



## Original Research

# Comparison of Outcome between Lightweight Mesh v/s Heavy Weight Mesh in Lichtenstein Hernia Repair

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### Abstract

**Aim:** Lichtenstein Inguinal hernia repair is one of the most common surgical procedures performed throughout the world. Albeit a number of techniques have been described but at present Lichtenstein tension free mesh repair is the standard of care in the treatment of inguinal hernia.. This study aims to compare the heavy and light weight meshes used in their management.

**Material & Methods:** This is a prospective comparative study on outcomes between Heavy (Polypropylene) and light (Polypropylene+polyglactin) weight mesh in Lichtenstein repair of inguinal hernia patients admitted in Department of Surgery, J.A. Group of hospital associated with Gajra Raja Medical College, Gwalior from April.2017-Dec.2018. Comprising 30 patients in each group

**Results:** A total of 60 patients were studied (30 patients in each group). Age group of 31-50 yrs had highest incidence of inguinal hernia. Males are more commonly affected by inguinal hernia than females. Foreign body sensation in heavy mesh group is significantly higher than light mesh group. Average of 15.00% of the patients had foreign body sensation in Heavy mesh group, where as in light group average was 10%. Chronic pain was also more common in heavy mesh group. Stiffness around incisional site was complained by 10% of overall patients in the heavy mesh group whereas no patients had this complaint in light mesh group. Recurrence was neither seen in heavy mesh group nor in light weight mesh group patients.

**Conclusion:** Inguinal hernia is seen predominantly in elderly male population, most common complications after inguinal hernia surgeries are Chronic pain, Foreign body sensation, Recurrence, Stiffness around incisional site. In my study light mesh has been proved to be better than heavy mesh to be used as prosthesis in inguinal hernia

**Keywords:** Comparative, Hernia, Heavy, Light, Lichtenstein, Polypropylene, Polypropylene+polyglactin

### Introduction

Inguinal hernia repair is one of the most common elective operations performed in general surgery.

Tension-free mesh based repairs are the most common method of inguinal hernia repair today, whether done by open method or laparoscopic

because meshes have been shown to reduce the recurrence rates by up to 50%.

The incidence of inguinal hernia has been reported to be around 5%-7%. Worldwide over a million meshes are implanted over a year. the discussion about the ideal mesh with highest biocompatibility is still going on. The most common open repair performed is the Lichtenstein repair. Efficacy of the mesh repair is based on strengthening of weakened native tissue by a strong mesh aponeurotic scar tissue (MAST) complex. Inflammatory processes beyond the optimum foreign body reaction may entrap the contiguous structures leading to complications such as chronic groin pain, discharge, wound complications.

The majority of human randomized controlled trials in laparoscopic hernia surgery left the choice of the type of the mesh to the individual surgeon's preference and cost considerations. It has been observed that choice of the mesh-prosthesis in inguinal hernia repair is far more important than technique as a determinant of outcome. In international studies on poly- ester meshes used for laparoscopic inguinal hernia repair it was described that patients showed no complications related to the mesh and identified prospective technical and long-term advantages using polyester mesh. Lightweight meshes are supposed to have many advantages over HW meshes like decreased incidence of chronic groin pain, early return to work and better patient comfort.

### Aims and Objectives

To compare and analyze the difference between heavy weight mesh versus light weight mesh for the following outcomes:

1. Foreign body sensation
2. Chronic pain
3. Recurrence
4. Abdominal stiffness

### Material and Method

A Prospective, Comparative, Randomized clinical trial based in hospital setting between Light and Heavy Polypropylene mesh in Lichtenstein repair of

inguinal hernia was conducted at Department of General Surgery in G. R Medical college and Jayarogya Group of Hospital, Gwalior on patients admitted in Department of General Surgery between April 2017 to December 2017 undergoing Lichtenstein tension free mesh repair for inguinal hernia.

Age and sex wise distribution of the patients were done. The patients were randomly allocated using computer generated numbers to the groups as below. Each group had 30 patients.

**Group A:** heavy weight mesh used

**Group B:** light weight mesh used

Comparative study done on 60 patients admitted in Department of General Surgery between April 2017 to December 2017 undergoing Lichtenstein repair for inguinal hernia. 30 Patients were in Light mesh group and 30 were in Heavy mesh group.

### Results

The most common age of presentation in this study of patients (>50%) were in the age group between 50-70 years in both groups. Number of patients in age group 21- 30 years were 05 in HW group and 07 in LW group, in age group 31 – 40 year 03 were in HW group and 00 were in LW group, in 41 – 50 year age group 04 were in HW group and 05 in LW group, > 70 year age group comprised only 02 in HW group and 01 in LW group

**Table 1** Age at presentation

Age in yrs	Heavy mesh		Light mesh	
	No	%	No	%
21-30	05	16.5%	07	23.1%
31-40	03	9.9%	00	00%
41-50	04	13.2%	05	16.5%
51-60	08	26.4%	09	29.7%
61-70	08	26.4%	08	26.4%
>70	02	6.6%	01	3.3%
Total	30	100%	30	100%

The average duration of hospital stay in HW group was 8.6 days and in LW group was 5.6 days. 20 out of 30 patients in HW group and 16 out of 30 patients in LW group stayed between 6-10 days, 8 out of 30 patients in HW group and 11 out of 30 patients in LW group stayed between 3-5 days in hospital and only 2 patients in LW group stayed less

than 3 days in hospital. Patients complaining of moderate to severe pain and foreign body sensation were discharged later

**Table 2-** Duration of stay in hospital

No of Days	HW	LW
0-3	0	2
3-5	08	11
6-10	20	16
>10	2	1

At the end of 2 week follow up, 1 month follow up, 3month follow up, 6 month follow up no patients in either group have recurrence. Even at the end of 1 year follow up no patient land up with the recurrence of hernia at the operated site.

