Section: General Surgery

Original Research Article

COMPARATIVE STUDY BETWEEN THE CONVENTIONAL LICHTENSTEIN REPAIR VS DESARDA REPAIR IN INGUINAL HERNIA IN LOCAL AREA.

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ABSTRACT

Background: Aims: To compare the recurrence rates and the postoperative morbidity and outcome between Desarda's technique and Lichtenstein's technique for primary unilateral inguinal hernia.

Materials and Methods: This is a comparative study conducted from the patients admitted with the diagnosis of unilateral primary inguinal hernia in SVS Medical College & Hospital from June 2017 to June 2020. The patients were subjected to either Lichtenstein or Desarda method of hernia repair.

Results: Duration of surgery is insignificant, Recurrence with 3 cases (12%)and Seroma formation is more lichtenstein operated group with 5 cases (20%) with no significance when compared. During the follow up period, at one month and six months, 7(35%) cases and 4(20%) cases persisted to have mild pain respectively in Lichtenstein repair, whereas none of the patients in Desarda repair had any kind of pain which is statistically significant. Two (10%) patients continued to have chronic pain at the end of 1 year in the Lichtenstein group. Time to return to daily activities was 92% in case of desarda repair and 76% in Lichtenstein repair. Time taken to resume normal activities in case of Desarda herniorrhaphy was 88% as compared to Lichtenstein hernioplasty, which is 67%. No complications observed in followup.

Conclusions: Desarda repair technique outperforms Mesh repair in terms of operating time. Additionally, the differences in postoperative complications between the two techniques are statistically insignificant.

Keywords: Hernia, Lichtenstein Repair, Desarda Repair, Seroma.

INTRODUCTION

A hernia is the protrusion of abdominal cavity contents through a weakened abdominal wall.[1] The most prevalent type of groin hernia, accounting for 75% of cases in both males and females, is the inguinal hernia.[2,3] The lifetime incidence of inguinal hernia is around 27% in males and 3% in females.[2-4]

Desarda's technique, presented in 2001, is a novel hernia repair based on the concept of providing a strong, mobile, physiologically active, and dynamic posterior wall.[5] Desarda argued that since the aging process is minimal in tendons and aponeurosis, the use of a strip of external oblique aponeurosis (EOA) is the best alternative to either mesh or the Shouldice repair. The author demonstrated that his repair was dynamic in nature due to the contractions of the external and internal oblique muscles, thereby converting the strip of EOA into a 'shield' to prevent re-herniation. Studies also showed that the strip of EOA supported the transversalis fascia and that chances of herniation behind the strip were also reduced.[5]

Classically done operations today are tension repairs like Bassini, Shouldice or MacVay's repairs and tension free repairs like repairs done with mesh, plug and mesh or PHS (Prolene Hernia System). All

tension repairs have a high rate of recurrences and post- operative pain. Reports on the outcome of inguinal hernia surgery show that recurrence rate in 5 years after operation can vary from 0.1 to over 20%. Sutures are under tension even at rest and get aggravated during contractions and scar shrinkage in the healing process. Therefore, tension free repairs using mesh prosthesis are being preferred. But then there are many associated complications of a foreign body. Laparoscopic hernia surgery reduces pain and duration of stay, but associated with its own complications associated with general anesthesia and instrumentations in addition to the mesh placed inside the abdomen, cost of procedure and the learning curve. Our study aims to compare the short-term outcomes of the Desarda technique with the Lichtenstein technique in terms of average operating time, postoperative seroma formation and complications.

MATERIALS AND METHODS

This is a comparative study of Lichtenstein versus Desarda repair for Inguinal hernia was conducted from the patients admitted with the diagnosis of unilateral primary inguinal hernia in SVS Medical College & Hospital from June 2017 to June 2020. The patients were subjected to either Lichtenstein or Desarda method of hernia repair.

Inclusion Criteria: Males of 25 years of age or older with primary unilateral inguinal hernia.

Exclusion Criteria: Women, bilateral inguinal hernia, recurrent or complicated inguinal hernia.

All procedures were done under Spinal anesthesia. For Lichtenstein hernioplasty, a 10*15cm polypropylene mesh was used. The mesh is about 0.5 mm thick and has burst strength of approximately 14 kg/cm2. It is sterilized by Ethylene oxide gas by the manufacturer. Polypropylene 2-0 was used to suture the mesh in place. For Desarda repair, an un-detached strip of the External Oblique Aponeurosis (EOA) is sutured to the inguinal ligament below and the muscle arch above, behind the cord to form a new posterior wall using 1/0 polypropylene interrupted sutures.

