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Comparison of pure tissue repair (Desarda) and prosthetic repair (Lichtenstein) methods for inguinal hernia repair

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Abstract---An ideal hernia repair must be tension free, tissue based and have no complications. In Desarda operation a 1-2 cm strip of external oblique aponeurosis which is isolated and sutured to conjoint tendon and inguinal ligament resulting in strengthening of the posterior inguinal canal. Lichtenstein's repair uses prolene mesh and is a tension free repair. Compare Desarda tissue repair with Lichtenstein mesh repair for treatment of primary inguinal hernia. Objective: To compare post-operative pain, to compare post-operative complications, to compare hospital stay, to compare rate of recurrence This study enrolled 160 patients of inguinal hernia who are divided into two groups of 80. Group D included patients who underwent Desarda procedure for hernia repair and group L included patients who underwent Lichtenstein mesh repair. The results were compiled and analysed using SPSS version 20 statistical software. Severity of post-operative pain on POD1 and POD7 in group L was higher when compare to group D. Scrotal swelling was 1.25% in group D and 8.75% in group L. The occurrence of seroma was 2.5% in group D and 11.25% in group L. The occurrence of hematoma and wound infection were comparable in both the groups. In group L 30% of the patient had >3 days hospital stays. Whereas, in group D only 16.25% patients had >3 days hospital stays. Recurrence was 0 in either group. Desarda repair is more cost effective as it is a tissue-based repair and does not require placement of prolene mesh which is used in Lichtenstein repair. Conclusion: Desarda repair for hernia has reduced severity of post-operative pain, post-operative complications and also lesser stay in hospital when compared to Lichtenstein hernia repair.

Keywords---inguinal hernia, Desarda repair, Lichtenstein mesh repair.

Introduction

Inguinal hernia history is as old as the surgery itself. The most commonly performed surgery across the world is hernia. Bassini had described the tissue-based hernia repair. An ideal hernia repair must be tension free, tissue based and have no complications. In Desarda operation a 1-2 cm strip of external oblique aponeurosis which is isolated and sutured to conjoint tendon and inguinal ligament resulting in strengthening of the posterior inguinal canal. Lichtenstein's repair uses prolene mesh and is a tension free repair.

Aim

Compare Desarda tissue repair with Lichtenstein mesh repair for treatment of primary inguinal hernia.

Objectives

To compare post-operative pain

- To compare post-operative complications
- To compare hospital stay
- To compare rate of recurrence
- Hernia repair is one of the most commonly performed general surgical procedures worldwide.
- An Ideal Hernia repair should be tension free, tissue based, with no potential damage to vital structures, no long-term pain or complications and no recurrence.
- Lichtenstein's prosthetic repair using prolene mesh has been popular lately & it is a tension free repair. The mesh works as a mechanical barrier, but it does not give mobility and physiologically dynamic posterior wall. Moreover, this technique is associated with risk of infections, recurrence, chronic pain testicular atrophy and infertility, foreign body sensations and chronic groin sepsis which sometimes may require mesh removal.
- Desarda has described an operation where a 1-2 cm strip of external oblique aponeurosis lying over the inguinal canal is isolated and then sutured to the conjoint tendon and inguinal ligament, reinforcing the posterior wall of inguinal canal. This new technique is theoretically closer to ideal hernia repair. It is based on the concept of providing a strong, mobile and physiologically dynamic posterior inguinal wall.[1]

Materials and Methods

- This prospective comparative study of patients having unilateral inguinal hernia will be undertaken in Krishna Institute of Medical & Research Centre, Karad during the period between December 2019 to June 2021.

$$n = \frac{(p_1 q_1 + p_2 q_2) (Z_{1-\alpha/2} + Z_{1-\beta})^2}{(p_1 - p_2)^2}$$

P1=12 ; p2=31 ; q1=88 ; q2=69

$$(Z_{1-\alpha/2} + Z_{1-\beta})^2 = 7.84$$

From the above formula n=70

Assuming some amount of patients may not follow up and taking a 10%buffer, appropriate sample size would be 80 in each group and a total of 160.

