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KEY WORDS: Inguinal Hernia; Desarda,s technique ; Local tissue repair ; Non-mesh repair.

DESARDA'S NO-MESH NO-TENSION REPAIR OF INGUINAL HERNIA – IT'S MERITS AND DEMERITS

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ABSTRACT

Background: Inguinal herniae are the most common types of hernia encountered in the most part of the world. Inguinal hernia remains an important health care problem . In the history of inguinal hernia surgery there have been many methods and modification of many methods of hernia surgery . Desarda,s technique is one method of inguinal hernia repair which does not use any mesh and is based on no-tension local tissue repair.

Aim: The objective of this study was to study the efficacy of Desarda,s technique of inguinal hernia repair and the merits and demerits of the procedure.

Materials and Methods : It was a prospective cross-sectional instituition based observational study carried out in the department of surgery of North Bengal Medical College in the period from January 2015 to June 2016. The study included a total of 55 patients in the age group of 18 year to 70 year having primary uncomplicated and complicated inguinal hernia. The final inclusion criterion was the condition of the external oblique aponeurosis. Patients with thin, divided, weak aponeurotic fibres were excluded from the study. Patients of inguinal hernia of Nyhus Class 3 and Nyhus Class 4 were also excluded from the study. Every patient was clinically assessed and evaluated by laboratory investigations. After a proper counseling and informed consent form got signed by the patient they were operated under spinal anaesthesia and hernia was repaired by Desarda,s technique. After operation all the patients were followed up for a period of 3 months to 1 year. Parameters studied were 1. Age and sex 2. Inguinal hernia complicated or uncomplicated 3.side of hernia 4. Nyhus class of inguinal hernia 5. Time taken for the surgery 6. Time taken for discharge 7. Pain score as per Visual Analogue Scale (VAS) at discharge 8. VAS score at 3 months 9. Return to basic activity 10. Haematoma 11.Seroma 12. Surgical site infection 13. Recurrence of hernia 14.Inguinodynia – presence of groin pain on the side of surgery on walking even after 3 months of surgery.

Results: Out of 55 patients 54 were male and 1 was female in the age group between 22 and 65 and having 25 right inguinal hernia and 30 left inguinal hernia. Out of 55 herniae operated 13 (23.6%) were Nyhus Class 1 and 42 (76.4%) were Nyhus Class 2. 49 (89.1%) cases of herniae were operated electively and 6 (10.9%) were operated under emergency setup. This study has recorded no reccurence of hernia after a follow-up of maximum period of 1.5 years and a minimum period of 3 months. At 3 months of follow-up of 55 patients undergone inguinal hernia repair by Desarda,s technique 5 (9.1%) had chronic non-healing wound 4 (7.3%) due to surgical site infection which resolved on treatment, 1 (1,8%) had scrotal haematoma , 1 (1.8%) had inguinodynia managed with pregabalin and cured. The mean operating time was 32.76 ± 5.78 mins. Most of the patients could be discharged on the second day after hernia operation while some patients needed more time upto 5 days for discharge (2.18± 0.782 days). The VAS score at discharge was 23.06 ± 6.33 mm on the Visual Analogue Scale. One patient experienced chronic groin pain at 3 months with a VAS score of 40 mm. All the patients could return to basic need activity by the second day after surgery with a mean of 1.18 ± 0.4 days.

Conclusion: Over a perod of follow-up of 3 months to 18 months of 55 cases of Nyhus Class 1 and Nyhus Class 2 inguinal hernia which were repaired by Desarda,s technique, there was no recurrence of hernia. However a morbidity of 19.2% was recorded. The commonest complication noted was surgical site infection (16.4%) both immediate and late. One patient developed a haematoma and another patient developed inguinodynia.

Introduction

Inguinal hernia is the most common type of hernia encountered in the most part of the world. Inguinal hernia, because of its prevalence, remains to be an important health problem. The expected risk of getting inguinal hernia in lifetime is 27% for males and 3% for females[1] . Rate of complication of inguinal hernia varies from 100 to 300 per year per 100,000 citizens[2]. Millions of dollars are spent and millions of working hours are lost each year in treating complications and recurrences of inguinal hernia.

