ORIGINAL ARTICLE

Lichtenstein Versus Desarda Technique for Inguinal Hernia Repair: A Randomized Clinical Trial

HABIB AHMED[1], MUHAMMAD TARIQ NAZIR[2], FAKHAR IRFAN[3], *MUDASSAR MURTAZA[4], ASHFAQ NASIR KHAN[5]*
[1]Associate Consultant General Surgery, King Khalid University Hospital, King Saud University, Riyadh, Saudi Arabia
[2]Associate Professor Surgery, Govt. Teaching Hospital Shahdarah/FJMU, Lahore
[3]Assistant Professor Surgery, Govt. Teaching Hospital Shahdarah/FJMU, Lahore
[4]Assistant Professor Surgery, Govt. Teaching Hospital Shahdarah/FJMU, Lahore
[5]Assistant Professor, Surgical unit 2, Services Hospital/SIMS, Lahore
Correspondence to:Muhammad Tariq Nazir, Associate Professor Surgery, Govt. Teaching Hospital Shahdarah/FJMU, LahoreEmail:tnchatha@hotmail.com

ABSTRACT

Background: There are different techniques for the repair of inguinal hernia, whichcan be classified broadly intothe techniques usingprosthetic mesh andtissue-based techniques. The recent guidelines recommend the mesh repair as first choice, either by laparo-endoscopic technique or an open procedure.The Desarda's operation is tissue based repair with comparable results to open mesh repair.
Aim: To compare the results of Lichtenstein mesh repair (L group) with Desarda's technique (D group).
Methods: 100 adult male patients with uncomplicated inguinal hernias were included; 50 in each group. Patients with intra operative finding of weak, thin or split fibers external oblique aponeurosis were excluded. The patients were followed in terms of postoperative and chronic pain, time taken to start basic activities and work, recurrence of hernia and other complications.
Results: Operating time was comparable in both groups. 6% patients in L group and 4% in D group had mild to moderate groin pain within 30 days. It resolved in all patients except in one patient in L group, who had chronic mild groin pain. Patients in D group took less time to return to basic activities and work than patients in L group. 4% patients in L group and 2% in D group had surgical site infection. Scrotal edemaoccurred in 6% in L group 4% in D group and it resolved in all patients in both groups within 30 days. 6% in L group and 8% in D group suffered wound hematoma; out of these only 1 patient (2%) in L groupneeded operative drainage. Wound seroma occurred in 6% in L group and 2 % in D group; out of these 1 patient needed aspiration once in L group; others resolved spontaneously. There was no recurrence of hernia in both groups in our study.
Conclusion: Inguinal hernia can be treated successfully without mesh by Desarda repair technique. Its recurrence rates are comparable to the standard Lichtenstein mesh repair with less complications. However, intraoperative finding of weak, thin, or splitfibers of external oblique aponeurosis is the basic hindrance in Desarda technique.
Keywords: Inguinal hernia, Lichtenstein, Desarda

INTRODUCTION

Inguinal hernia is an important medical problem with estimated lifetime risk of 27% for men and 3% for women [(1)]. There are several techniques for the repair of inguinal hernias. In the old well known Bassini repair conjoint tendon is sutured to inguinal ligament behind the cord. To decrease tension in the pulled conjoint tendon, relaxing incision is made in anterior rectus sheath, called Tanner slide. In McVay repair the conjoint tendon is sutured to the cooper ligament behind the cord. Other described methods are, bringing the external oblique aponeurosis (EOA) behind the cord and suturing to inguinal ligament; or double breasting of EOA behind the cord. All these methods are part of history now.

Shouldice technique is multilayer tissue based repair. In this technique, transversalis fascia is incised from pubic tubercle to internal ring, flaps are created and repaired in double breast fashion;conjoined tendon is sutured to inguinal ligament and EOA is repaired in doublebreast fashion in front of the cord. Among the tissue based repairs, Shouldice repair is considered the best, but it is sophisticated and needs long learning curve. At Shouldice hospital recurrence rate is claimed less than 1%, but in other centers up to 15% [(2)]. Due to this unacceptably high recurrence rates, Shouldice technique is not considered asoptimum surgical technique for repair of inguinal hernia in general hospitals.

A darn inguinal hernia repair is tensionless technique in which posterior wall of inguinal canal is reinforced with non-absorbable suture between conjoint tendon and inguinal ligament in darn fashion without approximating the two structures.

In Lichtenstein repair, prosthetic mesh is fashioned to posterior wall of inguinal canal to induce fibrosis for strengthening of wall. It is popular, as it meets most of the prerequisitesof a good inguinal hernia surgery, but is associated with complications related to the mesh. Also cost of mesh is significant for many surgical centers.

