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Original Research Article

Desarda's versus Lichtenstein technique of inguinal hernia repair

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ABSTRACT

Background: Ideal method for modern hernia surgery should be simple, cost effective, safe, tension free and permanent. The Lichtenstein operation to a great extent achieves this entire goal. The Lichtenstein mesh repair is associated with complications, postoperative dysfunction and high cost composite meshes. Desarda's technique, became a new surgical option for tissue-based inguinal hernia repair. The present study was designed to evaluate and compare the effectiveness and complications of the Desarda's repair with Lichtenstein tension-free mesh repair for treatment of inguinal hernia in a developing country.
Methods: 200 patients with unilateral, primary, reducible inguinal hernia were selected. Included patients were randomly divided into two groups. Studied parameters were Duration of surgery, intra operative complications, post-operative Pain, Duration of hospital stay, return to normal activities, post-operative complications and recurrences.
Results: There were a total of 100 patients each group. There was no statistically significant difference in duration of surgery and complication rate between the two groups. Difference in mean VAS was not statistically significant. The mean hospital stay in Desarda's technique was 2.5 days while it was 2.6 days in Lichtenstein's group. The mean time to return to basic physical activity in the Desarda's technique was 12.6 days while it was 13.3 days in the Lichtenstein's group. There were no recurrences in either group. Chronic inguinal pain (>1month) was more frequent in Lichtenstein's group.
Conclusions: There is no significant difference in duration of surgery, intra operative complication rate, post-operative pain, complications and recurrence, between Desarda's technique and Lichtenstein's technique. However chronic inguinal pain is less in Desarda's technique. Desarda's repair must be considered in young patients (<30 years). Its long-term efficacy needs to be studied with larger, prospective double-blind randomized trials, with longer follow-up.

Keywords: Desarda's technique, Inguinal hernia repair, Lichtenstein technique

INTRODUCTION

Inguinal hernia is one of the most common diseases manage by surgeon.[1] A hernia is abnormal protrusion of a viscus or a part of viscus through an opening in the wall of cavity containing it. It tends to occur at natural areas of weakness, where muscles are not strong and are vulnerable to intra-abdominal pressure. The estimated lifetime risk for inguinal hernia is 27% for men and 3% for women.[2]

The choice of a surgery depends on the surgeon as there were no written surgical guidelines for hernia treatment till 2009.[3-5] There is a considerable variation in the efficiency of all these procedures which is calculated by the rate of recurrence, complications which is also influenced not only by the different techniques but also by experience and the technical skills of the surgeons.[6] However, the ideal method for modern hernia surgery should be simple, cost effective, safe, tension free and permanent. The Lichtenstein operation to a great extent

achieves all these goals.[7] Lichtenstein technique has since become the most commonly performed surgery for inguinal hernia and because it provides a tension-free repair with good long-term results.[8,9] Tension-free mesh repair is nevertheless associated with complications such as foreign body reaction, infection, pain, fistula formation, migration, shrinkage, and recurrence.[10] Other complications include skin anaesthesia, bruising and haematoma formation, seroma formation, orchitis and testicular atrophy. The synthetic prostheses most often used in the inguinal area can cause foreign body sensation in the groin, discomfort, and abdominal wall stiffness.[11] Surgical-site infections are more frequent after hernia treatment using mesh.[12,13] Migration of the mesh from the primary site of implantation in the abdominal cavity is one of the most dangerous complications.[14-16] Intense chronic foreign body reactions around the mesh prosthesis may produce meshoma/plugoma treatment of which becomes a new surgical challenge.[17-19]

The observed complication rate, postoperative dysfunction and high cost composite meshes have urged surgeons to look for new hernia repair techniques or to modify old ones. An example of such efforts is the Desarda's technique, introduced in 2001 and became a new surgical option for tissue-based inguinal hernia repair.[20,21] The present study was designed to evaluate and compare the effectiveness and complications of the Desarda's repair with Lichtenstein tension-free mesh repair for treatment of inguinal hernia in a developing country.