There was no consensus on inguinal hernia surgery until late 2009 when recommendations based on review of literature and outcome of clinical trials of the European Hernia Society (EHS) were published. As per the European Hernia Society guidelines , open hernioplasty particularly the Lichtenstein technique and laparoscopic methods were considerd to be the standard procedure for treatment of inguinal hernia in adult male.Contrary to this firm opinion recommended by the EHS , the Shouldice repair which is a herniorrhaphy , has been accepted as standard as well[3]. However the choice of the type and method of repair depend mainly on the experience of the surgeon. The accepted method of repair of inguinal hernia should be simple, safe, cost effective, tension free and should have minimal rate of recurrence. The commonest method of inguinal hernia repair used to be modified Bassini. It is easy to learn and cost effective. Lichtenstein tension free mesh repair to a great extent achieves all the goals and parameters set by the EHS[4,5]. This method, however, is not without shortcomings such as it,s high cost, not easily available in parts of the underdeveloped countries and mesh related complications like tendency of the mesh to crumble and migrate. This may lead to failure of hernia surgery as groin is a very mobile area. Once there is infection mesh may have to be removed[6]. The synthetic material usd as mesh may cause new kind of complications like abnormal foreign body sensation in the groin, discomfort,abdominal wall stiffness which may affect daily activities of the patient[7]. Surgical site infections, often with delayed clinical symptoms are not uncommon after insertion of mesh in the inguinal area[8,9]. Migration of the mesh from the original site of implantation

between the layers of the abdominal wall is another complication[10]. A massive progressive chronic inflammatory process associated with foreign body reaction around the prosthesis may produce inguinal stiffness and bulge. To manage the problem has become a new challenge[11]. Additionally, reproductive and sexual function have been reported to be seriously affected after surgical treatment of inguinal hernia with mesh[12]. The predictors of mid and long term prognosis are determined not only by the type of hernia and the size of the inguinal defect but the immediate and delayed pain and the time taken to resume normal activity[13,14,15].

The observed rate of complications and dysfunction following inguinal hernia surgery have prompted many surgeons to modify a preexisting standard procedure or to look for a new procedure for inguinal hernia repair.

An important example is the Desarda,s[16,17] no-mesh repair technique.It has been accepted to be a new surgical option for tissue based inguinal hernia repair. Desarda[18] has described his genuine technique in which he tries to satisfy and cover all the criteria mentioned above and does not have to use any mesh. He claims low cost with minimal incidence of complications. The present study was carried out to evaluate certain outcomes of Desarda,s repair of inguinal hernia in North Bengal Medical College.

DESARDA'S TECHNIQUE

All the patients under this study underwent repair of inguinal hernia by Desarda,s technique. Using a standard protocol each patient was given one prophylactic dosage of 1.2 gm of co-amoxyclav 30 min before surgery. The operation was done under spinal anaesthesia. A standard oblique inguinal incision was made 2cm above and parallel to medial two thirds of the inguinal ligament.The layered approach to the inguinal canal and subsequent herniotomy were done. The difference occurred during repair of inguinal hernia.The technique was chosen after evaluation of aponeurosis of external oblique muscle. The quality of the aponeurosis is the final condition in inclusion criteria. In Desarda,s technique , the upper-medial edge of the external oblique aponeurosis is sutured to the inguinal ligament from the pubic tubercle medially to the internal ring laterally using continuous polypropylene suture (fig. 1).

Fig. 1 : Upper medial cut margin is sutured to inguinal ligament.

Particular attention is given to the nerves of the inguinal area. All intraoperative variables were recorded for comparison. The first suture is taken in the inguinal ligament close to the pubic tubercle to approximate external oblique aponeurosis to the inguinal ligament. The last suture should make a new ring in the aponeurosis for the spermatic chord but not to constrict it. Sutures are passed through inguinal ligament , fascia transversalis and external oblique. The index finger of the left hand is used to protect the underlying femoral vessels. An incision is made in the sutured upper-medial leaf separating a strip of the external oblique aponeurosis about 2cm in width equivalent to the weak area of the posterior wall of the inguinal canal between the conjoint arch and the inguinal ligament but not more than 2cm. This splitting incision is then extended medially to the level of the pubic symphysis and laterally 1-2 cm beyond the internal ring. The medial insertion and lateral extension of the strip of this external oblique aponeurosis is kept intact to act as a biological segment. The upper free border of this strip is sutured to the conjoint tendon and muscle with interrupted polypropylene sutures throughout its length (Fig.2).

