A COMPARATIVE STUDY OF REPAIR OF INGUINAL HERNIAS BY SHOULDICE TECHNIQUE VIS-A-VIS BASSINIS TECHNIQUE

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ABSTRACT

A comparative study of repair of inguinal hernias by Shouldice technique (ST) vis-a-vis Bassinis technique (BT) was conducted on 100 patients who presented with inguinal hernia in the OPD services of our hospital. The patients were worked up and alternatively distributed to undergo repair by ST (n=50) or BT (n=50). Repair by ST required longer operating time (Avg 95 min vs 80 min), but involved lesser hospitalization (4.0 days vs 4.5 days), lesser complication rate (2 vs 4), lesser recurrence rate (0 vs 2) and higher rate of satisfaction. The study confirms the advantages of Shouldice repair in the treatment of inguinal hernia.

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KEY WORDS: Bassinis technique; Inguinal hernia; Shouldice technique.

Introduction

Hernia is defined as the protrusion of a viscus or part of a viscus outside its containing cavity through a natural or acquired defect in the wall [1]. It is a very common malady and of all hernias, those of the inguinal region are the commonest. Ravitch has mentioned in his monogram on hernia that "if no other field were offered to the surgeon for his activity than the repair of hernia, it would be worthwhile to become a surgeon and devote entire life to this service." [2]. In fact, repair of hernia is the epitome of surgery. The surgical technique has been a subject of heated debate over the years. The Shouldice Technique (ST) has carved a niche for itself by its proponents reporting a recurrence of less than 1% although Bassinis Technique (BT) is more commonly followed being simpler to perform.

This prospective study was performed between May 1995 to May 1998 at a tertiary referral hospital of the Armed Forces to assess the benefits of ST in inguinal hernia repair.

Material and Methods

A prospective comparative study of the ST vs BT was performed from May 1995 to May 1998. 100 patients admitted during the above period were studied. Base line investigations and those to exclude any predisposing causes were done. Chest X-ray in patients with chronic bronchitis, old pulmonary Kochs etc. and USG abdomen in selected cases like patients with BPH. All patients were exhibited intraoperative antibiotics in the form of Inj Ampicillin 1 gm and Inj Gentamicin 80 mg and continued for two doses postop. Most cases underwent surgery under spinal anaesthesia.

The repair by ST was carried out using 3'0 prolene in variance to the thin steel wire used at Shouldice Clinic Toronto. Myers, Shearburn and Delvin originally used stainless wire but have subsequently used prolene. Stainless steel wire is the most effective suture but difficult to use; prolene is much easier and as effective. It was done in six layers after excising the cremaster, baring the cord and high ligation at the deep ring in cases of indirect sac. Starting medially, the first layer took the inferolateral flap and the undersurface of the superomedial flap of the transversalis fascia also picking up the medial and lateral cremasteric stumps. Laterally after forming the new deep ring, it is reversed to complete the second layer [3]. The third layer is commenced just medial to the internal ring picking up the surface of the internal oblique above and the undersurface of the lower flap of the external oblique aponeurosis close to the inguinal ligament and then reversed to complete the fourth layer.

Post-operatively, all patients were managed with IV fluids for 6-8 hours, analgesics on patient demand and antibiotics after 3 doses only if the wound got infected. In uneventful cases, wounds were inspected between 3 to 5 days before discharge and sutures removed on 8th post-op day in OPD.

Results

There were 100 patients of inguinal hernia who were worked up and alternatively distributed, without regard to any other criteria, to undergo repair by ST or BT (50 each). These patients were followed up post-operatively for a minimum period of 6 months and maximum of 36 months. The age of the patients varied from 16 years to 68 years. Indirect inguinal hernia formed the majority of cases amongst both groups, 64% in Shouldice and 70% in Bassinis. Similarly incomplete hernias formed a major group amongst both Shouldice and Bassinis group. A total of 06 bilateral hernias were encountered (Table 1). Of these 03 were operated by ST and the other 03 by BT. In all the cases, both sides were operated by the same technique as per the randomization. 05 complicated hernias were encountered. Of these, 04 were obstructed and 01 strangulated. 04 underwent repair by ST including the patient with strangulated hernia who required resection and anastomosis.

TABLE 1

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Type of hernia	Shouldice technique n=50 (%)	Bassinis technique n=50 (%)
Direct	18 (36)	15 (30)
Indirect	32 (64)	35 (70)
Complete	15 (30)	13 (26)
Incomplete	35 (70)	37 (74)
Pantaloon	01 (2)	05 (10)
Bilateral	03 (6)	03 (6)
Recurrent	02 (4)	02 (4)
Complicated	04 (8)	01 (2)

In the ST group, 18% patients were sedentary workers, 14% moderate and 68% had heavy occupation. In the BT group, 16% patients had sedentary jobs, 24% moderate and 60% heavy occupation. Sedentary work included clerical jobs including sitting for long hours; moderate-hawkers, drivers and students; heavy-farmers and soldiers. Side distribution was almost equal (Table 2). Most operations were performed by trainee surgeons (Table 3). The results in terms of operating time, duration of hospitalization, complications and return to normal work are shown (Table 4).

