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Original Research Article

Comparison of tension free Desarda technique with Lichtenstein for inguinal hernia repair

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ABSTRACT

Background: Inguinal hernia is common surgical problem for which mesh based technique, particularly Lichtenstein repair is considered gold standard. However it has its own limitation such as foreign body sensation, wound infection, cord fibrosis, chronic pain, etc. Desarda technique for hernia repair is emerging technique for inguinal hernia repair known for its low cost procedure, less recurrence rate and feasibility of the procedure. The objective of the study was to compare treatment of primary inguinal hernia repair with these methods in terms of various operative and post-operative parameters.
Methods: 64 patients included in the study and operated after randomization. Intra-operative time, local complication, return to everyday activity, post-operative pain, foreign body sensation and early recurrence were analysed.
Results: 51 patients were analysed with a minimum follow up period of 3 months and rest were lost on follow up. Operative time was less in Desarda's repair (28.24 vs. 30.88 min). Desarda repair was cost effective, return to everyday activity was early in Desarda group, there was significantly ($p<0.001$) less post-operative pain measured on VAS on 2nd POD, 7th POD and 1 month. No recurrence observed.
Conclusions: Desarda repair is easy to perform and takes less time to perform, it is also cost effective. Desarda repair when compared with Lichtenstein was superior in terms of postoperative pain, return to everyday activity and no foreign body sensation. Desarda repair is superior to mesh based technique in terms of outcome.

Keywords: Desarda, Lichtenstein, No mesh repair, Chronic pain, Foreign body sensation

INTRODUCTION

Inguinal hernias remain an important surgical problem because of frequency. Average Life time risk for inguinal hernia is 27% for men, 3% for women.[1] Annual morbidity rates in various countries vary from 100 to 300 per 100,000 populations.[2] Until 2009 there were no written surgical guidelines for hernia treatment, when the European hernia society (EHS) published its recommendations based on analysis of the literature and the results of clinical trials. In the EHS guidelines, mesh-based techniques Lichtenstein technique in particular and endoscopic methods are recommended for treatment of primary inguinal hernia in adult men (strength of recommendation 1A). In a departure from this firm opinion presented by the EHS, the Shouldice method has been acknowledged to be acceptable.[3] The synthetic prostheses most often used in the inguinal hernia can create new clinical problems, such as foreign body sensation in the groin, discomfort, and abdominal wall stiffness, which may affect the everyday functioning of the patient.[4] Surgical site infections often with clinical symptoms delayed for years are more frequent after hernia treatment using mesh, migration of the mesh from

the primary site of implantation in the abdominal cavity is one of the most dangerous 10 complications.[5-8] Intense chronic inflammatory process typically associated with foreign body reactions around the mesh may produce meshoma or ptumors, the treatment of which becomes a new surgical challenge.[9] Procreation and sexual function are reportly seriously affected after surgical hernia treatment with mesh. The observed complication rates and postoperative dysfunction have influenced many investigations to look for new hernia repair techniques or modify old methods. An example of such efforts is the Desarda method, which was presented in 2001 and become a new surgical method for tension free tissue based inguinal hernia repair.[10,11] Because the results of our prospective study involving the technique were promising and comparable to results presented by other authors.[12,13]

Aims and objective

Aim of the study was to compare Desarda tissue repair with Lichtenstein mesh repair for treatment of primary inguinal hernia repair at tertiary centre in Dehradun, Uttarakhand.

METHODS

The Study was conducted in Department of Surgery, Shri Guru Ram Rai Institute of Medical and Health Sciences from November 2016 to February 2018. This Study was a Prospective Randomised Controlled Trial. The Study was approved by Institutional Ethical Committee.

Inclusion criteria

Inclusion criteria were male patients of age >18 years; patients with primary unilateral Inguinal hernia.

Exclusion criteria

Exclusion criteria were patients <18 years and >80 years; patient with bilateral inguinal hernia; patients with obstructed, strangulated and recurrent inguinal hernia.

Randomization

Randomization was done by envelope lottery system.

Intervention

Patient were explained visual analogue scale (VAS), written and informed consent was obtained and were kept overnight fasting of minimum 8 hrs prior to procedure.

