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Original Research Article

Desarda versus Lichenstein repair in treatment of inguinal hernia: our experience in KVG Medical College and Hospital

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ABSTRACT

Background: Desarda technique of inguinal hernia repair introduced in 2001 is still not considered standard tissue-based hernia repair technique. The aim of the study was to compare the tissue based Desarda technique with standard Lichtenstein repair in treatment of primary inguinal hernia.
Methods: 72 cases were allocated into 2 groups. Desarda (D Group) had 36 and Lichtenstein (L Group) had 36 patients. Primary outcome factors included operative time measured from skin incision to skin closure. Post operative pain scores was using Sheffield scale. Ecchymosis, hematoma, seroma, surgical site infections, foreign body sensation etc. were evaluated as postoperative complications. A follow up examination was planned for 6 month to look for early recurrence (<6 month) and chronic groin pain.
Results: Mean age in desarda's group 44.94±15.5 years while Lichtenstein group was 45.47±13.12 years. The mean duration of surgery 42.83 min (D) versus 50.72 min (L). Duration of hospital stay 3.38 days (D) versus 4.08 days (L). Time taken to return to normal and work activities was significantly less in Desarda group (p=0.001). After 6-month mean follow up period 1 recurrence is noted in each arm (p=1).
Conclusions: On comparison of Desarda with Lichtenstein repair. Desarda technique does not use a mesh. Patients after Desarda's operative procedure gets normal activity sooner as compared to the standard Lichtenstein mesh repair. Complications similar to standardized technique. We also found the use of Desarda technique in patients with indirect hernia is a technically sound option than Lichtenstein technique.

Keywords: Inguinal hernia, Lichenstein, Desarda's

INTRODUCTION

The surgical treatment of inguinal hernias has evolved through several stages to reach a modern and successful era. It has been said that the history of groin hernias is the history of surgery itself.[1] hernia repair is one of the most commonly performed general surgical procedures worldwide.[2] since the time Bassini described his technique the search for an ideal inguinal hernia repair is still on. An ideal inguinal hernia repair should be tension free, tissue based, with no potential damage to vital structures, no long-term pain or complications and no recurrences. Other tissue repairs like modified Bassini, iliotibial tract repair, Shouldice, nylon darn, Halsted-Taner, McVay and many others either require good surgical experience or are tension repairs with recurrences. Shouldice method which closely compared with the mesh repair rarely used probably because of complexity involved in tissue dissection and repair. Recurrences vary from surgeon-to-surgeon centre to centre owing to complexity of procedures.[5]

Though Lichenstein prosthetic repair using Prolene mesh has being popular lately it is not a tissue-based repair and hence cannot be considered ideal. Though this method of hernia repair is simple and safe, at the slightest moment of the mesh from the sutured area is leading cause of failure of mesh repair of inguinal hernias. Mesh works as a mechanical barrier. Does not give mobile and physiologically dynamic posterior wall.[3] Moreover this technique is associated with chronic groin pain and testicular atrophy and infertility.[4] Suture repair for inguinal hernia is still under development, and recently, Desarda as described an operation where a 1-2 cm strip of external oblique aponeurosis lying over the inguinal canal is isolated from the main muscle but attached both medially and laterally. It is then sutured to the conjoint tendon and inguinal ligament, reinforcing the posterior wall of inguinal canal. As the abdominal muscle contract, this strip of aponeurosis tightens to had further physiological support to the posterior wall. This operation is currently being evaluated.[6] This new technique is theoretically closer to ideal hernia repair.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 do. It does not require complicated dissection or suturing. There is no tension on suture line. 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.[7-9] Success of groin hernia is measured primarily by permanence of operation, fewest complications, minimal cost, and earliest return to normal activities. To validate the use of Desarda's repair at large, its comparison to open mesh (Lichtenstein) – in these outcomes must be established. The purpose this study is to attempt to establish the influence of this new technique on early clinical outcomes of inguinal hernia repair, and limited study of long term outcomes. If proved to be effective it will be a basis for promotion of use globally.

