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Outcome of Uncomplicated Inguinal Hernia Repair by Desarda Technique in Adult Male as a Day Case Surgery at Mugda Medical College Hospital

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Abstract **Original Research Article**

***Background*:** Mesh repair (Lichtenstein and Laparoscopic) for inguinal hernia is the most frequently performed operation round the world. In recent years inguinal hernia surgery has undergone numerous advances. Among them, Desarda technique provides a new concept of hernia repair based on physiological principle using an undetached strip of external oblique aponeurosis. Worldwide, day case inguinal hernia surgery has been markedly increased irrespective of technique. Due to benefit of cost effectiveness and freeing of mesh related complication, Desarda technique needs to be considered as day case hernia surgery. ***Objectives*:** To evaluate outcome of day case inguinal hernia surgery in terms of immediate and early postoperative complications, rate and reasons of unanticipated admission after surgery, time of return to basic activities and recurrence rate in our setup. ***Methods*:** This observational study was carried out at the department of surgery, Mugda Medical College Hospital included 50 male patients with uncomplicated inguinal hernia during August 2019 to July 2021. Data was collected by researcher himself with using a prepared structured questionnaires & checklist and analyzed on Statistical Packages for Social Science (SPSS) 22. ***Results*:** Among 50 male patients 60% belong to low-income status, mean age was 44.09 ±10.93 years. The mean operative time was 46.31 ±12.27 mins. In the first postoperative day 22 patients reported mild pain and on third postoperative day majority (42) reported no pain. The mean duration of hospital stay was 18.16 ±11.24 hours and only 6 (12%) patients needed unanticipated admission. No severe postoperative complication, one recurrence has been reported. The mean time of return to basic activities 2.3 ±1.33 days. ***Conclusion*:** The results of the present study demonstrate that Desarda technique can be safely offered as day case hernia surgery in our country. Further study is needed for better outcome.

Keywords: Inguinal hernia, Desarda technique, Day case surgery.

INTRODUCTION

A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls. The estimated lifetime risk for inguinal hernia is 27% for men and 3% for women [1]. Repair of an inguinal hernia is one of the most commonly performed operation in general surgery and contributes significantly to healthcare cost worldwide. In adult surgery, 80% of all hernia repairs are for inguinal hernia. Every year more than 20 million hernia repair surgery is performed round the world. Although the rates vary from country to country, ranging from 100-300/100000 of the population [2].

In the last few years, the various methods of inguinal hernia repair and their merits have become the subject of a vigorous debate. Mesh repair (Lichtenstein and Laparoscopic) is the most commonly performed operation in the world. However, Mesh has its own shortcomings that include its initial cost, non-availability in many rural areas of the developing world, tendency to fold or wrinkle, chronic groin pain and sepsis that requires mesh removal. Because of the observed complications and postoperative dysfunctions,

many investigators look for new methods of hernia repair. An example of such effort is the Desarda method, presented in 2001, becomes a new tissue based surgical option for groin hernia repair dealt not only with anatomical aspects of the repair but also physiological principles. A strip of external oblique aponeurosis was used for strengthening of the posterior wall alternative to a prosthetic mesh [3-5].

Successful groin hernia repair primarily based on simplicity and durability of the repair, fewer post-operative complication, minimal cost, shorter hospital stays and earlier return to normal activities [6, 7]. Desarda method was the first to advocate performing the inguinal hernia repair on physiological considerations gives a strong and physiologically dynamic posterior wall. This results in a tension free repair without the use of any foreign body. Being simple to perform, it also eliminates the disadvantage of technical difficulty seen with Bassini, Halsted, McVay and Shouldice repair [4]. In the modern world, the cost of the medical treatment becomes a real issue.

One indisputable advantage of Desarda technique is its highly cost effectiveness in many aspects [5]. That is why this method recently getting popularity in the field of hernia repair surgery.

