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Original Research Article

A Comparative Study of Tension Free Desarda Repair with Lichtenstein's Mesh Hernioplasty for Inguinal Hernia Repair in the Hilly Areas of Garhwal.

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Abstract

Objectives: The present study was to compare effectiveness of the tension free Desarda technique with Lichtenstein mesh hernioplasty for inguinal hernia repair.

Methods: A total of 80 patients of inguinal hernia with age group 18 to 70 years were enrolled in this study. 40 patients were in each group (Lichtenstein and Desarda). 40 patients underwent hernia repair by the tension free Desarda technique and 40 patients underwent Lichtenstein procedure. The primary outcome measure was chronic groin pain using an 11-point numerical rating scale (NRS 11) score at three months postoperatively. Secondary outcome measures comprised of operative time, haematoma formation, wound infection, early recurrence within three months, seroma formation, foreign body sensation, days to return to normal gait, days to return to normal work and postoperative pain scores using NRS scoring at 6 hours, day 1, day 7, 1 month and 3 months postoperatively.

Results: Postoperative complication in most of the patients were marginally higher in Lichtenstein repair as compared to Desarda repair. Duration of surgery, time to return to normal gait and normal work in patients who underwent Desarda repair were lesser as compared to Lichtenstein mesh hernioplasty however the difference was not statistically significant. Desarda group patients had a higher satisfaction rate 37(92.5%) than the Lichtenstein group patients 33(82.5%).

Conclusions: Both Desarda repair and Lichtenstein's mesh hernioplasty provided satisfactory treatment for primary inguinal hernia with low recurrence rates and acceptable rates of complications. Desarda repair is a simple and straightforward procedure with no complexity involved in the tissue dissection and repair. Desarda repair may potentially increase the number of tissue based methods available for treating groin hernias as it is cost effective, easy to perform and without the use of mesh prosthesis. The present study concluded that there is no difference between Desarda repair and Lichtenstein's mesh hernioplasty in short term effectiveness however high quality long term follow up randomized controlled trials are needed to provide a more reliable evidence.

Keywords: Desarda Technique, Lichtenstein, Inguinal Hernia Repair.

Introduction

Inguinal hernia is one of the most common treatable surgical conditions. Lichtenstein's mesh hernioplasty remains the gold standard treatment for the same [1]. Inguinal hernias remain an important surgical problem because of frequency. Average life time risk for inguinal hernia is 27% for men, 3% for women [2]. Annual morbidity rates in various countries vary from 100 to 300 per 100,000 populations [3]. As per European Hernia Society (EHS) guidelines published in 2009, prolene mesh-based procedures ie. Lichtenstein's technique and laparoscopic methods are preferred for treatment of symptomatic inguinal hernia in adult men while the Shouldice tissue based hernia repair technique is considered the best non-mesh repair method [4].The synthetic prostheses most often used in the inguinal area may in some cases create new clinical problems such as foreign body sensation in the groin, discomfort and abdominal wall stiffness, surgical site infections, migration of mesh and may affect procreation and sexual function. The cost and availability of mesh prostheses in smaller towns and underdeveloped regions prove to be a major hindrance. The requirement of the hour is to find a technique that is simple, cost effective, easy to perform, does not require extensive dissection and use of foreign body and also gives an acceptable recurrence rate without any major intraoperative or postoperative complications and can be performed as a day care procedure to reduce the burden of cases in the community.

In 1987, Lichtenstein described reinforcement of the posterior wall using a mesh resulting in a tension-free repair. Today this method is widely used owing to its ease of application and lower recurrence rates [5]. However, many mesh-related complications have been noted in clinical practice, including infection, pain, foreign body sensation, seroma, mesh rejection, mesh migration, adhesions, fibrosis, calcification, and thrombosis [6]. To prevent these complications, Desarda in 2001 described a technique of tissue repair based on the concept of providing a robust, mobile and physiologically dynamic posterior inguinal wall [7]. Objectives of our study was to compare the tension free Desarda technique with Lichtenstein's mesh hernioplasty for inguinal hernia.

