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SHOULDICE VERSUS LICHTENSTEIN REPAIR

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ABSTRACT...Objective: To compare the results of tissue based Shouldice repair with the Lichtenstein tension free repair of inguinal hernia. **Design:** A prospective randomized controlled trial. **Period:** From Jan 2004 to Dec 2006. **Setting:** Surgical Unit-II, Allama Iqbal Medical College / Jinnah Hospital Lahore, Pakistan. **Patients & Methods:** A total of 156 patients were included in this study were equally divided into two groups. **Results:** The mean age was 45 years. After a follow up of upto 2 years there was significant difference in the recurrence rate. It was 5% in the Shouldice group and 1.28 %in the Lichtenstein group. Similarly chronic pain was also much higher i.e. 5% in the Shouldice group compared to 1.28% in Lichtenstein Group. The rate of hematoma and seroma formation was the same (1.28%) in both groups, however infection was seen slightly more in Lichtenstein repair (3.84%) as compared to Shouldice repair (2.56%). **Conclusion:** Tension free Lichtenstein technique was found to be superior to the tissue based Shouldice repair with respect to post operative complications and recurrence.

Key words: Hernia, Shouldice, Lichtenstein.

INTRODUCTION

Inguinal hernia is a common problem and its repair is one of the most frequently performed operation in general surgical practice[1,2]. Despite this, patients continue to have complications, like prolong postoperative recovery, delayed return to work and hernia may recur, thereby having significant impact on quality of life and economy[2].

Various techniques of repair have been used; all having excessive suture line tension as edges of the defect are brought together under tension. This excessive suture line tension is recognized as the primary determinant of the high recurrence rate and postoperative pain[1,2] and hence led to the ongoing research trials about the best approach to inguinal hernia repair[3,4].

Over the last 15 years the repairing technique of inguinal hernia has underwent dramatic improvements including the recognition of the concept of tension free hernia repair, the use of prosthetic material and the advent of laproscopic surgery[1,2,5]. The aim of this study was to compare the Shouldice tissue repair technique with the tension free Lichtenstein hernia repair.

PATIENTS AND METHODS

This prospective randomized controlled trial was conducted at the surgical unit II, Allama Iqbal Medical College, Jinnah Hospital, Lahore, Pakistan. Between Jan 2004 and Dec 2006, 156 patients were enrolled in the study. These were equally divided into two groups (78each), one having the Shouldice repair while the other underwent Lichtenstein repair, on alternate basis.

All male patients with primary inguinal hernia admitted in surgical unit II AIMC/JNH were included in the study.

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EXCLUSION CRITERIA

- Age < 20 and > 70 years.
- Female patient.
- Patients with bilateral or recurrent hernias.
- Patients with obstructed or strangulated hernias.
- Presence of severe cardiac or respiratory illness who were unfit, and immunocompromised.
- Any local site skin infection, like boil, scabies.
- Grossly obese patients or those with obstructive uropathy due to enlarged prostate.

The clinical data collected on a standard proforma included: age, gender, type of hernia, type of surgery, duration of hospital stay, time to return to normal activities and work, postoperative complications in the hospital and follow up.

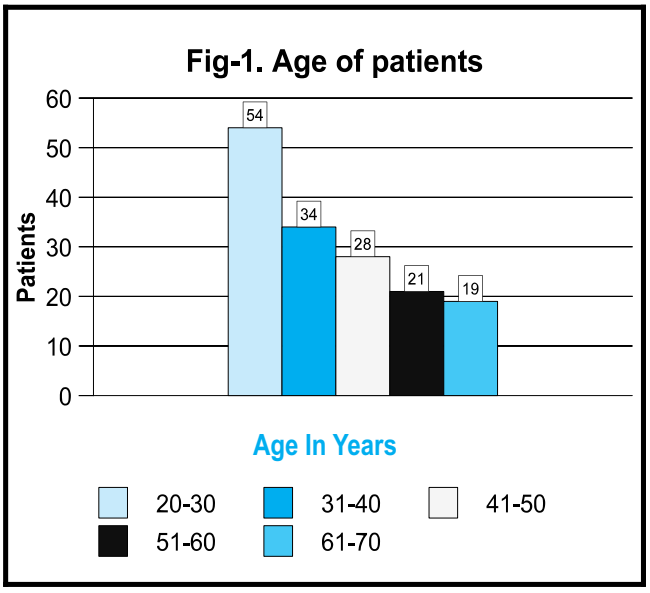
Regional or general anesthesia was used for both procedures. All procedures were performed by third year surgical residents or above. The patients were followed in the out patient departments one week postoperative, then 3,6 months, then 1 and 2 years. At follow up interview, they were assessed for complications and recurrence.

RESULTS

The age of the patients ranged from 20-70 (mean age 45) years (table-I). All were male. 92 (58.97%) were direct while 64 (41.02%) were indirect hernia. Patients were equally divided into Shouldice and Lichtenstein groups. All patients were discharged within 24 to 48 hours. Follow up was limited in our study due to poor compliane of patients. All patients attended the follow up clinic till 3 months. However 136(88.3%), 128(83%) and 96(61.5%) patients attended the clinic upon completion of 6 months, 1 and 2 years respectively.

In the Shouldice group (table-II), 2 (2.56%) patients had wound infection, one (1.28%) patient had seroma and one (1.28%) patient had hematoma formation. Chronic pain was reported by 3 (3.84%) patients on 3 months follow up and in one (1.28%) patient on one year follow up. Four (5%) patients had recurrence with a follow up of upto 2 years, out of which one (1.28%) patient had an early recurrence at one year follow up (table-III). Time taken for patients to return to work was from 21-28 days (mean 24.5).