A splitting incision was taken in EOA, partially separating and creating a 2 cm strip whose medial leaf is sutured to the inguinal ligament laterally from the pubic tubercle to the deep inguinal ring by a continuous non absorbable suture (2/0 Prolene). The upper free border of the EOA strip was sutured to internal oblique or conjoint muscles with Prolene 2/0. The resultant strip of EOA placed behind the cord formed a new posterior wall of the inguinal canal. The spermatic cord placed in the inguinal canal and the lateral leaf of EOA is sutured to the newly formed medial leaf of EOA in front of the cord using Prolene 2/0 sutures. Particular attention was paid to identify and preserve the nerves of the inguinal area. Unlike mesh repairs, the strip of EOA that replaces the mesh is more physiological and when put under tension when straining by abdominal wall muscular contraction creates lateral tension while contraction of the internal oblique/conjoined muscle creates tension above and laterally, making the EOA strip a shield to prevent any herniation. This fascial strip also gives additional strength to the weakened internal oblique and transverse abdominal muscle. For both techniques, the skin was closed with continuous non absorbable sutures. All intraoperative variables were recorded and compared.

The patients were followed up for postoperative pain, which was evaluated using Visual Analogue Scale, wound hematoma, wound seroma, wound infection. Patients were assessed for postoperative pain using Visual Analogue Scale. A 10-centimeter line with the labels "no pain" and "severe pain" at either end makes up the Visual Analogue Scale. For documentation purposes, we converted this to 1-3 mild pain, 3-7 moderate pain, and 7-10 severe pain. On the seventh postoperative day, sutures were taken out, and patients who were ambulatory, taking oral medication, and feeling comfortable were released from the hospital.

Patients were referred to the outpatient department, where they were monitored for recurrence, duration of recovery from chronic groin pain (inguinodynia), and other sequelae. The two techniques' cost-effectiveness was contrasted.

RESULTS

50 cases of unilateral primary inguinal hernia were included in the study after taking their consent. They were subjected to either Lichtenstein or Desarda method of hernia repair. Evaluation of all the patients included in the study was done regarding the history, physical findings, operative findings and postoperative complications. 25 patients underwent Lichtenstein repair and 25 patients underwent Desarda herniorrhaphy.

The patients were followed up at 12 months, 24 months and 36 months interval for any complication or recurrence.

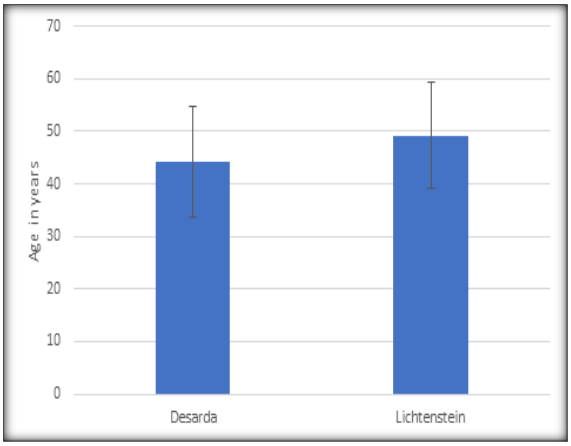

Figure 1: Bar diagram. Showing mean age in years

Mean age in Desarda operated group is 44.16 ± 10.57 and lichtenstein operated group is 49.24 ± 10.57 which is stastically not significant and groups are comparable with each other.

Duration of surgery is insignificant when compared in study.

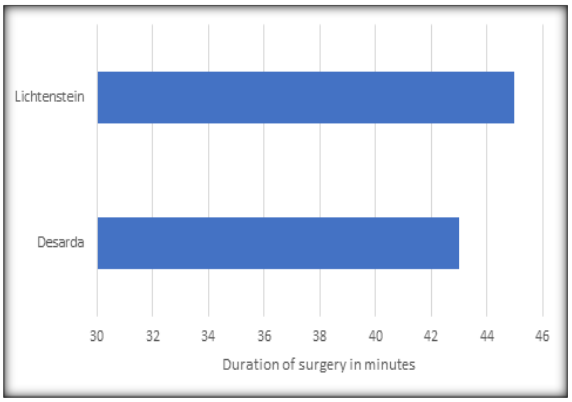

Figure 2: Mean duration of surgery in study

Table 1: Side of hernia of patients in study

Diagnosis	DESARDA	LICHTENSTEIN	P -VALUE
	Frequency	Frequency	
LEFT	14 (56%)	11 (44%)	0.396
RIGHT	11 (44%)	14 (56%)	

Side of hernia is not significant when compared in both groups.