Parts were prepared by clipper just before surgery, Inj. Cefuroxime 1.5 gm was given 1 hour prior to incision and spinal anaesthesia was given under monitoring by Anaesthetist. After the induction of anaesthesia, site was painted 1st by betadine scrub and then by 10% betadine solution and draped with sterile sheets.

Desarda repair was performed according to the surgical technique described by Dr. Desarda and mesh prosthesis repair (Lichtenstein) was undertaken as described in the textbooks.

Post-operative care and follow up

In post-operative period patient were kept on nil per oral till next morning or appearance of bowel sound and maintained with i/v fluid as per standard treatment protocol. Patient was also given a course of antibiotics, PPI and Analgesics for a period of 5 days. Dressing was done on 3rd, 5th and 7th post-operative days. Suture was removed on the 9th POD. Complication if present was managed accordingly.

Preoperative, intraoperative and postoperative variables were recorded. Complication if any was also recorded.

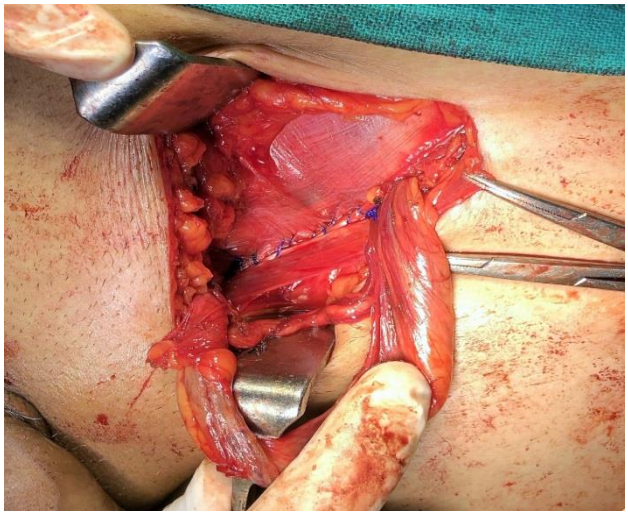

Figure 1: Upper leaf of external oblique aponeurosis sutured to inguinal ligament.

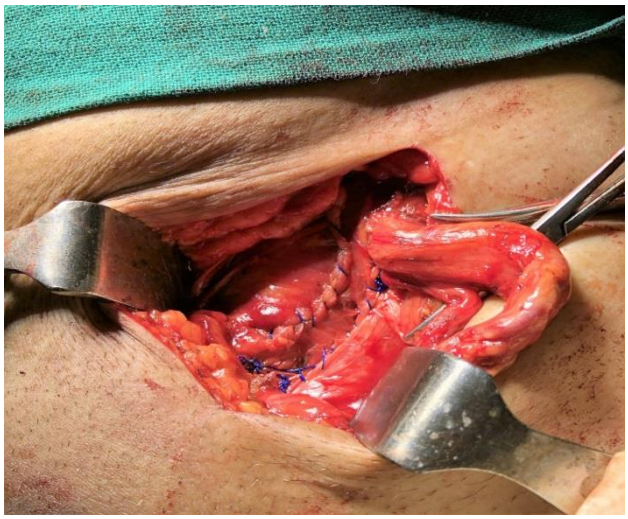

Figure 2: Strip of external oblique aponeurosis sutured to the conjoint tendon.

Figure 3: Both leaf of external oblique sutured with cord beneath.

Data was collected in Microsoft excel and analysed in SPSS data system. Comparison of data was done by Chi square test and Fisher exact test. P valve less than 0.05 was considered significant.

RESULTS

A total of 51 patients were included in the study after screening and rest were lost on follow up. 25 Desarda repair and 26 Lichtenstein repair were done on these 51 patients.

Table 1: Demographic details.

