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ORIGINAL ARTICLE

COMPARISON OF POSTOPERATIVE PAIN IN DESARDA VS LICHTENSTEIN MESH REPAIR IN THE TREATMENT OF INGUINAL HERNIAS

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ABSTRACT

Background: Inguinal hernia is a protrusion of a viscus or part of a viscus in the inguinal canal either through the internal ring or a weakness in its posterior wall. Inguinal hernia repair is one of the most frequently performed surgeries in the world. The objective of this study was to compare the mean postoperative pain in Desarda vs Lichtenstein Mesh repair in the treatment of inguinal hernia.

Materials & Methods: This randomized controlled trial was conducted at Surgery Department Mercy Teaching Hospital, Peshawar Medical College and District Headquarter Hospital Daggar, Buner from January 2022 to December 2022. Two hundred thirty-eight patients were equally & randomly allocated by toss method into two groups i.e., Experimental group (Desarda's repair group) & Control group (Lichtenstein Mesh repair group).

The data for the sample were elaborated by counts & percentages and for the population as confidence interval with 95% confidence level. The mean pain between 2 groups was compared using independent sample t-test.

Results: Mean pain at 24 hours was same in both groups i.e., 2.62 in Desarda group as compared to 2.71 in Lichtenstein Mesh repair group & at 3 days was also same in both groups i.e., 2.26 in Desarda group as compared to 2.21 in Lichtenstein Mesh repair group. Mean pain score at 7 days was statistically significant i.e., p-value<0.05. Mean pain score was 2.17 in Desarda group as compared to 2.18 in Lichtenstein Mesh repair group.

Conclusion: Our study concludes that early postoperative mean pain at one week of follow up is less in Desarda repair as compared to Lichtenstein repair in the treatment of inguinal hernia & the results are statistically significant.

KEY WORDS: Post-operative Pain; Direct Inguinal Hernia; Indirect Inguinal Hernia; Herniorrhaphy; Hernioplasty.

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1. INTRODUCTION

1.1 Background: Inguinal hernia is a protrusion of a viscus or part of a viscus in the inguinal canal either through the internal ring or a weakness in its posterior wall.[1] The cumulative risk for development of inguinal hernias is 27% in men & 3% in women and the incidence of inguinal hernias in adult population is approximately 15%.[2,3]

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The repair of Inguinal hernia is one of the most frequently performed surgeries in the world. More than 20 million herniorrhaphies are performed each year worldwide & inguinal hernia repair is among the top 3 operations performed frequently in the western countries.[4,5]

In 2009 European Hernia society published guidelines for the repair of inguinal hernia & recommended Lichtenstein or laparoscopic methods for the repair of inguinal hernia.[6] So, Tension free mesh repair is currently one of the preferred procedure for the treatment of inguinal hernia.[7]

Lichtenstein Mesh repair is the most widely used procedure due to minimal postoperative complications & decrease recurrence rate.[8-9] However Mesh may result in inflammation & fibrosis which can cause tightness & foreign body sensations.[10] Mesh repair has been found to have association with chronic

inguinal pain in 1% to 28.7% of patients.[11] Surgical site infection is a known complication of Mesh repair.[12] Further Lichtenstein repair is also associated with the migration of mesh to colon, urinary bladder, femoral vein or testes & can cause sexual dysfuction.[13,14]

In 2001 an Indian surgeon Dr. Desarda introduced a new tissue based inguinal hernia repair technique, which neither required complicated dissection nor required mesh placement. Moreover, this technique was cost effective & was easy to learn.[15,16]

Szopinski et al.[17] from Poland in a randomized controlled trial found that at 1 week of follow up, 46% (49) patients in Desarda group had mild pain on VAS scale as compared to 44% (46) patients in Lichtenstein repair group. 5 patients had moderate pain in Desarda group as compared to 3 patients in Lichtenstein repair group at 1 week. No severe pain was observed at 6 months of follow up.

Youssef et al.[18] from Egypt in a randomized controlled trial found that mean postoperative pain at 24 hours of follow up was 2.4 ±1.9 by VAS score in Desarda repair group as compared to 2.8 ±1.6 in Lichtenstein repair group. At 48 hours & 1 weeks of follow up mean pain was 4.7 ±1.5 & 1.4 ±1.2 in Desarda group as compared to 4.8 ±1.5 & 1.5 ±1.3 in Lichtenstein repair group.

Gedam et al.[6] from India in a prospective cohort study found that mean postoperative pain at 1,3 & 7 days of follow up was 2.72 ±0.44, 1.56 ±0.61 & 0.46 ±0.54 in Desarda group as compared to 2.43 ±0.61, 1.29 ±0.65 & 0.27 ±0.44 in Lichtenstein repair group and the results were statistically significant.