Day surgery increase the level of service quality in terms of outcomes, reducing any negative consequences relating to prolonged hospital stays, lead to shorter waiting lists and help to rationalize the costs of surgical treatments. Current policies in healthcare encourage an increase in ambulatory and same-day surgery and expanding the indications for outpatient surgery as it is more cost-effective and better accepted by most patients [6]. The European Hernia Society recommendation that all case of inguinal hernia patients should be considered potentially eligible for day surgery [8]. The British Association of Day Surgery has suggested that 80% of inguinal hernia repairs should be carried out as day case procedures, regardless of the technique used. In 2014/15 77.8% of primary inguinal hernia repairs (unilateral) were carried out as a day case and rates varied from 67% to 88% across institutions [9]. Several observational studies have quantified the cost savings achievable with this approach, showing that surgery for Inguinal hernia repair in patients staying in hospital costs 56% more than day surgery [10]. On a worldwide basis, there has been a clear increase in the proportion of inguinal hernia repair procedures performed at day case-clinics [11, 12].

The purpose of this study will be to evaluate outcome of inguinal hernia repair performed as day cases surgery at our institute by means of immediate and early postoperative complication, rate and reasons of unanticipated admission after surgery, time of return to basic activities and recurrence rate.

METHODS

This is an observational study. The study was carried out in the admitted patient's Department of Surgery, Mugda Medical College Hospital, Dhaka, Bangladesh. The duration of the period from August 2019 to July 2021. This study was carried out on 50 adult male patients with uncomplicated inguinal hernia attending of Mugda Medical College Hospital Dhaka, Bangladesh. The data for this study about had been accumulated from patients' medical information and radiographs. Statistical evaluation of the results used to be got via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

RESULTS

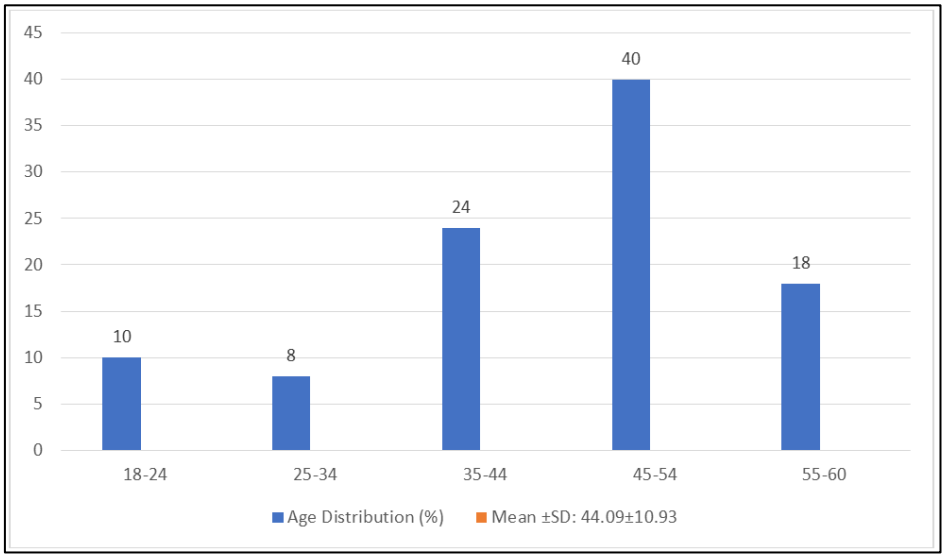

Figure I: Distribution of the study population according to age (n=50)

Figure I shows that age distribution of the population where 5(10%) were 18 to 24 years, 4(8%) were 25 to 34 years, 12(24%) were 35 to 44 years, 20(40%) were 45 to 54 years, and 9(18%) ware 55 to 60 years. Most of the patients belong to 45-54 years age group. The mean age was found 44.09 ±10.93 years with range from 18 to 60 years.

Table I: Distribution of study population according to economic status (n=50)

Economic status	Monthly Per Capita Income (BDT)	n	%
Upper middle income	>28000	5	10%
Lower middle income	7,400-28,000	15	30%
Low income	<7,400	30	60%
Total		**50**	**100%**

Table I shows distribution of the population according to economic status of the patients where most of the patients (60%) belong to low-income status, 30% were lower middle-income status and 10% were upper middle-income status.