Table 2: Recurrence in present study

Recurrence	DESARDA	LICHTENSTEIN	P -VALUE
	Frequency	Frequency	
No	24 (96%)	22 (88%)	0.097
Yes	0	3 (12%)	

Recurrence is more lichtenstein operated group with 3 cases (12%) with no significance when compared.

Table 3: Seroma formation in present study

Seroma	DESARDA	LICHTENSTEIN	P -VALUE
	Frequency	Frequency	
No	24 (96%)	20 (80%)	0.082
Yes	1(4%)	5 (20%)	

Seroma formation is more lichtenstein operated group with 5 cases (20%) with no significance when compared.

Table 4: Patients' subjective assessment of the operated area at the 12-, 24-, and 36-month follow-ups are shown

12 moths follow up	DESARDA	LICHTENSTEIN	p-value
Foreign body sensation	3(12%)	11(44%)	0.38
Abdominal wall stiffness	5(20%)	9(36%)	0.27
Altered sensation in operated areas	12(48%)	21(84%)	0.08
24 moths follow up			
Foreign body sensation	5(20%)	15(60%)	0.24
Abdominal wall stiffness	2(8%)	12(48%)	0.50
Altered sensation in operated areas	11(44%)	23(92%)	0.09
36 moths follow up			
Foreign body sensation	4(16%)	9(36%)	0.31
Abdominal wall stiffness	6(24%)	16(64%)	0.20

Altered sensation in operated areas	10(40%)	21(84%)	0.10	he pain intensity was reduced which was more in Lichtenstein repair (7%) compared to Desarda repair. However, the difference was not statistically significant. More complications were observed in Lichtenstein repair with 5 (20%) cases having seroma and 2(8%) cases having infection of the wound. In Desarda repair, 2 (8%) patients had complications, one (4%) having seroma and infection of the wound. However, it was not statistically significant. During the follow up period, at one month and six months, 7(35%) cases and 4(20%) cases persisted to have mild pain respectively in Lichtenstein repair, whereas none of the patients in Desarda repair had any kind of pain which is statistically significant. Two (10%) patients continued to have chronic pain at the end of 1 year in the Lichtenstein group. Time to return to daily activities was 92% in case of desarda repair and 76% in Lichtenstein repair. Time taken to resume normal activities in case of Desarda herniorrhaphy was 88% as compared to Lichtenstein hernioplasty, which is 67%. There was no recurrence observed in both the groups during the follow-up period.

During the follow up period, at one month and six months, 7(35%) cases and 4(20%) cases persisted to have mild pain respectively in Lichtenstein repair, whereas none of the patients in Desarda repair had any kind of pain which is statistically significant. Two (10%) patients continued to have chronic pain at the end of 1 year in the Lichtenstein group.

Time to return to daily activities was 92% in case of desarda repair and 76% in Lichtenstein repair. Time taken to resume normal activities in case of Desarda herniorrhaphy was 88% as compared to Lichtenstein hernioplasty, which is 67%. No complications observed in followup.

DISCUSSIONS

According to EHS guidelines, mesh-based techniques the Lichtenstein technique in particular and endoscopic methods are recommended for treatment of symptomatic primary inguinal hernia in adult men and Shouldice method has been acknowledged to be acceptable as well. The Lichtenstein method of hernia repair is simple and safe. But the mesh prosthesis has its drawbacks. Mesh works as a mechanical barrier. It does not give a mobile and physiologically dynamic posterior wall. Migration of the mesh from the primary site of implantation in the abdominal cavity is one of the most dangerous complications. Surgical site infections are more frequent after hernia treatment using mesh. Intense chronic inflammatory process typically associated with foreign body reactions around the mesh prosthesis may produce meshoma or plugoma tumors, the treatment of which becomes a new surgical challenge. Additionally, procreation and sexual function are partly seriously affected after surgical hernia treatment with mesh. Desarda repair has removed all drawbacks of both types of repairs. There is no tension on suture lines as seen in tension repairs and there is no foreign body used like mesh repairs.[6]

All patients (100%) had mild pain, but the pain intensity was reduced which was more in Lichtenstein repair (7%) compared to Desarda repair. However, the difference was not statistically significant. More complications were observed in Lichtenstein repair with 5 (20%) cases having seroma and 2(8%) cases having infection of the wound. In Desarda repair, 2 (8%) patients had complications, one (4%) having seroma and infection of the wound. However, it was not statistically significant. In a randomized controlled trial by Szopinski et al,[7] there was no significant difference in the clinical outcomes observed during a three-year follow-up of adult male patients with a primary inguinal hernia operated by Desarda's or Lichtenstein's technique. Excluding seroma formation, the frequency of complications was also similar in the two groups. In a study conducted by Dr. Desarda,[5] in 2008 comparing this technique with mesh-based repairs, he reported that patients in whom the author's technique was performed had a shorter hospital stay, less time to return to work, and fewer complications. Manyilirah et al,[8] also conducted a case-control study on Desarda's repair, comparing it to the Lichenstein's repair, and they showed that rates of wound infections in both the repairs were similar.