Study Groups

- GROUP D: 80 patients who undergo desarda procedure for hernia will be included in this group.
- GROUP L: 80 patients who undergo Lichtenstein mesh repair for hernia will be included in this group.

Inclusion criteria

- 1) Patients of age >18 years
- 2) Patients with primary Inguinal hernia.

Exclusion criteria

1. Patients of age <18 years
2. Patients with
 - obstructed inguinal hernia
 - strangulated inguinal hernia
 - recurrent inguinal hernia

Statistical Analysis

- Normally distributed data are presented as mean, standard deviation and were compared using the Student's *t*-test.
- Non-normally distributed data were presented as median and were compared using the Mann-Whitney *U* test.
- Categorical variables, like age, sex, laterality of hernia are presented as frequencies and were compared using Chi-square test.
- *P*<0.05 was considered as significant difference.
- Statistical analysis was performed using SPSS 20 for Windows (SPSS Inc., Chicago, Illinois).

Findings

Demographic parameters

- The mean age was 54.6+ 7.85 in group D and 55.16 + 6.83 in group L
- With p-value statistically insignificant.

- Gender and occurrence of side of hernia were statistically insignificant.
- Therefore, both the groups were comparable.

Post Operative Pain

- In our study, the post-operative pain was significant on POD 1 with P – value 0.025 and on POD 7 it was 0.029.
- Pain on POD-15 and POD-30 was insignificant.

Post Operative Complications

- In our study, the occurrence of scrotal swelling in Group L (8.75%) vs (1.25%) in group D, with p- values 0.030.
- The occurrence of seroma in group L (11.25%) and in group D (2.5%) P-value is 0.0293.
- The occurrence of hematoma and wound infection were statistically insignificant.
- Thus, the occurrence of post- operative complications were more in Lichtenstein mesh repair.

Length of Hospital Stay

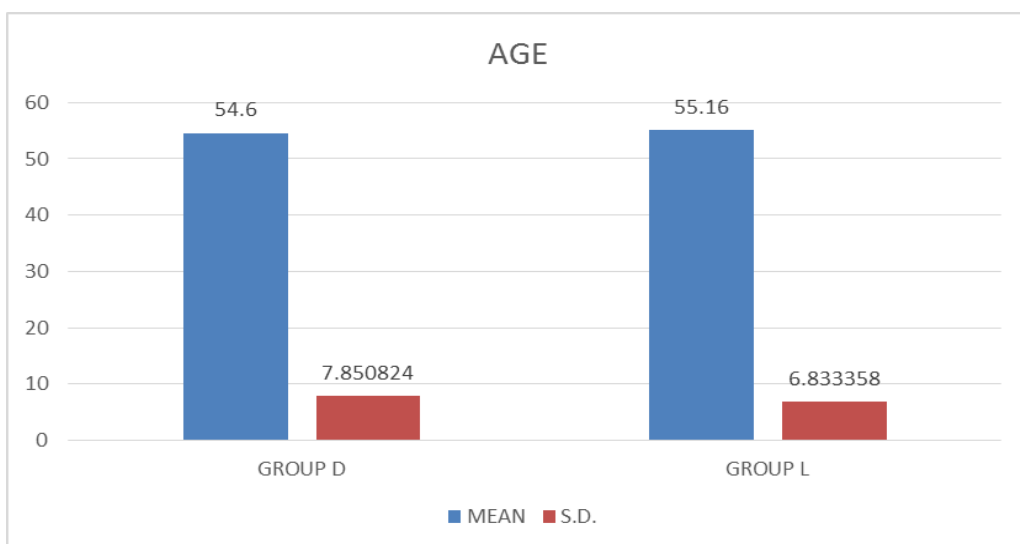
The number of patients with stay less than 3days is more in Group D as compared to group L. With P- value 0.03 which is statistically significant.

Recurrences

There are 0 recurrences in both the groups.