METHODS

The comparative prospective study was conducted from October 2015 to October 2017 in Department of Surgery, IIMSR medical college, Jalna, Maharashtra. Approval from the hospital's ethics committee was obtained. The diagnosis of hernia was on the basis of history and examination. 200 patients between 18 to 60 years of age with unilateral, primary, reducible inguinal hernia were selected. Patients with uncontrolled diabetes, uncontrolled hypertension, bleeding disorders, obstructed inguinal hernia, significant bladder outlet obstruction and recurrent hernia were excluded from the study. Informed consent was taken. Included patients were randomly divided into two groups using random table i.e., one group in which hernia was repaired by Lichtenstein technique and second group by Desarda's technique. All Surgeries were performed by single consultant, who has already performed more than 50 hernia surgeries by each technique (Lichtenstein technique and Desarda's technique). The operations were done under spinal anaesthesia via a regular oblique inguinal incision made about 1.5cm above and parallel to the medial two thirds of the inguinal ligament. The standard procedure of opening in layers and subsequent herniotomy was followed for all the patients. The difference only arose during repair of the defect. The Lichtenstein tension-free mesh repair was performed as described by amid.[22] A 7.5x15cm polypropylene mesh was trimmed to fit the inguinal floor. The mesh was sutured to the ligament of inguinal using a non-absorbable continuous 2/0 suture (Prolene; Ethicon) and secured cranially using same suture. The Desarda's repair was performed as it was originally described in 2001.[20,21]

Surgical technique in Desarda's repair: The medial leaf of the external oblique aponeurosis was sutured with the inguinal ligament from the pubic tubercle to the internal ring using polypropylene 2-0 (Prolene) interrupted sutures (Figure 1).

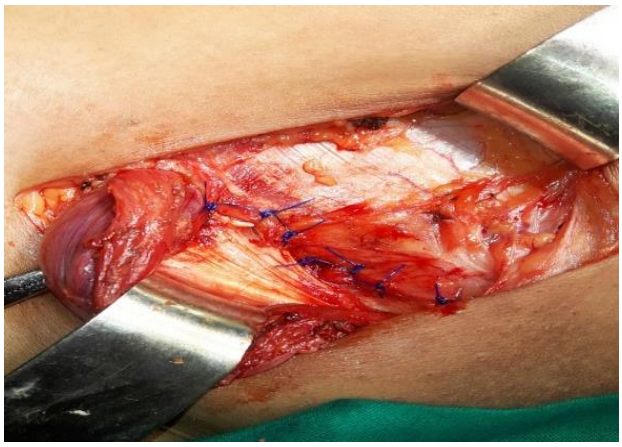

Figure 1: The medial leaf of the external oblique aponeurosis is sutured to the inguinal ligament.

Figure 2: Undetached strip of external oblique aponeurosis forming the posterior wall of inguinal canal.

The first two sutures were taken in the anterior rectus sheath where it joins the external oblique aponeurosis. The last suture will be taken so as to narrow the abdominal ring sufficiently without constricting the spermatic cord. Each suture was passed first through the inguinal ligament, then the transversalis fascia, and then the external oblique. A splitting incision was made in this sutured medial leaf, partially separating a strip with a width equivalent to the gap between the muscle arch and the inguinal ligament but not more than 2cm. This

splitting incision was then extended medially up to the pubic symphysis and laterally 1-2cm beyond the abdominal ring. The medial insertion and lateral continuation of this strip were kept intact. A strip of the external oblique, was now available, the lower border of which was already sutured to the inguinal ligament. The upper free border of the strip was then sutured to the internal oblique or conjoined muscle lying close to it with 2/0 polypropylene interrupted sutures throughout its length (Figure 2).