Ali et al.[8] from Pakistan in a cross-sectional study found that 3% patients in Desarda group had post operative pain & numbness as compared to 4% patients in the Lichtenstein repair group.

1.2 Aims & Objectives: To compare the mean postoperative pain in Desarda vs Lichtenstein Mesh repair in the inguinal hernia treatment at 1 day, 3 days & 7 days postoperatively in patients presented to Surgical Unit of Lady Reading Hospital, Peshawar, Pakistan.

1.3 Research Null Hypothesis:

H_{01}: The postoperative pain in Desarda vs Lichtenstein Mesh repair in the inguinal hernia treatment is same at 1st post op day.

H_{02}: The postoperative pain in Desarda vs Lichtenstein Mesh repair in the inguinal hernia treatment is same at 3rd post op day.

H_{03}: The postoperative pain in Desarda vs Lichtenstein Mesh repair in the inguinal hernia treatment is same at 7th post op day.

2. MATERIALS & METHODS

2.1 Design, Setting & Duration of study: This randomized controlled trial was conducted at Surgery Department Mercy Teaching Hospital, Peshawar Medical College and District Headquarter Hospital Daggar, Buner from January 2022 to December 2022. Study approval was granted from hospital ethical committee & implied consent was acquired from attendants or patients themselves.

2.2 Sampling & Randomization: All adult patients having age 18-65 years & presented with reducible, uncomplicated unilateral inguinal hernia to Surgical OPD of Mercy Teaching Hospital Peshawar and DHQ Hospital Daggar Buner, Pakistan were included in the study. Patients with recurrent or bilateral inguinal hernia & complicated inguinal hernia e.g., Strangulated or Obstructed were excluded from the study. Patients who were unfit for spinal or general anesthesia were also excluded from the study.

Two hundred thirty-eight patients undergoing hernia repair were randomly & equally assigned by toss method into two groups i.e., Experimental (Desarda's repair) group & Control (Lichtenstein Mesh repair) group.

2.3 Procedure, Intervention & Follow up: Patients in both groups were operated under spinal or general anesthesia. Prophylactic antibiotics (Cefoperazone Sulbactam 2gm) was given at the time of induction of anesthesia. In Desarda's group inguinal incision was given, aponeurosis of external oblique was incised & spermatic cord was lifted. Hernial sac was identified & herniotomy was done in indirect hernia while reduction of sac was done in direct inguinal hernia. Desarda repair was performed using continues absorbable suture (vicryl 1) to stabilize the aponeurosis strip with inguinal ligament on the lateral border and internal oblique muscle on medial side.

In Lichtenstein Mesh repair group, the repair was done using only piece of mesh 6*11cm. Mesh was secured by using continuous suture (prolene 2/0) to the inguinal ligament laterally starting from pubic tubercle and to the conjoint tendon medially with interrupted suture. A gap of 2cm was created laterally through the mesh to accommodate the cord.

All patients were postoperatively given injection Ketorolac 30mg, 2 doses intravenously for pain relief & then shifted to oral Tab Dicloran 50mg (diclofenac sodium) twice daily for 5 days. No patients in both groups required rescue analgesia.

Patients in both groups were followed for post operative pain first at 24 hours postoperatively & then at 3 days & 1 week period. A doctor & a trained nurse followed patient for post operative pain on Visual analogue scale. Patient having VAS score 1-3 were included as mild pain, having VAS score 4-6 as moderate pain & 7-10 as severe pain.

2.4 Data Collection & Analysis plan: Age and sex were our matching variables, while the post operative pain at 24 hours, 3 days and 1 week was our research variable. The data for the sample were elaborated by counts & percentages and for the population as confidence interval with 95% confidence level. The

mean pain between 2 groups was compared using independent sample t- test.

3. RESULTS

All male patients having reducible inguinal hernia were included in our study & there was none female patients. Mean age in Desarda group was 40 years ±1.72 while it was 43 years ± 2.13 in Lichtenstein Mesh repair group.

H_{01} was accepted as mean pain at 24 hours was same in both groups i.e., 2.62 in Desarda group as compared to 2.71 in Lichtenstein Mesh repair group & statistically the results were not significant i.e., p-value>0.05. (Table 3.1)

H_{02} was accepted as mean pain at 3 days was also same in both groups i.e., 2.26 in Desarda group as compared to 2.21 in Lichtenstein Mesh repair group & the results were not statistically significant i.e., p-value>0.05. (Table 3.2)

H_{03} was rejected showing mean pain sore at 7 days was statistically significant in Desarda Repair group vs Lichtenstein Mesh Repair group i.e., p-value<0.05. Mean pain score was 2.17 in Desarda group as compared to 2.18 in Lichtenstein Mesh repair group at 1 week of follow up. (Table 3.3)

4. DISCUSSION

Inguinal hernia surgical treatment is one of the most commonly performed operation nowadays.[19] The success rate i.e., decreased recurrence rate is dependent on the tension free repair of inguinal hernia.[20]

Bassini's repair & its modified procedures were used for years for the repair of inguinal hernia, till the invention of Lichtenstein tension free Mesh repair. After that tissue-based repair e.g., Shouldice & Desarda were also used for the treatment of inguinal hernia.[21]

Lichtenstein Mesh repair can cause neuropathic pain due to damage of ilioinguinal or genitofemoral nerves during surgery. The prosthetic material i.e., Mesh can induce inflammatory process & fibrosis, which can cause pain as well. Mesh rejection is also a possible complication.