In international guidelines for groin hernia repair, 2018, mesh repair of inguinal hernia is recommended as first choice, either by a laparo-endoscopic technique or an open procedure and any other techniques need further evaluation[3].

There are many complications related to synthetic mesh used in the inguinal hernia surgery, such as discomfort at the area, abdominal wall stiffness,foreign body sensation in the groin[(4)], migration of the mesh [(5)]and chronic inflammation due to foreign body reactions[(6,7)].

Received on 26-07-2019
Accepted on 13-02-2020

The mean recurrence rate for the Lichtenstein procedure is about 1.8 to 4%[8,9].

The Desarda's technique, presented in 2001 by Dr. Desarda, is tissue based open inguinal hernia repair using an undetached strip of EOA to strengthen the posterior wall of inguinal canal[(10)].The author claimed that results of his technique are superior or equal to that ofLichtenstein and Shouldice techniques. He claimed complication rate of 1.8% and recurrence less than 1%[10,11,12].

The objective of the study was to compare the results of Lichtenstein mesh repair with non mesh Desarda's technique.

MATERIAL AND METHODS

This randomized clinical trial was done at Government Teaching Hospital Shahdarah, Lahore from Jan.2017 to Jun. 2018. Adult male patients aged between 18 to 80 years with uncomplicated inguinal hernias were included. All patients were given detailed information on the trial and each participant signed an informed consent form. The patients were randomly allocated intraoperatively to undergo one of the two surgical repairs: the classic Lichtenstein mesh repair or Desarda tissue-based repair. The patient who refused to be randomized were excluded. Also patient with recurrent hernias, strangulated or obstructed hernias were excluded. Final exclusion was done intraoperatively where patients with weak, thin or splitfibers of EOA were excluded. A total of 100 patients were finally included. Patients' baseline health variables are shown in table 1.

Table 1: Comparison of baseline health variables:

Variables	Lichtenstein (n=50)	Desarda (n=50)
Mean Age (years)	48.4	47.2
Comorbidities (no)		
Diabetes mellitus	4	3
Hypertension	6	8
Smoking	10	12
Chronic cough/COPD	1	2
Ischemic heart disease	2	0
Chronic kidney disease	0	1
BMI > 30	1	2
Physical Activity:		
Non physical	11	14
Mild Physical activity	37	33
Heavy Physical activity	2	3

All patients were operated under general (40% vs 44% in Lichtenstein and Desarda group respectively) or regional (60% vs 56%) anesthesia.All patients were given prophylactic dose of antibiotics.

Lichtenstein repair (L group): After dealing with the sac,the posterior wall of inguinal canal was reinforced with prolene mesh. The mesh was sutured to the fibro-periosteum of the pubic bone and inguinal ligament with prolene 2/0 continuous sutures. Above, it was sutured to internal oblique with Prolene 2/0 interrupted sutures. On the lateral part of mesh, a slit was made in the mesh to accommodate the cord at deep ring. The two limbs of mesh sutured together lateral to deep ring also meshanchored to the internal oblique here. The cord was places in position. The inguinal canal was closed by suturing the two edges of EOA with prolene 2/0 continuous sutures, leaving adequate space for superficial ring. The superficial fascia closed with vicryl and skin with prolene 2/0.

The Desarda repair (D group): After dealing with the sac,incision was made in the upper leaf of EOA, 2 cm from its divided margin, thereby separating 2 cm strip of EOA from the upper leaf, but keeping its continuity at both ends.It was extending from symphysis pubis medially, to about 1 cm lateral to the deep ring laterally.This strip of EOA was pulled down behind the cord and sutured to the inguinal ligament below with prolene 2/0 continuous sutures and to the arch of the muscle above with prolene 2/0 interrupted sutures, thereby reinforcing the posterior wall by natural tissue without tension.The cord was places in position. The lower leaf of EOA was sutured to the new upper leaf of EOA in front of the cord using Prolene 2/0 interrupted sutures, leaving adequate space for superficial ring. The superficial fascia closed with vicryl and skin with prolene 2/0.

Post-operative analgesia was same for both groups. Patients were examined as inpatient. After discharge from hospital patients were seen in surgical outpatient department at day 7 and month 1, 3, 6 and 12 post-operatives. Patients with complications followed more frequently.Postoperative painscores was assessed by using Visual analogue scale between 0 to 100. Score of more than 50 at 3 months' post-operative was considered as chronic pain. Groin discomfort, scrotal edema, fever, hematoma, seroma, surgical site infections, chronic pain, and hernia recurrence were evaluated as postoperative complications.

