



Incidence of chronic pain after single stitch mesh fixation in open inguinal hernia repair: An observational prospective study, a case series

Neeti Kapur, Naveen Kumar*

PGIMER, Dr.R.M.L Hospital, New Delhi, India

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ABSTRACT

Background: Chronic pain, after Lichtenstein inguinal hernia repair, remains a frequent complication. Various causes for post operative pain from Liechtenstein inguinal repair have been suggested, one of them being the use of sutures for fixing the mesh to the inguinal ligament. The present study was undertaken to evaluate the incidence of chronic pain and recurrence rate, using a single stitch mesh fixation in open inguinal hernia repair.

Methods: 625 male patients between 18 and 60 years operated for open inguinal hernia repair. The incidence of pain at one week, one month, three months and one year were recorded. The effect of physical activity and recurrence rates were also recorded. A 3-0, polypropylene suture was used to secure the lower medial corner of the mesh to the soft tissue overlying the pubic tubercle.

Results: Majority of the patients fall between the age group of 40 and 60 (80%) years and all are male patients. Of the total cases, 313 were right sided, 200 were left sided, and 112 were bilateral. 82 patients required further analgesics for one more week, 10 patients required analgesics for another two weeks while only one patient had analgesics for one more post-operative month. All patients were performing all their activities after 15 days. There was one recurrence at the end of three months.

Conclusions: Single stitch mesh fixation over pubic tubercle in open inguinal hernia repair causes minimum postoperative chronic pain with 0.2% recurrence.

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1. Introduction

Abdominal wall hernias are common, with a prevalence of 1.7% for all ages and 4% for those aged over 45 years. Inguinal hernias account for 75% of abdominal wall hernias, with a lifetime risk of 27% in men and 3% in women [1] (see Tables 1–3).

Inguinal hernias are often classified as direct or indirect, depending on whether the hernia sac bulges directly through the posterior wall of the inguinal canal (direct hernia) or passes through the internal inguinal ring alongside the spermatic cord, following the coursing of the inguinal canal (indirect hernia) [2].

Surgery is the treatment of choice varying from a nylon darn, Open mesh repair, Shouldice layered, Lichtenstein mesh to a laparoscopic repair. Mesh hernioplasty has gained wide spread acceptance due to its superior outcome in terms of reduced recurrence rates which are in the range of 1–2%. The Lichtenstein mesh

hernioplasty is currently the most popular operative technique for open repair of inguinal hernia [3].

The objective of groin hernioplasty is to prevent peritoneal protrusion through the myopectineal orifices. Hernias are repaired either anteriorly through groin incision in which case the structure in and around the inguinal canal must be divided in order to reach the inner most aponeurotic fascial layer, or posteriorly through abdominal incision in which case, the hernial orifices are exposed directly on entry to the properitoneal space [4].

Inguinal hernia repair is the most frequently performed procedure in surgical practice. Though, recently Laparoscopic repair of the inguinal hernia is being performed often, the Lichtenstein open technique of repair of the inguinal hernia remains the most widely accepted procedure for its safety effectiveness, low recurring rate and low cost [5,6]. Lichtenstein presented his open mesh repair technique for inguinal hernia in 1986. The Lichtenstein technique has since become the most commonly used (with various modifications) on account of its ease of operation and because it provides a tension-free repair with good longterm results. The advantages of this repair were its association with less pain, rapid postoperative recovery, early return to normal activity and very low recurrence

* Corresponding author.

E-mail addresses: neetikapur2004@yahoo.co.in (N. Kapur), drnaveenmmcc@gmail.com (N. Kumar).

Table 1
Distribution of age.

Age (years)	Percentage
21–30	35
31–40	90
41–50	150
51–60	350

Table 2
Distribution of hernia.

Hernial side	Percentage
Right	313
Left	200
Bilateral	112

Table 3
Distribution of types of hernia.

Types of hernia	Percentage
Indirect	300
Direct	200
Pantaloon's	125

rate. Tension-free mesh repair is nevertheless associated with complications such as foreign body reaction, infection, pain (The incidence of chronic groin Pain following this procedure is reported to be as high as 75.5%), fistula formation, migration, shrinkage, and recurrence. Other complications include skin anesthesia, bruising and haematoma formation, seroma formation, orchitis and testicular atrophy [7].