Characteristics	Desarda group (n=25)	Lichtenstein group (n=26)
Age (in years)	61.65	50.04
Complaint	**N (%)**	**N (%)**
Pain	7 (28)	2 (7.6)
Swelling	3 (12)	6 (23.1)
Pain and swelling	15 (60)	18 (69.2)
Associated illness		
BPH	3 (12)	6 (23.1)
Tuberculosis	1 (4)	1 (3.8)
COPD	4 (16)	7 (26.9)
Constipation	3 (12)	0
None	14 (56)	12 (46.1)
Addiction		
Smoker	7 (28)	8 (30.7)
Alcoholic	2 (8)	3 (11.5)
Smoker and alcoholic	2 (8)	1 (3.8)
None	14 (56)	14 (53.8)

The mean age of Desarda group was 61.65 yrs and Lichtenstein group was 50.04 yrs, there was no significant difference in terms of age, associated illness and addiction. There was no intraoperative complication in both the groups. However, operating time was less in Desarda repair (28.24 mins) vs. Lichtenstein repair (30.88 min) and was also significant ($p<0.05$).

Table 2 Comparison of clinical characteristic of primary inguinal hernia.

Characteristics	Desarda group (n=25)	Lichtenstein group (n=26)
	N (%)	**N (%)**
Site		
Right	14 (56)	17 (65.4)
Left	11 (44)	9 (34.6)
Type		
Direct	11 (44)	7 (26.9)
Indirect	11 (44)	17 (65.4)
Direct + Indirect	3 (12)	2 (7.7)
Reducibility		
Reducible	24 (96)	21 (80.8)
Irreducible	1 (4)	5 (19.2)
Content of hernial sac		
Omentum	10 (40)	8 (30.8)
Bowel	4 (16)	4 (15.4)
Omentum and bowel both	10 (40)	13 (50)
Urinary bladder	0 (0)	1 (3.8)
Lipoma of cord with omentum	1 (4)	0 (0)

Table 3: Intraoperative details.

Characteristics	Desarda group	Lichtenstein group	P value
Operative time (in min.)	28.24	30.88	<0.05

Mean VAS in Desarda group on 2nd POD was 3.12 while Lichtenstein had 3.73 which was significant ($p<0.05$), on 1 week mean VAS in Desarda group 1.28 and Lichtenstein group was 2.07 was significant ($p<0.05$) and mean VAS at 1 month in Desarda was 0.12 and Lichtenstein was 0.346 which was also significant ($p<0.05$). 3 patients in Desarda group and 8 patients in Lichtenstein group had pain at the end of 1 month and was statistically significant ($p<0.05$).

Mean time to return to normal activity was 13.68 days in Desarda repair and 18.54 days in Lichtenstein repair which was statistically significant ($p<0.05$). In Desarda group none of the patient developed seroma/wound infection in post-operative period while Lichtenstein group 4 patient developed seroma and 1 had wound infection and was statistically significant ($p<0.05$). Total cost of surgery was Rs 7700 in Desarda group and 14780 in Lichtenstein group and was significant ($p<0.05$). No recurrences were observed in either of the group over a minimum period of 3 months.

Table 4: Postoperative parameters.

	Desarda group	Lichtenstein group	P value
Post-operative pain (average VAS)			
Pain on 2nd day	3.12	3.73	<0.05
Pain at 1 week	1.28	2.07	<0.05
Pain at 1 month	0.12	0.346	<0.05
No. of patients having pain at 1 month	3 (12%)	8 (30.8%)	<0.05
Incidence of local hypoesthesia	9 (36%)	4 (15.4%)	0.09126
Incidence of foreign body sensation	0 (0%)	21 (80.7%)	<0.0001
Incidence of chronic pain	1 (0%)	10 (38.4%)	<0.05
Recurrence	0 (0%)	0 (0%)	-
Operative cost	Rs 7700	Rs 14780	<0.05
Return to normal activity (in days)	13.68	18.54	<0.05
No. of patients having seroma	0 (0%)	4 (15.4%)	<0.05
No. of patients having wound infection	0 (0%)	1 (3.8%)	1

DISCUSSION

Inguinal hernia remains a common surgical illness for which gold standard treatment is Lichtenstein mesh hernioplasty. However, using mesh has its own limitation and complication. It also increases the cost of the operation. Mesh shrinks by 20-40% of its size and can also fold, wrinkle and curl on its own which may lead to recurrence.[14]