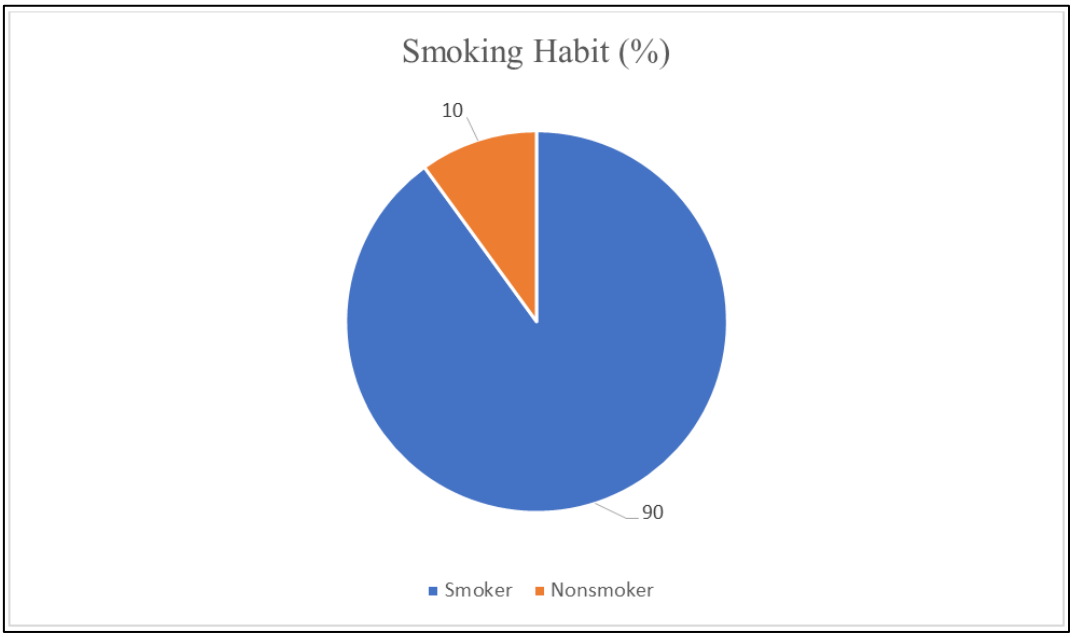

Figure II: Distribution of study population according to smoking habit (n=50)

Figure II shows distribution of the population according to smoking habits of the patients where most of the patients (90%) were smoker.

Table II: Distribution of study population according to BMI (n=50)

BMI (kg/m2)	n	%
Underweight (<18.5)	7	14%
Normal (18.5 to 24.9)	36	72%
Overweight (25 to 29.9)	5	10%
Obese (≥30)	52	4%

Table II shows distribution of the study population according to BMI where 14% patients had Underweight, 72% patients had Normal, 10% patients had Overweight and 10% patients had Obese.