Desarda's repair is pure tissue-based technique, so, it will not elicit these complications. However, nerves damage during hernia repair remains a possible complication. As no Mesh is required, so, Desarda's repair is less expensive as compared to Lichtenstein Mesh repair.[22-23]

Table 3.1: Mean post operative pain score at 24 hours in Desarda Repair group vs Lichtenstein Mesh Repair group in the inguinal hernia treatment

Groups	Mean	Standard Deviation	Mean's Difference	95% CI of Difference		t-value	Degree of Freedom	p-value (2-tailed)
				Upper limit	Lower limit			
Desarda Repair	2.62	1.44	-0.09	0.309	-0.48	-0.444	235	0.1098
Lichtenstein Mesh repair	2.71	1.67						

Table 3.2: Mean postoperative pain score at 3 days in Desarda Repair group vs Lichtenstein Mesh Repair group in the inguinal hernia treatment

Groups	Mean	Standard Deviation	Mean's Difference	95% CI of Difference		t-value	Degree of Freedom	p-value (2-tailed)
				Upper limit	Lower limit			
Desarda Repair	2.26	0.94	0.05	0.282	-0.182	0.4236	236	0.4748
Lichtenstein Mesh repair	2.21	0.88						

Table 3.3: Mean postoperative pain score at 7 days (1 week) in Desarda vs Lichtenstein Mesh Repair group in the inguinal hernia treatment

Groups	Mean	Standard Deviation	Mean's Difference	95% CI of Difference		t-value	Degree of Freedom	p-value (2-tailed)
				Upper limit	Lower limit			
Desarda Repair	2.17	0.58	-0.01	0.171	-0.191	- 0.1086	236	0.0002
Lichtenstein Mesh repair	2.18	0.82						

All patients included in this study were males & had uncomplicated unilateral inguinal hernia. Indirect inguinal hernias are twice as common as direct inguinal hernias.[24]

In our study it was found that mean postoperative pain in Desarda's repair group was statistically similar to Lichtenstein Mesh repair group at 1 day of follow up.

A study by Youssef et al.[18] from Egypt found that mean postoperative pain was 2.4 ±1.9 by VAS score at 24 hours of follow up in Desarda repair group as compared to 2.8 ±1.6 in Lichtenstein Mesh repair group.

Gedam et al.[6] from India found that mean post operative pain was more in Desarda's group i.e., 2.72±0.44 as compared to 2.43 ±0.61 in Lichtenstein Mesh repair group and the results were statistically significant.

Our study also revealed that mean post operative pain in Desarda's repair group was statistically similar to Lichtenstein Mesh repair group at 3 days of follow up.

Gedam et al.[6] from India revealed different results and found that mean post operative pain was more in Desarda's group i.e., 1.56 ±0.61 as compared to 1.29 ±0.65 in Lichtenstein repair group and the results were statistically significant.

In our study it was found that mean postoperative pain in Desarda's repair was less as compared to Lichtenstein Mesh repair at 1 week of follow up & the results were statistically significant.

Two studies from literature retrieved similar results. Ali et al.[8] from Pakistan also found that postoperative pain was less in Desarda's repair group i.e.,3% patients as compared to 4% patients in Lichtenstein group having post operative pain. Youssef et al.[18] from Egypt also found that postoperative mean pain at 1 week was 1.4 ±1.2 in Desarda's repair group as compared to 1.5 ±1.3 in Lichtenstein repair group.

Two studies from literature showed different results. Gedam et al.[6] from India at 1 week of follow up found that mean pain by VAS score was 0.46 ±0.54 in Desarda group as compared to 0.27 ±0.44 in Lichtenstein repair group and the results were statistically significant. Szopinski et al.[17] from Poland found that post operatively 5 patients had moderate pain in Desarda group as compared to 3 patients in Lichtenstein repair group at 1 week of follow up.

5 CONCLUSION

Our study concludes that early postoperative mean pain at one week of follow up in inguinal hernia repair is less in Desarda repair group as compared to Lichtenstein Mesh repair & the results are statistically significant.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	KU, SA
Acquisition, Analysis or Interpretation of Data:	KU, SA, SMIA, WM, SSR, NB
Manuscript Writing & Approval:	KU, SA, SMIA, WM, SSR, NB

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.