Research Article

# Prospective comparative study of open meshplasty (lichentenstein's method) versus laparoscopic inguinal hernia repair

Jaykar R D[1], Kasabe P S[2], Aher Manoj[3], Korde P A[4]

[1]Associate Professor, [2]Assistant Professor, [3,4]Resident, Department of General Surgery, Dr. V. M. Government Medical College, Solapur, Maharashtra, INDIA.
**Email:** pkthehunk@gmail.com

## Abstract

**Background:** Since the dawn of surgical history, hernias have been subject of interest and their treatment has evolved through distinct stages. Time has seen many advances in hernia management from truss and bandages recommended by Cooper in 18th century to laparoscopic hernia repair till date. **Cases:** We present 2 years prospective comparative study of 60 patients of inguinal hernias with respect to post-operative pain, operative time, hospital stay and rate of recurrence. 30 patients undergone hernia repair by meshplasty (Lichenstein's repair) and rest of 30 patients undergone laparoscopic hernia repair (15 by TAPP and 15 by TEP)
**Keywords:** lnguinal hernia, Lichenstein's meshplasty, prolene mesh.

***Address for Correspondence:**
Dr. Paresh A Korde, Resident, Department of General Surgery, Dr. V. M. Government Medical College, Solapur, Maharashtra, INDIA.
**Email:** pkthehunk@gmail.com
Received Date: 22/08/2014 Accepted Date: 03/09/2014

Access this article online

Quick Response Code:

Website: www.statperson.com

DOI: 04 September 2014

## INTRODUCTION

The word "HERNIA" is the Greek word meaning offshoot, a budding or buldge while in LATIN it means " rupture or tear".[2] An inguinal hernia is defined as a protrusion of part of the contents of the abdomen through the inguinal region of the abdominal wall[1]. 75 % of all abdominal hernias occur in the groin. Indirect: Direct = 2:1. Right sided inguinal hernias are more common than left sided with male: female ratio of 7:1[3]. The inguinal hernia incidence and prevalence is considerably high. Incidence rate is approximately 1 in 544[4]. The yearly cost of groin hernia repair in any country accounts major percentage of health care expenditure, so the expeditious and effective care of inguinal hernia remains an important health care issue[5]. The most important advance in hernia surgery has been the development of tension free repair using mesh. Improvement in surgical technique together with the development of new prosthetic material and a better understanding of how to use them, have significantly improved outcome of the patients[6]. With advent of laparoscopy, groin hernia repair by transabdominal pre-peritoneal repair has become more comfortable repair which is simple with less tissue damage and earliest return to normal activities with negligible post-operative pain[7].

## CASE REPORT

A prospective comparative study over 60 patients of inguinal hernia was done 30 of which were treated by Lichenstein's repair and remaining 30 were treated by laparoscopic hernia repair. Prolene mesh of size 15x 15 cm was used for unilateral laproscopic repair and 15x 8 cm for Lichenstein's repair. For bilateral hernias in laparoscopic repair the mesh size was 30x 25cm. All the male patients in the age group of 30 to 70 years were considered in this study. Patients with very large hernia, obstructed hernia, strangulated hernia and irreducible hernias were excluded from this study. Patients were discharged after the operation as per their comfort and instructed to follow-up on 3rd and 7th post-operative day

How to site this article: Jaykar R D, Kasabe P S, Aher Manoj, Korde P A. Prospective comparative study of open meshplasty (lichentenstein's method) versus laparoscopic inguinal hernia repair. *MedPulse – International Medical Journal* September 2014; 1(9): 485-490. http://www.medpulse.in (accessed 04 September 2014).

and again to follow n 8th day for suture removal. Patients were followed up at every month for six months on OPD basis and then every 3 months during study period. Post-operative pain assessment was done using McGill Visual Analogue Scale. Patients were assessed for post-operative pain, operative time, hospital stay and rate of recurrence.

## OBSERVATIONS

**Table 1:** Age Distribution

| Age | No. of patients | Percentage |
|---|---|---|
| 31-40 | 9 | 15.00 |
| 41-50 | 17 | 28.33 |
| 51-60 | 29 | 48.33 |
| 61-70 | 5 | 8.33 |
| **Total** | **60** | **100** |

Total of 64 hernias were repaired in 60 patients of which 4 were bilateral. Out of 60 patients 36 were right sided and 20 were left sided hernias.