However, chronic pain, after Lichtenstein inguinal hernia repair, remains a frequent complication with a reported incidence of 15–40%. Various causes for post operative pain from Lichtenstein inguinal repair have been suggested, one of them being the use of sutures for fixing the mesh to the inguinal ligament and rectus sheath. Various modifications have been tried with variable results [8,9]. The present prospective study was undertaken to evaluate the incidence of chronic pain and recurrence rate, using a single stitch mesh fixation in open inguinal hernia repair.

2. Material and methods

An open prospective observational study was conducted at Department of General Surgery, Dr.R.M.L.Hospital, New Delhi where 625 male patients between 18 and 60 years operated for open inguinal hernia repair from the year february 2003 to march 2013 with minimum follow up of 2 years had been included in this study after signing an informed consent. Exclusion criteria included the following: Patients more than 60 years, recurrent hernia, sliding hernia, obstructed and strangulated hernia, bladder outlet obstruction, lower respiratory infection/chronic obstructive pulmonary disease, and ischemic heart disease. The incidence of pain at one week, one month, three months and one year were recorded. The effect of physical activity and recurrence rates were also recorded. The work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The work has been reported in line with the PROCESS criteria [14].

2.1. Surgical technique

All patients were given perioperative antibiotic dose (cephalosporin 1 g dose intravenous). The operation was done under local,

regional or general anesthesia depending on preference of the patients. An oblique 5–6 cm incision, 2 cm above and parallel to the groin crease was made. It started lateral to the internal inguinal ring and ended medially, 2 cm short of pubic tubercle. The incision was deepened until the external oblique aponeurosis was seen and crura of the external ring were visible. It was incised along the direction of its fibers extending the incision about 2 cm lateral to the internal ring down through the external ring. The deep aspect of the external oblique was then freed from the internal oblique up to the anterior iliac spine and medially from rectus sheath up to midline and well reflected laterally to expose the shelving edge of the inguinal ligament. The ilioinguinal and iliohypogastric nerves if seen were preserved.

The spermatic cord, covered by fascia and cremasteric muscle was mobilized and a rubber catheter was placed around the cord structures for traction. The cord coverings were initially divided longitudinally to expose the cord structures. The cremasteric muscle was excised by dividing at the internal ring and distally at the external ring. The internal ring was freed all around from the cord. The indirect hernia sac was separated from the cord structures by blunt and sharp dissection high up to the internal ring. A high dissection was considered to be complete once the preperitoneal fat at the neck of the sac is visualized. In complete scrotal hernias, no scrotal dissection was done, the sac was transected in the canal and the distal cut end was left open. After inspecting inside to ensure it is empty, the sac was transfixed at the neck with 2-0 atraumatic absorbable suture and cut. The high ligation of the sac was ensured if the cut end retracted behind the internal ring.

The fascia transversalis was exposed at the floor (Posterior wall) of the inguinal canal after dissecting the tissues over it. Complete homeostasis was ensured. It was then plicated without tension with continuous 3-0 polypropylene stitch was interlocked at the internal ring and taken back towards the pubic tubercle where it was tied with the previous knot. In direct hernia, the covering of the bulge (sac) was incised all around near its base to delineate the defect in the fascia transversalis. The extra peritoneal contents were pushed back and the defect was closed in two layers with continuous 3-0 polypropylene suture as described above.

A polypropylene mesh was used for repair and was slit longitudinally from lateral to medial for 6–7 cms, 2 cm from the lower border. The upper and lower medial edges were rounded off.

A 3-0, polypropylene suture was used to secure the lower medial corner of the mesh to the soft tissue overlying the pubic tubercle with 2 cm overlap (Fig. 1). The mesh was placed behind the cord over the flattened fascia transversalis, conjoint tendon and rectus

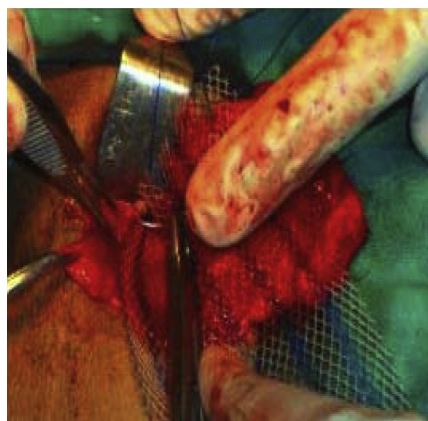


Fig. 1. Fixation of corner of the mesh to the soft tissue overlying the pubic tubercle.

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