

## ORIGINAL ARTICLES

### REPAIR OF INGUINAL HERNIAS WITH LICHTENSTEIN TECHNIQUE

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#### ABSTRACT

**Inguinal hernia is a very common surgical problem. It is more likely to occur in man than in woman because the spermatic cord passes through the abdominal wall in the inguinal region, leaving a site of natural weakness prone to hernia formation.**

**Recurrences have been a significant problem following hernia repair, Prosthetic materials have been increasingly used in hernia repair to prevent recurrences. Their use has been associated with several advantages, such as less postoperative pain, rapid recovery, and low recurrence rates.**

**In this case control study, 50 inguinal hernia repairs were performed between January, 2001 to December, 2001, using polypropylene mesh (lichtenstein technique). The main outcome measure was early and late morbidity and especially recurrence.**

**Inguinal hernia was indirect in 72% of cases (36 patients), direct in 28% (14 patients). Mean patient age was 54.5 years (range, 27-82). Follow up was completed in 50 patients (100%) by clinical examination. The median follow-up period was 1 year. Hematoma and seroma formation requiring drainage was observed in 2 and 3 patients, respectively, while transient testicular swelling occurred in one patient. We have not observed acute infection or abscess formation related to the presence of the foreign body (mesh). In one patient, however, a delayed rejection of the mesh occurred after 4 months. There was no recurrence of the hernia. Postoperative neuralgia was observed in 3 patients (6%).**

**Keywords:** Hernia repair, inguinal hernia, mesh repair, tension free repair

## INTRODUCTION

Recurrence following repair of inguinal hernias is a significant problem for both the surgeon and the patient. There is evidence that a defect in the metabolism of collagen is involved in the pathogenesis of inguinal hernias in adults, leading to a weakening of the transversalis fascia obviously, the use of such a weakened tissue is problematic for hernia repair [1]. In an attempt to reduce the incidence of recurrences and to reinforce the plastic reconstruction various techniques have been used, including autologous tissue techniques and a variety of biomaterials [2]. Usher proposed the use of high-density polyethylene to repair tissue defects of the chest and abdominal wall, about half a century ago [3],

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[4] since that time, a clear preference for synthetics has been observed and during the last decade a marked interest in the use of prosthetic materials was evident. The reports by stoppa et al [5] and by Lichtenstein [6], as well as the innovation of laparoscopic hernia repair [7-8] revealed the use of prostheses was associated with many advantages. It greatly contributed to this change in our surgical philosophy. In this paper, we review our experience on tension- free surgical repair of a consecutive series of inguinal hernias using a polypropylene mesh (lichtenstein technique).

## MATERIALS AND METHODS

This case control study was carried out in surgical department of PAF Hospital Islamabad from January, 2001 to December, 2001.

Repair of inguinal hernias were performed in 50 patients by using a polypropylene mesh. Inguinal Hernia was indirect in 72% of cases (36 patients) and direct in 28% (14patients). Mean patientage was 54.5 years (range 27-82 years). All cases were performed under general/spinal anesthesia. Patients with obstructed and bilateral hernias were excluded.

**Operative Technique**

The patient is placed in the supine position. The groin is prepared in the usual fashion, before the incision, a bolus dose of a second generation cephalosporin is given intravenously. After incising the skin, subcutaneous tissue, and external oblique aponeurosis the spermatic cord is elevated from the posterior wall of the inguinal canal in indirect hernias, the hernia sac is identified, dissected to the internal ring and opened to allow examination of its contents. The sac is ligated and its distal portion is usually excised, however, in large indirect inguinal hernias, where the sac descends down to the scrotum, the distal part of the sac may be left open to prevent the formation of a hydrocele, thus allowing spontaneous obliteration.