Material & Methods

This present study was conducted in the department of Surgery, Veer Chandra Singh Garhwali Government Institute of Medical Sciences and Research (VCSGGIMS&R), Srinagar, Garhwal, Uttarakhand, India during a period from March 2019 to July 2022. All the subjects signed an informed consent approved by the institutional ethical committee, VCSGGIMS&R, Uttarakhand. A total of 80 patients of inguinal hernia with age group 18 to 70 years were enrolled in this study. 40 patients were in each group (Lichtenstein and Desarda).

Patients were operated under spinal anaesthesia after anaesthetic clearance. Patients with a complicated hernia, i.e., irreducible, obstructed or strangulated hernia, patients with coagulopathy and patients with contraindications to spinal anaesthesia were excluded from the study.

Methods:

The Desarda repair was done as originally described by Desarda. Through a regular oblique inguinal incision; the external oblique aponeurosis was exposed. The external oblique aponeurosis was cut in line with the upper crux of the superficial ring. Herniotomy was done in the usual fashion. The medial leaf of the external oblique aponeurosis was sutured with the

inguinal ligament from the pubic tubercle to the deep ring using 1-0 polypropylene interrupted sutures. The first two sutures were taken in the anterior rectus sheath, where the external oblique aponeurosis is fused with it. The last suture was taken to sufficiently narrow the deep ring without constricting the spermatic cord. Each suture was first passed through the inguinal ligament, then the transversalis fascia and then the external oblique aponeurosis. A splitting incision was taken in this sutured medial leaf of the external oblique aponeurosis, partially separating a strip of external oblique aponeurosis with a width equivalent to the gap between the muscle arch and the inguinal ligament. The splitting incision was extended medially up to the pubic symphysis and laterally 1–2 cm beyond the deep inguinal ring. The medial insertion and lateral continuation of this strip were kept intact. The upper free border of the strip was sutured to the internal oblique or conjoined muscle with 1-0 polypropylene interrupted sutures. This resulted in an extra strip of external oblique aponeurosis being placed behind the cord to form a new posterior wall of the inguinal canal. The lateral leaf of the external oblique aponeurosis was then sutured to the newly formed medial leaf of the external oblique aponeurosis in front of the cord using 1-0 polypropylene interrupted sutures. Lichtenstein's mesh hernioplasty was carried out through a regular oblique inguinal incision where the external oblique aponeurosis was exposed. The external oblique aponeurosis was divided along the line of incision, starting from the superficial ring and extending laterally for up to 5 cm. The ilio-inguinal nerve lying underneath the aponeurosis was safe guarded. The cord, along with its cremasteric covering, was separated from the sac. Herniotomy was done in the usual fashion. The mesh of size 7.5 cm x 15 cm was cut in a footprint tracing fashion. The first medial most stitch fixes the mesh 2 cm medial to the pubic tubercle where the anterior rectus sheath inserts into the pubic bone avoiding the periosteum of the bone using 2-0 polypropylene suture material. The same suture is then used as a continuous suture to fix the lower edge of the mesh to the free lower border of the inguinal ligament up to a point just lateral to the deep ring. The slit was made in the lateral end of the mesh to create a wider upper tail(upper 2/3 rd) and a narrow lower tail (lower 1/3 rd). The slit extends to a point just medial to the deep ring. The upper tail is then passed underneath the cord in such a way as to position the mesh posterior to the cord in the inguinal canal and the spermatic cord is placed in between the two tails of the mesh. The upper tail is then crossed over the lower one and with the mesh kept lax, its upper edge is then fixed to the rectus sheath and the internal oblique aponeurosis with two or three interrupted non absorbable sutures. The two tails are then tucked together and fixed to the inguinal ligament just lateral to the deep ring, thus creating a new deep ring made of mesh. The tails are trimmed 5 cm beyond the deep ring and placed underneath the external oblique aponeurosis. The external oblique aponeurosis was then closed with an absorbable 2-0 polyglactin suture over the cord and an adequate opening is left at the newly created superficial ring so as not to occlude the emerging spermatic cord[6]. The ilioinguinal and iliohypogastric nerves were preserved each time they were encountered and special attention was paid not to include these into the sutures or mesh.