The aponeurotic portion of the internal oblique muscle was used for suturing to this strip wherever and whenever possible to avoid tension. The spermatic cord was placed in the inguinal canal and the lateral leaf of the external oblique was sutured to the newly formed medial leaf of the external oblique in front of the cord, as usual, again using polypropylene interrupted sutures. Undermining of the newly formed medial leaf on both of its surfaces was done to facilitate its approximation to the lateral leaf. The first stitch was taken between the lateral corner of the splitting incision and lateral leaf of the external oblique.

Particular attention was paid to identify and preserve the nerves of the inguinal area. Duration of the repair was started at the beginning of a particular repair technique after herniotomy had been performed, and ends when the last stitch of the repair is knotted, before closing the other layers of the wound. It was recorded in minutes.

Studied parameters were duration of surgery, intra operative complications, post-operative Pain, duration of hospital stay, return to normal activities, post-operative complications and recurrences. Pain was assessed with visual analogue scale (VAS). Postoperatively, patients were encouraged to resume normal activities as soon as possible. Antibiotics and analgesics were routinely prescribed to the patients post operatively. Sutures were removed on day 7. Follow-up was done at 1 week, 4 weeks, 3rd month 6 months and at 1 year. Appearance of a bulge with cough impulse was treated as recurrence. During follow-up visits, complete physical examination was undertaken. Statistical Analysis was conducted with the help of Microsoft Excel and SPSS software for Windows. Variables were presented as mean and standard deviation for quantitative and percentages for qualitative or as deemed appropriate.

RESULTS

There was a total of 100 patients each in the Desarda's and Lichtenstein's group. The mean age of the patients in the Lichtenstein's group was 41 years while in the Desarda's it was 42 years. There was no significant difference in the age and the co morbid condition in both the groups (p>0.05). There were no intra operative complications. There was no statistically significant difference in duration of surgery and complication rate between the two groups (p>0.05).

Table 1: Comparison of demographic variables, Per-Operative findings, Post operative data and frequency of Complications between desarda's group and Lichtenstein group.

	Desarda's group (N=100)	Lichtenstein's group (N=100)
Age (mean)	48	47
Male	96	97
Females	04	03
Co-morbidities		
Hypertension	22	23
Diabetes	04	05
COPD	06	05
Smoking	11	13
CRF	03	02
Alcohol	12	13
BMI >30kg/m^2	10	12
Type of hernia		
Right	62	58
Left	38	42
Indirect	55	62
Direct	42	36
Pantaloon	03	02
Intra operative complications	Nil	Nil
Duration of surgery	32 min	28 min
Pain by VAS		
POD 1 (mean)	2.96	3.01
POD3	2.9	3.2
POD7	1.46	1.52
Post-operative complications		
Cord edema	6	5
Inguinal hematoma	4	5
Seroma	3	6
Wound infection	1	2
Fever	11	10
Mean stay in hospital (days)	2.5	2.6
Return to normal physical activity (days)	12.6	13.3
Chronic inguinal pain (>1 month)	3	8
Testicular atrophy	Nil	Nil
Recurrence at 3 months	Nil	Nil
6 months	Nil	Nil
1 year	Nil	Nil

Mean VAS score on 1st post-operative day was 2.96 in Desarda's group while it was 3.01 in Lichtenstein's group. Mean VAS score on 7th post-operative day was 1.46 in Desarda's group and 1.52 in Lichtenstein's group. Difference in mean VAS was not statistically significant. The mean hospital stay in Desarda's technique was 2.5 days while it was 2.6 days in Lichtenstein's group. This difference is not significant (p>0.05). The mean time to return to basic physical activity in the Desarda's

technique was 12.6 days while it was 13.3 days in the Lichtenstein's group. This difference is also not significant. There were no recurrences in either group. Chronic inguinal pain (>1 month) was more frequent in Lichtenstein's group. There were no postoperative deaths.

