

Comparative Study of No Mesh (Desarda) Technique Versus Mesh (Lichtenstein) Technique of Inguinal Hernia Repair

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How to cite this article:

Praveen Sirasani, K Lokesh. Comparative Study of No Mesh (Desarda) Technique Versus Mesh (Lichtenstein) Technique of Inguinal Hernia Repair. *New Indian J Surg.* 2019;10(5):488-492.

Abstract

Context: Inguinal hernia repair is the most commonly performed operations. In the early 1980s, Lichtenstein popularized the tension free repair, supplanting tissue-based repairs with the widespread acceptance of prosthetic materials for posterior wall of inguinal canal. No surgeon has ideal results, and complications remain. This study was taken as the Desarda's technique recently gaining popularity as physiological repair not using the mesh and Desarda's technique short term outcomes not much evaluated in comparison with Lichtenstein' repair in this region.

Aims: To compare the short term outcomes and recurrence rate between Lichtenstein's and Desarda's technique in the following ways:

Source of data: Narayana Medical College and Hospital Nellore, during 2 years from October 2014 to October 2016.

Research design: A prospective experimental study.

Sampling procedure: Simple random sampling technique.

Sample size: A total of 60 patients were studied, 30 of these undergoing Desarda's hernia repair and 30 undergoing Lichtenstein mesh repair.

Conclusions: Desarda's technique and Lichtenstein's technique both are have similar rates of wound infection and post operative pain. Desarda's technique was easy to do, has no recurrence in short term follow up period, lower operative time, less chances of post operative morbidities, lower cost, less incidence of seroma.

Keywords: Hernia; Desarda's technique; Lichtenstein's technique.

Introduction

The earliest record of inguinal hernia dates back to 1500 BC. It has been said that the history of groin hernias is the history of surgery itself.^{1,2} Evidence of surgical repair of inguinal hernias can be traced back to ancient civilizations of Egypt and Greece.^{3,4}

Inguinal hernia repair is the most commonly performed operation in the United States, owing to a significant lifetime incidence and variety of successful treatment modalities. Approximately 800,000 cases were performed in 2003.^{3,5}

Bassini (1844–1924) transformed inguinal hernia repair into a successful venture with minimal morbidity. The success of the Bassini repair over its predecessors ushered in an era of tissue-based repairs. Modifications of the Bassini repair were manifest in the McVay and Shouldice repairs. All three of these techniques, as well as modern variations such as the Desarda operation, are currently practiced.^{3,6}

In the early 1980s, Lichtenstein popularized the tension free repair, supplanting tissue-based repairs

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Received on 13.08.2019, **Accepted on** 04.09.2019

with the widespread acceptance of prosthetic materials for inguinal floor reconstruction. This technique was superior to previous tissue-based repair in that mesh could restore the strength of the transversalis fascia, thereby avoiding tension in the defect closure.

Inguinal hernia repair underwent its most recent transformation. Laparoscopic inguinal hernia repair as the Trans Abdominal Pre Peritoneal (TAPP) repair and the Totally Extra Peritoneal repair (TEP).

Despite the frequency of this procedure, no surgeon has ideal results, and complications such as postoperative pain, nerve injury, infection, and recurrence remain.⁶ In spite of these, inguinal hernia still remains unconquered and poses a lot of challenges for all surgeons practicing hernia repair.

There are more than 200 techniques for inguinal hernia repair, and every technique author claiming that their technique is superior to others. As the Desarda's technique recently gaining popularity as physiological repair not using the mesh and it's short term outcomes not much evaluated in comparison with Lichtenstein' repair in this region and hence took the study.

Materials and Methods

Source of data: Patients at Narayana Medical College and Hospital Nellore.

Study duration: 2 years from October 2014 to October 2016.

Research design: A prospective experimental study

Sampling procedure: Simple random sampling technique

Sample size: A total of 60 patients were studied, 30 of these undergoing Desarda's hernia repair and 30 undergoing Lichtenstein mesh repair.

Inclusion criteria

1. Above 18 years of age.
2. With a primary, reducible inguinal or inguinoscrotal hernia; unilateral or bilateral hernias.

Exclusion criteria: Patients with

1. Obstructive uropathy or chronic obstructive pulmonary disease, poor general condition.
2. Patients with strangulated hernia, Recurrent hernias.

Study method: All patients were evaluated as per proforma. Institutional ethical committee approval was taken prior to commencement of study. The patients were divided into two groups. *Group A* cases undergoing repair by Lichtenstein's technique. *Group B* cases undergoing repair by Desarda's technique.