The primary outcome measure was chronic groin pain using an 11-point numerical rating scale score (NRS 11 ranging from 0 representing one pain extreme i.e. no pain to 10 representing the worst pain imaginable) at three months postoperatively. Secondary outcome measures were operative time, haematoma formation, wound infection, early recurrence within three months, seroma formation, foreign body sensation, days to

return to normal gait, days to return to normal work, and postoperative pain scores using NRS scoring at 6 hours, day 1, day 7, 1 month and 3 months postoperatively.

Statistical Analysis

Data was analysed with the help of latest version of SPSS software. Mean and standard deviations were observed. P-value was taken less than or equal to 0.05 ($P \leq 0.05$) for significant differences.

Observations

A total of 80 patients that met the inclusion criteria were randomly allotted in a 1:1 manner to Desarda and Lichtenstein group. In 40 cases, Lichtenstein's mesh hernioplasty was performed and in the rest 40 patients, Desarda repair was done. All the cases were successfully performed under spinal anaesthesia with no intraoperative complications. There was no significant difference between the level of pain in the Lichtenstein group and the Desarda group at any time in the postoperative period. However, the pain was maximal in the early postoperative period and decreased in both groups over the next few months. There was no significant difference between the number of patients who developed postoperative complications in the Lichtenstein group and Desarda group. There was no significant difference in operating time, return to work or return to normal gait in the Lichtenstein group and Desarda group. Any patient who had a score ≥ 1 on an 11-point numeric scale (NRS 11) beyond three months of surgery was labelled as having chronic groin pain.

Of the 40 patients who underwent Lichtenstein operation, 19 (47.5%) had some pain at three months, while 18(45%) patients of the Desarda group had pain at 3 months. This difference was not statistically different. The proportions were comparable even when we analysed at a cut-off NRS of 3/10.

Table 1: Baseline data

Group		Lichtensten	Desarda
No. of patients		40	40
Age (mean) (in years)		40.65±15.76	39.87±14.56
Type	Direct	27	22
	Indirect	13	18
Side	Right	25	21
	Left	15	19
BMI (mean)		21.34±2.54	21.45±2.38

Table 2: Comparison of post operative pain between groups

Mean NRS	Lichtenstein	Desarda	p-value
6 hours	5.87±1.93	5.23±1.42	0.095
24 hours	3.94±1.87	3.64±1.66	0.450
7 days	2.45±1.63	2.01±1.24	0.178
1 month	1.89±1.25	1.31±1.19	0.036
3 months	0.87±0.91	0.54±0.65	0.065

When we compared the mean ± S.D of postoperative pain between Lichtenstein and Desarda repair, greater reduction of pain was seen in Desarda technique.

Table 3: Post operative complications

Complications	Lichtenstein (N=40)	Desarda (N=40)
Haematoma	0	1
Wound infection	2	1

Early recurrence	1	1
Seroma	4	3
Foreign body sensation	1	0
Anyother complications	4	4
Total	12	10

Postoperative complications in most of the patients were marginally higher in the Lichtenstein's group as compared to the Desarda group. Duration of surgery, time to return to normal gait and normal work in Desarda were lesser as compared to Lichtenstein's mesh hernioplasty. Desarda group had a higher satisfaction rate 37(92.5%) than the Lichtenstein group 33(82.5%).

Table 4: Outcomes of surgery

	Lichtenstein (N=40)	Desarda (N=40)	p-value
Duration of surgery (minutes)	84.50 ± 23.45	78.12 ± 21.03	0.204
Time to return to normal gait (days)	3.89 ± 2.41	3.27 ± 2.11	0.224
Time to return to normal work (days)	11.23 ± 6.98	10.78 ± 7.65	0.784

Discussions

Several techniques have been employed in the treatment of inguinal hernias since Bassini first described his method in 1887. The technique ranges from the tissue repairs such as modified Bassini, iliotibial tract repair, Shouldice repair, Nylon Darning, Halsted's repair, Tanner's slide and McVay's repair, to the tension free hernioplasties that involve the use of a mesh prosthesis[8]. Despite the large armamentarium available for the treatment of this common condition, no surgeon has ideal results, and complications such as postoperative pain, nerve injury, infection and recurrences do exist [9]. The physiologically dynamic tension free inguinal herniorraphy using external oblique aponeurosis(Desarda's technique) of inguinal hernia repair acclaimed by its developer, Prof Desarda, who has used it since1990, seeks to get over the challenges faced with the use of the tension tissue repair and mesh repair techniques. It is based on the concept of providing a strong, mobile and physiologically dynamic posterior inguinal wall. The technique is simple, easy to learn and easy to do. It does not require complicated dissection or suturing. There is no tension on the suture line. It does not use any foreign material like mesh 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 [9,10].

