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Early Post Operative Outcomes of Desardas Repair in A Rural Medical College Hospital

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Abstract

Background: Despite the high burden of inguinal hernias in India, and the total embrace of the tension-free mesh techniques (Lichtenstein) its use has remained low in rural areas because of its cost and availability. Desarda's method, acclaimed to be tension free with very few studies done on this technique, there was need to evaluate its effectiveness in a rural setup like MVJ medical college and analyze its efficacy with respect to procedure, complications and outcomes.

Study Objectives: To study outcomes of Desarda's method of hernia repair like postoperative pain, hospital stay, return to work, Operative time, Foreign body sensation, Chronic Groin pain, Recurrence.

Methods: This was a prospective observational study of patients with primary inguinal hernias who underwent Desarda's repair from July 2017 and June 2019. Postoperative acute pain was assessed with the help of VAS 1, 2, 3 days and 1 month postoperative day. Patients were followed up at 1, 3, 6, 12, 18 months to check for complications.

Results: There were 50 male participants (mean age 48.2 yrs). Procedure took 52.32 mins and ambulation time was 1.52 SDdays. Mean pain score was 3.24 SD+0.77 (POD1), decreased to 1.58 (POD2), 1.18 (POD3). Mean hospital stay was 4.06 days. 4% had hematoma, 6% had seroma, Surgical site infection rate was 6%. Many patients returned to work with a mean of 8.12 days. No complaints of chronic pain, foreign body sensation after 3 months. No recurrence was seen during the study period.(Table 2)

Conclusion: Desarda technique is fast with less complications, Patients return early to work and none had chronic groin pain and foreign body sensation after 3 months. Without any recurrence the efficacy of Desarda's repair may be considered equal to mesh repair in preventing recurrence and better in late complications, cost benefit and patient compliance.

Keywords: Desarda's repair; Tissue based repair; Operative time; Ambulatory period; Post operative pain; Return to work; Chronic groin pain; Recurrence.

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Introduction

Inguinal hernia is a common surgical problem in MVJ Hospital a rural tertiary care centre. The need to find an efficient, safe but simple and affordable method of hernia repair provided the basis for this study. This study was designed to establish the short-term clinical outcomes of hernia repair using the Desarda's technique, a non-mesh tissue-only repair, which is acclaimed to be able to restore the normal physiology of the inguinal canal as compared to the mesh-based repairs.

Inguinal hernia repair is one of the most commonly performed surgeries worldwide where numerous techniques have been described for Inguinal hernia repair since several centuries.[1] Desarda's achieves tension free anatomical hernia repair using external oblique aponeurosis and absorbable sutures. It is said to be tension free, pure tissue repair. As we know currently tension free mesh repair is the standard of care in the treatment of hernias. Lichtenstein's, considered a pillar of hernia repair where synthetic mesh is used to achieve a tensionless repair. However chronic

pain, foreign body sensation, stiff lower abdominal wall have been variably reported in patients. To overcome this, led to invention of Biological mesh wherein now at least thirty types of biologic meshes exist for hernia repair. Since biologic meshes are derived from biological tissues, these materials are eventually degraded and remodelled by the host, providing the benefit of a temporary scaffold at the repair site with low risk of long-term inflammation and fibrosis. However, the high cost of biological meshes, at roughly $25–30 per square cm and also it is not yet available in most of the countries and is very much beyond affordability for poor and middle class sections of the society. Since the introduction of laparoscopic techniques, these methods became equally accepted for inguinal hernia, in particular in western regions where financial aspects play a less prominent role.

Desarda's technique is a pure tissue repair without mesh and cost effective. The principle behind this technique is physiological while it makes the best use of anatomy of the inguinal canal and anterior abdominal wall to repair the defect and gives a repair resembling normal anatomy. However, Desarda's is less practiced. Hence our study determines if Desarda's can be effective.

Desarda used his technique to repair Hernia for his patients since then and the technique was recognized worldwide when he presented a paper in 2001 with better results compared to Lichtenstein repair. Since then many of the developing countries started using this technique to find similar results to Lichtenstein in terms of recurrence but far better results with other complications like chronic pain and foreign body sensation.

This clinical study has been undertaken to study the Efficacy of Desarda's Technique analyzing various parameters like duration, simplicity of procedures, Early and late complications, Chronic pain and foreign body sensation, Recurrence, Benefits to patient-reduced hospital stay, early return to work.

