

Original article

A comparative study between STOPPA repair and Lichtenstein MESH repair in the treatment of bilateral inguinal hernia

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Abstract:

Purpose: Inguinal hernia is one of the most frequently performed operations in general surgery. The commonly performed methods of open tension free repair of bilateral inguinal hernias include a) Stoppa's method and b) Lichtenstein's repair. The main objective of our study was to contrast between the above two methods over the different surgical aspects including different aspects related to the technique of surgery and the occurrence of post operative and long term complications.

Methods: Randomized prospective study including 80 patients between the age groups 35 to 70 with bilateral inguinal hernia selected from the Out patient department of a tertiary care centre. The patients were assigned to two groups with one group undergoing repair of the hernias by Stoppa's method and the other group undergoing Lichtenstein's repair. The patients were assessed in the post operative period for immediate complications and were followed up for a period of 9 months to look for recurrence.

Results: The two groups were assessed over different parameters of surgical repair including operative time, post operative pain and need for analgesia, the occurrence of complications, the duration of post operative hospital stay, and recurrence and were found to be comparable in most of the aspects except for the operative time which was found to be significantly lower in the Stoppa's group.

Conclusions: We would like to conclude by saying that the Stoppa's repair is a good alternative to Lichtenstein repair and should be considered especially in the treatment of bilateral inguinal hernias and should be included in the curriculum of training surgeons.

Introduction:

Inguinal hernia repair is the most frequently performed operation in general surgery. Hernias occur in about (1-5)% of the general population¹. Hernias are usually unilateral and about (6-8)% of the groin hernias are bilateral². For many years, it was believed that simultaneous repair of bilateral hernia could not be done because it was believed to be associated with a high recurrence rate³. The emergence of tension free repair techniques led to a change in this notion. Placement of a mesh is needed in all types of tension free repair with the mesh being

placed either through an open or a laparoscopic route. The commonly performed open techniques include a) Lichtenstein's tension free mesh repair [Hernioplasty] and b) Stoppa's repair. The advantages of simultaneous repair of bilateral hernia is better patient satisfaction, lower cost, as the patient is being subjected to single hospital stay, one anesthesia and only one period of recovery is required⁴. Our present study aims to compare Lichtenstein's mesh repair hernioplasty with Stoppa's repair in the different surgical aspects in the treatment of bilateral inguinal hernia.

Objectives:

The objective of our study is to contrast between the above mentioned 2 methods in the repair of bilateral Inguinal hernia with respect to :

- 1) Post operative time, post operative analgesia requirement and the duration of the post operative hospital stay.
- 2) To compare the occurrence of post operative complications including minor vascular injury, nerve injury, injury to the vas deferens, retention of urine, bowel and bladder injury, scrotal hematoma, seroma formation, cord oedema, wound infection, testicular pain and recurrence of hernia.

Methodology:

a) Study design:

Randomized, prospective study which included 80 patients between (35-70) years of age with bilateral Inguinal hernia selected by simple randomization method from the Surgical Out Patient Department (OPD) of a tertiary care hospital. They were assigned to 2 groups of 40 patients each. All the patients were classified by Nyhus classification. One group underwent repair of the hernia by simultaneous Lichtenstein mesh repair hernioplasty and the other group underwent Stoppa's repair. They were routinely investigated and those found fit for anesthesia were operated. The operative time (from the skin incision to the application of wound dressing) was noted.

b) Exclusion criteria:

Patients with the following were excluded from the study:

- i) Recurrent hernia

- ii) With associated overt severe co-morbidities.

- iii) Patients with complicated hernias (including strangulated and obstructed hernia).

- iv) Female patients.

- v) Age less than 35 years and age more than 70 years.

- vi) Patients with symptomatic prostatomegaly needing intervention.

c) Post operative period:

The patients were assessed for post operative pain using the Visual Analogue scale and the need for post operative analgesia was assessed.

Complications such as minor complications including neurovascular injury, retention of urine, scrotal hematoma, seroma formation, cord oedema, wound infection, testicular pain were noted.

Major complications including bowel and bladder injury were looked for.

The sutures were removed on post operative day 8 and the patients were discharged.

d) Follow up:

The patients were followed up every monthly for the first 6 months and then after 3 months on out patient department (OPD) basis to look for recurrence. The patients were totally followed up for a period of 9 months.