RESULTS

Table 2: Post-operative variables

Variables	Lichtenstein	Desarda
Operative time (minutes)	61 ± 15	58 ± 12
Post-operative pain (Visual Analogue Scale)		
Day 1	42/100	35/100
Day7	18/100	15/100
Return to basic activities (days)	1.70 ± 0.55	1.65 ± 0.65
Return to work (days)	15± 5	14 ± 5

Table 3: Postoperative complications

Variables	Lichtenstein (no&%)	Desarda (no&%)
Early Complications (within 30 days)		
Scrotal edema	3 (6%)	2 (4%)
Wound hematoma	3 (6%)	4 (8%)
Wound hematoma needing drainage	1 (2%)	0
Seroma		
Day 7	3 (6%)	1 (2%)
Day 30	1 (2%)	0
Groin pain	3 (6%)	2 (4%)
Surgical site infection	2 (4%)	1 (2%)
Late complications (3-12 months)		
Groin pain	1 (2%)	0
Change or loss of sensation	8 (16%)	9 (18%)
Foreign body feeling	6 (12%)	4 (8%)
Recurrence	0	0

Total of 100 cases of inguinal hernia were operated, 50 in each arm. The baseline health variables were comparable in both the groups (Tables1). Also intraoperative variables (exploration of inguinal canal, dealing with the nerves, dealing with the hernia sac, cord lipomas, operative time) were comparable in both groups. Post-operative variables and complications are shown in Tab. 2 and 3

DISCUSSION

The results of inguinal hernia repair vary from moderate to excellent. There are different techniques for the repair of inguinal hernia. These can be classified broadly into the non-mesh tissue based techniques and the ones using prosthetic mesh. The amount of tension associated with most the tissue based techniques is an important cause ofhernia recurrence and it was the reason of popularity of mesh based techniques. Desarda technique is tissue based, tension free repair.In our study, we compared Desarda technique with Lichtenstein technique.

In our study the operating time was comparable in L group (61±15min) and D group (58±12min).Ge H et al[13], Rodriguez et al[14] and Z Abbas et al[15] didn't find significant difference in operation time, while Youssef et al[16] and Ahmed R et al[17] found significant shorter operation time in D group.

Chronic groin pain is significant complication after groin hernia surgery. In our study we found 6% patients in L group and 4% in D group had mild to moderate groin pain within 30 days. It resolved in all patients except in one patient in L group, who had chronic groin pain. Sowmya et al found less postoperative and chronic pain in Desarda repair as compared to Lichtenstein repair[18]. Gedam et al found significant less pain during first 7 post-operative days in Desarda group[19]. Ge H et al found comparable results[13]. Other authors have variable results [14,17]. In a study by Desarda,he compared his technique with Lichtenstein repair. He reported that mesh may cause extensive fibrosis at the area, thereby causing nerve entrapment and chronic groin pain[20].

We found change or loss of sensation in 16% patients in L group and 18% in D group. Foreign body sensation 12% vs 8% respectively in L and D groups. Szopinski et al, Youssef et al and Ge H et al didn't find significant difference regarding change of sensation in both groups[13,16,21].

In our study patients in D group, took less time to return to their basic and work activities as compared to L group. This may be due to less foreign body material and less pain. Sowmya et al, Z Abbas et al, Desarda et al. and Rodríguez et alhave reported similar results[14,15,18,20]. Ge H et al found comparable results in both groups [13].

There was no recurrence in both groups in our study. Desarda, in a clinical trial, published in 2006, comparedhis technique to Lichtenstein repair.He reported that there was zero recurrence in his technique while 1.9% recurrences in Lichtenstein repair [20], Z Abbas et al [15] found no recurrence in either group. Szopinski et al. [21] found 1.9% recurrence in each group. Similar results were obtained in studies by Rodriguez et al. [14], Ahmed et al [17] and Gedam et al [19].

In our study, 4% in L group and 2% in D group has surgical site infection; treated by partial wound opening, irrigation and antibiotics. Rodriguez et al. [14] noted 8 cases of wound infection out of 876 patients in L group; 3 of them needed reoperation. Sowmya et al[18] noted less wound infection in D group. Ge H et al found comparable results[13].

We found postoperative scrotal edema in 6% in L group and 4% in D group, it resolved in all patients in both groups within 30 days. Wound hematoma occurred 6% in L group and 8% in D group, out of these only 1 patient (2%) needed operative drainage; that was in L group. Wound seroma occurred in 6% in L group and 2% in D group; out of these 1 patient needed aspiration once in L group; others resolved spontaneously. Ge H et al found comparable results in both groups[13].Szopinski et al[21] found significant less seroma in D group.

We didn't calculate the overall cost of surgery, but the extra cost in Lichtenstein repair is the cost of mesh (Pakistani Rupee 4000 to 6000).

CONCLUSION

Inguinal hernia can be treated successfully without mesh by Desarda repair technique. Its recurrence rates are comparable to standard Lichtenstein procedure. It is cost effective (no mesh), patients have less postoperative pain. The other complications are similar or less than Lichtenstein repair. However, the basic hindrance in performing Desarda technique is intraoperative finding of weak, thin, or splitfibers of external oblique aponeurosis, and here Lichtenstein technique has advantage.