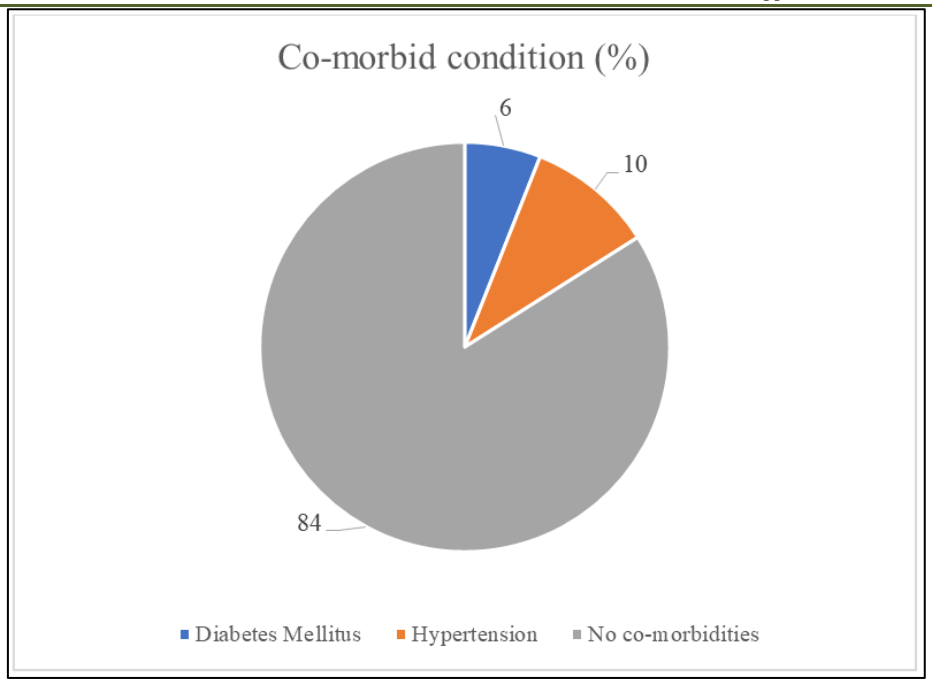

Figure III: Distribution of study population according to co-morbid conditions (n=50)

Figure III shows distribution of the study population according to co-morbid condition where 6% patients had diabetes mellitus and 10% had hypertension.

Table III: Distribution of study population according to total operative time (n=50)

Duration (in min)	n	%
30	9	18%
31-60	35	70%
61-90	6	12%
Mean ±SD	46.31	±12.27

Table III shows distribution of the study population according to the total operative time where 18% took 30 min, 70% took 31 to 60 min and 12% took 61 to 90 min. The mean operative time was 46.31 ±12.27 mins.

Table IV: Distribution of study population according to duration of hospital stay (n=50)

Duration (in hour)	n	%
10-12	13	26%
12 -18	29	58%
18 -24	2	4%
24 - 72	6	12%
Mean ±SD	18.16	±11.24

Table IV shows distribution of the study population according to duration of hospital stay where most of the patients stayed at hospital for 12 – 18 hours (58%) and only 6 (12%) patients could not be discharged on same day of surgery, get unanticipated admission after surgery. The mean duration of hospital stay was 18.16 ±11.24 hours.

Table V: Distribution of study population according to reason of unanticipated admission after surgery (n=6)

Reasons for admission	n	%
Retention of urine	2	33.33%
Difficulty in movement	2	33.33%
Uncontrolled pain	1	16.67%
Surgery was performed late in the day (family demand)	1	16.67%
Total	**6**	**100%**

Table V shows distribution of study population according to reason of unanticipated admission after surgery where among 50 patients 6 patients could not be discharged on same day of surgery. Two patients (33.33%) were not discharged because of retention of urine and two patients (33.33%) because of difficulty in movement. Another two patients could not be discharged because of uncontrolled pain (16.67%) and the surgery was performed late in the day (16.67%).

