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A Study on Comparison between Open Preperitoneal Mesh Repair and Lichtenstein Mesh Repair for Inguinal Hernia

Authors
Dr Malaya Krishna Nayak[1], Dr. Ashok Kumar Nayak[2], Dr Anshuman Pradhan[3], Dr Balabhadra Samantaray[3], Dr Dharbind Kumar Jha[3]
[1]Assistant Professor, [2]Associate Professor, [3]Junior Resident (Academic)
Department of General and Laparoscopic Surgery, Vimsar, Burla, Odisha, India
Email: *dr.dj4love@gmail.com, Contact number 8763090706*

ABSTRACT
Background: *Lichtenstein hernioplasty is now standard surgery for inguinal hernia repair. The aim of the study was to compare the short-term and long-term outcomes of the open preperitoneal mesh repair with the Lichtenstein mesh technique repair for inguinal hernia which could be a better option.*
Methods: *203 consecutive patients with inguinal hernia were randomized (according to a random table) to undergo either a open preperitoneal or a Lichtenstein repair under anesthesia. Early outcome measures duration of surgery, postoperative complications. Early complications like wound pain, wound infection,. Late complications like pain and recurrence.*
Time to return to work and full activity.
Results: *In our study we found that though the operative time in open preperitoneal mesh repair is longer than the conventional Lichtenstein mesh repair the post operative pain, infection, duration of hospital stay and recurrence rate is less.*
Conclusions: *In conclusion we recommend open preperitoneal repair in inguinal hernia in place of Lichtenstein repair. The use of open preperitoneal hernia repair for inguinal hernia is safe, post operative pain and recurrence rate is minimal.*
Keywords: *Inguinal hernia, preperitoneal mesh repair, Lichtenstein mesh repair.*

Introduction

An inguinal hernia is a protrusion of abdominal cavity contents through the inguinal canal. Many people develop an inguinal hernia making its repair one of the most performed procedures worldwide. Mesh repair is superior to primary suture techniques. The mesh can either be placed using an open technique or via a laparoscopic approach. As most types of mesh repair result in a low recurrence rate, reduction of postoperative chronic pain remains a major challenge. The preperitoneal space is found between the transversalis fascia and the peritoneum itself. The actual groin hernia defect is located anterior to this space, whether the defect exists in the internal ring (indirect inguinal hernia) or through the transversalis floor of the inguinal canal (direct inguinal hernia). This approach is more effective than the traditional anterior hernioplasty because a repair in the preperitoneal plane fixes the hernia

defect in the space between the hernia contents and the hernia defect. In contrast, the anterior approach does not keep the hernia contents from contact with the defect, but rather fixes the hernia defect anterior to the defective anatomy. The operation is also advocated for difficult inguinal hernia recurrences, since the posterior approach will usually remain open and without scar following a previous anterior hernia repair. An open approach using a mesh in the preperitoneal space could reduce this major complication because, as this space lacks nervous structures, interaction between the mesh and nerves is absent. The following are its major principle:

1. It is a simple, easy-to-learn, and open technique with low cost effectiveness, avoiding the scopic approaches with their considerable learning curves and severe adverse events.
2. Stay away from the nerves and the inguinal canal during dissection.
3. Mesh positioning in the preperitoneal space is out of reach of the nerves.
4. minimal mesh fixation
5. No dissection nor reconstruction of the inguinal canal is necessary.

Objective

- To reduce post operative pain, infection and recurrence

Study Period: March 2014 to March 2017

Place Of Study: Dept. of General Surgery, VSSIMSAR, Burla Odisha , India

Methods

First, the patients were examined at the outpatient department and an inguinal hernia was clinically assessed. After thorough routine investigations, 203 consecutive patients with inguinal hernia were randomized (according to a random table) to undergo either an open preperitoneal or a Lichtenstein repair under anesthesia (general or spinal).

Surgical Technique for Open Preperitoneal Mesh Repair

In the preperitoneal hernia repair, the incision is usually made transversely in the lower quadrant 2–3 cm cephalad to the inguinal ligament. The incision is made slightly more medial than the anterior approach so that the lateral border of the rectus muscle can be exposed after incising the anterior rectus sheath. Once the muscle is exposed, retraction of the rectus muscle medially allows for careful opening of the posterior rectus sheath and entry into the preperitoneal space. The inferior epigastric vessels and the cord can be visualized in this space. The cord usually does not require extensive manipulation or dissection since the usual cord attachments (lipoma and cremaster fibers) are found in the anterior layers of the inguinal canal. In this way, the approach also avoids exposure to the sensory nerves of the inguinal canal. Once the preperitoneal space has been entered and exposed, the specific repair to be performed depends on hernia anatomy. For direct defects, the sac is inverted back into the peritoneal cavity but does not need to be excised. The transversalis fascia is then reapproximated over the inverted sac using interrupted sutures; in this way, the upper border of the transversalis fascia is affixed to the lower border composed of the iliopubic tract. For indirect defects, the sac is reduced off of the cord and a high ligation of the sac is performed at the sac neck; ironically, with this approach, the “high ligation” is actually a “posterior” ligation, since the surgeon ideally should transect the sac just above the preperitoneal fat, which is situated along the inferior border of the exposed field. Once the sac has been ligated, the defect in the internal ring is repaired from the posterior plane using interrupted suture to affixed the ring leaflets of the transversalis fascia to the iliopubic tract, thereby tightening the ring itself.