METHODS

The present study was a single-center. single-blind randomized, comparative two group surgical study. It compares between two surgical procedures namely Lichtenstein and Desarda repair for inguinal hernia. After obtaining ethical clearance from Institutional Ethical committee, study was conducted on patients admitted with the diagnosis of primary inguinal hernia (both direct and Indirect) in KVG Medical College and Hospital, Sullia, Dakshina Kannada, Karnataka from December 2019 to May 2021. The patients were subjected to either Lichtenstein or Desarda method of hernia repair after taking written consent to participate in the study. Purpose of the study and the methods of treatment were carefully explained to the patients individually. They were allowed to ask questions freely to ensure that they had understood the whole procedure and the concept of blinding. Shiefield score for Pain measurement was explained to all patients in detail. The diagnosis of primary inguinal hernia was made on basis of history of reducible groin swelling and essentially on clinical examination. Detailed history was collected including age. Chief complaints and duration, other associated conditions like chronic cough, chronic constipation, urinary complaints etc, h/o previous abdominal surgeries, family history, occupation, marital status etc. Detailed physical examination was conducted by same examiner and classification was done according to EUS class. Telephonic contact numbers and detailed address were collected for follow up. Routine investigations were done which were relevant to obtain fitness for surgery. This included hemoglobin percentage, random blood sugar, blood urea, serum creatinine, ECG, and routine urine analysis for sugar, albumin and microscopy, chest x-ray and ultra sound abdomen. If any patient was found to have any medical contraindication for surgery was first treated for these medical problems and then re-evaluated for surgery. Statistical analysis will be made using descriptive statistic and Statistical package for social sciences (SPSS) version 21 was used for analysis.

Sample size

Considering mean difference in time taken for surgery to be 8 minutes between D and L group with 95% CI and 80% power our sample size will be 30 in each group. Considering 10% nonresponse rate and 10% loss to follow up we will include 36 in each group. Sample size calculated using OpenEpi version 3.03.

Inclusion criteria

All cases of inguinal hernia admitted for surgery: above 18 -75years of age and with a primary, reducible inguinal or inguino-scrotal hernia; unilateral or bilateral.

Exclusion criteria

Patients with: Old and debilitated patients of poor general condition as they will be unable to give an accurate assessment of the key outcomes of the operation, recurrent hernias and per operative finding of separated, thin and/or weak external oblique aponeurosis.

RESULTS

Age distribution

Age ranged between 19 to 71 years among patients undergoing Desarda's repair and 21 to70 years in Lichtenstein repair. The mean age of presentation in Desarda's group was 44.94±15.5 and in Lichtenstein 45.47±13.12. There was no significance difference in the age in both the groups.

BMI distribution

The distribution of BMI in both groups is similar with all the number of patients falling in 18.5-25 kg/m^2 category.

The difference between the two groups was statistically significant with a p value of 0.05.

In this study most of the patients are male in both groups except 3 (8.3%) female and 1 (2.8%) female patient in Desarda's group and Lichtenstein group considering p value of 0.6.

Table 1: Age distribution.

Age in years	Procedure type		P value
	D	L	
<30	7 (19.4%)	5 (13.8%)	
30-40	7 (19.4%)	7 (19.4%)	
41-50	11 (30.5%)	9 (25.0%)	
51-60	2 (5.5%)	10 (27.7%)	
61-70	6 (16.6%)	4 (11.1%)	0.8
>70	3 (8.3%)	1 (2.7%)	
		36 (100%)	
Total Mean±SD	36 (100%) 44.94±15.5	45.47 ±13.12	

Occupation among hernia patient

Present study shows that 58.3% and 72.2% patients are manual labours, 11.1% and 2.8% patients are drivers,8.3% and 11.1% are students,13.9% and 11.1% are coolie,5.6% and 2.8% are clerk, 2.8% and 0.0% are teachers in both Desarda's and Lichtenstein group respectively.

Table 2: Gender distribution.

	D		L		P value
	Mean	SD	Mean	SD	
Operating time	42.83	1.732	50.72	2.009	<0.001

Mode of presentation

Without expectation all the patients presented with swelling, of these 28 (77.8%) and 29 (75.0%) presented with only swelling, 8 (22.2%) and 9 (25%) patients presented with both swelling and pain in Desarda's and Lichtenstein group respectively. There was no statistical difference in both groups with p value 0.7.

Anatomical side of hernia

The present study showed that hernia was more common on right side 50% and 52.8%. Left sided hernia comprised about 27.8% and 41.7%, 22.2% and 5.6% Bilateral hernia in Desarda's and Lichtenstein group respectively. However, the difference was not statistically significant with p value of 0.06.

