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Surgery

A COMPARITIVE STUDY OF ONLAY – SUBLAY MESHPLASTY (PHS) vs. LICHTENSTEIN MESHPLASTY OF INGUINAL HERNIA

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ABSTRACT

Introduction: A Hernia is the protrusion of part of the abdominal contents beyond the abdominal wall's normal confines. In this study, an attempt is made to compare the results of two different modalities of hernia repair–Lichtenstein repair and repair of hernia with Polypropylene hernia system.

Aim: The study aims to ascertain the Polypropylene hernia system's safety and benefits for hernia repair against conventional Lichtenstein tension-free mesh repair technique.

Materials and methods: The prospective clinical study comprises 30 patients presenting with inguinal hernia attending OPD and admitted to the General Surgery Department of King George Hospital, Visakhapatnam, during the study period of September 2018 to October 2020.

Results: Age distribution between 10-90, most of the 50-70 age group (14 cases). Visual analog scale (VAS) score for PMR 4.55 ± 1.18 and LMR 6.06 1.27 (p-value <0.05). Wound infection for PMR 1 case and LMR 2 cases. Duration of surgery for PMR 65.40 ± 7.84 and LMR 51.33 ± 13.51 (p-value <0.05). Type of surgery and duration of hospital stay for PMR 4.93 ± 1.27 LMR 6.73 ± 2.12. Type of surgery and return to work for PMR 5.93 ± 1.27 and LMR 7.73 ± 2.12(p-value <0.05).Recurrence in PMR 0 % and LMR 6.67%.

Conclusion: PHS repair is superior to Lichtenstein mesh repair about safe, tension-free method, shorter hospital Stay, early return to work, least recurrence rates, and a high subjective success rate and satisfaction rate.

KEYWORDS : Inguinal hernia, Hernioplasty, Polypropylene hernia system (PHS), PHS mesh repair(PMR), Lichtenstein mesh repair(LMR).

INTRODUCTION

The hernia has been known for ages and will be known for centuries to come as long as human beings prompt to stand and walk. Since the dawn of surgical history, hernias have been a subject of interest, and their treatment has evolved through distinct stages. A hernia is the "protrusion of a viscus or part of the viscus through an abnormal opening in the walls of its containing cavity."

Hernia seems to be the result of a bipedal posture of humans due to bearing of intra-abdominal pressure against the lower abdominal wall, below the level of arcuate line. This is compounded by the evolutionary defect in the posterior rectus sheath's human-absence, below the level of arcuate line. Search for a near-perfect modality of inguinal hernia treatment has not yet ended—recent introduction being: Hernia System and Laparoscopic Repair of Inguinal Hernia. Despite these, inguinal hernia remains unconquered and poses many challenges for all surgeons practicing hernia repairs. Successful hernia surgery is a series of minimums, specifically minimum risk of surgery and anesthesia, minimum tissue trauma, disability confinement, complications, cost, and recurrence. The most effective surgical treatment is unknown. In this study, an attempt is made to compare the results of two different modalities of hernia repair–Lichtenstein repair and repair of hernia with Polypropylene hernia system.

AIM

The study aims to ascertain the Polypropylene hernia system's safety and benefits for hernia repair against conventional Lichtenstein tension-free mesh repair technique.

OBJECTIVES

The following factors will be taken into consideration to assess the outcome of both procedures:

1) Postoperative pain
2) Postoperative wound infection
3) Duration of the hospital stay
4) Day of Return to work
5) Chronic groin pain
6) Recurrence rates
7) Cost-effectiveness

METHODOLOGY

SOURCE OF DATA

The prospective clinical study comprises 30 patients presenting with inguinal hernia attending OPD and admitted to the General Surgery Department of king George hospital Visakhapatnam during the study period of September 2018 to October 2020.

METHOD OF COLLECTING DATA

In this study, 30 patients presenting with inguinal hernia were selected by the Random sampling technique.

INCLUSION CRITERIA 1) Adult, male 2) All cases > 18 years of age 3) Uncomplicated inguinal hernia

EXCLUSION CRITERIA 1) Age below 18 years, 2) Previous groin surgeries 3) Recurrent inguinal hernia 4) Complicated hernia like obstructed and strangulated inguinal hernias presenting as emergencies. 5) Other coexisting surgical pathologies 6) Other comorbid conditions like Diabetes mellitus, Hypertension, etc.

RESULTS

Thirty patients were divided into two groups. One group of 15 patients underwent meshplasty using the Prolene hernia system (PHS). Other groups of 15 patients were operated on by using Lichtenstein mesh repair. Visual Analogue Scale (VAS) score was used to assess the pain among the patients postoperatively. All patients of both groups were followed for 2 years to evaluate complications and recurrence among them.

The following data were obtained.