Need for the Study: Having potential to replace Mesh repair, can benefit millions who undergo hernia repair even in remote areas where mesh is not available especially developing nations like India. The studies done on this new technique are very few and it's too early to come to a conclusion of that this inguinal hernia repair method is effective with possible complications. European hernia society approved this technique and included in guidelines , mentioning many similar studies and researches are needed regarding Desarda's repair to conclude this technique as a better option of hernia surgery as acclaimed by the inventor Dr. Desarda. Our study is a little contribution for a possible better and affordable option of hernia repair. This might as well contribute improving physical quality of life.

Objectives

Objectives of the Study:

A. To study efficacy of Desarda's technique in hernia repair.
B. To study benefits of Desarda's technique, a mesh free, no tension hernia repair technique using absorbable sutures

Efficacy in terms of -

Duration and simplicity of procedures.

Early and late complications.

Chronic pain and foreign body sensation.

Recurrence.

Benefits to patient reduced hospital stay, early return to work, health care cost.

Methodology

Study Design

The study was a single- Centre observational study.

Study Setting

The study was carried out at MVJ Referral and Teaching Hospital which has a bed capacity of 750. The hospital is a main teaching hospital for MVJ Medical College.

Adult patients with inguinal hernias are seen in the general surgical outpatients department after having been assessed and admitted in Surgery ward.

Desarda's repair was carried out after thorough clinical examination and preparation of the patient. The study was conducted for two years, between July 2017 and June 2019.

Study population

All adult patients with a primary, reducible

inguinal or inguinoscrotal hernia and consented to participate in the study.

Selection Criteria: Inclusion

Participants:

- All patients who present with inguinoscrotal swelling and diagnosed as Inguinal Hernia.

Exclusion

- Patients who refuse surgery.
- Patients with systemic disorder not able to undergo surgery.
- Recurrent Hernia

Sampling Procedure

Patients with inguinal hernias seen in Surgery OPD were interviewed and clinical assessment made by the Principal Investigator (PI). The 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.

After history taking, physical examination was done and requested necessary investigations for surgery. This was aimed at recording the key research and major co-morbidities. Those who met the inclusion criteria and consented to participate in the study were enrolled in the study until the required sample size was attained.

Interventions

Materials and Procedure

(a) *Preparation:* An informed consent was obtained from the participant. The visual analogue scale for pain assessment was carefully explained to each participant. The participant was then shaved where necessary. He or she was asked to empty the urinary bladder where necessary, before being asked to lie supine on the operating table and anaesthesia given.

(b) *Herniotomy:* The groin skin crease (transverse) incision measuring between 7.5cm and 10cm was employed in every participant, starting 2cm above and medial to the pubic tubercle. This exposed the external oblique aponeurosis (EOA), the superficial inguinal ring and the cord. After achieving hemostasis, the EOA was incised in the line of its fibres, starting at the superficial ring to about 2cm laterals to the deep inguinal ring. Care was taken not to damage the ilioinguinal and iliohypogastric nerves just beneath the aponeurosis, the spermatic cord was mobilised by placing a finger around the cord at the level of the pubic tubercle. The cremasteric fibres were divided to free the cord from the underlying structures such as the inguinal ligament. The fascial layers of the cord were picked up between two artery forceps, and a dissecting scissor was used to split open these layers over the anteromedial aspect of the cord. The sac was then identified and dissected free from the cord structures with a combination of sharp by scissors and blunt dissection by gauze stripping, and cleared to the level of the deep ring. The freed cord was drawn away from the field using a hernia ring. The hernia sac was then opened and the visceral contents examined and manually reduced.

Traction using three haemostats was applied to the opened margins of the sac bringing the deep inguinal ring and the neck of the hernia sac into view. The sac was then twisted, transfixed and ligated with atraumatic Vicryl 2/0 suture. In case of a small direct hernia, the sac was invaginated back into the peritoneal cavity. While for the sliding hernia, the cut edges of the peritoneum were repaired by a continuous atraumatic 2/0 Vicryl suture after reducing the viscus back into the abdominal cavity.

The excess sac was excised about 1cm distal to the ligature, and the cut edges checked for haemostasis before the sac was dropped back behind the aperture in the transversalis fascia. In all large inguino-scrotal hernias the sac was excised and its fundus, adherent onto or continuous with tunica vaginalis, was left in-situ. The repair was then embarked on.