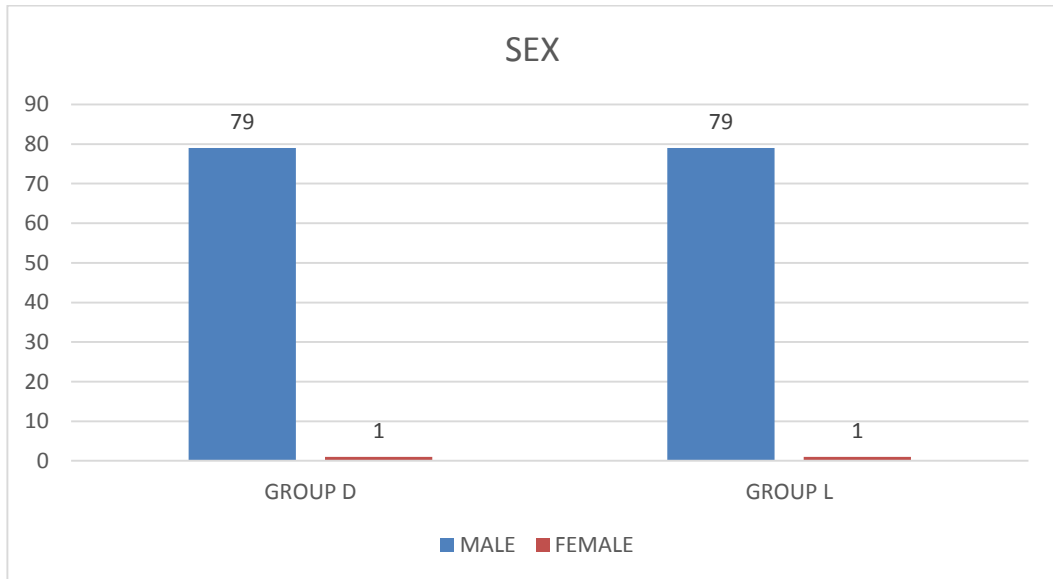
Results

Age

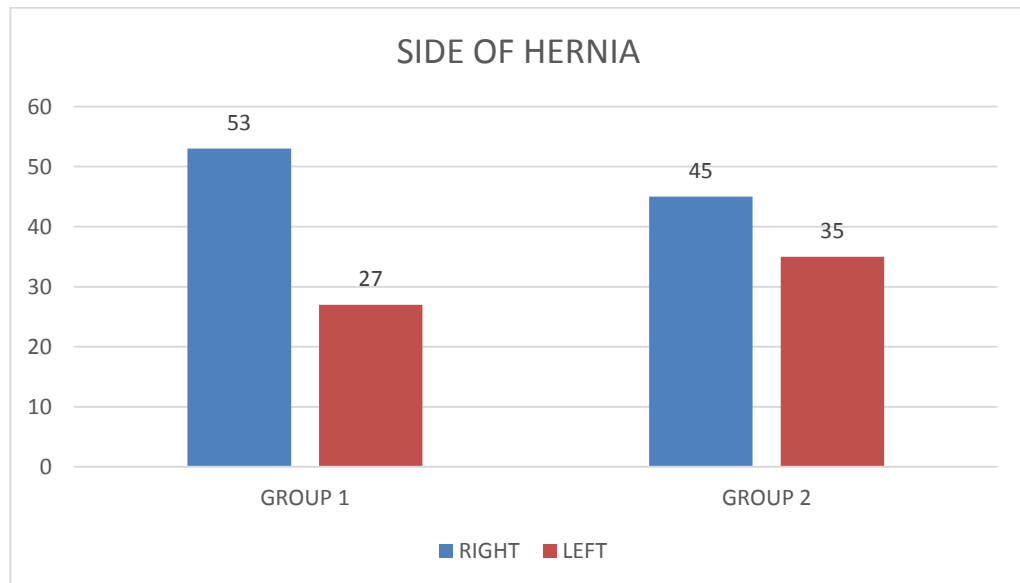