Table 1: Age distribution

AGE GROUP	FREQUENCY	PERCENT
11—20	1	3.3
21—30	5	16.7
31—40	4	13.3
41—50	4	13.3
51—60	7	23.3
61—70	7	23.3
71—80	1	3.3
81—90	1	3.3
Total	30	100

Table 2: Distribution based on postoperative pain

VAS	PMR	LMR
<3	0	0
3 – 6	14	9
>7	1	6
Total	15	15
Mean ± SD	**4.55 ± 1.18**	**6.06 ± 1.27**
P value	<0.05	

Table 3: Distribution based on Postoperative complication – Woundinfection

	PMR	LMR
No	14	13
Yes	1	2
Total	15	15

Table 4: Duration of Hospital stay

	PMR	LMR
1 – 2 days	0	0
3 - 4 days	1	1
5 - 7 days	11	9
>7 days	3	5
Total	15	15
Mean ± SD	**4.93 ± 1.27**	**6.73 ± 2.12**

Table 5: Type of surgery and duration of surgery

Duration of surgery	Mean ± SD	P value
PMR	**65.40 ± 7.84**	<0.05
LMR	**51.33 ± 13.51**	
Total	58.36 ± 13.00	

Table 6: Type of surgery and return to work in days

	Mean ± SD	P value
PMR	**5.93 ± 1.27**	<0.05
LMR	**7.73 ± 2.12**	
Total	6.83 ± 1.94	

DISCUSSION

Age distribution

In the present study, the mean age of the patients was 49.53 ± 16.98. majority of the patients were in the age group of 51 – 70, i.e., 14 patients. 21-30 years age group had 16.7% of patients.

This study is correlating with the results of the Gupta et al. study.

MEAN AGE

Present study	49.53 ± 16.98
Ibrahim et al	43.5 years
Badhkur	41.7 years
Gupta	49 ± 17.21

OCCUPATION

Based on occupation in the present study, Agricultural labor was 43.3%, Manual labors were 46.7%.

Presenting complaints

In the present study, based on presenting complaints, 46.7% had swelling for more than one year, 36.7% had swelling for 6-12 months, and 16.7% had swelling for <6months.

Based on presenting complaint (Pain), 90% had pain for the last six months, and 10% had pain for more than six months Type of Hernia In the present study, 60% had Indirect Hernia, 36.7% had Direct hernia.

Type of Hernia

In the present study, 60% had Indirect Hernia, 36.7% had Direct hernia.

Based on surgery

50% of the patients underwent Lichtenstein meshplasty, and 50% underwent PHS meshplasty.

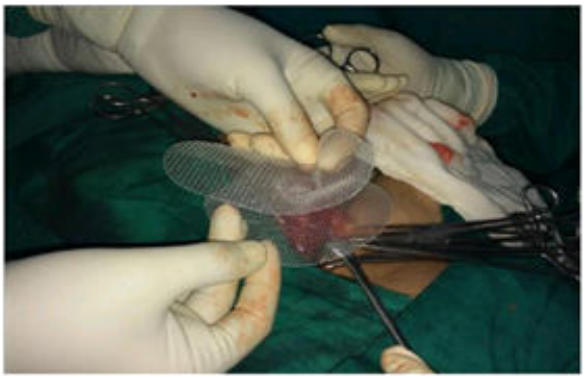

Figure 1: Prolene hernia system

Postoperative infection

Wound infection was observed postoperatively among 10% of the patients. Most of these were superficial infections. Intravenous Ceftriaxone 1gm BD, along with regular antiseptic dressing, was used to clear the infection.

Duration of hospital stay

In the present study, 70% of the patients had a duration of hospital stay between 4-7 days, and 16.7% had a duration of hospital stay for >8 days, and 13.3% had a duration of hospital stay for <3 days. The mean duration of hospital stay was 5.83±1.94

Postoperative pain and Type of surgery

In the present study, the mean Visual Analogue Scale score was 5.30±1.44. The mean VAS score of the PMR group was 4.55/10, and the mean VAS score of the LMR group was 6.06/10. The mean VAS score was more for the LMR group than the PMR group. This finding was statistically significant as the p-value calculated using a parametric statistic, i.e., unpaired t-test was significant with a p-value <0.05.

POSTOPERATIVE PAIN

	LMR	PMR
Present study	6.06/10	4.55/10
Badhkur et Al	4.2/10	3.2/10

In the study by Shankar48 et al. maximum number of patients complained of moderate pain, 76.67% in cases and 73.33% in controls, and both the groups were compared statistically with a P = 0.7326. On POD 3, the percentage of patients in the moderate pain category decreased with an increase in mild pain and no pain category. Both the groups were comparable with a P = 0.9097. On POD 8, none of the patients complained of severe pain, and most of the patients had no pain. Both the groups were comparable with a P = 0.8297. Overall, there was no statistically significant difference between cases and controls in postoperative pain days 1, 3, and 8. But on comparing postoperative pain on day 1 with day 3 and 8, and on comparing day three pain with day eight pain, there was a statistically significant decrease in the severity of pain with a P < 0.05. It signifies that the severity of pain decreases as the number of PODs increase in both groups.

