



COMPARATIVE STUDY OF LICHTENSTEIN MESH REPAIR AND PROLENE HERNIA SYSTEM IN THE MANAGEMENT OF INGUINAL HERNIA

Dr Ashok Y. Kshirsagar

Professor, Krishna Institute Of Medical Science, Karad

Dr Ajay Kumar Agarwal*

Resident, Krishna Institute Of Medical Science, Karad *Corresponding Author

ABSTRACT

Background: Inguinal hernia repairs are commonly performed operations. Recently, Neumayer et al examined the gold standard Lichtenstein on-lay mesh repair (LMR) against laparoscopic inguinal hernia repair and showed that the recurrence rates are higher for laparoscopic mesh repairs when compared with the open on-lay mesh repair (laparoscopic 10.1% versus open 4.9%). In 1998, the prolene hernia system (PHS) mesh, consisting of an on-lay and an underlay patch attached with a connector, was introduced as an option for tension-free open repair of inguinal hernia combining the benefits of a posterior and anterior repair from an open approach. Our objective was to evaluate the PHS mesh repair versus the LMR for inguinal hernias.

Methods: PHS mesh hernia repairs and LMR repairs from June 2007 to MAY 2009 were included. Demographic data such as age, gender, occupation; smoking, symptoms as well as co-morbid conditions such as chronic obstructive pulmonary disease, prostatism and ascites were collected. Duration of surgery was also noted. Complications such as pain on days 1, 7, 14, seroma, hematoma, orchitis and wound infection were recorded. Duration of hospital stays was recorded. Chronic groin pain and recurrences in each group were also recorded. A student t test and chi-square analysis was used for statistical analysis.

Results: Fifty six patients were included. (PHS mesh 28, LMR 28). The follow-up for the study was between 3-18 months. There was no significant difference with regards to age, gender, or co-morbidities between the 2 groups. The duration of surgery was significantly lower in PHS group. Overall, there was a trend towards decreased hospital stay in PHS group. No recurrences noted in either group.

Conclusion: Our study shows, reduced operation time and duration of hospital stay in PHS mesh compared with the gold standard Lichtenstein on-lay mesh for inguinal hernias. The incidence of chronic groin pain is also lesser in PHS group. No recurrence noted in either group.

KEYWORDS : inguinal hernia; open; laparoscopic; anterior; posterior; mesh

INTRODUCTION

Hernia is protrusion of whole or part of the viscus through a normal or abnormal opening in the wall of its contents. The external abdominal wall hernia is the commonest form, the most frequent varieties being inguinal (75%), femoral (8.5%) and umbilical (15%). Repair of inguinal hernia is one of the commonest surgical procedures worldwide, irrespective of country, race or socio-economic status and constitutes a major health-care drain in every country. Because inguinal hernia repair is the most frequently performed procedure in general surgery, a small decrease in the incidence of recurrence, re-operation, and morbidity will have great socio economic consequences and will, therefore, affect the choice of technique.

AIM AND OBJECTIVES OF THE STUDY

AIM

To do comparative study of Lichtenstein mesh repair and prolene hernia system in management of inguinal hernia

OBJECTIVES

To compare PHS with Lichtenstein mesh repair in terms of

1. Operation time
2. Return to normal activity
3. Post operative complications
4. Recurrence

MATERIALS AND METHODS:

Patients:

This is comparative study done at Krishna hospital &MRC, Karad from June 2007 till May 2009. A total of 28 patients who underwent inguinal hernia repair with PHS were compared with 28 patients who underwent Lichtenstein mesh repair.

Inclusion criteria

Patients 18 years and above

All patients admitted with the diagnosis of inguinal hernia (both direct and indirect)

Exclusion criteria

Patients with complicated inguinal hernia (irreducible, incarcerated, strangulated) Paediatric inguinal hernia

Standardization of study:

History and examination of all patients done as per Performa. All surgeries were done under spinal anaesthesia.

Standard procedure followed for Lichtenstein mesh repair and PHS was followed.

Study methods:

1. The present study is a comparative study.
2. The study period is from JUNE 2007 to MAY 2009
3. A total of 56 patients with uncomplicated inguinal hernia were taken for study
4. Patients were randomly allotted to two group. 28 patients underwent Lichtenstein mesh repair and the remaining 28 underwent repair with prolene hernia system under spinal anaesthesia.
5. Duration of surgery, post operative complications including groin pain, duration of hospital stay, chronic groin pain, return to normal activity, foreign body sensation and recurrence were recorded.