Desarda's Repair[2]

The medial leaf of the EOA was sutured to the inguinal ligament from the pubic tubercle to the deep inguinal ring using 1 PDSII (Polydioxanone) continuous sutures. The first 1–2 sutures were taken in the anterior rectus sheath and just lateral to pubic tubercle along inguinal ligament. The last suture is taken so as to narrow the deep ring sufficiently without constricting the spermatic cord.[2]

A splitting incision was made in this sutured medial leaf, partially separating a strip of width 1.5–2 cm. This splitting incision was extended medially up to the rectus sheath and laterally 1–2 cm beyond the deep ring. The medial insertion and lateral continuation of this strip was kept intact.

A strip of the EOA was now available, the lower border of which was already sutured to the inguinal ligament. The upper free border of the strip was now sutured to the internal oblique or muscle arch lying close to it with PDS 1 continuous sutures throughout its length.[2]

The aponeurotic portion of the internal oblique muscle was used for suturing to this strip wherever and whenever possible without tension; otherwise, it is not a must for the success of the operation.

This resulted in the strip of the EOA being placed behind the cord to form a new posterior wall of the inguinal canal. At this stage the patient was asked to cough and the increased tension in the strip is clearly visible.

The spermatic cord was placed in the inguinal canal and the lateral leaf of the EOA was sutured to the newly formed medial leaf of the EOA in front of the cord, as usual, again using PDS 1 continuous sutures.

Undermining of the newly formed medial leaf on both its surfaces facilitates its approximation to the lateral leaf without tension. The first stitch was taken between the lateral corner of the splitting incision and lateral leaf of the EOA.

The skin was then closed by interrupted Nylon 2/0 or 3/0 vertical mattress suture, and dressed with two or three layers of haemostatic gauze and elastoplasts applied to completely cover the gauze.

Postoperative Care and Follow-up

After skin closure, instructions not to open up the wound dressing nor wet it when bathing.

Instructions to immediately report back to the PI in the event of excessive pain at the incision site, blood, wound discharge, or foul smell arising from the wound.

The first follow up was done next day after the operation, where pain was assessed using the VAS. The Patient was then given a copy of the pain VAS to note the level on the third day at home. Those who could not read or write would report back verbally. Pain assessment was done based on pain felt in the morning after walking 50–100 meters. Instructions on how to fill the pain VAS at home on the 3rd POD were repeated and the patient asked to repeat them for the PI to ensure that they had been understood and discharged.

Any complications such as hematoma and scrotal swelling were managed accordingly. The patient was allowed home and was told to report back on the 14th POD especially if they had any complications or had not regained normal gait on the 7th POD. They were instructed to call the PI, or were called on their mobile phones.

All patients were instructed not to restrict their normal activities and they could start routine non strenuous work from 3–4 days after surgery. Patients were told not to drive until 3–4 days after surgery as the foot reaction time does not return to normal until then.

Severe Adverse Events

Anticipated adverse events included: large seromas, severe wound sepsis, large hematoma, spermatic cord injury and acute urinary retention were managed conservatively.

Study Variables

Predictor Variables:

1. Demographic characteristics: Age
2. Clinical characteristics: Location of hernia,

Type of hernia (based on Nyhus classification).

Outcome Variables:

1. Pain Score (VAS).
2. Operative time (min).
3. Intra-operative complications (e.g. vas deferens injury, inferior epigastric vessel injury, nerve injury).
4. Time taken to return to normal gait (days).
5. Post-operative complications (e.g. wound sepsis, seroma, hematoma, scrotal/testicular swelling, orchitis, others).
6. Long term complications (eg. Chronic pain, Foreign body sensation, Recurrence).

Data Collection

Data was collected using a standardized, interviewer-administered questionnaire. The PI assessed all the patients. Under the supervision of the consultant surgeon, the PI assisted by a medical officer and a senior nursing officer carried out all the operations.

Assessment of the patient for the key outcomes was done by the PI.

The data was edited for completeness, cleaned, coded and entered into a computer using the Microsoft Excel.

Data Analysis

Baseline demographics and clinical characteristics of the two groups: The baseline information was presented effectively in tables. For numerical variables, their variability along with average values were reported for each group, and then summarized by mean or standard deviation, or median and ranges if asymmetrical distribution.