**Table 2:** Side of the hernia in Lichenstein's Meshplasty group

| Side of hernia | No. of the patients | Percentage |
|---|---|---|
| Right side | 18 | 60.00 |
| Left side | 10 | 33.33 |
| Bilateral | 2 | 6.66 |
| **Total** | **30** | **100** |

**Table 2(a):** Side of hernia in laparoscopic group

| Side of hernia | No. of pateints | Percentage |
|---|---|---|
| Right sided | 18 | 60.00 |
| Left sided | 10 | 33.33 |
| Bilateral | 2 | 6.67 |
| **Total** | **30** | **100** |

Right sided hernia were present in 18 patients, left sided hernia was in 10 patients and bilateral hernias were in 2 pateints in both the groups

**Table 3:** Type of hernia in Lichenstein's Meshplasty group

| Type of hernia | No. of patients | Percentage |
|---|---|---|
| Indirect | 20 | 66.66 |
| Direct (including 1 recurrent) | 08 | 26.66 |
| Bilateral indirect | 1 | 03.33 |
| Bilateral direct | 1 | 03.33 |
| **Total** | **30** | **100** |

**Table 3 (a):** Type of hernia in laparoscopic group

| Type of hernia | No. of patients | Percentage |
|---|---|---|
| Indirect | 23 | 76.66 |
| Direct | 4 | 13.33 |
| Bilateral | 2 | 6.66 |
| Recurrent | 1 | 3.33 |
| **Total** | **30** | **100** |

**Table 4:** Type of hernia according as per Nyhus classification in Lichenstein's Meshplasty group

| Type of hernia | No. of patients | Percentage |
|---|---|---|
| I | 18 | 60.66 |
| II | 3 | 10.00 |
| III a direct | 8 | 26.66 |
| III b indirect | 0 | 0 |
| III c femoral | 0 | 0 |

| | | |
|---|---|---|
| IV a direct (recurrent) | 1 | 3.33 |
| IV b indirect | 0 | 0 |
| IV c femoral | 0 | 0 |
| IV d (a+b+c) | 0 | 0 |
| **Total** | **30** | **100** |

**Table 4 (a):** Type of hernia as per Nyhus classification in laparoscopic group

| Type of hernia | No. of patients | Percentage |
|---|---|---|
| I | 20 | 66.67 |
| II | 4 | 13.33 |
| III a direct | 5 | 16.66 |
| III b indirect | 0 | 0 |
| III c femoral | 0 | 0 |
| IV a direct (recurrent) | 1 | 3.33 |
| IV b indirect | 0 | 0 |
| IV c femoral | 0 | 0 |
| IV d (a+b+c) | 0 | 0 |
| **Total** | **30** | **100** |

**Table 5:** Post-operative pain Visual Analogue Score (VAS) of patients operated by Lichenstein Meshplasty method

| VAS | No. patients | Percentage |
|---|---|---|
| 1-2 | 9 | 30.00 |
| 3-4 | 17 | 56.33 |
| 5-6 | 4 | 13.33 |
| 7-8 | 0 | 0 |
| 9-10 | 0 | 0 |
| **Total** | **30** | **100** |

**Table 5 (a):** Visual Analogue Score of patients operated by laparoscopic method in present study

| VAS | No. patients | Percentage |
|---|---|---|
| 1-2 | 19 | 63.33 |
| 3-4 | 10 | 33.33 |
| 5-6 | 1 | 3.33 |
| 7-8 | 0 | 0 |
| 9-10 | 0 | 0 |
| **Total** | **30** | **100** |

Hence pain was significantly higher in open hernia repair group than the laparoscopic repair group.