All patients were evaluated with:

Operative and post op details

Duration of surgery, post operative complications including groin pain, duration of hospital stay, chronic groin pain, return to normal activity, foreign body sensation and recurrence were recorded.

The criteria for study

1. Seroma formation: presence of clear fluid without any sign of inflammation.
3. Infection: purulent collection in the wound associated with signs of inflammation.
4. Groin pain: burning, pricking or stinging sensation in the inguinal region was assessed on post op days 1, 7 and 14. Pain documented using visual analogue score.

Chronic groin pain is defined as pain in the inguinal region lasting for more than six months.

Table I: visual analogue scale

CATEGORY	SCORE
NONE	0
MILD	1,2,3
MODERATE	4,5,6
SEVERE	7,8,9,10

5. Return to normal activity: is when the patient returns back to his usual work.
6. Recurrence: is the occurrence on inguinal hernia in the operated side.

RESULTS

Study design: A comparative surgical study with 56 patients randomly divided in to two groups with 28 in Group LMR and 28 patients in Group PHS is undertaken to study the efficacy of surgical procedures.

AGE DISTRIBUTION:

Patients > 18 years were included in the study.

Table II: Age distribution

Age group	No. of patients	percentage
<30 years	15	25.5%
31-40 years	10	17%
41-50 years	08	13.6%
51-60 years	12	20.4%
61-70 years	09	15.3%
>70 years	02	3.4%

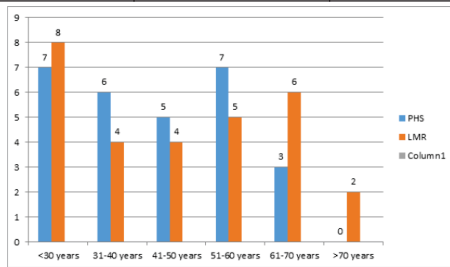


Fig: I Graph showing the comparison of age
There was no statistical difference between two groups.

SEX DISTRIBUTION

55 of our patients were male. Only one patient was female in the study.

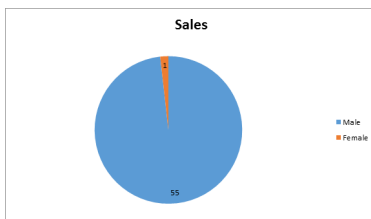


Fig: II Gender distributions of patients studied

DURATION OF SURGERY:

The duration of surgery in LMR ranged from 35.3 minutes to 56.3 minutes, with a mean duration of 47.26±6.56 minutes. In PHS group the duration of surgery ranged from 23.4 minutes to

50.2 minutes, with a mean duration of 36.48±8.33 minutes.

Table III: comparison of duration of surgery

Duration of surgery	Group LMR	Group PHS
Min-max	35-56	23-50
Mean + _SD	47.26±6.56	36.48±8.33
Inference	Mean duration of surgery is significantly less in group PHS	

PAIN SCORE:

The patients were evaluated for groin pain on post op days 1, 7, and 14 using visual analogue scale. The results are as follows.

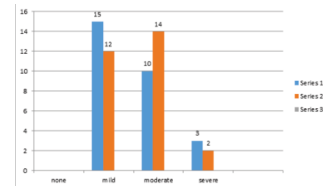


Fig: III graph showing the pain score –post op day 1

VAS on day 1 showed majority of the patients had mild pain. Post op day 7:

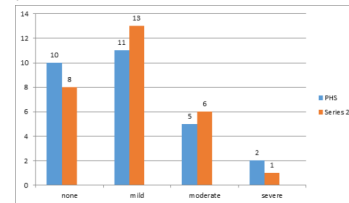


Fig: IV Graph showing the pain scores on post op day 7

By day 7, 7 patients in PHS group and 6 patients in LMR group were totally pain free.

Post op day 14:

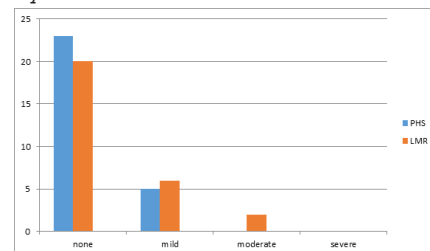


Fig: V Graph showing pain score post op day 14

On day 14, 21 patients in PHS group and 18 patients in LMR group were pain free. Only one patient in LMR group complained of severe pain.

CHRONIC GROIN PAIN:

Is defined as pain lasting for more than 3 months. It is one of the most important complications following hernia surgery.