Quality Assurance: The PI carried out operations under the supervision of the consultant surgeon. The PI had been trained in the use of Desarda repairs before this study. A standardized and pretested Proforma was used. A statistician helped the PI in data analysis

Dissemination of Results: The results of the study will form the basis of the dissertation to be submitted in partial fulfillment for the award of the degree of Master of Surgery of Rajiv Gandhi University Of Health Sciences.

Copies will be provided to Department, Library.

Ethical Considerations: Approval to carry out the study was taken from the Department of Surgery, MVJ Hospital, MVJ Medical College and Research Hospital and Ethics Committee, MVJ Research Hospital and Medical College.

Results

Majority of the patients in our study were in the age group of 30–50 yrs and youngest patient was 28 yrs who was manual laborer in market and oldest one was 75yrs.There were 23 Right sided hernias, one more than left sided hernias but noticeably Indirect hernia on the left was more than right side with 19 cases. Incidence of Indirect hernia was 78%.

Table 1: Operation Duration.

Parameter (In minutes)	Mean (n=50)	Standard Deviation
Duration of Procedure	52.32	13.14
Minimum	35	–
Maximum	95	–

Desarda's took an average of 52.32 minutes only to complete from skin to skin. However the variations were observed from case to case because of factors like type of hernia, age , need for dissection. Bilateral hernias took nearly 80 minutes to complete the procedure.(Table 1)

Table 2: Post-Operative Hospital Stay.

Parameter (In days)	Mean (n=50)	Standard Deviation
Post Op Hospital stay	4.06	1.43
Minimum	2	–
Maximum	10	–

Table 3: Ambulation Time and Return to Work.

Parameter (In days)	Mean Days (n=50)	Standard Deviation
Ambulation time	1.52	0.64
Return to work in days	8.12	1.97

66 % of the patients returned to work by 8th day post Desarda's repair and upto 94% return to work were observed by 12 days. Further delay was seen in very old people.

Table 4: Pain Score (Vas).

Pain On Days	VAS Mean Score (n=50)	Standard Deviation
Pain 1	3.24	0.77
Pain Day 2	1.58	0.64
Pain Day 3	1.18	0.59
Pain at 1 month	0.22	0.42
Pain at 3 months	No pain	

Though every patient had pain on POD1, the pain score regressed drastically day by day and at the end of one month only 11(22%) had pain scores of 1VAS. (Table 4)

At 3rd month follow up no one complained of pain. Abdominal wall stiffness was also considered as discomfort and taken into consideration.

Table 5: Early Complications.

Complications	Number of Cases (n=50)	Percentage
Hematoma	2	4%
Seroma	3	6%
Infection	3	6%

In our study comprising of 50 patients, 14%had hematoma/seroma. Three patients, which is 6% had infection. In our study we found that the patients were able to return to their work around 8–10 days. (Table 5)

Table 6: Long Term Complications.

Parameters	Number of Cases (N=50)	Percentage
Chronic Groin Pain	0	0
Foreign Body Sensation	0	0
Recurrence	0	0

There were no complications like chronic groin pain and foreign body sensation reported in our study .There was no recurrence of hernia during the study period. Total expenditure from admission to discharge was considered and mean expenditure was Rs.7210. (Table 6)

Table 7: Results Comparision with other Indian Studies.

	Our Study	Desarda and Ghosh[7]		Zaheer Abbas et al[10]		Sumathi et al[11]		Neogi P et al[12]	
	D	D	L	D	L	D	L	D	L
Duration of procedure	52.32	-	-	65.64	65.76	49	54	14.75	21.2
Ambulation period	1.52	-	-	-	-	-	-	-	-
Hospital Stay	4.06	1.22	3.59	2.58	3.9	4	6	-	-
POD 1 Pain	3.24	-	-	2.86	3.5	-	-	-	-
POD2	1.58	-	-	-	-	-	-	2.9	3.51
Discharge day	1.18	-	-	1.46	1.52	-	-	-	-
POD 1m %	0.22	-	-	-	-	-	-	0.104	0.1915
Wound Infection%	6	-	-	4	6	0	1	6.25	10.6
Hematoma	4	-	-	-	-	-	-	-	-
Seroma	6	-	-	6	8	-	-	4.43	25.5
Return to work	8.12	8.48	12.46	7.04	11.3	8.26	12.58	-	-
Chronic Pain	0	0	6.49	-	-	0	33	1	13.95
FB Sensation @3 m	0	-	-	-	-	-	-	-	-
Recurrence	0	0	1.97	0	0	0	0	0	0
Cost in rupees	7210	-	-	-	-	-	-	990	4424

All the studies done so far are only comparative studies between Desarda's technique (D) and Lichtenstein's technique (L)

Table 8: Results Comparision with other International Studies.