Table-I. Age of patients.	
20-30 years	54 (35%) patients
31-40 years	34 (22%) patients
41-50 years	28 (18%) patients
51-60 years	21 (13%) patients
61-70 years	19 (12%) patients



In the Lichtenstein group (table-II), 3 (3.84%) patients had wound infection, one (1.28%) patient had seroma and one (1.28%) patient had hematoma formation. Chronic pain was reported by one (1.28%) patient on 3 month follow up while no patient complaint of chronic pain on subsequent follow up. One (1.28%) patient reported recurrence upon 3 months follow up, while no subsequent recurrences were encountered (table-III). Time taken for patients to return to work was from 15-23 days (mean 19 days). The difference in results was not statistically significant.

Table-II. Complication.			
Follow up	**Complication**	**Shouldice repair (patients)**	**Lichtenstein (Patients)**
01 week	Wound site infection	02 (2.56%)	03 (3.84%)
	Seroma formation	01 (1.28%)	01 (1.28%)
	Hematoma formation	01 (1.28%)	01 (1.28%)
03 months	Chronic Pain	03 (3.84%)	01 (1.28%)
01 years	Chronic Pain	01 (1.28%)	Nil
02 years	Chronic Pain	Nil	Nil

Table-III. Recurrence		
Follow up	**Shouldice repair**	**Lichtenstein repair**
03 months	Nil (0%)	Nil (0%)
06 months	Nil (0%)	Nil (0%)
01 year	01 (1.28%)	Nil (0%)
02 years	03 (1.28%)	01 (1.28%)

DISCUSSION

The Shouldice Clinic in Toronto, Canada employs a multilayer repair technique reconstructing the posterior inguinal wall using continuous suture, creating a multi layer imbrications that equalizes tension through out the suture line. They reported a recurrence rate of less than 1 %[6]. However the Shouldice repair performed elsewhere had a higher recurrence. A multicenteric randomized trial reported a 6% recurrence rate[7]. Despite being well established as standard of the traditional tissue based inguinal hernia repair, it is shown to be associated with prolong recovery due to post operative pain, delayed return to work, chronic pain and recurrence. The main determinant being excessive suture line tension[2,3]. In our study the infection rate was 2.56% while 5% patients had recurrence in the Shouldice group.

In an attempt to decrease the problems associated with suture based techniques, Lichtenstein et al. introduced, in 1989 the concept of tension free hernia surgery by utilizing prosthetic material to reinforce the inguinal floor without distorting the normal anatomy and with no suture line tension. Lichtenstein reported in this 1,000 patient study, minimal complications and a recurrence of 0% after a follow up of 1-5 years. They advocated the procedure under local anesthesia, and showed it to be associated with lack of postoperative pain, same day hospital discharge, immediate mobilization and return to work as its major advantages[8]. It is associated with lower complications and recurrence rate as compared to the conventional tissue repair. Therefore it is being recommended for all primary, recurrent, bilateral and even for the largest defect and most difficult procedures. Hence it has become the most frequently performed inguinal hernia operation[1,2]. Because of its suitability of being conducted under local anesthesia, it has a low cost and is practiced in many centers as day care surgery[9]. In our study the Lichtenstein group had an infection rate of 3.84% while the 1.28% patient had recurrence. The time taken off work was less than what the Shouldice group took.

The prosthetic materials used are non carcinogenic and chemically inert. They do not induce an allergic, inflammatory and foreign body reaction and are not altered or modified by tissue fluids. They resist mechanical strain and can be sterilized and are available in a variety of shapes and sizes. This results is far less rate of infection and no mesh rejection. There is immediate strength and with time a strong wall is formed[2]. Shulman et al. In 1992 reported his experience of Lichtenstein repair of 3,019 primary hernias. The overall infection rate was 0.03% with no mesh rejection. The overall rate of recurrence was 0.2% [10]. In 1995 Shulman published another study of Lichtenstein tension free mesh repair performed by 72 general surgeons with no special interest in hernia repairs to determine if similar degree of success could be obtained. Over 16,000 repairs were performed with an infection rate of 0.6% and a recurrence rate of less than 0.5%. These results signified the simplicity and reproducibility of the

Lichtenstein repair and demonstrated that a steep learning curve was not necessary for general surgeons to achieve excellent outcome using this technique[11]. The absence of steep learning curve is also shown in a prospective, randomized trial of the Lichtenstein open mesh technique versus the Shouldice repair by surgeons in training. In this study patients who underwent Lichtenstein repair required significantly less time off work and had a recurrence rate of 0%, compared with 10% in the Shouldice repair group[12]. On the contrary, Shouldice technique has been shown to require considerable time to learn and despite training, difficulties were sometimes encountered in repairing the inguinal floor without tension esp. indirect hernia[13,14].

Chronic pain, often interfering with daily life, is a significant problem after inguinal hernia repair with the reported incidence of up to 60%. Iatrogenic nerve lesions are probably the most important cause of chronic pain, but may be regarded as an unavoidable consequence of open anterior repair[3,15]. The Shouldice group in our study had an over all rate of chronic pain in 5% which is higher than the 1.28% in the Lichtenstein repair group.

CONCLUSION

Hernia formation can affect people of all ages and is a common medical condition. The tension free Lichtenstein repair technique is found to be superior to the tissue based Shouldice technique, as it results in fewer recurrences and post operative complications. Lichtenstein repair is a simple and safe procedure that is easy to perform and learn. Excellent results are reproducible even in non specialized centers, and even in the hands of surgeons in training.

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