3000

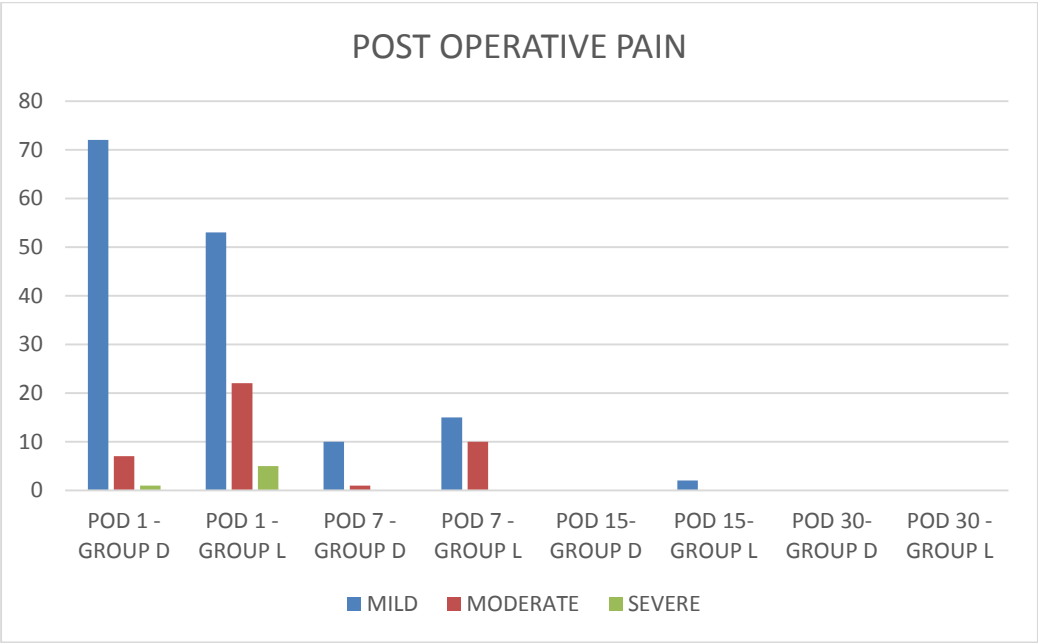
Gender



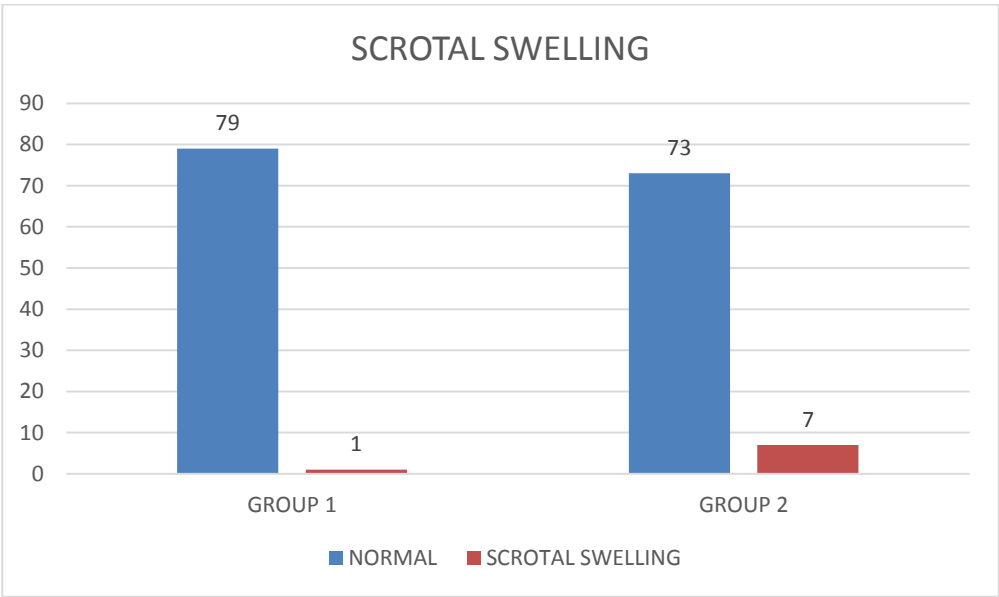