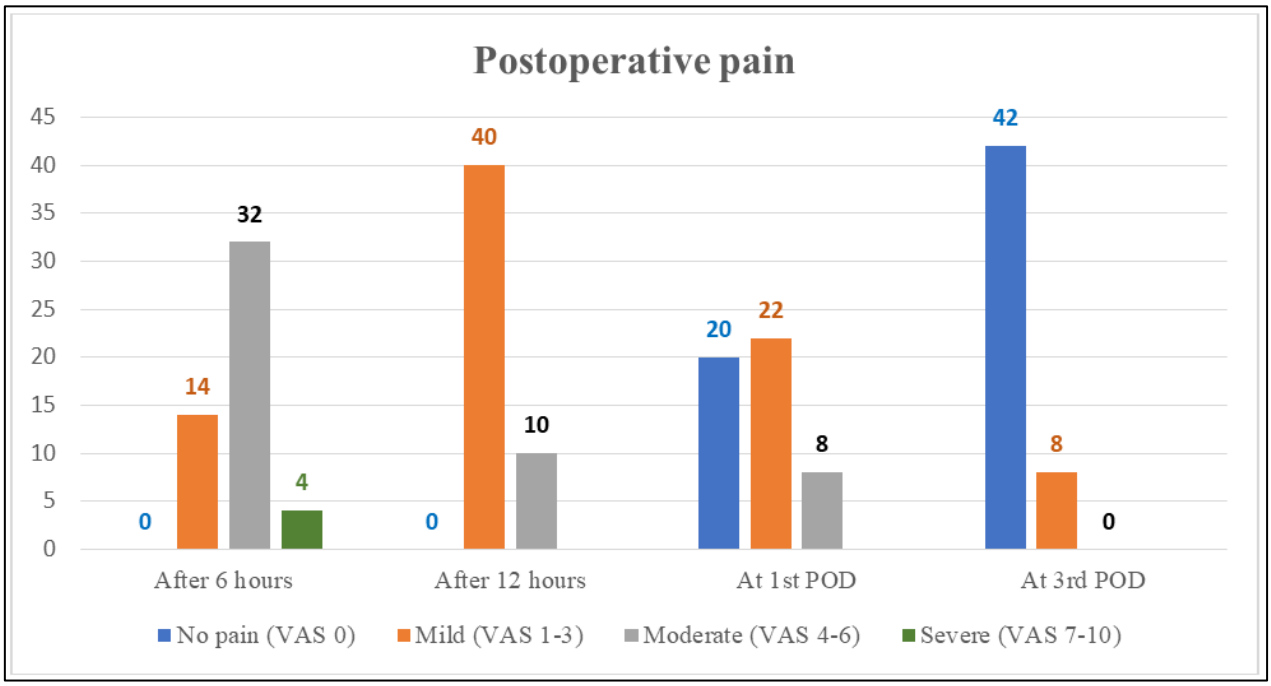

Figure IV: Distribution of study population according to postoperative pain (n=50)

Figure IV shows distribution of the study population according to postoperative pain where after 6 hours only 4 patients reported severe pain and most of the patients reported moderate pain (32 in number); 12 hours later 40 patients reported mild pain. In the first POD 22 patients reported mild pain and on the third POD majority that is 42 patients reported no pain.

Table VI: Distribution of study population according to postoperative complications (n=50)

Postoperative Complication	n	%
Scrotal oedema	1	0.5%
Inguinal hematoma	1	0.5%
Seroma	1	0.5%
Difficulty in movement	4	2%
Retention of urine	2	1%
Surgical site infection	1	0.5

Table VI shows distribution of the study population according to postoperative complication where 1(0.5%) had scrotal oedema, 1(0.5%) had inguinal hematoma, 1(0.5%) had seroma, 4(2%) had difficulty in movement, 2(1%) had retention of urine and 1(0.5%) had surgical site infection.

Table VII: Distribution of study population according to recurrence (n=50)

Recurrence (within 6 months)	**n**	**%**
Present	1	0.2%
Absent	49	0.98%

Table VII shows distribution of study population according to recurrence within 6 months where one recurrence (2%) was observed.