A polypropylene mesh is trimmed to fit the floor of the inguinal canal, and its apex is first sutured to the pubic tubercle using a no 3-0 prolene suture. The same continuous suture then sutures the lower border of the mesh to the free edge of the inguinal ligament, after an opening is made into its lower edge to accommodate the spermatic cord. The continuous suture extends up just medial to the anterior superior iliac spine. Interrupted prolene sutures then suture the two cuted edges of the mesh together around the spermatic cord. The infero-medial corner of the mesh is then attached well overlapping the pubic tubercle. The mesh is then anchored to the conjoined tendon by metal staples or by interrupted sutures (Prolene 3-0). After meticulous hemostasis, a closed suction drain is placed beneath the external oblique aponeurosis, especially in large inguinal hernias, where an extensive dissection was performed during the plastic reconstruction. The aponeurosis of external oblique is then closed sing absorbable sutures.

Regarding peri-operative care of the patient, prophylactic antibiotics (inj.Cefataxime 1gm at the

**Table -1 Post-operative complications**

Complications	No of patients	Percentage
Morbidity	2	4%
Haematoma	2	4%
Seroma	3	6%
Testicular Swelling	1	2%
Mesh Rejection	1	2%
Post Op Neuralgia	3	6%

time of induction then 1 gm x 12 hourly for one day) are usually given. In high-risk patients (i.e.) obese patients), low molecular weight heparin is usually administered to prevent deep venous thrombosis the night before surgery and its administration is continued during the hospitalization of the patient, Surgery is usually performed general/spinal anesthesia. The patient is mobilized about six hours after surgery. Postoperative anesthesia consist the administration of NSAIDS. The usual duration of the hospitalization was 3-4 days. When a closed suction drainage was used, it was removed on the 2nd post operative day.

**RESULTS**

Postoperative pain was minimal and easily controlled by the use of single analgesics (as previously reported). In the immediate postoperative period we had following complications. There was early morbidity observed in two (4%) patients.

Hematoma and seroma formation, requiring drainage, were observed in two (4%) and three (6%) patients respectively. Testicular swelling occurred in one patient (2%) all of which settled.

Follow up was completed in 50 patients (100%) by clinical examination by calling them repeatedly in out door department. The median follow up period was one year. In one patient we observed a delayed rejection of the mesh, 4 months after the plastic reconstruction. This complication was presented by the late formation of a productive sinus at the site of the surgical incision. In this patient, a surgical debridement of this sinus tract was performed, but the fluid production continued. The mesh was then removed. Severe postoperative neuralgia, persisting over 6 months postoperatively and requiring analgesics administration, was observed

in 3 patients (6%). Management was conservative in all cases (by using simple, non-narcotic analgesics, such as NSAIDs) and progressively settled in all cases, there was no recurrence of hernia in these patients (Fig 1, 2, 3).

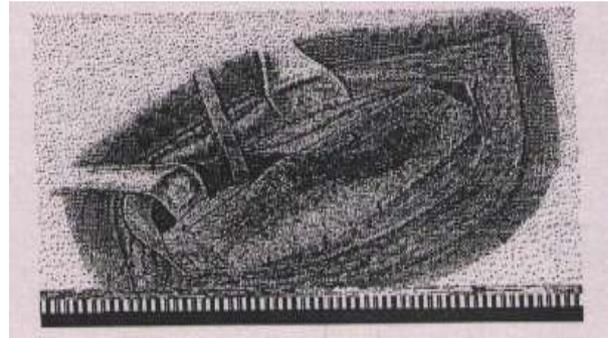
## DISCUSSION

The repair of inguinal hernia with mesh by Lichtenstein technique, about 18 years ago opened a new era in groin hernia repair [6]. Post operative pain is minimal; as a result of the tension-free technique.

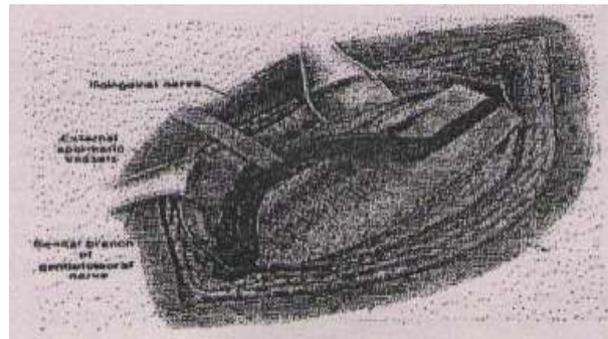
The method is very simple, effective, is associated with a very low recurrence rates (ranging from 0 to 2% in the literature) and can be performed under local or regional anaesthesia (9,10). For these important advantages, it is currently the preferred method for the plastic reconstruction of inguinal hernias for the majority of surgeons around the world.