**Table 6:** Post-operative hospital stay Distribution of post-operative hospital stay in both groups

| Post-operative Hospital Stay Post-operative day(POD) | Lichenstein's Meshplasty Group No.of patients | Percentage of patients | Laparoscopic Repair Group No. of patients | Percentage of patients |
|---|---|---|---|---|
| POD 1 | - | - | - | - |
| POD 2 | - | - | - | - |
| POD 3 | - | - | 20 | 66.66 |
| POD 4 | - | - | 5 | 16.66 |
| POD 5 | 24 | 80 | 4 | 13.33 |
| POD 6 | 4 | 13.33 | 1 | 3.33 |
| POD 7 | 2 | 6.66 | - | - |

Laparoscopic group received general anesthesia and Lichenstein meshplasty group received spinal anesthesia for which patients were watched for first 2 POD. No patient in our study was discharged within 48 hrs. In Lichenstein. Meshplasty group 24 patients i.e.80% of the patients were discharged on POD 5, 4 patients on POD 6 (13.33%) and 2 patients on POD 6 (6.66%). In laparoscopic group 20 pateints were discharged on POD 3 (66.66%) and 5 patients on POD 4(16.66%) and 4 pateints on POD 6(3.33%).

**Table 7:** Operative time required in Lichenstein Meshplasty and Laparoscopic group

| Operative time | Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | |
|---|---|---|---|---|
| Time in mins | No.of patients | Percentage of patients | No. of patients | Percentage of patients |
| 40-45 | 7 | 23.33 | 2 | 6.66 |
| 46-50 | 5 | 16.66 | 1 | 3.33 |
| 51-55 | 13 | 43.33 | 13 | 43.33 |
| 56-60 | 1 | 3.33 | 5 | 16.66 |
| 61-65 | 1 | 3.33 | 4 | 13.33 |
| 66-70 | 1 | 3.33 | 2 | 6.66 |
| 71-75 | 2 | 6.66 | 2 | 6.66 |
| **76-80** | **0** | **0** | **1** | **3.33** |

Thus average operative time for LIchenstein's Meshplasty group was 54.16 mins while for Laparoscopic repair was 57.16 mins. Thus mean operative time for laparoscopic repair was more than that of Lichenstein's Meshplasty.

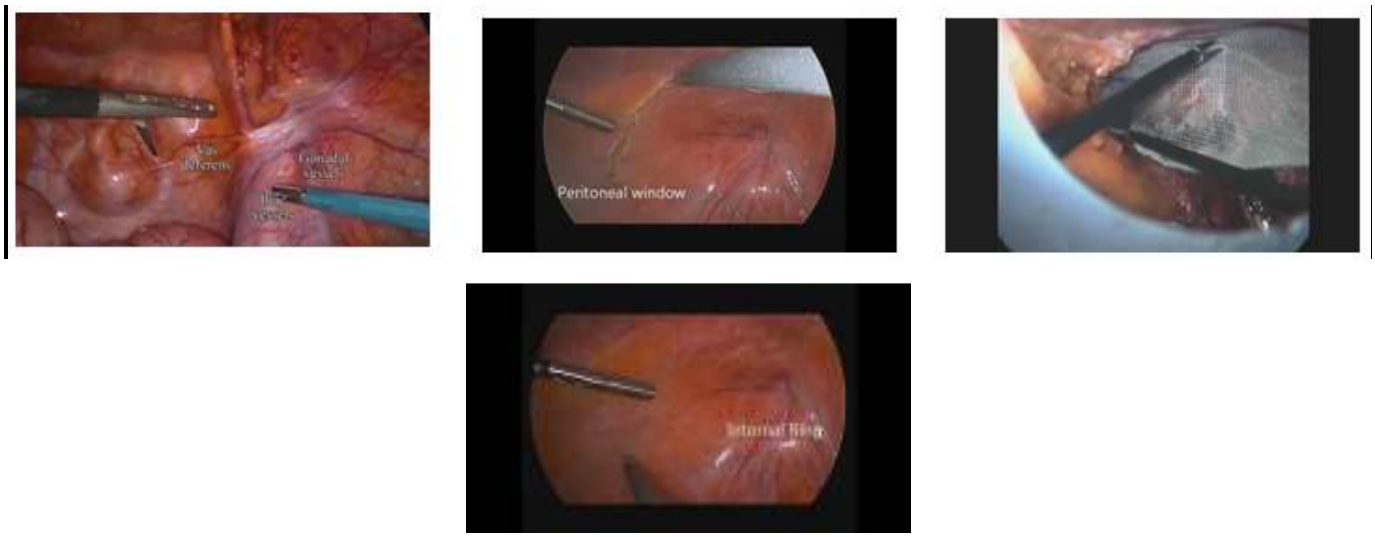
**Table 8:** Recurrence of hernia

| Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | |
|---|---|---|---|
| No.of patients | Percentage of Patients | No. of patients | Percentage of patients |
| 1 | 3.33 | 1 | 3.33 |