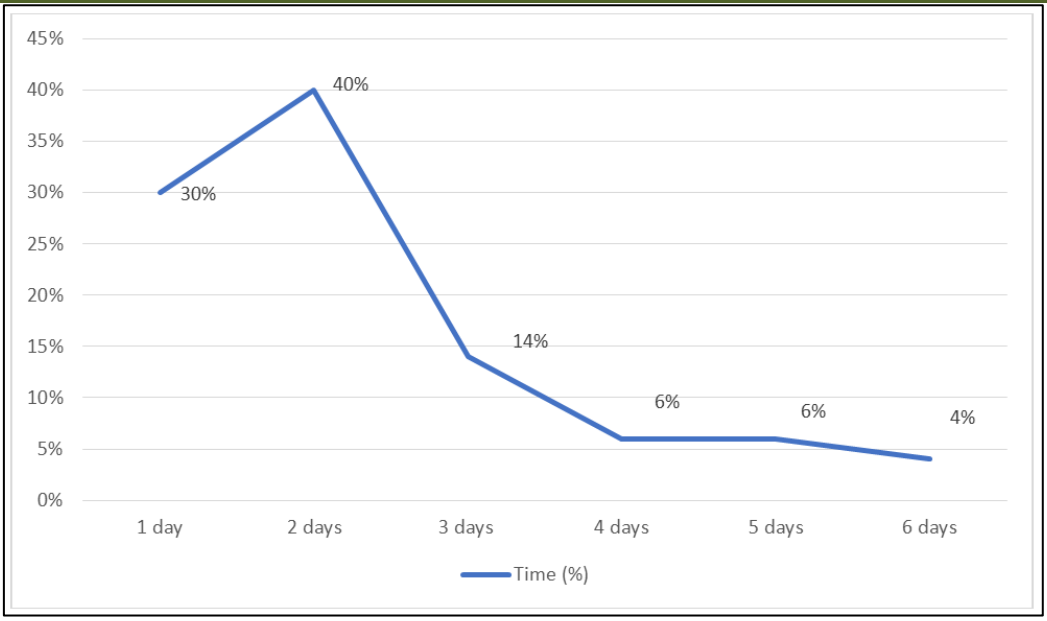

Figure V: Distribution of study population according to time to return of basic activities (n=50)

Figure V shows distribution of the study population according to time to return of basic activities, where 30% was day1, 40% was 2 days, 14% was 3 days, 6% was 4 days, 6% was 5 days and 4% was 6 days. Most of the patients (40%) returned to their daily activity within 2 days.

DISCUSSION

Inguinal hernia surgery is one of the earliest forms of surgery and most common surgical procedure performed worldwide. The standardization and reproducibility of the inguinal hernia surgery, the low surgical impact, the least post-operative course and better understanding of the anatomy as well as physiology of the inguinal canal have significantly improved outcomes for many patients as outpatient management. Besides, the chosen technique should also be the easiest to learn, least traumatic, least expensive, convenient and safe for elderly patients with low or no recurrence rate.

There are advantages and disadvantages associated with all types of open inguinal hernia repairs. Existing non-prosthetic repair (Shouldice) is blamed for causing tissue tension and offers recurrence rate ranging from 0.7 to 17% depending on experience [1]. The Lichtenstein technique and its modifications is blamed for known complications of foreign body, high incidence of chronic groin pain ranging from 28.7-43.3%, [5] mesh migration, mesh rejection, chronic groin sepsis, recurrence rates of around 4% in long term follow up [1]. Shin D *et al.*, claimed possible damage to the spermatic cord and nerve entrapment due to extensive fibrosis, infertility due to unilateral or bilateral inguinal vasal obstruction with testicular atrophy or epididymal obstruction especially in young reproductive age group or with a solitary testicle [13]. Laparoscopic hernia repairs have a long learning curve, costly, general anesthesia dependent, technically complex and lack of experience make these repair unattainable for the general surgeon practicing outside specialized centers. Desarda seems to eliminate above mentioned disadvantages and technical difficulties, which are superior or equal to Shouldice and Lichtenstein repairs with 1.8% complication rate and 0.2% recurrence [1].

In our country day case surgery for inguinal hernia is not still well practiced. Day case inguinal hernia surgery has many advantages over inpatient surgery delivering enhanced recovery with earlier return to normal activities with high quality patient care, minimal adverse events, less risk of last-minute cancellations and less opportunity for hospital-acquired infections. For the hospital it is cost effective in terms of length of hospital stay, patient care, releasing inpatients bed and helping to shorten the waiting time for hernia repair [6]. For the patients it is appreciable means of completing their recovery in the comfort and convenience of familiar surroundings free from dependency on nursing staff for food, drink, drugs and other basic needs. With rapid expansion of day case surgery, it can be safely offered to higher risk groups including ASA III patients and elderly patients [6].

This study demonstrates outcome of uncomplicated inguinal hernia repair as a day case surgery by Desarda technique for adult male at Mugda Medical College and Hospital. Patient age ranged from 18-60 years, majority of the patients 20(40%) were seen in 45 to 54 years of age group. The mean age was found 44.09 ±10.93 years. A total of 30(60%) patients in this study belong to low-income status and 15(30%) patients were lower middle-income status. Among these 50

patients 3(6%) patients had diabetes mellitus and 5(10%) had hypertension. Almost two third of the cases (72%) had normal BMI, 7% were underweight, 10% were overweight and 4% were obese.