Observations and results:

1) Age Distribution:

The mean age in Lichtenstein's group was 56.4 \pm 12.6 years and in Stoppa's group was 56.7 \pm 11.2 years which was found to be comparable.

2) Type of Hernia :

In Lichtenstein’s group, 25 patients (62.5%) had bilateral direct inguinal hernia, 13 patients (32.5%) had bilateral indirect, 2 patients (5%) had Mixed type i.e one indirect with other direct. In Stoppa’s group, 23 patients (57.5%) had bilateral direct inguinal hernia, 13 patients (32.5%) had bilateral indirect inguinal hernia, 4 patients (10%) had mixed type. Thus, the two groups were comparable with respect to type of hernia.

3) Postoperative Pain :

Postoperative pain was evaluated by visual analogue scale on POD1 , POD2 , and POD7 and upon follow up at 1st month. The maximum score for a given patient was taken into account. It was seen that the patients of Lichtenstein’s group had an average Visual analogue score of 4.1, 3.2 and 2.1 on POD 1, 2 and 7 respectively whereas that of Stoppa’s group had an average VAS of 3.9, 2.9 and 1.9 on POD 1, 2 and 7 respectively which was again found to be comparable.

4) Operative time :

Table 1: showing the operative time between the two groups.

Operative time minutes	Lichtenstein’s meshplasty group		Stoppa’s group	
	No. of patients	Percentage of patients	No. of patients	Percentage of patients.
60-75	0	0	4	10
76-90	3	7.5	22	55
91-105	12	30	5	12.5
106-120	15	37.5	6	15
121-135	8	20	3	7.5
136-150	2	5	0	0
151-165	1	2.5	0	0

It was seen from table 1 that about 65% of Lichtenstein group had an operative time in the range of 105-120 minutes with an average operative time of 117.38 minutes (SD 17.20 minutes) and that of the patients in Stoppa’s repair had an operative time in range of 75-90 minutes with an average operative time of 95.12 minutes (SD 16.58 minutes) which was statistically highly significant (p<0.001).

5) Postoperative Hospital Stay :

The average number of days of postoperative stay for Lichtenstein’s group was 8.8 days (SD 4.45 days) and that of Stoppa’s group was 8.3 days (SD 3.89 days). The difference in post-operative hospital stay was not statistically significant.

6) Recurrence of hernia :

In out of 160 hernias repaired in 80 patients with 40 patients in each group, there was a single

unilateral recurrence in Stoppa's group with a recurrence rate was 2.5%. There was no recurrence in Lichtenstein's group

7) Complications :

In this study, postoperative complications were rare with both techniques . Out of 80 patients, only 18 patients developed minor complications which included minor neuro vascular injury, cord oedema, scrotal haematoma, retention of urine, testicular pain and inguinodynia. There were no major complications. Major complications included injury to the bowel, bladder and the spermatic cord.

Three patients in Lichtenstein's meshplasty developed complication of seroma which were managed by aspiration of seroma and patients recovered well. There was no incidence of seroma in Stoppa's group. Five patients in Lichtenstein's meshplasty and two patients in Stoppa's repair developed wound infection i.e. postoperative surgical site infection (SSI) which were mostly superficial surgical site infections. It was treated by removing one suture and drainage of collection and daily dressing and higher antibiotics like injection amoxicillin with clavulanic acid 1.2 g twice daily..

The normal antibiotic policy included the following:

Injection ciprofloxacin 10mg/Kg twice daily intravenous for the first 2 days followed by tablet ciprofloxacin 500 mg twice day for another 3 days. In those patients who developed a SSI, a pus culture was sent and the antibiotics were adjusted according to the culture sensitivity report. Five patients in Lichtenstein's meshplasty developed spermatic cord edema which was treated with antiinflammatory and

analgesics. None of the patients in Stoppa's group developed this complication of cord edema.

Two patients in Lichtenstein's meshplasty developed testicular pain which was treated with anti-inflammatory and analgesics. None of the patients in Stoppa's group developed this complication. There were no incidence of complications like vas deference injury, vascular injury, nerve injury, bowel injury, bladder injury, retention of urine, scrotal hematoma, and inguinodynia.

8) Return to Normal daily activity:

In our study, the average time to return to pain free normal daily activity was 16.98 days (SD 4.03) for Lichtenstein's group and that for Stoppa's group was 15.15 days(SD 2.95). However, the difference was statistically not significant.