DISCUSSION

Hernia repairs are the most frequently performed general surgery throughout the entire world. The present day's surgeon's armamentarium is full of myriad of surgical techniques ranging from the Lichtenstein repair to laparoscopic hernia repair. This availability of various options has helped the surgeon choose a repair that will best fit with the individual needs of the patient, which are dictated by anatomical, physiological, medical, occupational and many other factors. Lichtenstein technique and its modifications have become some of the most popular and frequently performed surgeries.[7] It is a simple, operator-friendly technique that is easy to learn and perform. The incidence of perioperarive and postoperative complications is minimal.[8]

Most of the patients return to routine life within 48 hours and 60% of physical laborers return to work within 4 weeks. Yet there is a high incidence of chronic groin pain following hernia repair.[23] and chronic groin sepsis after mesh repair requires complete removal of mesh to treat the sepsis.[24] Possible damage to the spermatic cord and nerve entrapment following mesh repair due to extensive fibrosis are also concerns raised by this technique.[25] Depending on the level of expertise and the degree of handling the incidence of post-operative pain is greatly altered. Yet the results from a study conducted by Danielson et al amongst a list of open repairs Lichtenstein's requires lesser expertise with a less steep learning curve.[26]

The Desarda technique for inguinal hernia repair is a new tissue-based method. Despite the objections presented by some authors, application of the external oblique muscle aponeurosis in the form of an undetected strip (which makes the posterior wall of the inguinal canal stronger) has been established as a new concept in tissue based hernia repair.[27,28]

The technique is original, new, and satisfies the principles of ''no tension'' presented by Lichtenstein, and is different from the historical methods using the external oblique aponeurosis, proposed initially by McArthur, and Andrews or Zimmermann.[29,30] Desarda's technique of inguinal hernia repair is easy to learn and does not require complicated dissection. As the steps in this surgery are fixed there is very less scope for modification by individual surgeon. This new technique of hernia repair does not need any costly mesh or laparoscopic instruments. This makes this repair highly cost effective. That is why many published articles recently demonstrated an interest in the technique.[3,20,21]

In our study, there were no statistically significant differences between the patients enrolled to the Desarda and Lichtenstein groups. The percentage of other early and late complications was comparable. The higher ratio of seroma after use of the Lichtenstein method can be explained by the influence of the synthetic mesh on surrounding tissues. This is consistent with other studies and the known influence of polypropylene on tissue.[31,32] There was no recurrence in either group. Similar findings were reported by Desarda MP, on 860 patients over a follow up period of more than seven years.[33]

Mean VAS score on 1st post-operative day was 2.96 in Desarda's technique and 3.10 in Lichtenstein's technique. Similar study by Mitura K and Romanczuk M, compared Desarda's and Lichtenstein's technique and reported mean VAS score on 1st post-operative day to be 3.3 and 3.8 in Desarda's and Lichtenstein's technique respectively.[34] In Present study the mean hospital stay was 2.5 days and 2.6 days in Desarda and Lichtenstein group respectively. Similar study by Mitura K and Romanczuk M, reported that patients operated by Desarda's technique were discharged on 4th day and those operated by Lichtenstein's technique were discharged on 5th post-operative day).[34] The mean time to return to basic physical activity in was 12.6 and 13.30 days in Desarda's and Lichtenstein's group respectively. Similarly, study conducted by Desarda MP and Ghosh A, reported that the mean time to return to work in the Desarda's technique was 8.48 days while it was 12.46 days in the Lichtenstein's group.[35]

CONCLUSION

There is no significant difference in duration of surgery, intra operative complication rate, post-operative pain, complications and recurrence, between Desarda's technique and Lichtenstein's technique. Desarda's no mesh repair is equally safe and more cost effective than Lichtenstein's repair. However chronic inguinal pain is less in Desarda's technique. This method does not require extensive dissection of the inguinal floor. Desarda's repair must be considered in young patients (<30 years).

Its long-term efficacy needs to be studied with larger, prospective double-blind randomized trials, with longer follow-up. Thus, there is no "best" form of hernia repair; it is to be tailored according to the nature of hernia, patient characteristic and the preference of the surgeon and the patient. It would be only apt to end with the words of Sir John Bruce of Edinburgh: "The final words on hernia repair will probably never be written.

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