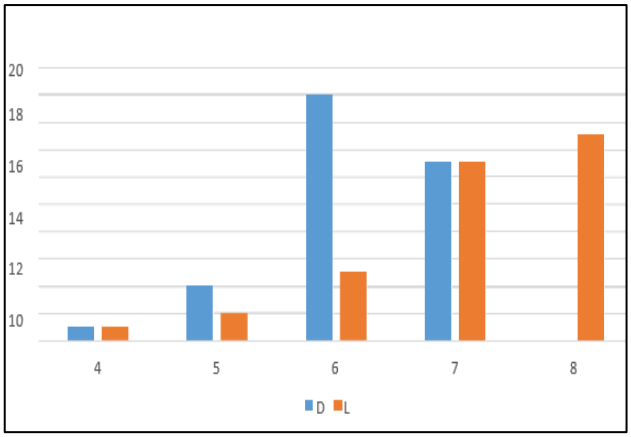

Figure 1: Return to normalcy.

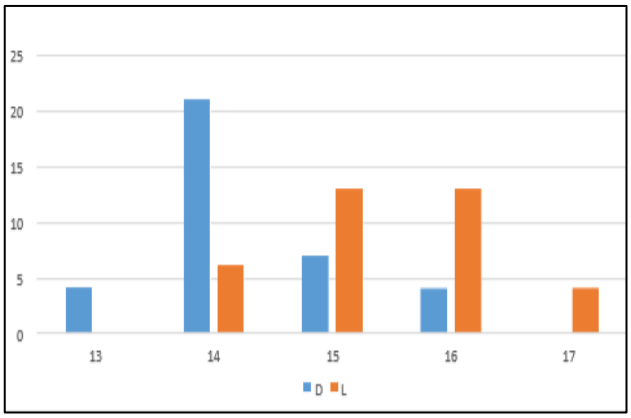

Figure 2: Return to work activity.

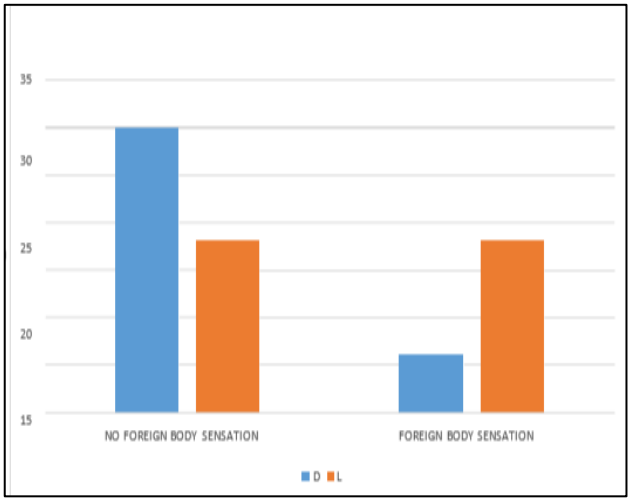

Figure 3: Foreign body sensation.

Chronic cough among hernia patients

In this study 14 (38.9%) and 19 (52.4%) patients had chronic cough in Desarda's and Lichtenstein group respectively.

Extent of hernia among patients

In this study 11 (30.6%) and 9 (25%) patients had complete inguinal hernia, 25 (69.4%) and 27 (75%) patients had incomplete inguinal hernia in desarda's and lichtenstein group respectively. Most of the patients had incomplete inguinal hernia in both the groups. With insignificant p value 0.59.

Table 3: Comparision of cost of treatment between the two groups.

Cost of treatment	D	L	P value
<9000	20 (55.5%)	0 (0%)	0.02
9000-11000	13 (36.1%)	25 (69.4%)	
>11000	3 (8.3%)	11 (30.5%)	
Total	36	36	

Type of hernia

In this present study 36 cases of Desarda group had medial and lateral hernia which contributed 50% in each type. And 36 cases Lichtenstein had 47.2% medial hernia and 52.8% lateral hernia.

Comparison of operative times

The mean duration of surgery in Desarda group was 42.83±1.732 while that in Lichtenstein group was 50.72±2.009. There was a statistically significant difference of nearly 8 minutes with a p<0.001

Comparison of post operative pain

On POD -1: 13.9% versus 0.0% had mild pain, 52.8% versus 50.0% had moderate pain, 33.3% versus 50.0% had severe pain in desarda's and Lichtenstein group respectively. Here the p value was found to be insignificant (p>0.05).

On POD-3; 25.0% versus 47.2% had no pain, 61.1% versus 50.0% had mild pain,13.9% versus 2.8% had sever pain in both desarda's and Lichtenstein group respectively with insignificant p value (p>0.05).

On POD-14; 77.8% versus 72.2% patients had no pain, 22.2% versus 27.8% had mild pain in desarda's and Lichtenstein group respectively with less significant p value (p>0.05).