Then post operatively the patient were evaluated for postoperative pain, infection i.e both seroma and hematoma, no of days in hospital, time to

return to normal activities and work. nerve entrapment and recurrence .

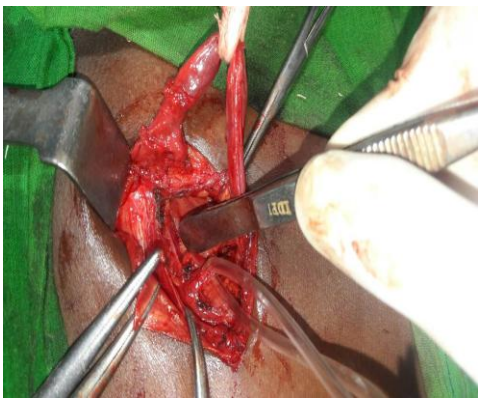

Fig 1 Showing the Pre peritoneal Space Dissected

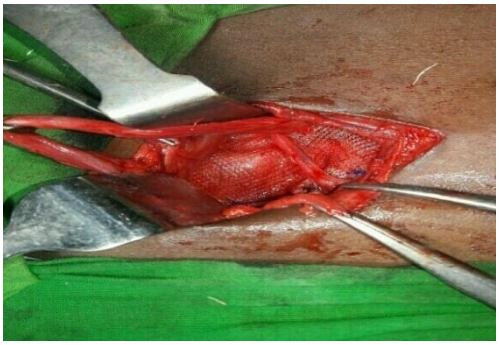

Fig 2: Showing the Mesh Placement in Pre peritoneal Space

Result

	Group I (Lichtenstein Repair)	Groupii (Open Preperitoneal Mesh Repair)
Direct Hernia	24	12
Indirect Hernia	102	47
Recurrent Hernia	2	16
Total	128	75

	Group I (Lichtenstein Repair)	Groupii (Open Preperitoneal Mesh Repair)
Average Operative Duration	1 Hour 15 Mins	1 Hour 30 Mins

Post Operative Day	Pain Requiring Analgesic In Group I (Lichtenstein Repair)	Pain Score In Groupii (Open Preperitoneal Mesh Repair)
1	128	75
2	128	40
3	100	2
4	42	0
5	5	0
6	2	0
7	0	0

	Group I (Lichtenstein Repair)	Groupii (Open Preperitoneal Mesh Repair)
Neuralgia	8	0
Infection and seroma	6	Nil
Average No days stay in hospital	8	4
Average Time to return to normal activities and work (non strenuous)	14 days	10 days
Recurrence	2	0

In our study we found that though the operative time in open preperitoneal mesh repair is longer than the conventional Lichtenstein mesh repair the post operative pain , infection, duration of hospital stay and recurrence rate is less.

Discussion

A hernia is defined as an area of weakness or complete disruption of the fibromuscular tissues of the body wall. The word “hernia” is derived from a Latin term meaning “a_rupture.” The treatment of all hernias, regardless of their location or type, is surgical repair. Successful surgical repair of a hernia depends on a tension free closure of the hernia defect to attain the lowest possible recurrence rate. Previous reports to simply identify the defect and suture it closed resulted in unacceptably high recurrence rates of up to 15%. Modern techniques have improved upon this recurrence rate by placement of mesh over the hernia defect, or in the case of laparoscopic repair, behind the hernia defect. Mesh can also be placed behind the defect by open method in open preperitoneal mesh repair. This decreases the operative time and also is easy to learn as compared to laparoscopic hernia repair. According to our study the average duration of operation in Lichtenstein hernioplasty is less as compared to open preperitoneal mesh repair it is because of the preperitoneal dissection which took extra time. More over Lichtenstein hernioplasty can be done in local, spinal and general anaesthesia where as open preperitoneal mesh repair is usually done in spinal and general anaesthesia. In our study we have done all the

cases either in spinal or general anaesthesia. The main problem in Lichtenstein hernia repair is pain after operation as one has to do extensive inguinal canal dissesction and encounter nerves like illioinguinal and illiohypogastric nerves which is not required in open preperitoneal mesh repair. In our study 75, 40 and 2 patients of open preperitoneal mesh repair required analgesic i.e combination of paracetamol 500mg and diclofenac sodium 50 mg oral tablet on post op day 1, 2, 3 repectively. Whereas 128, 128,100,42, 5,2 patients of Lichtenstein mesh repair required analgesics on post operative day 1,2,3,4,5,6 repectively. Thus after day 3 no patients required analgesic who underwent preperitoneal mesh repair. The post operative infection rate is less because the mesh is placed in a deeper plane and hence the chance of mesh infection is also less. the postoperative hospital stay is less because the patient suffer from less pain and return to normal activity in a early date. The recurrence rate is less because the mesh is placed before the anatomical defect hence giving a better support and strength like the laparoscopic repair. in our study we got recurrence in 2 cases of Lichtenstein mesh repair which was repaired by open preperitoneal mesh repair technique successfully.

Conclusions

In conclusion we recommend open preperitoneal repair in inguinal hernia in place of Lichtenstein repair. The use of open preperitoneal hernia repair for inguinal hernia is safe, post operative pain and recurrence rate is minimal.

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