Laterality

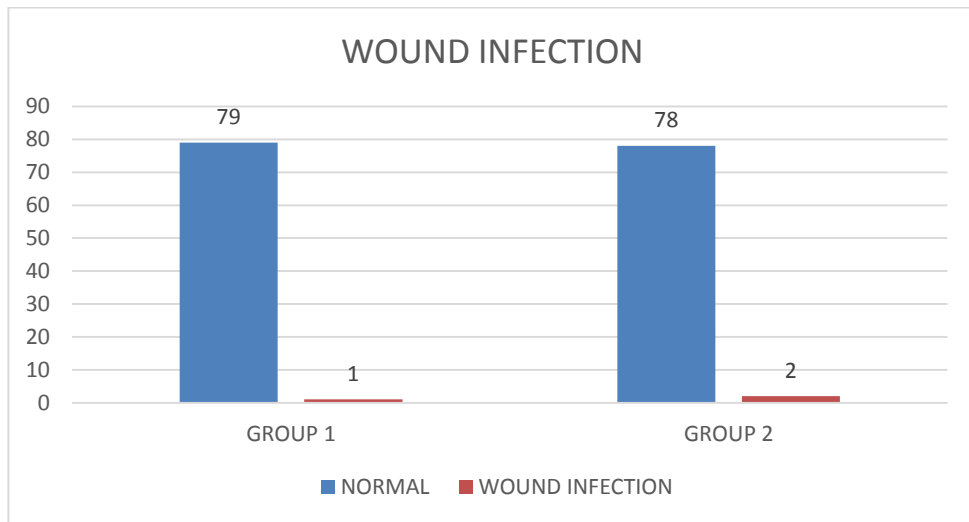
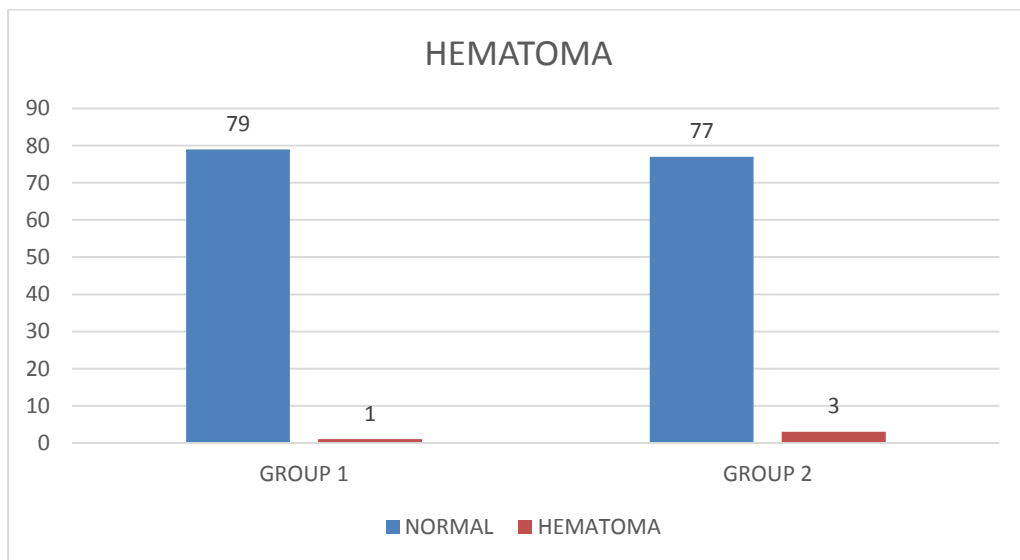