Among 50 cases 31 patients (62%) had a left sided hernia while 19 patients (38%) had a right side one. Twenty-six of them (52%) had indirect hernia while twenty-two patients (44%) had direct one. Two patients (4%) had both direct and indirect component, pantaloon hernia.

The duration of operation is a surgeon dependent variable and reflects the ease of operation. As regard to the operative time (calculated from skin incision to skin closure), it ranged from 30 minutes in 9(18%) patients, 31-60 minutes in 35(70%) patients, 61–90 minutes in 6(12%) patients, The mean operative time in this study was 46.31 ±12.27 mins which is almost similar with the other studies like Gurgenidze and Datuashvili had 42.43± 2.8 min, Khairy *et al.,* had 45.25 ±12.55 min [1, 14]. The operative time was significantly short in favor of inguinal hernia repairs by Desarda technique. The mean duration of hospital stay was 18.16 ±11.24 hours.

A major indicator of quality of care in day surgery is the incidence of unanticipated admission after the procedure. In this study most of the patients were successfully discharged, only a small proportion required unanticipated admission. Of the 50 patients, 46 patients were discharged on the same day and 6 patients on later days. Two patients (33.33%) were not discharged on the same day because of retention of urine and two patients (33.33%) because of difficulty in movement. One patient (16.67%) could not be discharged because of uncontrolled pain and another one (16.67%) because of the surgery was performed late in the day so that family did not want him to be discharged. No patient discharged from the hospital on the same day was re-admitted. Capoglu *et al.,* reported Eighty-five (85%) of 100 patients who underwent inguinal hernia surgery under local anesthesia were discharged on the same day. The factors preventing same day discharge were prolongation of surgery, delay of surgery to later hours of the day, development of surgical complications (scrotal hematoma, peri-operative vagal stimulation), postoperative nausea and pain, and the need to treat comorbid diseases (hemophilia, chronic renal failure) [2]. Sinha *et al.,* reported among 588 patients 39(12.7%) elderly and 27(9.5%) younger patients needed unanticipated admission due to postoperative bleeding, prolonged surgery, uncontrolled pain, unable to mobilize, retention of urine and complication of general anesthesia [6].

The entire patients were assessed for perception of postoperative pain, measured by visual analogue score. Although wound pain was the most common postoperative symptom reported by patients, only 4 patients reported severe pain after 6 hours and most of the patients reported moderate pain (32 in number); 12 hours later 40 patients reported mild pain. In the first postoperative day 22 patients reported mild pain and on the third postoperative day majority that is 42 patients reported no pain which is similar with the results of other study like Roy *et al.,* had 73 patients reported only mild pain on first postoperative day and 168 patients reported only mild pain on third postoperative day among 184 patients [15]. This is well within the range of targets recommended by the Royal College of Anesthetists, which states that severe postoperative pain should be experienced by fewer than 5% in the first 48 h and 85% or more should report no pain or only mild pain [16]. Desarda reported total of 620 (72%) patients had mild pain locally for 2 days, 206 (24%) for 4 days and 34 (4%) had mild pain for 7–15 days among 860 patients. No patient had severe or very severe pain [4]. Gurgenidze and Datuashvili also reported majority among 118 patients felt mild pain on first postoperative day. The quantum of pain reduced significantly and patients complained of a slight discomfort rather than any pain by third postoperative day except one patient [1].

In this study there were not any severe postoperative complications. Postoperative complications like scrotal oedema are seen in 1(0.5%) case, inguinal hematoma is seen in 1(0.5%) case, seroma is seen in 1(0.5%) case, Difficulty in movement is seen in 4(2%) cases, retention of urine is seen in 2(1%) cases and surgical site infection is seen in 1(0.5%) case. There was no per-operative or postoperative death, so mortality rate was nil. As regard to postoperative complications, Khairy *et al.,* reported among 100 patients 4 cases of seroma, 4 cases of wound infection and 4 cases of hematoma [14]. Gurgenidze and Datuashvili reported among 118 patients there were 5 cases (4.2%) of seroma, 4 cases of (3.4%) hematoma, 3 cases of (2.5%) wound infection [1]. Bansod *et al.,* reported postoperative complications like surgical site infection are 02 (1.66%), seroma is seen in 03 (2.5%) [17].