Recurrence rate for Lichtenstein repair is less than 2% but Liem et al, has claimed recurrence rate of 6.3% at 2 years and 10% in 4 years.[15] In a study by Shin et al infertility in patients on whom mesh hernioplasty was performed seems to be mesh, which caused trapped or obliterated vas.[16]

Robinson et al reported 252 complication including infection (42%), mechanical failure (18%), pain (9%), reaction (8%), intestinal complication (7%), adhesions (6%), seroma (4%), erosion (2%), and other (4%).[17] Sepra/ polypropylene mesh had more mechanical failure, biomaterial mesh had more reactions, PTFE/ polypropylene showed more intestinal complication whereas PTFE mesh caused more infections.

Hernioplasty causes chronic groin sepsis for which treatment is surgical removal of mesh.[18]

Necrotising fasciitis, orchialgia and colo-cutaneous fistula are some rare complication.[19-21]

Desarda, described a novel technique of inguinal hernia repair. In his surgery, a strip of external oblique aponeurosis is partly separated from its medial leaf, keeping its continuity intact at either end this is sutured to the inguinal ligament below, and the arch of the muscle above, behind the cord, to form a new posterior wall. Contraction of the external oblique muscle creates lateral tension in this strip while contraction of the internal oblique/conjoined muscle creates tension upwards and laterally, making the strip a shield to prevent any herniation. So additional strength given by the external oblique muscle to the weakened conjoined tendon to create tension in the strip and prevent re-herniation is the essence of this operation. Tension created in this strip is graded. Stronger intra-abdominal blows result in stronger abdominal muscle contractions leading to increased tension in this strip to give graded protection. At rest the strip is without any tension. Thus, a strong and physiologically dynamic posterior wall is created. The aging process is minimum in the tendons and aponeurosis, so a strip of the external oblique, which is tendo-aponeurotic, is the best alternative to the mesh.[22] He claimed his method to be simple and an effective method of surgical correction leading to early ambulation, less hospital stays, early return to normal activities, with no recurrence and less complication rates.[23,24]

Losananoff amd Millis criticised Desarda repair and objected for incomplete and unreliable method of follow-up in his study and the technique described by Desarda is not superior to Mesh repair.[25] Naguib et al, also stated in his study that follow-up in Desarda study was unsatisfactory and tension free technique was also questioned.[26]

In the present study, there was statistically significant difference between the Desarda and Lichtenstein methods in regard to postoperative complications, time to resumption of normal activity, local hypoesthesia, recurrence and operative time ($p<0.05$).

Manyilirah et al and Youssef et al who obtained similar results in regards of operating time in their study.[27,28]

Abbas et al, found the operative time to be similar in both groups.[29] He applied interrupted sutures to stich external oblique strip to conjoint tendon which may have prolonged his operative time.

In our study no seroma and wound infection was observed in Desarda group but Lichtenstein group 4 seroma and 1 wound infection was observed, which was significant ($p<0.05$). Abbas et al, also reported similar results, seroma formation rate 0% in Desarda and 1.4% in Lichtenstein repair.[29]

Mesh based repair can cause male infertility and sexual function.[30] Mesh may also cause chronic pain due to nerve entrapment.[31] In young patient, Desarda repair can

be used to avoid complication such as male infertility and nerve entrapment.

In our study no recurrence was observed in either of the group, but long-term follow-up is needed for assessment of this new tissue based technique.

CONCLUSION

The study is designed to compare the outcome of Lichtenstein tension free mesh repair and Desarda repair. Though it requires studying large number of patients and a longer follow up, The Lichtenstein repair and Desarda procedures of primary inguinal hernia repair do not differ significantly in the means of procedure, complexity. Local complications and pain intensity is higher in Lichtenstein repair compared to Desarda repair. The time taken for return to normal non-sternous activity is significantly higher for Lichtenstein group compared to Desarda repair. There is no recurrence of hernia seen in both groups during follow up period. This operation is simple to perform, does not require foreign body like mesh or complicated dissection of the inguinal floor as in bassini and shouldice. Desarda technique is cost effective when compared with Lichtenstein method, so can be done easily, especially in rural areas. The mean hospital stay is low for Desarda repair compared to Lichtenstein repair.

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