



Prolene Hernia System in Groin Hernia Repair- Our Experience in a Tertiary Care Hospital

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Introduction

A hernia is defined as an area of weakness or complete disruption of the fibro muscular tissues of the body wall. Structures arising from the cavity contained by the body wall can pass through, or herniated, through such a defect. Inguinal hernia, is the most common external abdominal hernia and comprises of 95% of all groin hernias. The repair of inguinal hernia is one of the most frequently performed surgical operation. A landmark in hernia surgery was described by Eduardo Bassini in 1889³ who added one more principle to hernia repair i.e. reconstruction of the posterior wall of the inguinal canal and reported recurrence rates highly acceptable by those standards. This was followed by Shouldice technique of imbrications of transversalis fascia and strengthening the posterior wall in four layers of fascia and aponeurosis. These modifications decreased the recurrence rate to around 3%.⁴

The next era of hernia repair lasting till today is known as the era of tensionless repair. It was realized that the tension resulting from abdominal wall repair by placement of sutures is responsible for complications like chronic groin pain and hernia recurrences. Various autologous and non autologous materials were used to bridge the posterior wall defect. In 1958 Francis Usher used

polypropylene Mesh as a successful synthetic prosthesis.⁵ However the tension free concept is credited to Irving Lichtenstein who described the technique, known by his name, for the placement of a polypropylene mesh (Marlex) by an anterior approach. Lichtenstein's results proved so good that the technique continues to be used as standard in open inguinal hernia repair.⁶ Lichtenstein presented his open mesh repair technique for inguinal hernia in 1986.

With the advent of laparoscopic surgery on the scene, hernias could not long escape its grip and in 1982 Ralph Ger demonstrated the 1st laparoscopic closure of an inguinal hernia defect.⁷ They included the Transabdominal Preperitoneal (TAPP) Approach, the Totally Extra Peritoneal (TEPP) Approach, and the Intraperitoneal Onlay Mesh hernioplasty. All of these three techniques in essence entail the strengthening of the posterior wall defect by a prosthetic mesh placed laparoscopically by a posterior approach.

In 1999, Gilbert *et al.* reported results obtained with a new inguinal hernia repair technique^[7]. This technique employed a polypropylene device, the Prolene Hernia System (PHS), that combines three mechanisms of action. The PHS is formed by an internal round preperitoneal component that reinforces the myopectineal orifice. (Fruchaud's myopectineal orifice boundaries are formed

inferiorly by superior pubic ramus periosteum: superiorly by internal oblique and transverse muscles; medially by the rectus sheath and laterally by iliopsoas muscle and iliac fascia. Its divided in superior and inferior plans by the inguinal ligament anteriorly and iliopubic tract posteriorly). It also includes an external oval component that should be placed over the fascia transversalis to reinforce the floor of the groin, as with the Lichtenstein technique. Finally, the internal and external components are linked by a cylinder placed in the hernia ring, similar to the mesh-plug technique^[7]. In the study by Gilbert et al., use of the PHS resulted in 0% recurrence and a 5.8% rate of complications, including seromas, hematomas, and infections^[22]. Reports on the PHS are still scarce, in part because this repair method has been in use for a short time. The objective of the current study is to compare early and late complications in patients undergoing inguinal hernia repair with the PHS.

The use of a mesh is favoured for open inguinal hernia repair as it has a low recurrence rate. Various types of mesh have been used for hernia repair, plug and patch repair and the Prolene hernia system. In this prospective study, results from inguinal hernia repair with the PHS in a tertiary care hospital were analysed.

Aims and Objectives

The objective of the current study is to compare early and late complications in patients undergoing inguinal hernia repair with the PHS:

Recurrence: Presence of recurrent hernia in groin confirmed clinically as well as radiologically.

1. Operation time.
2. Post operative morbidity (wound hematoma formation, wound infection) seroma formation, wound infection).
3. Hospital stay.

Materials and Methods

The Study was be carried over a period of 2 years in the postgraduate dept. of surgery Government Medical College (GMC), Sgr and SMHS Hospital,

as a part of single centre randomized clinical trial. The study was undertaken to use prolene hernia system in groin hernias.