TABLE 2

	Shouldice technique n=50 (%)	Bassinis technique n = 50 (%)
Occupation of patient		
(a) Sedentary	09 (18)	08 (16)
(b) Moderate	07 (14)	12 (24)
(c) Heavy	34 (68)	30 (60)
Side of hernia		
(a) Right	29 (58)	22 (44)
(b) Left	21 (42)	28 (56)
(c) Bilateral	03 (06)	03 (06)
Associated conditions		
(a) Chronic cough	09 (18)	05 (10)
(b) Constipation	03 (06)	03 (06)
(c) BPH	02 (04)	01 (02)

TABLE 3

Status of operating surgeon	No. of cases
(a) Trainee surgeon	48%
(b) Junior surgeon	32%
(c) Consultant	20%

Discussion

Hernia is a common malady since time immemorial. It has been persued with great zeal by surgeons all over the world. There has been a fascinating progress in the treatment of hernia from the period of 'Barber surgeons' to the era of laparoscopic surgery and mesh hernioplasty. The 19th and 20th century saw a major boost to hernia surgery with the rise of stalwarts like Bassini, Shouldice, Nyhus and Stoppa besides others who dedicated their lives to understanding the basis of

TABLE 4

Results	Shouldice technique	Bassinis technique
Operating time (min)		
(a) Average	95	80
(b) Maximum	210	105
(c) Minimum	65	45
Duration of Hospitalization		
Average (Days)	4.0	4.5
Complications		
(a) Seroma	01	02
(b) Hematoma	01	01
(c) Neuralgia	00	01
Return to Normal Work		
Average time in weeks	4.3	4.8

hernial lesions and in reducing the recurrence rates.

Shouldice started his technique using local tissues in the 1930's and achieved an astoundingly low recurrence rate of less than 1%. These results were reproduced the world over by the proponents of ST. Other conventional techniques had a recurrence rate of 3-10%. In this study, the repair by ST has been evaluated in respect of the operating time, duration of hospitalization, recurrence and patient satisfaction and compared to Bassini's repair.

In our study ST took more time with an average of 95 min as compared to 80 min for BT. The reported average time taken at Shouldice Clinic is 65 min. Wantz et al have reported an average of 70 min and Berlin et al 65 min [4]. We took an average of 95 min which can be explained by the 'learning curve' for the procedure and that most surgeries were done by residents and junior surgeons. Bilateral hernias were operated in the same hospitalization 48-72 hours apart. This practice is followed in Shouldice Clinic Toronto and simultaneous repair not done so that if one side develops infection the other does not follow suit and secondly since most repairs are done under local anaesthesia, a simultaneous procedure would exceed the total permissible dose of lignocaine [5,6]. A total of 6 recurrent hernias were tackled. Although no records were available as to the technique of repair used, knotted individual strands of prolene could be identified in 3 patients.

64% of the total patients were in the heavy worker group. All soldiers were included in this group because of their rigorous and physically stressful lifestyle. It is this group which predominated the study proving that physical activity has a direct bearing on the occurrence of hernia. This has been shown by other studies also [6-8].

One of the objectives of hernia repair is to shorten

the period of hospitalization so that the patients go home early. At the Shouldice Clinic Toronto, patients are discharged within 48 to 72 hours after surgery. A supervised convalescence and early return to work are the hallmarks. Wantz et al have reported a 4.2 days hospital stay while Myers et al have reported a hospital stay on an average of 3.8 days following ST. In our study, the average hospitalization was 4.0 days which is comparable. The patients were discharged once they were comfortable, almost pain free, ambulant and if the wound was healthy on first examination after 72 hours.

Complication rate in hernia surgery increases with poor surgical technique including inadequate haemostasis and excessive use of cautery (2 cases in ST and 4 in BT group).

Early recurrence is defined as recurrence within 6 months of surgery. It varies from less than 1% in special interest centres to 30% in general surveys [9]. Our recurrence rates in series over a 3 year follow-up was 0% with ST and 2% with BT. At the Shouldice Clinic, a series of more than 200,000 groin hernias repaired since 1945 had an overall recurrence rate of 1% [3].

The overall clinical results were based on patients satisfaction level. The patients were divided into very satisfied, fairly satisfied and unsatisfied depending on the intraoperative duration of surgery, pain experience, urinary retention, period of hospitalization, return to work and any late complications including recurrence. Patients with no complaints throughout and early return to work were termed 'very satisfied'. Those with minor discomfort who improved on medication termed 'fairly satisfied' and those with major discomfort,

complication and recurrence termed 'unsatisfied'. In the ST group 76% were very satisfied, 20% fairly satisfied and 4% unsatisfied.

We conclude that herniorrhaphy by ST is a safe, simple and effective technique for achieving lowest recurrence rates and hence better patient satisfaction. It is a more physiological procedure than others. Hospitalization period is shorter, patient satisfaction good and recurrence rates very low. This has also been proved by other authors the world over. Shouldice Technique is thus recommended for soldiers of the Indian Army who are subjected to severe physical stress and carry much risk of recurrence.

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