Thus there were similar hernia recurrence rate after Lichenstein's meshplasty and Laparoscopic repair in our study which was 1/33 i.e. 3.33%. One patient in open meshplasty and one in laparoscopic repair developed inferior epigastric bleed which was controlled by ligation of vessel intra-operatively. One of the patient in open meshplasty and no patient in laparoscopic repair had intra-operatively ilioinguinal nerve injury. There was no patient who suffered with the complication like vas deference injury, bowel injury and bladder injury. One patient in open meshplasty developed scrotal hematoma which was treated by scrotal support, analgesics and antibiotics. Retention of urine was present in both groups, one in open meshplasty and one in laparoscopic repair group which was treated by urinary catheterization which was removed next morning. Two patients in open meshplasty and one in laparoscopic repair group developed wound infection i.e. surgical site infection and port site infection respectively. It was treated by removing one suture and drainage of pus and daily dressing and higher antibiotics. One patient from open meshplasty and one patient from laparoscopic repair developed recurrence on follow-up. One patient in laparoscopic repair (TAPP) was converted to open meshplasty due to adhesions.

## RESULT AND DISSCUSSION

In present study all the patients included were male patients. 91 patients belong to age group of 30-50 years. This age group constituted major working population of the country, so surgical outcomes of these patients significantly influences the economy and health care delivery system of our country. in this study there were total 60 patients with inguinal hernia, 30 patients were operated by Lichenstein's meshplasty and remaining 30 are operated by laparoscopic repair that is 15 patients by TAPP and 15 patients by TEP method. In our study 60% patients had right sided inguinal hernia and 33.33% patient had left sided inguinal hernia and 6.66% patients had bilateral inguinal hernia. According to Nyhus classification 63.33% of inguinal hernias were type I, 11.66% were of type II, 21.66% were of type IIIa and 3.33% was of type IVa.




## Post-operative pain

Patients were assessed for post-operative pain on day 1, 3 and7 and the maximum score for given patient was taken into account

**Table 1:** Comparison of VAS in patient operated by Lichenstein's meshplasty and Laparoscopic hernia repair in the present study and M.S.Wilson study

| Post-operative visual analogue scale | Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | |
|---|---|---|---|---|
| | Wilson study | Present Study | Wilson study | Present study |
| Mean VAS score | 3 | 3.36 | 3 | 2.6 |

The mean VAS of Lichenstein's meshplasty in our study was 3.36. This was comparable to the mean VAS of M.S. Wilson study which was 3. The mean VAS of laparoscopic hernia repair in our study was 2.6 which was comparable to that of M.S. Wilson study which has VAS 3. Post-operative pain was higher in Lichenstein's meshplasty group than Laparoscopic hernia repair group.

**Table 2:** Operative time the important issue of the operative time depends on surgeon experience, infrastructure and team work

| Study group | Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | |
|---|---|---|---|---|
| | Wright D.M study | Present study | Wright D.M study | Present Study |
| Mean operative time(mins) | 45 | 53.66 | 58 | 57.16 |

| Study group | Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | |
|---|---|---|---|---|
| | Wright D.M. study | Present study | Wright D.M. Study | Present Study |
| Mean operative time (mins) | 45 | 53.66 | 58 | 57.16 |

The mean operative time in our study for Lichenstein's meshplasty was 53.66 mins, for Laparoscopic hernia repair was 57.16 mins. It is comparable with operative time for Lichenstein's meshplasty which was 45mins and Laparoscopic hernia repair which was 58 mins in Wright D.M. et. al. study. It is clear that mean operative time for Laparoscopic hernia repair was more relatively more than open hernia repair and is statistically significant. On the contrary mean operative time for bilateral hernia was less with laparoscopic hernia repair than open hernia repair. In our study operative time for Lichenstein's meshplasty was more than Wright D.M. study because most of open surgery in our study were done in teaching institute.

**Table 3:** Post-operative hospital stay

| Post-operative hospital stay | Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | |
|---|---|---|---|---|
| | Wilson study | Present Study | Wilson Study | Present Study |
| Mean stay in days | 2 | 5.26 | 1 | 3.53 |

The mean hospital stay in Lichenstein's meshplasty was 5.26 days and in Laparoscopic group was 3.53 days in our study. Mean hospital stay in Lichenstein's meshplasty was 2 days and laparoscopic group was 1 day in M.S. Wilson study group. From this we can assess that laparoscopic hernia repair group had less post-operative stay than open hernia repair in our study.