	Our Study	Mitura et al[9]		Szopinski J et al[13]		Manyilirah W et al[14]		Yousef et al[6]	
	D	D	L	D	L	D	L	D	L
Duration of procedure	52.32	56.6	66.5	-	-	10.02	15.9	52.1	53.2
Ambulation period	1.52	-	-	-	-	-	-	-	-
Hospital Stay	4.06	-	-	5.7	-	5.8	-	-	-
POD 1 Pain	3.24	3.33	-	-	-	-	-	2.4	2.8
POD2	1.58	2.1	-	4.2	-	4.4	-	4.7	4.8
POD 3	1.18	1.5	-	-	-	2.73	3.33	1.4	1.5
POD 1m %	0.22	-	-	-	-	-	-	1.4	4.1
Wound Infection%	6	3.8	1.9	9	1.9	0	0	1	2.7
Hematoma	4	-	-	-	-	2	1	-	-
Seroma	6	-	-	3.8	5.8	1	0	-	-
Return to work	8.12	-	-	21	20	-	-	17.44	18.54
Chronic Pain	0	0	-	12.2	22.3	-	-	-	-
FB Sensation @3 m	0	-	-	15.2	17.6	-	-	9.8	12.5
Recurrence	0	0	0	-	-	-	-	0	0
Cost in rupees	7210	-	-	-	-	-	-	-	-

All the studies done so far are only comparative studies between Desarda's technique (D) and Lichtenstein's technique (L).

Discussion

Inguinal hernia is a common surgical problem in MVJ Hospital a rural tertiary care Centre. Currently, the results of hernia treatment, even those that have taken into account the EHS guidelines, vary from moderate to excellent. The mean recurrence rate for the standard Lichtenstein procedure is about 1% in hernia specialized centres but can be much higher in community hospitals (about 4%), and the reported rate even reaches 18% in some articles.[3] The summarized frequency of postoperative complications reported in the available literature is between 15 and 28%.[4,5]

The need to find an efficient, safe but simple and affordable method of hernia repair provided the basis for this study. Our results were compared with available literature to conclude the efficacy. It is also reported to be free of common postoperative complications normally associated with mesh repairs and other tension tissue repairs such as the Lichtenstein and modified Bassini methods respectively.

This is the most elaborative study in this regard and the results in regard to acute postoperative pain scores; time to return to work (ability to move freely, bend, squat, stoop, walk up a few stairs, or carry lightweights of about 10kg); and per operative

complications, post-operative complications with Desarda's repair were found to be consistent with the other studies[6,7,8,9] around the world and in comparison to the Lichtenstein's, Desarda's had various benefits and significant outcomes.

All the studies done so far are only comparative studies between Desarda's technique (D) and Lichtenstein's technique (L).

Demographic and Clinical Characteristics

In this study, all the patients were Males .The ages of participants in this study were unevenly distributed, with median age at presentation of 45years (min-max: 28–75). However, in this study a higher proportion of participants had presented with indirect hernia (78.0%) Nyhus class IIIB (10.0%)] compared to the proportion of direct hernia (22 %) [Nyhus class IIIA (20.0 %)]. There was only one patient under the age 30 yrs and maximum 34 (68 %) were in the age group of 30–50 yrs.

The demographic and clinical characteristics have widely been investigated and various studies have reported contradicting findings with regard to their effect on the key outcomes of hernia repair.

