

**OPEN PREPERITONEAL MESH REPAIR FOR INGUINAL HERNIA: A VIABLE OPTION**Suresh Chandu<sup>1</sup>, Ramya Yethadka<sup>2</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: BACKGROUND:** Inguinal hernia still remains a significant clinical problem despite the availability of variety of surgical techniques. This study was designed to evaluate the outcome and benefit of open preperitoneal mesh repair. **OBJECTIVE:** To evaluate the open preperitoneal mesh repair technique regarding complications, recurrences, safety and benefit. **PATIENTS AND METHODS:** Between July 2013 and June 2014, a prospective study of 25 consecutive patients operated for groin hernia using an open preperitoneal mesh technique was performed. The outcome variables being analyzed included operative time, time to return to normal activity, pain level, complications and recurrence rate. **RESULTS:** Wound infection occurred in only 1 patient. No seroma or recurrence was observed. Moreover, pain and hospital stay were not different from those obtained by other repair techniques. **CONCLUSIONS:** Open preperitoneal mesh repair is a safe procedure and gives a good result similar to those of the commonly used anterior approaches. It is easier to learn than laparoscopic repair and should be the procedure of choice for difficult inguinal hernias.

**KEYWORDS:** Inguinal hernia, Preperitoneal, Mesh repair.

**INTRODUCTION:** Inguinal hernia repair remains one of the most commonly performed surgery worldwide and groin hernia still remains a significant clinical problem despite advances in surgical technique. Lichtenstein tension free hernioplasty is the most common technique performed in the present day due to the low incidence of recurrence associated with the procedure.

However, the anterior approach still has the disadvantages with the risk of damages to the testicular blood supply and sensory nerves especially in the re-operative cases<sup>1</sup>. The evolution of the preperitoneal approach for recurrent inguinal hernia repair made it the procedure of choice for the management of all recurrent groin hernias<sup>2</sup> which can be done either laparoscopically or by open method.

The aim of this study was to evaluate the outcome of our experience of open pre peritoneal mesh hernioplasty in inguinal hernia.

**PATIENTS AND METHODS:** Between July 2013 and June 2014, 25 male patients (mean age 46.6 years) with no significant comorbidity, underwent a unilateral inguinal hernia repair.

Among 25 patients, 12 patients had indirect inguinal hernia, 5 patients direct hernia and 8 had combined hernia. All patients were subjected to open preperitoneal mesh repair.

**Operative Technique:** Most patients emptied their bladders immediately before operation and thus urinary catheterization was not routinely performed. Four patients were operated under general anesthesia, 21 under spinal anesthesia. Prophylactic antibiotics were given intravenously in all patients preoperatively.

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A transverse skin incision just above and parallel to the inguinal ligament was put as performed for the Lichtenstein technique. After completion of dissection and trans fixation of hernia sac, the transversalis fascia was opened. Blunt dissection was done so as to create preperitoneal space wide enough to place the mesh.

A Polypropylene mesh of size 10 × 12 cm was shaped to fit properly in each patient and was placed in the preperitoneal space. Mesh was fixed to the transversalis fascia using non-absorbable 2/0 polypropylene sutures at two to three points. No vacuum drain was used in these patients.

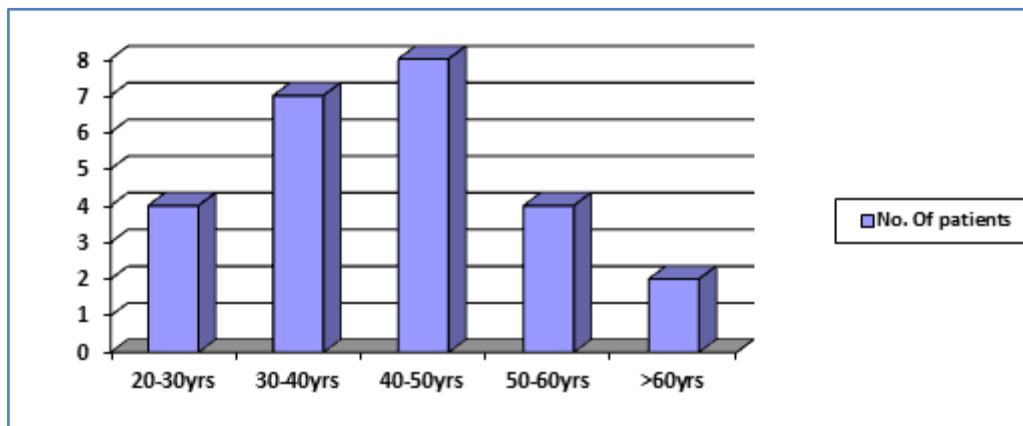
Patients were discharged 2-3 days after operation and sutures were removed on the 7<sup>th</sup> postoperative day. Patients were instructed to return to normal activity after 10<sup>th</sup> postoperative day.

All patients were followed for at least 6 months in the out-patient department.

**RESULTS:** All patients were males in the age group of 22-62 years. 12 patients had indirect type, 5 direct type and 8 patients had combined inguinal hernia. 3 patients had presented with recurrent hernia following anterior approach. There were no major difficulties during the operation. Patients were hospitalized for 1-2 days following the procedure.

Mean operative time was 78minutes. The most that patients experienced was only mild pain which was evaluated by visual analogue score. One patient developed urinary retention following spinal anesthesia. No seroma formation was noted. Only one patient had superficial surgical site infection on 3<sup>rd</sup> postoperative day and was successfully treated conservatively with antibiotics.