Table IV: Comparison of incidence of chronic pain

Chronic groin pain	Group LMR	Group PHS
Absent	25(89.3%)	27(96.4%)
Present	3(10.7%)	1(3.6%)

COMPLICATIONS:

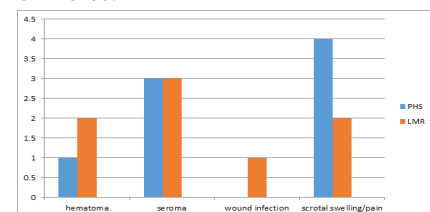


Fig: VI Graph showing the type of complications in two groups of patients

The incidence of scrotal pain/swelling is more in PHS group while hematoma/seroma is common in LMR group.

DURATION OF HOSPITAL STAYS:

The duration of hospital stays in PHS group was between 4-9 days with a mean duration of 6.68 ± 1.39 days. In the LMR group the duration of hospital stay was between 5-10 days with a mean duration of 7.61 ± 1.23 days.

Table-V: comparison of duration of hospital stays.

Hospital stay in days	Group LMR	Group PHS
1-2 days	0	0
3-4 days	0	2
5-7 days	13	17
More than 7 days	15	9
Mean+ SD	7.61 ± 1.23	6.68 ± 1.39

RECURRENCE:

No recurrence noted in both the group till date. The duration of follow-up being 3 to 18 months.

DISCUSSION

The present study is a comparative study between LMR AND PHS in the management of inguinal hernia. The study aimed to compare the two surgical techniques with respect to duration of surgery, post op complications, duration of hospital stay and recurrence.

AGE AND SEX DISTRIBUTION:

In our study most of the patients belonged to the 20-30 age group. The range was 20-78 years. The mean age was 46.86 ± 18.67 years in the LMR group and 44.00 ± 13.63 years in PHS group with no statistically difference. In a study by Farrakha M et al (2004), the mean age was 44 years with a range of 18-74 years.

DURATION OF SURGERY:

In our study the duration of surgery in PHS group was lesser than in LMR group and was statistically significant too. In a study by S. Awad et al, the duration of surgery in PHS group was 90.6 ± 1.6 mins and 89.5 ± 1.7 mins in LMR group.

POST OP PAIN:

In our study, post op pain was analyzed using VAS on days 1, 7 and 14. About 75% patients remained free by 14 days. In a study by Vironen. J and Nieminen, the incidence of pain between two groups was similar. About $3/4^{\text{th}}$ of the patients had mild pain after 1 week. At 14 days only 4% had more than mild pain.

COMPLICATIONS:

In our study, incidence of complications was 28.6%. Seroma/hematoma was common in LMR group and scrotal pain/swelling was common in PHS group. In a study by S. Awad et al, complication rates in PHS group were 17% and 23% in LMR group.

RECURRENCE:

No recurrence noted in our study.

In a study by S. Awad et al recurrence rate for PHS was 0.6% and for LMR it was 2.7%.

SUMMARY

Inguinal hernia is a common surgical pathology. Because inguinal hernia repair is the most frequently performed procedure in general surgery, a small decrease in the incidence of recurrence, re-operation will have great socioeconomic consequences and will, therefore, affect the choice

of technique. And the search for the best technique still continues. The present study was conducted in the department of general surgery, Krishna hospital and medical research centre, Karad. The study aimed to know the feasibility of repair of inguinal hernia using PHS and compare it with the standard Lichtenstein mesh repair. The other part of study was to compare LMR and PHS in the management of inguinal hernia. Owing to the ease of operation, low rates of recurrence and high level of patient safety and comfort, the Lichtenstein repair has become the most commonly used method of inguinal hernia repair. Some recent studies have reported chronic irritation and pain after Lichtenstein procedure, probably caused by tension, or nerve compression by the fixing sutures.

In an attempt to improve on the LMR, Gilbert developed an approach to the pre peritoneal space through the internal ring and led to the development of the PHS mesh. The PHS mesh, consisting of an underlay patch, an over lay patch, and a joining connector, have potential benefits over the traditional LMR and laparoscopic repairs. Our study showed that the duration of surgery was significantly lesser in the PHS group, so as the duration of hospital stay. There was no recurrence noted in our study in both the groups.

CONCLUSIONS

1. PHS which combines both anterior and posterior repairs of hernia is a simple procedure, easy to follow and comparable with gold standard Lichtenstein mesh repair.
2. Duration of surgery and duration of hospital stay are significantly lesser in PHS
3. Recurrence rates are comparable to Lichtenstein repair.

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