On POD-30; 94.4% versus 83.3% had no pain, 5.6% versus 16.7% had mild pain in desarda's and Lichtenstein group respectively with insignificant p value(p>0.05).

On POD-90; 94.4% versus 83.3% patients had no pain, 5.6% versus 16.7% had mild pain in desarda's and Lichtenstein group respectively with insignificant p value(p->0.05).

In this study none of the patients of desarda group had chronic groin pain when compare to Lichtenstein with significant p value 0.04

Complications

Ecchymosis

Present study 3 (8.3%) patients in Desarda's and 6 (16.7%) patients in Lichtenstein group had Ecchymosis with insignificant p value (p>0.05).

Hematoma

Present study 3 (8.3%) patients and 5 (13.9%) patients had hematoma in Desarda's and Lichtenstein group respectively with insignificant p-value (p>0.05).

Seroma

Present study 4 (11.1%) patients and 7 (19.4%) patients had seroma formation in Desarda's and Lichtenstein group respectively. Here p value is insignificant (p>0.05).

Surgical site infection

Present study only one patient (2.8%) in Desarda's group and 2 (5.6%) patient in Lichtenstein group had surgical site infection with insignificant p value(p>0.05).

Testicular edema

Present study 3 (8.3%) and 4 (11.1%) patients had testicular edema in desarda's and Lichtenstein group respectively with insignificant p value (p>0.05).

Duration of hospital stay

Mean duration of post operative hospital stay in Desarda group was 3.38±0.97days while Lichtenstein group was 4.08 ±0.73 days with significant p value of 0.04.

Return to normal activity

The time taken for the patient to return to normal activity was noted in both the groups. In desarda's group the mean time taken by the patient to return to normal activity was 6.19±0.74 while in Lichtenstein group was 7.08±1.02 days.There is a statistically significant difference between two groups with a p value of 0.001.

Return to work activity

The time taken for the patient to return to work activity was noted in both the groups. In desarda's group the mean time taken by the patient to return to work activity

was 14.31±0.822 while in Lichtenstein group was 15.33±0.89 days. There is a statistically significant difference between two groups with a p value of 0.001.

In this study 6 (16.6%) and 18 (50.0%) patient had foreign body sensation in Desarda's and Lichtenstain group respectively. However there is a significant statistical difference in both group with p value of 0.04.

Evaluation of recurrence in both groups after 6 month follow up

After 6 months of follow up there was 1 recurrence in both the groups. No statistical significance with p value of 1.00.

Comparison of cost of treatment between the two groups

The cost of treatment in total between two groups was compared. The mean cost of treatment in Lichtenstein group was INR 11200.6±808.2 while that in desarda group was INR 9100.6±1200.1 which was lesser by nearly 2000 INR. The difference was statistically significant with a p value of 0.02.

DISCUSSION

Inguinal hernia is the most common surgical abdominal entity in the adults.[10] In the past decade Lichtenstein repair has become the gold standard for treatment of inguinal hernias mainly due to the reduction in recurrences noted.[11] It is used as blanket surgery for all types and sizes of inguinal hernia with very few exceptions. However it is practiced widely it is far from the definition of an ideal hernia repair as it is not tissue based and has complications likes chronic inguinal pain as quoted in an editorial in annuals of surgery in 2001 which observed that the incidence of chronic groin pain has dramatically increased from around 3% to nearly 19%.[12] Nerve entrapment within the mesh is often blamed for this consequence. Several other complications of mesh repair include hematoma, seroma, ischemic orchitis, testicular atrophy, mesh infection and sinus formation.[13] Young patients especially those undergoing mesh repair for indirect hernias are affected mostly with a risk of infertility in future.

Hence a search for ideal hernia repair still underway and desarda's procedure might be the procedure satisfying procedure for an ideal hernia repair as it is tension free, tissue based and as per results of varies studies as less chronic groin pain than mesh repair as nerve entrapment does not occur. There is no risk of mesh infection as it uses un undetached strip of external oblique for repair .external oblique aponeurosis acts as a near perfect mess alternative as it as negligible foreign body reactions, causes no pathologic fibrosis, as low adhesion potential, as tensile strength >16 N, is of biological origin and matches the abdominal wall dynamics as closely as possible in flexibility, elasticity and memory as per the criteria let down by 30th international congress of European hernia society. This procedure if proved successful can be used extensively in all types of hernias where external oblique aponeurosis if well preserved.