Operative time

The operative time in the present study was taken as the duration of actual repair technique, from the end of herniotomy (ligation of the sac) to the time of placement of the last stitch of repair (before closure of external oblique aponeurosis is embarked on). The duration of 52.32±13.14 minutes for the Desarda's repair is similar with other comparative studies like Sumathi et al[11] with 45.55 min, Zaheer Abbas et al[10] having 65.64 min, Desarda and Ghosh[7] had 28.5 min, and Neogi P et al[12] had 14.75 min. The difference in operative time was attributed to continuous suturing done in Desarda repair. Less operative time in Desarda group was attributed to less need of traction as was also seen by Manyilirah et al[14] who obtained similar results. (Table 7)

Studies done with similar medical college institutions showed shorter duration of procedure compared to mesh repair. Our results are consistent with results of Mitura et al[9] with mean duration of 56.6 min in comparison with 66.5 minutes of Lichtenstein's method. Hence duration of Desarda's procedure in our study analyzed with other studies show that Desarda's is definitely a faster procedure, reason for this can be attributed to the simplicity of the procedure. (Table 8)

Ambulation time

The mean ambulation time was 1.52 ± 0.64 in our study where 28(56%) started brisk walk next day of procedure and 36% on next day remaining 8% on 3rd day. Delay in ambulation was due to the old age and associated co-morbid conditions as observed in Manyilirah et al14where subjects aged above 60 experienced delayed return to normal gait compared to the other age groups. In another study by Desarda,[2] 98.25% of the patients were ambulatory with limited movements up to the bathroom within 6–8 hours, whereas 97.6% experienced free movements within 18–24 hours.

Post Operative Hospital Stay

As a result of the introduction of tension-free surgical techniques, more importance has been given to their outcome in terms of patient postoperative pain, length of hospital stay and quality of life.

Twenty One (42%) patients had post operative hospital stay of less than 3 days and remaining 52% stayed for 4–7 days. Only 3 patients had stayed longer than a week with only one person staying for 10 days, uncontrolled diabetes with old age was the reason for staying so long.

Post operative stay was less in our study which influences economic burden of the patient and it is one of the important factor in analyzing the efficacy of a method .In our study nearly 94% had less than week stay in hospital that adds on to efficacy of this technique.

Assessment of Pain

Pain is the most common discomfort experienced by patients after an ambulatory inguinal herniorrhaphy. It is influenced by age, weight, sex, preoperative pain level, operative technique, hernia anatomy, the extent of nerve entrapment or damage of the ilioinguinal, iliohypogastric, and genitofemoral nerves and other postoperative complications.

Pain was scored on a visual analogue scale of 0 to 10. The pain experienced by the participants in the study were explained about VAS and orally asked by the investigator to rate their pain according to the scale. The mean pain score was highest on the POD1. The overall declining trend was seen with Desarda's method on POD2, further on Day 3. Patients were followed up at 1 month, 3 months

and 6 months. The explanation for the higher scores on the first POD could be because the operative dissection. In this study the mean pain scores on the first POD were 3.24±0.77 and the scores on the 2nd POD were 1.58±0.64. It declined further with mean score of 1.18±0.59 on the day of discharge where in 38% of patients got discharged on 3rd day and 30% got discharged on 4th day. The pain scores on the 7th POD were however higher in the studies by Situma. Desarda scored pain based on the mild-moderate-severe scale, and thus his scores could not accurately be compared to scores in this study. It is noticeable that only 3 patients had pain of score more than 3 after POD2 and 50 % of patients had a score of 1.

The pain scores in the study possibly confirms that the Desarda repair, as acclaimed by its inventor and others, is indeed a tension-free tissue repair. That the participants in this study and the one by Situma[8] experienced more pain on the 3rd POD, it is recommended that analgesics be adjusted accordingly to control pain at a particular time point after hernia surgery.

Complications

Wound Infection

Inguinal hernia repairs are clean surgical procedures where antibiotic prophylaxis is not recommended for routine use. In conventional hernia repair (non-mesh), antibiotic prophylaxis does not significantly reduce the number of wound infections.

Wound sepsis rate of 6 % was observed to be in this study. Intravenous injection of cefotaxime 1g was administered to patients at the start of operation in this study.

This may, though not exclusively, explain the reduction in rate of wound sepsis in this series. Utmost attention was paid to the routine infection control.