**Table 4:** Recurrence in hernia

| Recurrence in our study | | | | Recurrence in Douek et. al study | | | |
|---|---|---|---|---|---|---|---|
| Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | | Lichenstein's Meshplasty Group | | Laparoscopic Repair Group | |
| No. of | % | No. of | % | No. of | % | No. of | % |
| Patients | | Patients | | patients | | patients | |
| 1 | 3.33 | 1 | 3.33 | 1 | 3.33 | 1 | 3.33 |

Thus there are similar recurrence rate after Lichenstein's meshplasty and Laparoscopic hernia repair. In our study it was 1/33 i.e. 3.33% which was similar to that of Douek et. al study.

## CONCLUSION

Our comparative study of Lichenstein's meshplasty and laparoscopic hernia repair revealed following :

1. Mean operative time was more in laparoscopic hernia repair than Lichenstein's meshplasty repair.
2. In laparoscopic group there was less post-operative pain as compared with Lichenstein's meshplasty on post-operative day 1, 3 and 7.
3. Post-operative stay in laparoscopic groups was less than Lichenstein's meshplasty. Thus in conclusion, both Lichenstein's meshplasty and laparoscopic (TAPP/TEP) hernia repair has advantages and disadvantages for patients. Depending on local resource and infrastructure and expertise, both methods can be used and recommended for inguinal as well as for recurrent and bilateral hernias.
4. Laparoscopic repairs seems to be the better choice if feasible for bilateral hernia repair because it is less painful and more cosmetic with less hospital stay as compared to open bilateral Lichenstein's meshplasty repair.
5. Lichenstein's meshplasty done meticulously with good technique still proves to be the good option for laparoscopic repair if laparoscopic repair cannot be done due to any reason.
6. Recurrent hernia repair to be done laparoscopically is difficult and technically demanding procedure. Lichenstein's meshplasty could be the option for recurrent hernia repair. Laparoscopy is the better option for recurrent inguinal hernia repair.

## REFERENCES


1. Richard Cobb. Inguinal hernias. In, Peter J Morris. Oxford Textbook of surgery, 2nd edition. Oxford; New York, Oxford University press, 2000; 1399-1405.
2. Jack Abradinson. Hernia. In, Michael J. Zinner. Maingot's abdominal operations, 14th edition. New Baskerville, volume 1, 1997:1779-572.
3. Robert J. Fitzgibbons, Jr Charles J. Fillipi and Thomas H. Quinn. Inguinal hernias. In F. Charles Brunicardi. Schwartz principles of surgery, 8. Minion Pro, McGraw-Hill, 2005; 1353-92.
4. Statistics of country for inguinal hernia (internet).
5. Anthony S. Lowhan MD.Laparoscopic hernioraphy. InHulka and Reich. Textbook of Laparoscopy, 39th edition. Philadelphia, W.B. Saunders, 1994; 469-82.
6. Samir S. Awad MD. Evidence based approach to hernia surgery. The American Journal of surgery 2004; 188:15-25.
7. Bellon JM, Bajo A, Handunrille N. fibroblast from the transversalis fascia of young patient with direct inguinal hernia shows constitive MMP-overexpression. Annals of surgery 2001; 233(2); 287-91.
8. Robert J. Fitzgibbons. Laparoscopic inguinal herniorrhaphy results of a multicentral trial. Annals of surgery 1995; 22:3-13.
9. David C. Dunn. The History of Hernia repair. In Donald Menzies. Hernia repair: the laparoscopic approach, 3rd edition. Oxford, Blackwell science Ltd, 1999; 3-9.
10. BJ Leible. Long term results of a randomized clinical trail between laparoscopic hernioplasty and shouldice repair. British Journal of surgery 2000; 87:780-783.
11. Rutkow IM. The recurrence rate in surgery. Arch surg1995:130:575-77.
12. Robb H. Rutledge. The Cooper's ligament repair. In Fitzgibbons R J. Nyhus and Condons Hernia, 5th edition. Phil


Source of Support: None Declared
Conflict of Interest: None Declared