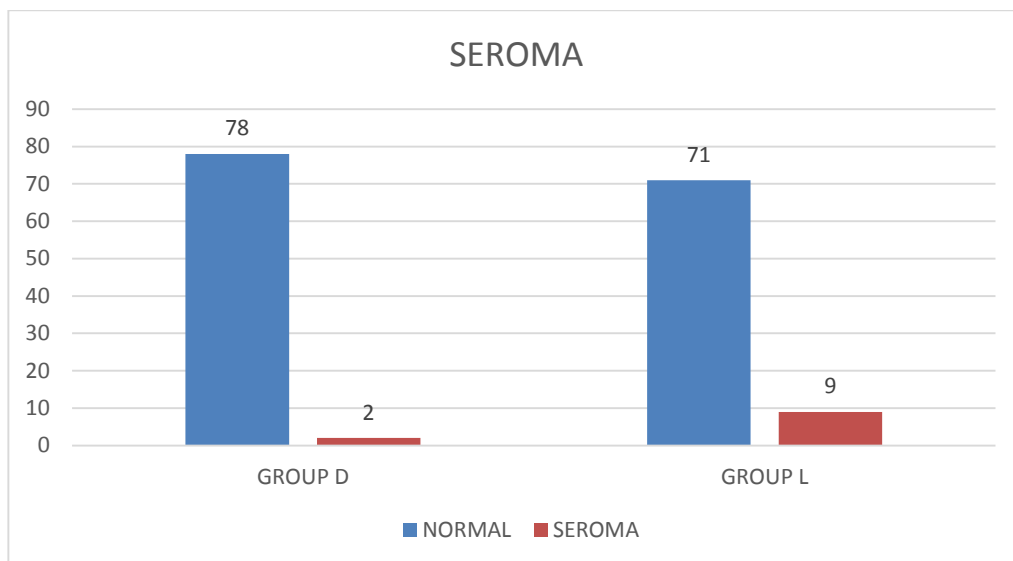
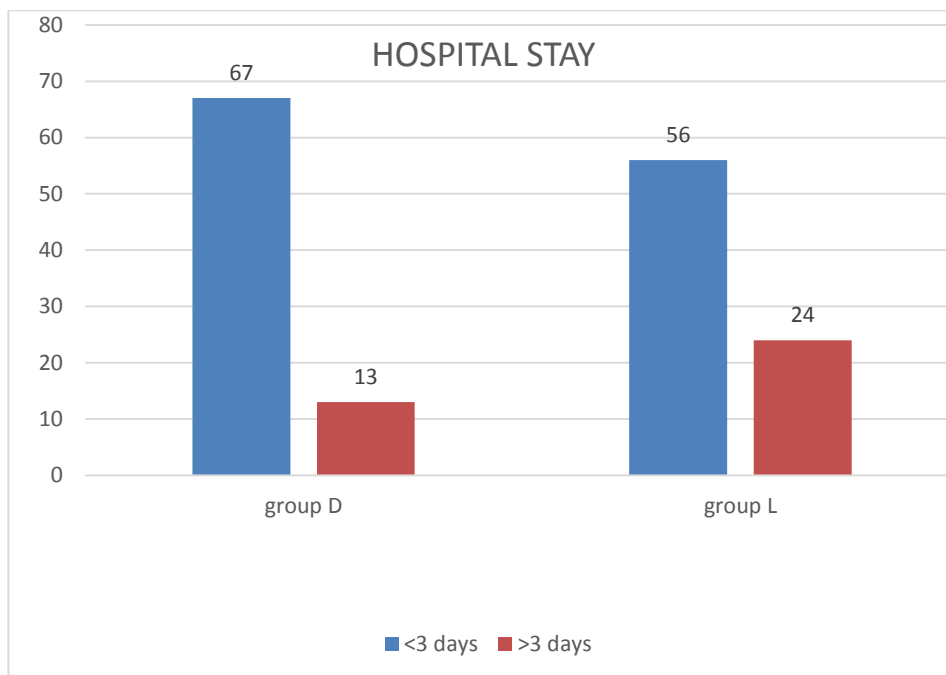
Post- Operarive Pain



Scrotal Swelling



Wound Infection**Hematoma**

Seroma**Length of Hopital Stay****Recurrence**

- There were 0 recurrences in both the groups.