In our present study chronic groin pain was marginally higher in the patients of Lichtenstein's group as compared to Desarda group. In most studies, there was no significant difference in terms of chronic groin pain between these two techniques [11,12], however, Desarda himself reported that there was no chronic groin pain after Desarda repair [13]. It was expected that Desarda repair would have fewer patients with chronic groin pain as there is less likelihood of mesh-related complications like nerve entrapments and fibrosis. We also did not find a significant difference between the Lichtenstein and Desarda groups regarding the proportion of patients having chronic groin pain[17].

In this present study, we found that the pain intensity was not significantly different at 6 hours, 24 hours, day 7, 1 month, and three months after operation between Lichtenstein and Desarda group. Similar results were reported by Manyilirah et al., Emile et al., and Youssef et al. [14,11,15] however the Desarda group had less pain in a study reported by Gedam et al. [16]. The hypothesis that pain

scores would be higher after Lichtenstein repair due to extensive dissection needed to place mesh was rejected in this study. Although the pain scores were less in the Desarda group, the difference was not statistically significant. The difference in mean pain scores between the groups was also not statistically significant [17].

In this present study, as Lichtenstein repair requires the creation of a space for the placement of a mesh, it was thought that there would be higher chances of haematoma, seroma and wound infection after Lichtenstein's repair but in our study, no significant difference was observed in these complications between the two groups. Only 1(2.5%) patient from the Desarda group had developed a haematoma, and none was seen in the Lichtenstein group. Various studies reported similar results [11].

In the present study, there was no significant difference in foreign body sensation, only one patient had foreign body sensation in the Lichtenstein's group. Similar results are shown in studies by Szopinski et al., Youssef et al., and Ge et al. [12,15,18]. It was thought that Lichtenstein repair would have more complications due to more dissection and mesh-related complications than Desarda repair, as reported by Emile et al.[11]

In the present study, mean duration of surgery was approximately 6 minutes lesser for Desarda repair than Lichtenstein repair, but this difference is slight and has neither clinical importance nor statistical significance. This is similar to results reported by Gedam et al. and many others [11,16]. The mean time for patients to return to normal gait was lesser for the Desarda group than the Lichtenstein group and it was not statistically significant. Manyilirah et al. and Ge et al. reported similar results. [14,18] Youssef et al. reported a significantly earlier return to normal gait for the Desarda group as it had less pain scores and fewer early complications [12,15]. In our study, the mean time for patients to return to normal work was greater for the Lichtenstein than the Desarda group. Szopinski et al. and Youssef et al. reported similar results [12,15]. There was no significant difference in postoperative pain scores, complication rates and the time to return to normal gait in our study. We observed one recurrence in the Desarda group and none in the Lichtenstein group at three months, which was not statistically significant. Similar results were reported in other studies also [11,18]. However, long-term follow-up is needed to know more about the long-term recurrence following these two techniques. Thus, in the present study, Desarda group patients (92.5%) had higher success rate as compared to Lichtenstein group patients(87.25%).[19]

Conclusions

The present study concluded that both the Desarda repair and Lichtenstein's mesh hernioplasty provided satisfactory treatment for primary inguinal hernia with low recurrence rates and acceptable rates of complications. Desarda repair is a simple and straightforward procedure with no complexity involved in the tissue dissection and repair. Desarda repair may potentially increase the number of tissue based methods available for treating groin hernias. The present study concluded that there is no difference between Desarda repair and Lichtenstein's mesh hernioplasty in short term effectiveness hoewever high quality long term follow up randomized controlled trials are needed to provide a more reliable evidence.

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