**Table 3-** Recurrence

Recurrence	Heavy mesh		Light mesh	
	No	Yes	No	Yes
2 weak	30	00	30	00
1 month	30	00	30	00
3 month	30	00	30	00
6 month	30	00	30	00
1 year	30	00	30	00

At the end of 2 week follow up 24 out of 30 in HW group and 12 out of 30 in LW group, at the end of 1 month follow up 20 out of 30 in HW group and 10 out of 30 in LW group, at the end of 3 month follow up 10 out of 30 in HW group and 06 out of 30 in LW group but at the end of 1 year follow up 05 patients in HW group and only 2 patients in LW group complained of foreign body sensation

**Table 4-** Foreign body sensation

FB	Heavy mesh		Light mesh	
	No	Yes	No	Yes
2 weak	06	24	18	12
1 month	10	20	20	10
3 month	20	10	24	06
6 month	21	09	25	05
1 year	25	05	28	02

At the end of 2 weeks follow up only 2 patients in heavy weight group and no patient in light weight group complain of stiffness over incisional site, after 1 month follow no patients in either group presented with stiffness over incisional site

**Table 5-** Stiffness around incisional site

CP	Heavy mesh		Light mesh	
	No	Yes	No	Yes
2 weak	28	02	30	00
1 month	30	00	30	00
3 month	30	00	30	00
6 month	30	00	30	00
1 year	30	00	30	00

## Discussion

1) The majority (>50%) of patients in this study were in the age group between 50-70 years in both groups. The incidence of age at presentation of inguinal hernia in a study done by Louis & Wendell et al was maximum in 30-60 years of life. In a study done by Ira M Rutkow 18% of cases were <15 yrs of age, 20% were 24-44 yrs, 23% were 45-65 yrs & 30% were >65 yrs; maximum number of cases were between 25-65 Yrs of age.

2) In present study 100% were male & 00% were females. This may be due to less awareness of women about hernia. Socio-economic & educational level of the female patients contribute to less number of female presenting to hospital with inguinal hernia in early stage in our study. The percentage of females in my study is nil compared to other studies.

3) In our study only postoperative period was calculated, because of delay in preoperative investigation. The average duration of hospital stay in HW group is 8.6 days and in LW group is 5.6 days. Study done by Sven Kornhale in 1976 shows that postoperative stay for short stay surgery was 3-4 days, 2-3 days in the study done by Glassowin 1984.

4) In the present study the recurrence rate is nil even though it can't be compared because of study group is small & follow up period was less. It is very difficult to project accurate incidence of recurrence it will depend on length of follow up. Even at the end of 1 year follow up no patient land up with the recurrence of hernia at the operated site and the difference of my study is statically not significant, in ideal surgeries the recurrence rate would be <1%. Sajid et al published a systematic review and meta-analysis on LWM vs. HWM concluded that the use

of a LWM was not associated with a higher recurrence rate. Chowbey et al reported higher recurrence rate with Ultrapro mesh (1.3%) as compared with the Prolene mesh(0.2%). There was no significant difference in recurrence rates between the LW and HW mesh group in studies by Chui et al, Agarwal et al, Bittner et al. and Langenbach et al.

5) At the end of 2 week follow up 24 out of 30 in HW group and 12 out of 30 in LW group ,at the end of 1 month follow up 20 out of 30 in HW group and 10 out of 30 in LW group, at the end of 3 month follow up 10 out of 30 in HW group and 06 out of 30 in LW group but at the end of 1 year follow up 05 patients in HW group and only 2 patients in LW group complained of foreign body sensation. Chui et al. reported significantly less foreign body sensation at 3, 6 and 12 months with LW mesh. The incidence after 3 months was 8% in LW mesh group as compared to 24% in HW mesh group while Bittner et al. reported there was no significant difference in this parameter between LW and HW mesh groups.

6) Bittner et al. reported more pain in mid weight mesh group at 6 months compared to other three groups However, at 12 months follow-up they did not find any significant difference in chronic pain among all mesh groups, Agrawal et al. showed that Light Weight polypropylene mesh was associated with significantly better pain score, patient comfort, and sexual function.

7) In the heavy mesh group 3 patients had stiffness over abdominal wall in the 2nd week follow up, 3 in 1 month follow up, 3 in 3 months follow up, 2 in 6 months follow up and nil in 1 year follow up. In light mesh group there was no patients with stiffness over incisional site throughout the follow up period, and the p value is 0.057 the hence the difference is statistically significant.

### Conclusion

Based on the findings of present study we conclude that light weight mesh have lesser incidence of postoperative pain, chronic pain and abdominal stiffness and lesser duration of stay in hospital, early mobility and early return to work..

### Please cite this paper as

Verma V K, Chandel H, Gangji A. Comparison of Outcome between Lightweight Mesh v/s Heavy Weight Mesh in Lichtenstein Hernia Repair.

### Acknowledgements: Nil

**Peer Review:** Not commissioned. Externally peer reviewed.

**Conflicts of Interest:** The authors declare that they have no competing interests.

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