All patients were discharged on 2<sup>nd</sup> postoperative day. Suture removal was done on 7<sup>th</sup> postoperative day. All patients returned to daily activities after 10<sup>th</sup> postoperative day. No recurrence or groin pain was observed in this study (Figure 1, Table no 1-3).



**Fig. 1: Patient demographics**

Type of inguinal hernia	No. of patients (%)
Indirect hernia	12 (48%)
Direct hernia	5 (20%)
Combined hernia	8 (32%)
Recurrent hernia	3 (12%)

**Table no.1: Types of hernia**

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	<b>Range</b>
Operative time	55-110 minutes
Post-operative hospital stay	2 <sup>nd</sup> - 3 <sup>rd</sup> day
Suture removal	5 <sup>th</sup> -7 <sup>th</sup> day

**Table no 2: Early postoperative data**

	<b>No. of patients (%)</b>
Urinary retention	1(4%)
Seroma	0
Scrotal oedema	0
Wound infection	1(4%)
Recurrence	0

**Table no 3: Postoperative complications**

**DISCUSSION:** Inguinal hernia still remains a significant clinical problem despite the advances in surgical techniques. The Lichtenstein tension free mesh repair is one of the popular methods of hernioplasty as it is easy to learn and perform, and gives consistent good results with less than 1% recurrence rates.<sup>3</sup>

When placed over the posterior inguinal wall as performed in Lichtenstein technique, Polypropylene mesh can cause changes in the peripheral nerve due to myelin degeneration, endoneurial and perineurial edema, fibrosis, axonal loss<sup>4</sup> and can cause chronic groin pain by entrapment of the nerve in scar tissue. Foreign body reaction to the mesh can lead to formation of wound seroma and induration.<sup>5,6</sup>

These complications of chronic groin pain and wound complaints associated with Lichtenstein procedure are often underreported<sup>7</sup>. All these complications can be avoided by placing the mesh in the preperitoneal plane by laparoscopic or open method. However, laparoscopic methods have their unique set of complications as well as having a difficult and prolonged learning curve<sup>8,9</sup> and the need of general anaesthesia during the procedure.<sup>7</sup> Thus open/ anterior pre peritoneal inguinal hernia repair is the viable alternative for the management.

Various techniques of preperitoneal repair have been described in the literature. The Stoppa operation was developed by placing a large piece of prosthetic mesh in the preperitoneal space<sup>10</sup>. Wantz adapted this operation for the repair of unilateral hernia.<sup>11</sup>

In addition by placing a mesh in the pre peritoneal space, the myopectineal orifice is covered completely which not only is the optimal treatment for indirect, direct, femoral and obturator hernias but also protects against any of these hernias from recurrence.

This technique for recurrent inguinal hernia which avoids reoperation through distorted anatomy and scar tissue markedly reduces the risk of damage to the testicular vessels and permits inspection of all potential groin hernia sites. Through an open incision, the dissection is rapid; structures are easily and widely visible. Its benefits have long been proclaimed.<sup>12,13</sup>

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Two randomized trials have compared laparoscopic with open preperitoneal mesh repair of hernias and found no significant difference in short-term recurrence rates.<sup>14,15</sup> Beets, et al<sup>16</sup> compared laparoscopic repair with open preperitoneal mesh repair for recurrent hernia; re-recurrence rates were 12% and 2% respectively, and it was also confirmed that open preperitoneal repair is an easier procedure with a shorter learning curve. Furthermore the laparoscopic approach cannot be used in patients with incarcerated, large inguinoscrotal hernias or in patients unfit for general anaesthesia.<sup>15</sup>

In the present study, postoperative pain was minimal, only oral analgesia was required and rapid mobility was permitted so that patients could be discharged within 1-2 days after operation. Three comparative studies found more postoperative discomfort and a longer recovery time with the open operation<sup>14,15,16</sup> although all used a lower midline incision.

This prospective study of 25 patients demonstrates good early results and the effectiveness of open preperitoneal mesh repair for inguinal hernia. The low incidence of recurrence, low complication rate and high level of patient satisfaction are in accord with other studies of open preperitoneal repair.<sup>17-23</sup>

### **The advantages of preperitoneal repair thus include:**

- Minor possibility of recurrence.
- Protection of the mesh against infections from the superficial planes of the wound.
- Strong adherence of the mesh to the musculo-aponeurotic structures of the whole inguinal region, that constitute a strong barrier against its anterior bulging or displacement.
- The pre peritoneal location of the prosthesis resumes the position and the function of the transversalis fascia.

Despite these clear benefits and excellent results, open preperitoneal mesh repair has not been widely adopted, in part because of the unfamiliarity with this approach.

The average operating time in open preperitoneal mesh repair is slightly longer than the Lichtenstein procedure which can be attributed to preperitoneal dissection as well as proper placement of the mesh. Complications like peritoneal breach are easily avoided by meticulous technique. Large tears should be repaired with a few stitches of absorbable suture as it helps in proper mesh placement.

Placing the mesh could pose some difficulty since the total dissected area cannot be visualized directly and can only be felt with the fingertips. The mesh also needs to be folded similar to laparoscopic techniques to introduce it into the preperitoneal space through the defect in the fascia transversalis.

**CONCLUSION:** In conclusion, the open preperitoneal mesh repair for inguinal hernia is highly effective in achieving a low recurrence rate. It is easier to learn and safer than laparoscopic repair, and should be the procedure of choice for all groin hernias.

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