ORIGINAL ARTICLE

Prolene Mesh Repair of Inguinal Hernias Single Layer Vs Double Layer

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ABSTRACT

Objective: To compare the outcome of single layer Prolene Mesh Repair of inguinal hernias with double layer repair by Prolene Hernia System.

Study Design: The was a Quasi experimental study

Place and Duration of Study: Department of general surgery , Pakistan Institute of Medical Sciences from September 2006 to October 2007

Methodology: In this quasi experimental study a total 60 patients divided into two groups were enrolled, 30 in each group. All male patients diagnosed as having inguinal hernias from 18 – 80 years of age were enrolled. The study was done in six months at the Department of General Surgery, Pakistan Institute of Medical Sciences, Islamabad.

Results: The average post operative pain in Group I was 5.73 and in Group II it was 6.63. The average operative time in Group I was 82.3 and in Group II it was 73.0 minutes. While the average time to return to work was 7.63 in Group I and 10.23 days in Group II. These all the study parameters, the pain score, operative time and return to work were found statistically significant when compared between both study groups (p-value = <0.001). There was less discomfort, less operative time and early return to work seen in the double layer prolene mesh repair when compared with single layer repair.

Conclusion: We conclude that in prolene mesh repair with the double layer approach is superior to single layer in terms of post operative pain, return to work and operation time.

Keywords: Prolene mesh repair, single layer, double layer, inguinal/groin hernia.

INTRODUCTION

Hernia repairs are the most frequently performed general surgery throughout the entire world, with more than 20 million hernia repairs occurring annually worldwide[1]. Among the several techniques available for the treatment of inguinal hernia, the Prolene Hernia System (PHS) has gained widespread acceptance over the past few years[2].

The Prolene Hernia System is a novel approach in the management of inguinal hernias, with encouraging initial results[3].

Hernia repair using the Prolene Hernia System is a tension-free repair that provides immediate strength and relatively less discomfort then conventional repairs[4]. In a study of 1100 patients monitored for the five years since the product's release only three saw hernias return[5] Reports show that.

Application of net of polyprophylene and the Prolene Hernia System allows to improve in patients the surgical treatment result significantly because of reliable strengthening of inguinal canal fundus without tension of tissues. Early postoperative rehabilitation and the lowering of recurrences occurrence justify significant advantages of such hernioplasty over autoplastic methods and its wide application in surgical treatment of primary inguinal hernia.[6]

METHODOLOGY

Patients were recruited from the surgical OPD and surgical ward with the diagnosis of inguinal hernia. The data was collected through a proforma specially designed for this study (annexed) after taking consent from the patient or relative, detailed history was taken regarding the signs and mesh plug technique, duration and complications.

All the necessary pre-operative evaluation was done before planning surgery.

Patients were divided into two groups by putting those with even serial numbers in group A and those with odd serial numbers into group B; group A undergoing single layer Prolene mesh repair and group B undergoing double layer mesh repair with Prolene Hernia System. Type of surgical intervention done was recorded.

Results such as pain, the operative time (minutes) for each procedure and time of return to work (days) after the surgery was recorded into the

study proforma.

RESULTS

All of the patients were male. Major age groups affected were between 18 and 80 years. Patients suffering from both types; direct and indirect, of inguinal hernias were included in the study. All sixty patients were randomly divided into two groups each containing 30 patients, one group (Group I) undergoing hernial mesh repair by double layer technique(pre-peritoneal) and the second group (Group II) by the single layer (Lichensteins's repair) repair.The overall mean ± SD age of study patients was 42.8 ± 13.0 years ranging from 18 to 71 years. We found out that majority 33.3% of the patients were in their 4th decade of life. Another 20.0% and 25.0% were in their 5th and 6th decade life. The mean ± SD age of patients was compared between the two study groups i.e. single vs double layer mesh repair of hernia. The age in double layer group was 42.8 ± 14.6 years while in single layer group it was also 42.8 ± 11.3 years. The difference between the two means was found to be statistically non-significant. Pain post op was calculated in both groups by the Visual Analogue Scale.