Type of surgery and Duration of surgery

In the present study, the mean duration of surgery was 58.36±13.00. The mean duration of the PMR group surgery was 65.40±7.84, and the mean Duration of surgery of the LMR group was 51.33±13.51. The mean duration of surgery was less for the LMR group than the PMR group. This finding was statistically significant as the p-value calculated using a parametric statistic, i.e., unpaired t-test, was significant with a p-value <0.05.

The present study results are closer to Badhkur et al.'s study results.

DURATION OF SURGERY

	LMR(min)	PMR(min)
present study	51.33 ± 13.51	65.40 ± 7.84
Badhkur et al	51.3 ± 8.5	65.4 ±1 0.1
Shankar	46.33 ± 7.18	46.67 ± 6.48
Santosh et al	47.26	36.48

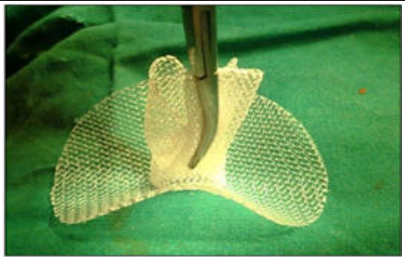

Figure 2: Bilayered polypropylene mesh (folding of the onlay followed by inlay)

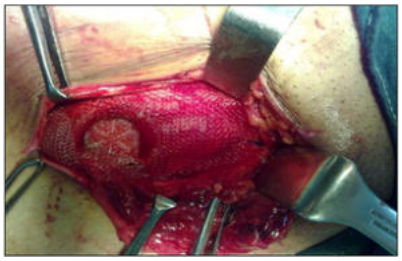

Figure 3: overlay patch placed over the conjoint tendon and inguinal ligament fixed at the pubic tubercle.

Figure 4: procedure completed (mesh in situ)

Duration of Hospital stay and Type of Surgery

In the present study, the mean duration of hospital stay was 5.83 ± 1.94. The mean duration of hospital stay of the PMR group was 4.93 ± 1.27, and the mean duration of hospital stay for the LMR group was 6.73 ± 2.12. The mean duration of hospital stay was more for the LMR group than the PMR group. This finding was statistically significant as the p-value calculated using a parametric statistic, i.e., unpaired t-test, was significant with a p-value <0.05.

DURATION OF HOSPITAL STAY IN DAYS

	LMR	PMR
Present study	6.73± 2.21 days	4.93 1.27 days
Shankar	4.10± 2.25 days	3.63 1.22 days
Santosh et al	7.61± 123	6.68 1.39 days
Guptha et al	42.56 ±9.95 hours	36.84± 6.51 hours
hota et al	04(4-8)	02(2-8) days
Badhkur et al	4.8 days	3.5 days

Type of surgery and Return to work in days

In the present study, the mean Return to their work in days was 6.83 ± 1.94. The PMR group's mean was 5.93 ± 1.27, and for the LMR group was 7.73 ± 2.12. The mean more for the LMR group than the PMR group. This finding was statistically significant as the p-value calculated using a parametric statistic, i.e., unpaired t-test, was significant with a p-value <0.05.

RETURN OF WORK

	LMR	PMR
Present study	7.73 2.21	5.93 1.27
Santosh et al	3.5days	2.8 days
Hota et al	30 days	15 days

Sanjay46 et al. reported no significant difference in time to return to driving, working, and normal activity between the two groups. Mean time to return to manual work in patients who were employed was 42 versus 30 days (P = 0.3), returning to driving was 20 versus 14 days (P = 0.2), and normal activity was 21 versus 22 days (P = 0.8).

Postoperative complications and Type of surgery

Three patients presented with postoperative complications; among them, two patients underwent LMR, and one patient underwent PMR surgery.

The study conducted by Santosh45 et al. shows Incidence of complications postoperatively (hematoma, seroma, wound infection, scrotal swelling/pain) was similar in both groups (28.6%). Seroma formation (10.7%) was the most common complication in the LMR group, while scrotal pain/swelling (14.3%) was common in the PHS group. Only one patient in the LMR group had a wound infection (3.6%). In our study, 3% with Lichtenstein repair presented with chronic groin pain and recurrence. A similar finding is observed in the study by Shankar48 et al. where In their research, 5 (8.33%) out of 60 patients had chronic groin pain, 2 (6.67%) in the PHS group, and 3 (10%) in the Lichtenstein group.

CONCLUSION

Of the two types of repair (Lichtenstein mesh repair and mesh repair with PHS), PHS repair was found to be safe and a tension-free method in treating inguinal hernia. PHS required fewer analgesics and antibiotics, owing to less postoperative pain and wound infection. PHS repair was superior to Lichtenstein Mesh about a shorter hospital stay and early return to work and hence had a high subjective success rate and satisfaction rate. PHS repair was a more feasible procedure for long-term complications with the least recurrence rates and persisting pain. The current limitation in the widespread use of PHS mesh for hernia repair is the high cost incurred, making Lichtenstein mesh repair still the most practiced surgery modality in patients with low socioeconomic status.

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