Return to work: Two patients returned to work as early as 5 days and nearly 64% of them returned by 8 days. Only 4 (8%) took longer than 11 days to return to work. With mean day of return to work of 8.12 days, results in our study were significant. The mean time to return to work, in a retrospective study by Desarda, was 8.48±1.97 days with his technique. (Table 3) Other studies had observed a little delay to as much as twice the duration in our study, but still patients operated with Desarda's technique returned to their work faster than that of Liechtenstein's in their studies.[8,9,13]

Chronic pain: Chronic pain has been defined as lasting >3 months by the International Association for the Study of Pain.It is one of the most important complications occurring after inguinal hernia repair, which occurs with greater frequency than previously thought.

However none of the patients under the study had Chronic groin pain. Chronic groin pain is common complication with the mesh repairs as described in other studies.[6,13]

Recurrence

Recurrences occur as a result of different causes and promoting factors: old age, obesity, type of anesthesia, suture material used, way of dealing with the sac, type of repair and postoperative complications. Today, especially in the era when use of prosthesis is common, our attention is as focussed on the anatomical, biological and mechanical factors as it is on the adequacy of repair, choice of technique used and the operative errors.

A higher percentage of smokers than non-smokers develop groin hernias and recurrences after repair. Read has shown that smokers have a higher circulating serum elastolytic activity than controls. The systemic protease/antiprotease imbalance in cigarette smokers leads to fascial degeneration, interference with normal wound healing, and an increased rate of recurrence of repaired hernias. Many surgeons believe that cough, chronic bronchitis, and respiratory insufficiency are important factors in recurrence of groin hernias, but little evidence for this is available. Abramson and colleagues showed that no significant independent evidence that chronic cough was associated with inguinal hernia or recurrence was found.

The state of health of the patient may have a negative influence on the success of groin hernia repair by influencing wound healing and collagen production. These conditions include malnutrition, hypoproteinemia, vitamin deficiencies, jaundice, prolonged infections, chronic debilitating diseases, malignant disease, and long-term steroid therapy. Markedly underweight patients are probably at a greater risk for recurrent hernias.

The cremaster muscle should be completely divided and excised to expose the entire posterior wall of the canal and the margins of the internal ring so that these structures can be accurately incorporated in the repair. Prolapsed preperitoneal fat-"lipomas"-is best excised but can also be returned through the internal ring into the abdominal cavity. At the Shouldice Hospital, excision of the cremaster

muscle is stressed. A bulky cord interferes with the repair and also with reconstruction of the anterior wall of the canal. High dissection of the sac well up into the retro peritoneum and the freeing of the sac from the edges of the internal ring are important for the prevention of recurrence of the hernia.

Lichtenstein's has a recurrence rate of upto 4 percent. There was 0.6% of recurrence reported in Manyilirah et al.[14]

Our study observed zero recurrence and so does most of the other studies like Desarda himself who has been practicing this method since 1983.

Presently, the majority of surgeons in the world favor mesh repair of inguinal hernias. In Denmark, with its complete IH repair statistics in a national database, mesh use was close to 100% in 2013. Tension-free mesh hernioplasty, a procedure popularized by our group, was first performed in 1984 has a worldwide reported recurrence rate of 1% or less as against our study method Desarda's has worldwide recurrence of 0.5% or less which makes it an efficacious method of hernia repair. Considering its efficacy, Desarda's has found its place in World Guidelines for Groin Hernia Management, given by EHS which quotes "As this is a new technique with some nonrandomized studies showing promising results, it is worthy of mention in the guidelines".[15]

Best operative techniques should have the following attributes: low incidence of complications (pain and recurrence), relatively easy to learn, fast recovery, reproducible results, and cost effectiveness.[15]

Desarda's repair satisfies most of these criteria and hence can be considered an efficacious method of hernia repair in contrast to available methods . The expenditure incurred by patient was taken from admission to discharge based on his bills. Since no other studies are available on expenses , it can be considered economical as mesh was not used.. A healthy young patient had to spend minimal amount whereas patients with co morbid conditions like diabetes, hypertension, COPD, ischemic heart disease had to needed investigations and pre operative preparation which they had spend little higher than the rest.

Worldwide, more than 20 million patients undergo groin hernia repair annually. There are many different approaches, treatment indications and a significant array of techniques for groin hernia repair warrant guidelines to standardize care, minimize complications, and improve results. Surgical treatment is successful in the majority of cases but recurrences necessitate reoperations in 10–15% and long-term disability due to chronic pain (moderate pain lasting longer than 3 months) occurs in 10–12% of patients. Approximately 1–3% of patients have severe chronic pain. This has a tremendous negative effect globally on health and healthcare costs.