Table 1: Comparison of pain scoring between single and double layer mesh repair of hernia

	Double layer (n=30)	Single layer (n=30)	p-value
Pain Score Mean ± SD	5.7 ± 0.4	6.6 ± 0.6	<0.001

Table 2: Comparison of operative time between single and double layer mesh repair of hernia

	Double layer (n=30)	Single layer (n=30)	p-value
Operative time (min) Mean ± SD	82.8 ± 7.1	73.0 ± 9.1	<0.001

We compared the mean pain scores between the two study groups using student's t-test. The pain scores showed that in the double layer group patients borne less pain as average of 5.7 ± 0.4 while in single layer group the average pain score was 6.6 ± 0.6 and this was significantly higher. The difference of means between both study groups was found statistically significant (<0.001). (Table 1) Similarly, while comparing the average operative time taken in both the study groups i.e. double layer mesh hernia repair and single layer mesh hernia repair. The mean operative time taken in the double layer group was 82.8 ± 7.1 minutes while in the single layer it was 73.0 ± 9.1 minutes. This difference of mean was found statistically significant (p-value = <0.001). (Table 2)We also compared the patients time to return to work between the two study groups. We was that in the double layer mesh repair the mean time was low as 7.6 ± 1.1 days while in the single layer repair the mean time taken to return to work was greater 10.2 ± 1.4 days. The difference of these means was also found to be statistically significant (p-value = <0.001). (Table 3)

Table 3: Comparison of return to work of patients between single and double layer mesh repair of hernia

	Double layer (n=30)	Single layer (n=30)	p-value
Return to work (days) Mean ± SD	7.6 ± 1.1	10.2 ± 1.4	<0.001

DISCUSSION

Inguinal hernia occurs whenever there is a disturbance in the anatomy or physiology of the inguinal canal. The direct hernia develops when either there is weakness of Fascia Transversalis or failure of shutter mechanism due to denervation of conjoint muscles as incision for appendicectomy[7].

Surgery is currently the treatment for all hernias. Many different techniques have been developed over the years. These techniques are based on the simple idea of closing the defect that is present and strengthening that area so the hernia will not recur. In the conventional methods of herniorraphy inguinal canal is opened and hernial defect is approached anteriorly, which is not only having limited access but also disturbs the normal anatomy and physiology of the canal by lifting the cord up. On the other hand preperitoneal approach whether open or laparascopic have direct access to the hernial defect with minimal

anatomical disturbance because of which many surgeons prefer preperitoneal approach whether laparascopic or open[8, 9 10]

In our study we observed significant differences of pain score, operation time and return to work parameters between single and double layer prolene mesh repair of hernias. The post operative pain was calculated in both groups by the Visual Analogue Scale. It was found that the average pain in Group I was 5.73 and in Group II was 6.63. The average operative time in Group I was 82.3 and in Group II it was 73.0. While the average time to return to work was 7.63 in Group I and 10.23 in Group II. These all the pain score, operative time and return to work were found statistically significant when compared between both study groups (p-value = <0.001).

In our study almost 80% of the patients were between 30 and 60 years of age. Keeping in mind the average age of the Pakistani population it can be argued that deterioration starts 10 years early than USA. Our results are comparable with the findings of Ruhl C and colleagues[11].

The Prolene Hernia System is a synthetic patch which allows for a double layer of reinforcement of the abdominal wall and a tension free repair. The work in developing this repair was pioneered by Dr. Gilbert at the Hernia Institute of Florida. Results are excellent with low recurrence rates. Most patients' experience less postoperative pain, are done under local, and always as an outpatient. Most patients can return to normal activities with in two weeks.[12]

CONCLUSION

We conclude that in prolene mesh repair with the double layer approach is superior to single layer in terms of post operative pain, return to work and operation time. Ours was a small scale low sample study which can not be generalized to the whole population. For that purpose further large scale randomized controlled trials are suggested.

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