A variety of prosthetic mesh is available to the surgeon. The ideal mesh properties are inertness, resistance to infection, molecular permeability, pliability, transparency, mechanical integrity and biocompatibility. Absorbable mesh does not remain in the wound long enough for adequate collagen to be deposited, while multifilament mesh can harbor bacteria. Monofilament mesh is the most popular presently in use with the various types of polypropylene having different characteristic advantages (II) Use of porous mesh (polypropylene) allows a large surface area for ingrowth of connective tissue leading to permanent fixation of the prosthesis allows well vascularized, tissue coverage of all aspects of the prosthesis. Fears of complication related to mesh implantation have proved to be without foundation. The use of vacuum drain is indicated in large inguinal hernias in order to minimize hematoma or seroma formation.

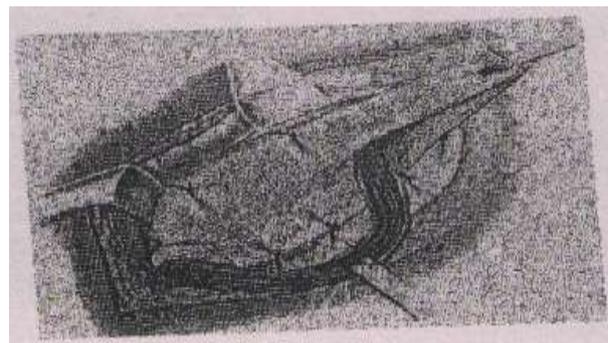
To reduce the chance of recurrence, the mesh should extend 2-4 cm beyond the boundary of Hesselbach's triangle [11]. The position of the mesh beneath the aponeurosis of the external oblique results in the intraabdominal pressure working in favor of the repair, since the external oblique aponeurosis keeps the mesh tightly in place by acting as an external support when intraabdominal pressure rises. The mesh should be



**Fig. 1:** A polypropylene mesh is trimmed to fit the floor of inguinal canal its apex is 1<sup>st</sup> sutured to the pubic tubercle and then the lower border of mesh to free edge of inguinal ligament.



**Fig. 2:** A slit is made on the lateral end of mesh to accommodate the spermatic cord.



**Fig. 3:** At the lateral end of the mesh upper tail is crossed over the lower one. And then the mesh is anchored to the conjoint tendon by interrupted sutures (prolene 3-0)

fixed carefully, by the use of prolene sutures or staples, to prevent folding, wrinkling, or cutting of the mesh around the cord.

The methods are simple, can be performed by all the surgeons even those without special interest in hernia surgery, and are very effective in the prevention of recurrence. Indeed, an extremely low recurrence rate (range, 0-0.7%) has been reported from many groups of surgeons [9, 12, 13]. The method combines many advantages,

such as simplicity, effectiveness, safety, comfortable postoperative course with easily controlled pain, rapid return to unrestricted activities, an impressively low recurrence rate and high patient satisfaction. Although it costs rupees 1600 to 2000 more to the patient as compared to the herniorrhaphy without mesh [14].

An other study by Mayagoitia and Suarez was carried out regarding repair of hernia with Lichtenstein technique on 103 patients from February 1998 to September 1999. Two patients develop edema of spermatic cord which resolved with anti-inflammatory medication. One patient presented with infection of the wound that resolved with drainage and daily dressing. No recurrence has occurred 18 months after surgery [15].

Lichtenstein tension-free mesh inguinal hernia repair is a safe, comfortable; simple; effective method and with extremely low recurrence rate. It has better control of the inguinal floor reinforcement with low morbidity.

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