Presently, the majority of surgeons in the world favor mesh repair of inguinal hernias because of its proven efficacy over years but Desarda's is new simple, mesh free anatomically and physiologically compliant method and hence we chose to study Desarda's technique.

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".

Conclusions

1. Desarda's repair takes significantly shorter operative time. This in the face of resource constraints should make surgeons consider the Desarda's repair as a time saving procedure.
2. This study has shown that the efficacy Of Desarda's Technique with respect to early and late post-operative complications is comparable to best available methods in Hernia repair.
3. The efficacy of the Desarda's technique is shown by early better clinical outcomes by reduced hospital stay, early recovery with return to work.
4. In our study, there was no foreign body sensation, low incidence of chronic groin pain and zero recurrence.

The conclusions above confirm that efficacy of Desarda's technique is comparable to the available standard techniques of Hernia repair and it is therefore it has the potential to gain importance developing nations like India.

Desarda's repair is as efficient as mesh repair in preventing recurrence but better in providing simple, natural dynamic affordable repair along with good patient compliance.

We can say that Desarda's has addressed chronic pain which was major concern in pure tissue repairs and can replace all other pure tissue repairs.

References

1. R. Van Hee, History of Inguinal Hernia Repair, Jurnalul de Chirurgie, Iaşi, 2011, Vol. 7, Nr. 3.
2. Desarda MP: Physiological Repair of Inguinal Hernia: a New Technique (study of 860 patients). Hernia 2006; 10: 143–6.
3. Eklund A, Rudberg C, Smedberg S et al (2006) Short-term results of a randomized clinical trial comparing Lichtenstein open repair with totally extraperitoneal laparoscopic inguinal hernia repair. Br J Surg 93:1060–1068.
4. Bittner R, Sauerland S, Schmedt CG (2005) Comparison of endoscopic techniques vs Shouldice and other open nonmesh techniques for inguinal hernia repair: a meta-analysis of randomized controlled trials. Surg Endosc 19:605–615.
5. Lau H, Lee F: Determinant Factors of Pain after Ambulatory Inguinal Herniorrhaphy:a Multi-variate Analysis. Hernia. 2001; 5 17–20.
6. Youssef T, El-Alfy K, Farid M. Randomized clinical trial of Desarda versus Lichtenstein repair for treatment of primary inguinal hernia.Int J Surg.2015 Aug;20:28–34.
7. Desarda M, Ghosh A: Comparative Study of Open Mesh Repair and Desarda's Nonmesh Repair in a District Hospital in India. East and Central African Journal of Surgery. 2006; 11(2):28–34.
8. Situma MS: Comparison of Desarda and Modified Bassini Inguinal Hernia Repair in Mulago Hospital. Kampala: Makerere University 2008.
9. Mitura K, Romanczuk M (2008) Comparison between two methods of inguinal hernia surgery — Lichtenstein and Desarda. Pol Merkur Lekarski 24:392–395.
10. Zaheer Abbas, Sujeet Kumar Bhat, Monika Koul, Rakesh Bhat. Desarda s no Mesh Repair Versus Lichtenstein s Open Mesh Repair of Inguinal Hernia A Comparative Study. Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 77, September 24; Page: 13279–13285.
11. P Sumathi , Raj Ashok, comparison of mesh and no mesh methods of inguinal hernia repair in a tertiary care Setup – a triple blind RCT study Over 2 years period.stanley medical journal.2016;3(2):25–27.
12. Neogi P, Gupta V, Tripathi N. A comparative study of outcomes of Lichtenstein repair and Desarda tissue repair in patients of inguinal hernia. Int Surg J 2017;4:2693–9.
13. Szopinski J, Kapala A, Prywinski S et al (2005) Desarda technique for inguinal hernia treatment: first Polish experiences. Pol Przegl Chir 77:159–168.
14. Manyilirah, W.; Kijjambu, S.; Upoki, A.; Kiryabwire, J. (2011).Comparison of non-mesh (Desarda's) and mesh (Lichtenstein) methods for inguinal hernia repair among black African patients: A short-term double-blind RCT. Springer. Hernia April 2012, Volume 16, Issue 2,pg. 133–144.
15. World Guidelines for Groin Hernia Management;2017, The HerniaSurge Group;www.europeanherniasociety.eu.