In our study Duration of surgery is insignificant when compared. Time to return to daily activities was 92% in case of desarda repair and 76% in Lichtenstein repair. Time taken to resume normal activities in case of Desarda herniorrhaphy was 88% as compared to Lichtenstein hernioplasty, which is 67%. Rodriguez et al,[9] found that the operative time for the Desarda technique was significantly longer than that for the Lichtenstein technique (p-value <0.05). However, the rates of wound infection and postoperative hematoma formation were similar between the two groups.[10] In a study conducted by W. Manyilirah et al,[8] it was found that the Desarda repair procedure takes significantly less time to perform compared to the Lichtenstein procedure. Similar findings were reported by A.E. Ahmed et al,[10] indicating that Desarda repair is associated with a shorter hospital stay and quicker return to work. B.S. Gedam et al,[11] also observed shorter operating times and earlier return to normal activity in patients treated with the Desarda technique. However, a systematic review by H. Ge et al,[12] concluded that there is no significant difference

between the Desarda and Lichtenstein techniques in terms of operating time, wound infection, and hematoma formation.

The results showed that Desarda and Lichtenstein techniques provided satisfactory treatment for primary inguinal hernia with no recurrence rates and acceptable rates of complications.

Prakash et al,[13] study observed that 2-year follow-up there were no recurrences in both groups. There were no surgical site infections in the Desarda's group, compared to Lichtenstein's repair which had 4 (10%) recurrences. The occurrence of complications like loss of sensation over the groin, scrotal edema, abdominal wall stiffness was not seen in Desarda's group, whereas its occurrence was highly significant in Lichtenstein's group. Jacek Szopinski et al,[7] observed two recurrences in each group (p = 1.000). Chronic pain was experienced by 4.8% and 2.9% of patients from groups L and D group respectively (p = 0.464). Foreign body sensation and other complications were not different between the groups. B S Gedam et al,[11] in a study with 15- month mean follow up period observed 1 recurrence in each arm (P = 1.0). There was no statistical difference in rates of post-operative complications among the two arms of the study. Hemanth Vupputuri et al,[14] in their study observed that recurrence rate was not significantly different; however, chronic groin pain was significantly higher in Mesh repair group as compared to Non mesh group (P = 0.05). Postsurgical pain was significantly higher (P < 0.001) in M than NM group whereas complications were comparable. Hua Ge et al,[12] in a systematic review observed no significant difference in terms of rate of wound infection, hematoma, foreign body sensation, seroma and recurrence rate. Sowmya G. R et al,[15] study observed that in Lichtenstein repair patients had chronic groin pain even at the end of one year, but none of the patients in Desarda repair had chronic groin pain. Complications such as seroma and wound infection were less in Desarda repair; however, there was no recurrence observed in both the groups during the follow up period. Tamer youssef et al,[16] observed that during 2-year follow up, one recurrence was detected in each group . Chronic groin pain was experienced by 5.6% and 4.2% of patients from Desarda and Lichtenstein groups respectively (P - 0.68). Gulzar MR et al,[17] observed that in Group L scrotal hematoma was developed in 4.8% patients and in 1.3% patients in Group D (p value 0.22). Surgical site infection was seen in 1 patient in Group L (1.61%) and 1 patient in Group D (1.31% p value 0.88). Ahmed S Arafa et al,[18] study observed that complication rates were nearly similar in the two study arms.

Although the Shouldice method has been considered the best tissue-based repair with recurrence rates of less than 1%, its technically demanding nature can potentially increase the incidence of recurrence of up to 15% with the less experienced and less trained hands.[19] In 2001, Desarda proposed a solution that using part of the external oblique aponeurosis (EOA) as a patch for repair, which may reduce the complications compared with meshes. Moreover, the technique requires no complicated dissection or suturing, and is easy to learn as its developer claimed. It does not require any foreign material and does not use weakened muscles or transversalis fascia for repair. The results are superior to those previously published in the field of hernia surgery.[20]

CONCLUSION

Our randomized controlled trial confirmed that the results of inguinal hernia treatment with the Desarda technique are nearly similar to the results with Lichtenstein over a 3-year time period. Looking at the advantages and drawbacks of each procedure, Desarad procedure can become a valid alternative to Lichtenstein especially in cases of gross contamination, in the presence of financial constraints, or if a patient disagrees with the use of mesh. This technique has the potential to enlarge the number of tissue-based methods available to treat groin hernia.

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