Eligibility of Patients

Age: 18 years to 75 years

Sex: Both

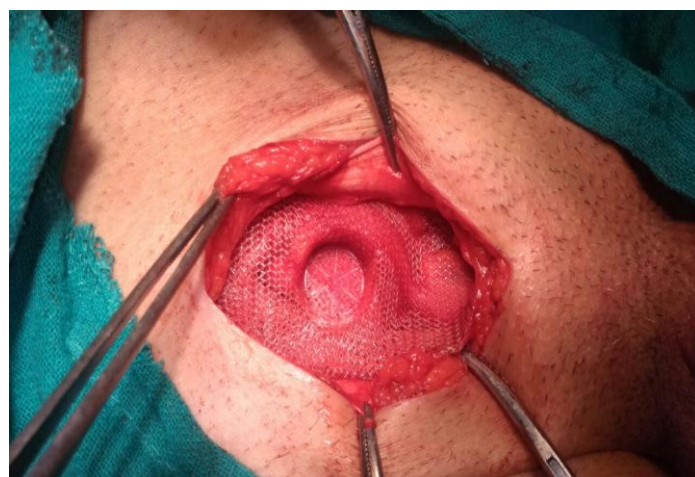
Type: Unilateral inguinal hernia

Exclusion Criteria

- a) Recurrent inguinal hernia
- b) Incarcerated hernia/ obstructed hernia.
- c) Immunosupression or any malignancy.
- d) Bilateral inguinal hernia.
- e) Connective tissue disorders.
- f) Patients with bleeding diathesis.



Pic 1: Shows the mesh used in this study. (Prolene Hernia System).



Pic 2: Shows the final placement of mesh.



Pic 3: Shows closure of aponeurosis over the mesh.

Results

This prospective study was carried out in the Department of General Surgery at Government Medical College, Srinagar, Jammu and Kashmir, India. A total of 30 patients were included in the study and the following results and observations were seen during the study.

Age Distribution

Most common age group was between 41-50 years. Minimum age of the patient was 20 years and maximum age was 70 years with the mean age of 48.2 ± 13.3 years.

Table Showing Age Distribution:

Age In Years	No of Cases
20-30	3
31-40	6
41-50	12
51-60	4
61-70	5

Type of Hernia

In our study total of thirty inguinal hernia cases were included of which 22 patients had indirect inguinal hernia as compared to 8 patients who had direct inguinal hernia.

Table Showing Type of Hernia with their occurrence:

Type of Hernia	No of Cases (%age)	
	Right	Left
Indirect	14 (46.6%)	8 (26.6%)
Direct	6 (20 %)	2 (6.67%)

Operating Time

The range of operating time in our study of PHS in groin hernia repair was 30-120 min with mean of 39.3min.

Table Showing Operating Time:

Operating Time	No of Cases	%age	Mean
0-30	12	40%	39.3
31-60	13	43.3%	
61-90	4	13.33%	
91-120	1	3.33%	
Total	30		

Complications

In our study we encountered total of 6 post operative complications. One patient had seroma formation. Two patients had scrotal swelling, other two patients developed wound infection. One patient had hematoma formation. All these complications were minor and self resolving.

Intraoperative and postoperative complications	No of cases
Vascular Injuries	0
Scrotal Swelling	2
Wound infection	2
Seroma	1
Hematoma	1
Urinary retention	0
Inguinal paraesthesias	0
Chronic groin pain	0
Total Complications	6

Recurrence Rate

Recurrence is one of the most important parameters which define how effective a particular method of hernia is. In our study there was no recurrence in any of our patients during a follow up period of 9-18 months.

Hospital Stay

Most of the patients in our study were discharged within 24 – 48 hrs (1 – 2 days) of post-operative period. Some patients who had some minor complications had a longer stay than usual. Mean postoperative hospital stay was 1.9 days.

Table Showing Hospital Stay

No of Days	No of Cases	Mean
1-2	25	1.9
3-4	4	
5-7	1	
Total	30	

Conclusion

This prospective study was conducted with an aim of studying various parameters (recurrence, complications, operating time etc) of Prolene Hernia system in groin Hernia repair.

- ❖ All the 30 patients in our study had inguinal hernia. 22 Patients had indirect inguinal hernia as compared to 8 patients who had direct inguinal hernia.
- ❖ In our study we found that the range of operating time was 30-120 min with mean of 39.3min.
- ❖ In our study we encountered total of 6 post operative complications. One patient had seroma formation. Two patients had scrotal swelling, other two patients developed wound infection. One patient had hematoma formation. All these complications were minor and self resolving
- ❖ Recurrence is one of the most important parameters which define how effective a particular method of hernia is. In our study there was no recurrence in any of our patients during a follow up period of 18 months.
- ❖ Prolene hernia system is a very versatile tool in the surgery of hernia repair.
- ❖ Prolene hernia system in hernia repair surgery takes less time.
- ❖ There are very minimal complications with the use of Prolene hernia system in groin hernia repair .
- ❖ Prolene hernia system has norecurrence in groin hernia repair.

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