REFERENCES

1. Primatesta P, Goldacre MJ. Inguinal hernia repair: incidence of elective and emergency surgery, readmission and mortality.Int J Epidemiol1996 Aug;25(4):835–839
2. G.L. Beets, K.J. Oosterhuis, P.M. Go, C.G. Baeten, G. Koots tra. Long termfollowup (12–15 years) of a randomized controlled trial comparing Bassini-Stetten, Shouldice, and high ligation with narrowing of the internal ring for primary inguinal hernia repair. J. Am. Coll. Surg., 185 (4) (1997 Oct 1), pp. 352-357
3. Simons MP, Smietanski M, Bonjer HJ et al. International guidelines for groin hernia management. Hernia. 2018 Feb;22(1):1-165
4. D'Amore L, Gossetti F, Vermeil V et al (2008) Long-term discomfort after plug and patch hernioplasty. Hernia 12:445–446.
5. Jeans S, Williams GL, Stephenson BM (2007) Migration after open mesh plug inguinal hernioplasty: a review of the literature. Am Surg 73:207–209
6. McRoy LL (2010) Plugoma and the prolene hernia system. J Am Coll Surg. 2011 Mar 212 (3):424 author reply 424–5
7. Miller JP, Acar F, Kaimaktchiev VB et al (2008) Pathology of ilioinguinal neuropathy produced by mesh entrapment: case report and literature review. Hernia 12:213–216
8. Hasegawa S, Yoshikawa T, Yamamoto Y et al.Long-term outcome after hernia repair with the prolene hernia system. Surg Today 2006; 36 (12):1058–1062
9. Adamonis W, Witkowski P, Smietanski M et al. Is there a need for a mesh plug in inguinal hernia repair? Randomized, prospective study of the use of Hertra 1 mesh compared to PerFix Plug. Hernia 2006 June 10 (3):223–228

10. Desarda MP. Inguinal herniorrhaphy with an undetached strip of external oblique aponeurosis: a new approach used in 400 patients. Eur J Surg. 2001 june; 167(6):443–448
11. Desarda MP. Surgical physiology of inguinal hernia repair: a study of 200 cases. BMC Surg 2003 Apr 16;3:2
12. Desarda MP. Physiological repair of inguinal hernia: a new technique (study of 860 patients). Hernia 2006 Apr; 10(2):143–146
13. Ge H, Liang C, Xu Y, et al. Desarda versus Lichtenstein technique for the treatment of primary inguinal hernia: A systematic review. Int J Surg. 2018 Feb; 50:22-27.
14. P. Rodríguez, P.P. Herrera, O.L. Gonzalez, J.R. Alonso, H.S . Blanco.A randomized trial comparing Lichtenstein repair and No mesh Desarda repair for inguinal hernia: a study of 1382 patients. East Central Afr. J. Surg., 18 (2) (2013 Nov 20), pp. 18-25
15. Z. Abbas, S.K. Bhat, M. Koul, Bhat. Desarda'sno mesh repair versus Lichtenstein's open mesh repair of inguinal hernia. A Comparative Study. J of evolution of Med and Dent Sci. Sep 2015, Vol 4, Issue 77, (13279-13285)
16. T. Youssef, K. El-Alfy, M. Farid. Randomized clinical trial of Desarda versus Lichtenstein repair for treatment of primary inguinal hernia. Int. J. Surg., 20 (2015 Aug 31), pp. 28-34
17. Ahmed R et al. Desarda versus Lichtenstein repair for inguinal hernia: a randomized, multi-center controlled trial with promising results. IntSurg J. 2018 Aug;5(8):2723-2726
18. Sowmya G. R, Deepak G.Udapudi. Comparative Study of Lichtenstein versus Desarda Repair for Inguinal Hernia. Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 97, December 03; Page: 16261-16265,
19. B.S.Gedam, Prasad Y.Bansod, V.B.KaleYunus Shah, MurtazaAkhtar.A comparative study of Desarda's technique with Lichtenstein mesh repair in treatment of inguinal hernia: A prospective cohort study. Int j surg.Volume 39, March 2017, Pages 150-155
20. Desarda MP, Ghosh A. Comparative study of open mesh repair and Desardass no mesh repair in a set-up of a district hospital in India. East and Cent. AfricJor Surg., 11 (2) Dec. 2006 (28-34)
21. Szopinski, J., Dabrowiecki, S., Pierscinski, S. et al. Desarda versus Lichtenstein technique for primary inguinal hernia treatment: 3 years results of randomized clinical trial. World J Surg. 2012 May; 36(5): 984-92.