Among the 160 patients the age of presentation in group D was 54.6 ± 7.85 and in group L was 55.6 ± 6.83 . The post-operative analysis of the results showed:

- Severity of post-operative pain on POD1 and POD7 in group L was higher when compared to group D.
- Scrotal swelling was 1.25% in group D and 8.75% in group L.
- The occurrence of seroma was 2.5% in group D and 11.25% in group L.
- The occurrence of hematoma and wound infection were comparable in both the groups.
- In group L 30% of the patients had >3 days hospital stays. Whereas, in group D only 16.25% patients had >3 days hospital stays.
- Recurrence was 0 in either group.
- Desarda repair is more cost effective as it is a tissue-based repair and does not require placement of prolene mesh which is used in Lichtenstein repair.

Conclusion

Desarda repair for hernia has reduced severity of post-operative pain, post-operative complications and also lesser stay in hospital when compared to Lichtenstein hernia repair.

Discussion

Demographic Parameters

The mean age was 54.6 ± 7.85 in group D and 55.16 ± 6.83 in group L. With p-value statistically insignificant. Gender and occurrence of side of hernia were statistically insignificant. Therefore, both the groups were comparable.

Post- Operative Pain

Amanda et al.¹⁵

There was a statistically significant difference in terms of postoperative pain 0.0167 in favour of the Desarda group.

Sudhir Jain et al.¹⁶

The mean pain score (VAS) was assessed at 6 h, 48 hrs and 1 week. There was a rise in pain starting 48 h postoperatively in both the groups, mean score being higher in Lichtenstein group. There was a subsequent fall of pain in both the groups, but the pain scores were higher in the Lichtenstein group throughout. Mean pain score at 1 week in the Desarda group was 1.39 ± 0.69 as compared to 2.82 ± 0.84 in the Lichtenstein group. The "p" value for the difference in mean scores at all the times was <0.001 , thus statistically significant. In our study, the post-operative pain was significant on POD 1 with P-value 0.025 and on POD 7 it was 0.029. Pain on POD-15 and POD-30 was insignificant.

Post-Operative Complications

Amanda et al.¹⁵

The complication observed were hematoma, seroma, and scrotal swelling, which were seen in 20% of patients in Lichtenstein group and 8% in Desarda group ($p = 0.0167$).

Szopinski et al.¹⁷

The rates of early and late complications were similar in the two groups. The number of seromas was comparable for the D and L groups 7 days after the surgery. But the number was higher in the L group at the 30-day follow-up [0/105 vs. 8/103(7.76%)], respectively; $p=0.004$).

Sudhir Jain et al.¹⁶

The overall complication rate was higher in the Lichtenstein group. The p value for this difference was 0.001 and hence was statistically significant. Scrotal oedema was the most common complication in both the groups. The Lichtenstein group had 10 patients (25%) who had scrotal oedema as compared to 3 patients (6.8%) in the Desarda group. The p value for this difference was 0.033 and hence statistically significant.

In our study, the occurrence of scrotal swelling in Group L (8.75%) vs (1.25%) in group D, with p - values 0.030.

- The occurrence of seroma in group L (11.25%) and in group D (2.5%) P -value is 0.0293.
- The occurrence of hematoma and wound infection were statistically insignificant.
- Thus, the occurrence of post- operative complications was more in Lichtenstein mesh repair.

Length of Hospital Stay

Amanda et al. ¹⁵

The length of hospital stay was not statistically significant ($p = 0.0968$).

Sudhir Jain et al.¹⁶

The mean hospitalization time in the Desarda group was 2.34 ± 0.57 days as compared to 4.88 ± 1.67 days in the Lichtenstein group. The p value was less than 0.001.

In our study, the number of patients with stay less than 3days is more in Group D as compared to group L. With P - value 0.03 which is statistically significant.

Recurrences

Amanda et al. ¹⁵

There was no recurrence reported on both study arms after 24 months of follow-up

Szopinski et al.¹⁷

There were two (1.9%) recurrences in each study group during the 3-year time period ($p = 1.000$).

In our study, there are 0 recurrences in both the groups.

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