Results

Table 1: Age Distribution

| Age in years | Group A | Percentage | Group B | Percentage |
|--------------|---------|------------|---------|------------|
| 21-30 | 9 | 15 | 3 | 5 |
| 31-40 | 5 | 8.3 | 6 | 10 |
| 41-50 | 5 | 8.4 | 7 | 11.7 |
| 51-60 | 6 | 10 | 10 | 16.7 |
| 61-70 | 5 | 8.3 | 4 | 6.6 |
| Total | 30 | 50 | 30 | 50 |

Table 2: Comparison of Age in Group A and Group B

| Parameters | Group A (n = 30) | | Group B (n = 30) | | Z Value | p Value |
|------------|------------------|-------|------------------|------|---------|---------|
| | Mean | SD | Mean | SD | | |
| Age | 43.7 | 14.56 | 47.4 | 12.5 | 1.41 | >0.05 |

Table 3: Comparison of Type of Hernia in Group A and Group B

| Type of hernia | Group A | Group B | Total |
|----------------|-------------|-------------|-------------|
| Direct | 16 (26.6%) | 16 (26.67%) | 32 (53.33%) |
| Indirect | 14 (23.33%) | 14 (23.33%) | 28 (46.67%) |
| Total | 30 (50%) | 30 (50%) | 50 (100%) |

Table 4: Comparison of Duration of Surgery in Group A and Group B

| Surgery | Group A (n = 30) | | Group B (n = 30) | | Z Value | p Value |
|----------|------------------|-------|------------------|-------|---------|---------|
| | Mean | SD | Mean | SD | | |
| Duration | 76.67 | 16.04 | 62.8 | 16.74 | 3.36 | <0.001 |

Table 5: Comparison of Cost of Surgery in Group A and Group B

| Surgery | Group A (n= 30) | | Group B (n=30) | | Z Value | p Value |
|---------|-----------------|-------|----------------|--------|---------|---------|
| | Mean | SD | Mean | SD | | |
| Cost | 1370 | 61.03 | 715 | 198.33 | 17.29 | <0.0001 |

Table 6: Comparison of Post Operative Pain in Group A and Group B

| Post op Pain | Group A (n = 30) | | Group B (n = 30) | | Z Value | p Value |
|--------------|------------------|------|------------------|------|---------|---------|
| | Mean | SD | Mean | SD | | |
| Day 1 | 5.433 | 1.27 | 5.1 | 1.16 | 1.14 | >0.05 |
| Day 3 | 4 | 1.67 | 3.65 | 1.38 | 0.68 | >0.05 |
| Day 6 | 2.55 | 1.91 | 2 | 1.63 | 1.27 | >0.05 |

Table 7: Comparison of Infection Score in Group A and Group B

| ASEPSIS score | Group A (n = 30) | | Group B (n = 30) | | Z Value | p Value |
|---------------|------------------|-----|------------------|------|---------|---------|
| | Mean | SD | Mean | SD | | |
| | 15.16 | 9.1 | 11.47 | 7.51 | 2.39 | <0.05 |

Table 8: Comparison of Seroma Formation in Group A and Group B

| Seroma formation | Group A (n = 30) | | Group B (n = 30) | | Z Value | p Value |
|------------------|------------------|--------|------------------|-------|---------|---------|
| | 4 | 13.33% | 1 | 3.33% | | |

Table 9: Comparison of Chronic Pain in Group A and Group B

| Chronic Pain | Group A (n = 30) | | Group B (n = 30) | | Z Value | p Value |
|--------------|------------------|--------|------------------|-------|---------|---------|
| 1 month | 5 | 16.67% | 2 | 6.67% | | |
| 3 months | 5 | 16.67% | 2 | 6.67% | 1.22 | >0.05 |
| 6 months | 5 | 16.67% | 2 | 6.67% | 1.22 | >0.05 |

Table 10: Comparison of Recurrence in Group A and Group B

| Chronic Pain | Group A (n = 30) | Group B (n = 30) |
|--------------|------------------|------------------|
| 1 month | 0 | 0 |
| 3 months | 0 | 0 |
| 6 months | 0 | 0 |

Discussion

Operative time

The mean operative duration of group A (Lichtenstein's) in this study was 76.67 minutes with a SD of 16.04 and in the group B (Desarda's) it was 62.33 minutes with a SD of 16.98. The Z value for comparison of operative time was 3.36 and P value of ≤ 0.001 . This difference between these two groups is statistically significant and also these results are comparable with the following studies like Manyilira *et al.*⁷

Situma *et al.*¹⁸ Desarda repair in 13.26 minutes, 2.73 minutes longer than the Modified Bassini repair.

Imran Ahmad *et al.*⁹ Desarda's group time taken for surgery was average 30 minute, while in Lichtenstein group average time was 40 minute (p value < 0.0001). In a study conducted by P.R.I. Rodríguez *et al.*¹⁰ observed that the mean duration of surgery was 39 minutes for Lichtenstein and 48 minutes for Desarda group ($p < 0.05$). In a study conducted by Iftikhar Ahmad Bhatti *et al.*¹¹ It is concluded that there is no difference in frequency of seroma formation and mean operative time in Desarda's or Lichtenstein's technique of hernia repair.