Discussion:

Since the dawn of surgical history, hernias have been a subject of interest and their treatment has evolved through distinct stages. The earliest record of Inguinal hernia date back to 1500 B.C. The history of hernia is the history of surgery. Forefathers of abdominal wall anatomy including Jean Louis Petit, Percivall Pott, Dr. August, Gottheb, Richter and Pietes Campbell , all of whose contributions were instrumental in developing our current understanding of hernia⁵. With clear insight into the anatomy and physiology of inguinal canal, the concept of 'Tissue repair' evolved. The earlier tissue repair methods needed extensive dissection of the tissues and suturing under tension which lead to ischaemic necrosis of the tissues with associated increase in the rates of recurrence. Hence, the need for a tension free repair. The commonly used open tension free

methods of hernia repair include Lichtenstein's mesh repair hernioplasty and Stoppa's repair.

For many years, it was believed that the simultaneous repair of bilateral inguinal hernia should not be performed because this approach would lead to an increase in the post operative complications and recurrence⁶.

The European hernia society guidelines recommend a one stage procedure (Lichtenstein's / laparoscopic) for the treatment of bilateral inguinal hernias⁷. The Stoppa procedure can be another alternative for the treatment of bilateral Inguinal hernia . Our current study aims to compare the two methods in different surgical aspects of bilateral Inguinal hernia repair.

In our study, the average operative time in the Lichtenstein's group was 117.38 mins and that of patients in the Stoppa group was 95.12 mins which was statistically significant with a p value found to be <0.01. This is comparable to the study conducted by Malazgirt et al⁸, where 45 patients of bilateral Inguinal hernia were operated (22 by Stoppa repair and 23 by Lichtenstein mesh repair) with the operative time in the Stoppa's group being significantly shorter than the Lichtenstein group. Our results were also comparable to the study conducted by Talha et al¹.

The post operative hospital stay in our study was found be comparable in between the two groups with the average number of days in the Lichtenstein's group being 8.8 (SD 4.45 days) and that of the Stoppa's group being 8.3 days (SD 3.89 days). This was found to be comparable to the study conducted by Malazgirt et al⁸. Sasso et al⁹, reported a mean post operative hospital stay of 1.55 +/- 0.83 days for bilateral Lichtenstein repair and Fernandez- Lobato et al¹⁰, reported that the mean post operative hospital stay following Stoppa repair for bilateral Inguinal

hernia was 1.2 days. The relatively long post operative stay in our study was due to the fact that most of the patients belonged to distant rural areas and could only be discharged after stitch removal on post operative day 8 in order to avoid loss to follow up.

Both the groups were however found to be comparable with respect to the age of the patient, the type of hernia at presentation, the post operative pain and the need for post operative analgesia and the time needed to return to normal daily activity. This was comparable to the study conducted by Malazgirt et al¹⁰ and Li et al¹¹, who carried out a meta analysis of 2860 patients enrolled into 10 randomized controlled trials and two comparative studies for comparison between preperitoneal approach and Lichtenstein's repair for Inguinal hernia and found no significant difference between both the groups in terms of the above mentioned variables.

Malazgirt et al⁸, reported one recurrence after Stoppa's repair and no recurrence after bilateral Lichtenstein repair. Our study was comparable to the above mentioned study in this respect. The recurrence in Stoppa repair group could possibly be attributed the greater learning curve and the technical expertise associated with Stoppa's repair.

Out of the 80 patients, only 18 patients developed minor complications. There were no major complications as has already been outlined in the observations.

The mesh used in Stoppa's repair was a large (30*30)cms polypropylene mesh which was more expensive than the two (7.5*15) cms polypropylene meshes used in bilateral Lichtenstein's repair. Hence , Stoppa's repair was found to be not very cost effective.

Conclusion:

We conclude by saying that the simultaneous repair of bilateral Inguinal hernia is safe and effective, as it is associated with a better patient satisfaction, lower cost and the patient is subjected to only one hospital admission, anesthesia and needs only one period of recovery.

Stoppa's method of hernia repair is a good alternative to bilateral Lichtenstein's repair for the treatment of bilateral Inguinal hernia with comparative operative

and post operative complications. Stoppa's repair can also be completed in a relatively shorter duration under regional and hence could be the method of choice, especially in high risk patients with bilateral Inguinal hernia.

Also, Stoppa's repair should be routinely incorporated in any healthcare system dealing with hernia patients and in the professional leaning curriculum of in house surgeons.

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