Demographics and symptomatology

The mean age of presentation in Lichtenstein group was 45.47 years and in Desarda 44.94 years. This was compared with the results in other studies and the correlated well which reported 52.5 years mean age14. Both male and female patients were included in the present study. Swelling was the most common presentation with most patients presenting within 6 months. Pain was present in the 17 was also correlating well with other studies.[3,7,8,9] The distribution of types of hernia varied slightly from other studies with Right indirect inguinal being most common. Manyilirah et al reported right indirect hernia as the most common type.[12,13] However there is no absolute correlation regarding this variable in all the studies oveall.[3,7] There is no significant difference between the associated comorbidities a seen in Szopinski et al.[15] The BMI distribution of patients in present study correlated with Manyilirah et al with most number of patients falling in 18.5-25 kg/m2 category (100%).

Operating time

The mean time difference between the two groups with respect to operating time in the current study is 8 minutes. The duration of surgery was shorter in the Desarda group. This correlated fairly well with Manyilirah et al which found a time difference of 12 mins.[12,13] This showed a significant time advantage with Desarda procedure.

Pain assessment

Though there was no statistically significant difference in pain in all days following surgery with lesser pain in desarda group, overall the pain showed an uptrend on POD 3, but the mean pain on POD 1 and POD 14 correlated fairly well in both studies. while in study by Szopinski et al POD 2 pain was taken into consideration and it was one point higher than that in the current study in both groups. Since overall the difference in pain remained approximately one point it might not be of significance.

Comparison of complications

Among the postoperative complications encountered in the present study seroma rate was roughly similar in both groups, however seroma rates were high compared to Szopinski et al at the same time scrotal swelling, hematoma rates and wound infections rates were more than the given study.[15]

Comparison of other parameters

A mean time for return to normal activity in present study was 7.08 days in Lichtenstein's group and 6.19 days in Desarda group. Mean time for return to work activity in present study was 15.33 in Lichtenstein's group and 14.31 days in Desarda group. while the mean duration of hospital stay was 4.08 days and 3.38 days respectively. The comparison of these parameters with others studies was not possible due to different operational definition of these variables in different studies. However a common trend of earlier mobilization and discharge was noted in a Desarda group in all studies.

Comparison of follow up outcome

After 6 months follow up the percentage of patients with chronic pain in Desarda group was at 0% percent while that in Lichtenstein's group was at 16%. Though the rates in Desarda group was not similar but in Szopinski et al it was lower than Lichtenstein's by nearly 10% after 3 years follow up.[15] The number of recurrences though an insignificant number with a 6 months follow-up was similar to other studies. There was no statistically significant data regarding recurrence in the present study.

The main limitation of our study were that the of patients were limited to the patients admitted to our hospital. Larger sample size may provide inspiring ideas for large-scale prospective studies concerning better repair for patients with primary inguinal hernias.

CONCLUSION

The operating time for Desarda's procedure is lesser then that of Lichtenstein's Mesh repair overall by nearly 8 mins. Desarda's technique is a relatively easy technique to master and is easily reproducible. However a thinned out external oblique muscle poses a difficulty in performing the procedure. Desarda's technique is best suited for young patients and for Indirect Hernias as it has less risk of post-operative orchitis, testicular atrophy, infertility and inguino-dynia. The postoperative pain is lesser with Desarda's technique on all postoperative days and patients ambulate faster and get discharged faster with this technique than with mesh repair. The risk of complications is roughly equal in both the procedures, however Desarda's technique is inherently free of risk of mesh infection as no prosthesis is used. There is a dramatic difference in incidence of chronic pain in Desarda's technique as compared to mesh placement as there is no risk of nerve entrapment. The recurrence data in this study is insufficient to comment on the chances of recurrence in these patients. However other studies in this aspect prove that there is no significant difference between the procedures as far as recurrence is concerned. On comparison of costs Desarda's technique is definitely more cost effective than Lichtenstein's as no mesh is used and the cost of antibiotics, mesh and hospital stay are reduced. Desarda's technique is definitely a promising procedure and has a lot of potential to replace mesh repair in certain conditions and is best suited for situations like strangulated hernias where mesh use is contraindicated. More number of Randomized control trails and multicenter trails need to be undertaken to study the pros and cons of this procedure in future. Lichtenstein's has certain disadvantages like ischemic orchitis , infertility and chronic pain, hence cannot be used as a blanket surgery for all types and sizes of hernia. Desarda's technique is a very reasonable alternative to mesh repair in many clinical situations. Desarda's repair is also ideally suited for repair of Inguinal hernia in female patients.

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