Using the external oblique aponeurosis to reinforce the natural tissues of the posterior wall, Halsted's repair did not restore the step-down effect of the inguinal canal. This resulted in many recurrent indirect hernias and also produced an inordinately high incidence of postoperative hydroceles and atrophic testes. In a second version of his procedure, Halsted placed the cord against the posterior wall and sutured the transversus abdominus and internal oblique muscles over it for fortification. Although neither of these procedures is favored by surgeons today, Halsted made many other important contributions to surgery.

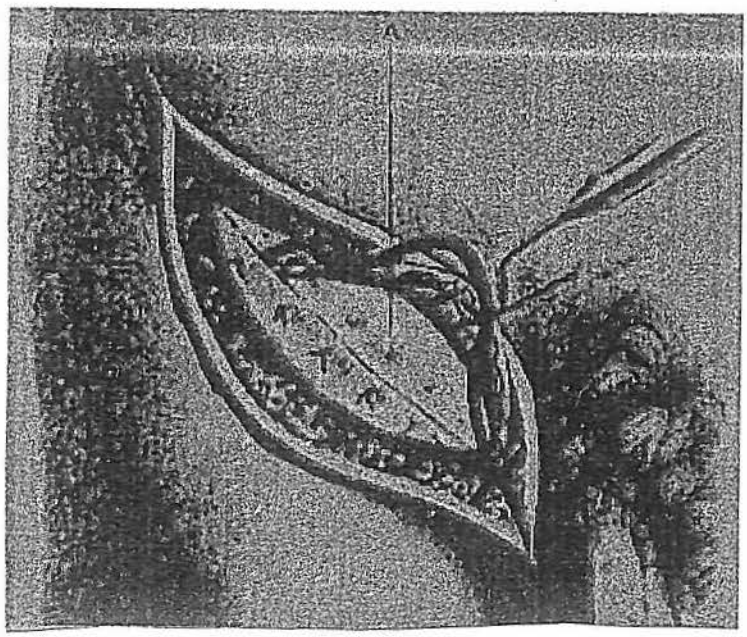

Figure 6 . Halsted operation. The external oblique aponeurosis is closed under the spermatic cord thereby sacrificing the step-down effect of the canal.

2.1.4 Cooper ligament repair

Cooper was the first to describe the superior pubic ligament, although he never used it to surgically repair a groin hernia. The first Cooper ligament repair was done in 1897 by the Austrian surgeon, Georg Lotheissen, who used the superior pubic ligament in 2 patients who had lost their inguinal ligaments in the course of prior unsuccessful hernia repairs[5].

McVay and Anson[6]revived Lothiessen's operation in 1942 (Figure 7). They considered the superior pubic ligament to be the ideal structure for reconstructing the posterior wall of an inguinal hernia, since it shares the same tissue plane and is derived from the same tissue origin as the transversus aponeurosis and the transversalis fascia. However, many surgeons who attempted this procedure found that it was sometimes difficult to approximate the transversus arch to the Cooper ligament. Doing so frequently resulted in considerable suture-line tension . Patients complained of considerable and prolonged postoperative pain, and failure rates became unacceptable. This procedure has, however, had value to surgeons by demonstrating the strength of the superior pubic ligament and showing its utility in large and difficult hernia repairs, including incisional hernias. It is a reliable structure to which prosthetic material can be fixed when a large defect must be spanned.

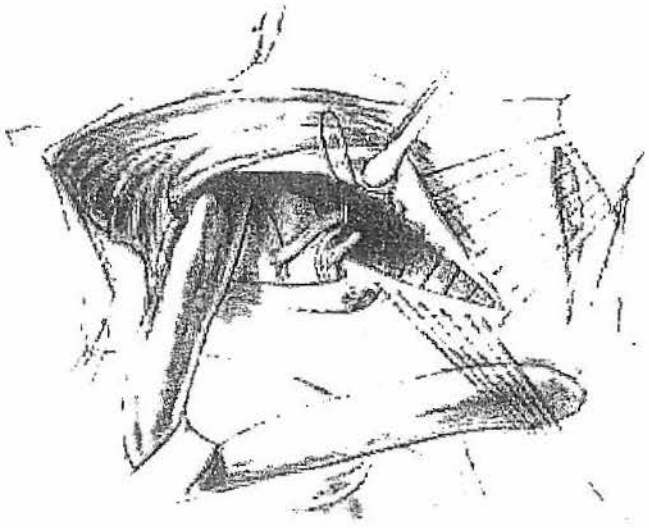

Figure 7. Cooper ligament repair. Approximation of the transversus arch to the superior pubic ligament.