Several studies reported chronic groin pain following open mesh repair in 28.7% to 43.3% cases [5]. In contrast, Desarda technique will not cause extensive fibrosis as seen in mesh repair. Not a single patient suffered from chronic groin pain and foreign body sensation in this study similar to other study like Gurgenidze and Datuashvili, Desarda, Khairy *et al.,* Roy *et al.,* Bansod *et al.,* [1, 4, 5, 14, 15] Youssef *et al.,* had observed 2.8% chronic groin pain and 9.8% foreign body sensation whereas Gedam *et al.,* had observed 1.08% chronic groin pain but no foreign body sensation [18, 19].

one recurrence (2%) was observed over a period of 2 years comparable to other studies like Roy *et al.,* Bansod *et al.,* Youssef *et al.,* and Gedam *et al.,* showed 1%, 0.83%, 1.4%, 1.08% recurrence rate at 2 years respectively [17-19]. Desarda technique construct dynamically enhanced strong posterior inguinal wall, thus the shielding and compression action of external oblique muscles and aponeurosis around the inguinal canal are important factors that prevent hernia recurrence after repair [3-5].

In this study there was significantly earlier return to basic activities suggesting patients get ambulatory sooner. The mean time taken to return to basic activities 2.3 ±1.33 days, which is in contrast to the other studies like Desarda *et al.,* had 1 Days, Roy *et al.,* had 2 days, Bansod *et al.,* had 1 day, Youssef *et al.,* had 3.9 Days, Gedam *et al.,* had 2.5 Days. [4, 14] Gurgenidze and Datuashvili reported patients were freely mobile within 18-24 h after surgery and returned to work within 6-14 days (mean: 8.62 days) similar to Khairy *et al.,* [1], Early return to basic activities in Desarda technique may be attributed to less tissue handling, less dissections and less postoperative pain.

This study did not categorically calculate the actual 'economic' benefit to patient and health institutions. However, without use of mesh and costly equipment, continuous absorbable suturing saves a packet of suture material and time. Besides, the economic benefit is enhanced by short hospital stay, low morbidity and the patients are back to their routine work within 1-2 weeks. From health institute point of view, resources can be better channelized to more needy and serious patients and reduce losses to the nation due to sick leave taken by the patients on waiting lists. This makes day case hernia surgery by Desarda technique cost-effective.

The low rates of severe pain and other adverse postoperative symptoms especially surgical site infection, lower cost, with a shorter hospital stay, quicker recovery, detail counseling in outpatient department and again before surgery, post-operative briefing, telephone follow up, free care givers to better utilize their time at home to take care of patients and other family members are likely to have contributed to the high overall satisfaction with their day case hernia surgery experience by Desarda technique.

Limitation of the Study

The present study had the following limitations. These should be kept in mind while deciding on the implications of the study.

1. Study period was short, so long term result like late recurrence rate beyond 2 years could not be assessed.
2. Study results could not be correlated with similar studies due to lack of previous research studies on day case hernia surgery by Desarda technique in our country.

CONCLUSION

The results of the present study demonstrate that Desarda technique has the potential as a day case surgery available to treat inguinal hernias in our country. This technique reduces the length of hospital stay; shorten time to recovery. The rates of pain and postoperative complications are very low which helps patients to mobilize earlier. Although day case inguinal hernia surgery provides quality care and improves patient outcomes, it has not yet reached its full potential. Careful planning, proper counseling and established communication channels may increase the overall rate of day case hernia surgery and have a significant cost benefit by reducing the added bed pressures and financial costs of overnight or further hospital stay.

RECOMMENDATION

On the basis of the results of the present study, day case inguinal hernia surgery by Desarda technique is easy to perform, reduces out pocket expenditure, require less logistic support and improve postoperative quality of life. Possible implications of this study in clinical practice may be applied and to do so large-scale long term multi-centric trials need to be conducted widely in our country.

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