Cost of the surgery

The mean cost of the surgery in the patients undergoing inguinal hernia repair by Desarda's technique was Rs 715 /- and had SD of 198.33 whereas the mean cost of the patients undergoing repair by Lichtenstein's technique was Rs 1350/- and had SD of 61.03. This was statistically significant difference with p value ≤ 0.0001 and z value of 17.29 which is comparable to following studies.

Szopinski *et al.*¹² Sowmya *et al.*¹³ Nadeem *et al.*¹⁴ Yong *et al.*¹⁵ Gopal Sharma *et al.*¹⁶ supports this.

Post-operative pain

The pain experienced by the all patients in both the groups of the study was scored on a visual analogue scale of 0-10 on the post operative days 1, 3 and 7. The overall analysis showed a trend of lower mean pain score in group B. The differences in the mean pain scores were not statistically significant and was comparable to the results demonstrated in studies by Szopinski *et al.*, Manyilira *et al.*, P.R.I. Rodríguez *et al.*, Situma *et al.*

Seroma formation

Seroma formation was observed 13.33% in group A and 3.33% in group B. Even though higher incidence of seroma in group A than group B, these results are not statistically significant. These results are comparable with following studies Grant *et al.*, Horstmannetal, kyamanywa *et al.*, szopinski *et al.* Seromas may result from extensive tissue dissection. The studies mentioned above showed that seroma is an inherent problem of mesh based hernia repairs. The explanation for this is not clear. However it is known that the mesh is rapidly invaded by fibroblasts that fill up the pores in the mesh. This could result in a delayed absorption of the serous fluid accumulating in the wound after the operation, leading to seroma formation.^{17,7}

Nadim khan *et al.*¹⁸, in the postoperative six patients in all presented with scrotal swelling of which 4 patients (3.6%) had developed seroma and two patients (1.8%) had hematomas formed. Sowmya *et al.*¹³; Complications such as seroma and wound infection were less in Desarda repair. Iftikhar Ahmad Bhatti *et al.*¹⁹, When cross tabulated treatment group with seroma formation, results were non-significant ($p = 0.297$). 6 patients of Desarda's group developed seroma formation and 10 patients of Lichtenstein group showed similar results, at end of study period.

Post operative wound infection

The mean ASEPSIS scores for group A was 15.17 with a SD of 9.15 and the mean score for group B was 11.47 with SD 7.51. Although not statistically not significant but the mean scores were higher in group A. This was comparable with following studies Rodriguez et al, Szopinski *et al.*, Desarda *et al.* Sowmya G et al.²⁵, GencV *et al.*⁴¹, Surgical-site infections, often with clinical symptoms delayed for long time, are more frequent after insertion of mesh in the inguinal canal.

Sikandar Hayat *et al.*, Post operative wound infection in both groups is similar which is comparable with the studies of Manyilrah *et al.* in 2012 and similar results were depicted by szupinsky *et al.* in 2013.³⁷

P.R.L Rodríguez *et al.*²² However, the morbidity was higher (7.5%) in the Lichtenstein group as compared to the 3.4% Desarda group. There were 8 mesh infections after surgery in the Lichtenstein group. Two cases required partial excision of the mesh and total excision in one case. Desarda technique has lower morbidity as compared to mesh hernioplasty.

Recurrence rate

In this study there was no recurrence seen in subjects of the groups in follow ups at 1 month, 3 months, and 6 months. The incidence of recurrence in patients undergoing mesh repair (Lichtenstein's technique) is known to range from 10–15% but a longer follow up is required to assess incidence of recurrence.^{43–45}

The incidence of recurrence in Desarda's technique is nil in all the studies except two studies which was statistically not significant.^{9,46,47,35, 32,20}

Sowmya G *et al.*²⁵, there was no recurrence observed in both the groups during the followup period. In our study, there were no statistically significant differences between the patients demographics in both groups and also there was no recurrence observed in both the groups during the follow up period.

P Sumathi *et al.*²⁴, it has showed the chances for recurrence as 1.97% but it was observed over 10 year followup. Our study findings correlates very well with the Desarda *et al.* study findings except for the fact that to identify the recurrence it necessitates large scale and longterm followup.

Rodríguez *et al.*²², There was no significant difference in the recurrence rate seen in both the groups (0.4% v 0.5%). The author believes that the

four cases of recurrences seen in Desarda group were due to failure of proper lateralization of the cord and insufficient narrowing of the internal ring as advised by Desarda. This was evident at re-exploration in those cases that needed only narrowing of the internal ring with few more stitches.

Conclusion

Desarda's technique and Lichtenstein's technique both are have similar rates of wound infection and post operative pain. Desarda's technique was easy to do, has no recurrence in short term follow up period, lower operative time, less chances of post operative morbidities, lower cost, less incidence of seroma.

Acknowledgement: To all the support

Conflict of Interest: Nil

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