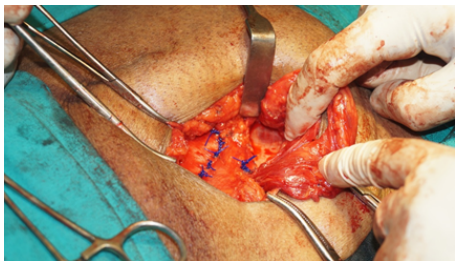

Fig. 2: Free margin of the strip sutured to the conjoint tendon and muscle

The spermatic chord which is now lateralized is put on the newly created canal with the strip of external oblique located posteriorly and the lateral leaflet of the external oblique aponeurosis is sutured to the newly formed medial leaflet of the external oblique in front of the chord again using polypropylene interrupted sutures. Undermining of the upper-medial leaf on its both surfaces is carried out carefully to facilitate its downward displacement and approximation to the lateral leaf. At the end skin and subcutaneous tissue is closed with interrupted polyamide sutures.

Desarda considers his technique as dynamic enforcement of the posterior wall of the inguinal canal and Lichtenstein,s method as prosthetic enforcement. Desarda proposes a new theory about the factors that prevent inguinal hernia formation in normal person[18]. He states that the posterior wall of the inguinal canal is not formed by just the fascia transversalis alone but by two layers which include the transversalis fascia and the aponeurotic extension from the transversus abdominis aponeurotic arch. He also states that transverslis fascia is too thin and delicate to give any protection. Protection is provided by the aponeurotic extension from the transverses abdominis aponeurotic arch. Concepts of the obliquity of inguinal canal or its shutter mechanism is not perfectly assessed. He has developed a mesh-free repair technique in the year 1983 using non-absorbable and later by absorbable sutures. The strip of the aponeurosis of external oblique is used to strengthen the posterior wall. The contraction of external oblique is transmitted to the posterior wall through the strip. As there is no mesh used in hernia repair, several studies in several countries all over the world are being carried out to verify its efficacy.

MATERIALS AND METHODS:

A total of 55 patients aged between 18 and 70 with primary uncomplicated and complicated inguinal herniae underwent hernia surgery in the department of general surgery of North Bengal Medical College in the period from January 2015 to June 2016. The participants were given detailed information on the trial and the nature of the surgery and informed consent was taken.The final inclusion criterion was the good condition of the aponeurosis of external oblique. Patients with weak, thin or divided aponeurotic fibres were excluded from the study. Patients with Nyhus class 1 and class 2 inguinal hernia were operated. Nyhus class 3 and class 4 herniae were also excluded.

The following parameters were studied: 1. Particulars of each patient. 2. Nature of inguinal hernia – complicated or uncomplicated. 3. Side of inguinal hernia. 4. Class of hernia as per Nyhus classification of groin hernia. 5. Time taken for surgery. 6. Time taken for discharge. 7. Visual Analogue Scale (VAS) of pain at the time of discharge. 8. VAS at 3 months from discharge. 9. Time taken to return to basic activity. 10. Hamatoma formation . 11. Chronic non-healing or discharging sinus even after six weeks of surgery. 12. Surgical site infection which resolved on short term. 13. Seroma. 14. Inguinodynia- presence of groin pain on walking on the side of inguinal hernia surgery even after 3 months of surgery. 15. Recurrence of hernia- Appereance of visible or palpable impulse at the site of hernia surgery within the period of followup.

Data has been collected, compiled and edited. Collected data were

charted in excel sheet. Analysis has been done with standard statistical software as and when required according to the principles of a descriptive study.

RESULTS

In this study , out of 55 patients in the age group of 22year to 63 year (mean of 41.58 ± 11.132), 54 were male and one patient was female . Out of 55 inguinal hernia operated 25 were right sided and 30 were left sided. 13 (23.6 %) inguinal hernia were of Nyhus class 1 and 42 (76.4 %) were Nyhus class 2. Out of 55 inguinal hernia operated , 6 (10.9%) were operated as an emergency due to complication and 49 (89.1%) were operated electively. Mean operating time taken was 32.76 ± 5.78 mins. Mean time of discharge was 2.18 ± 0.782 days. The VAS score at discharge was 23.06 ± 6.33 mm on the VAS scale . One patient experienced chronic groin pain at three months with a VAS score of 40 mm. He was the same patient who had a VAS score of 50 mm at discharge. Time taken for the patients to get back to basic needs was 1.1 ± 0.4 days.

We have noted that wound infection is the main complication of this surgery. 9 out of 55 patients undergoing inguinal hernia surgery had wound infection which was 16.36%.Inguinodynia was experienced by one patient (1.8%) who was treated with pregabalin and was cured after 6 months of therapy. There has been no recurrence of hernia after a follow up of 3 months to 18 months.

Table 1. Complications at 3 months of follow up

Issues	Frequency	Percent
Uneventful	45	81.8%
Chronic non healing wound	5	9.1%
Inguinodynia	1	1.8%
SSI (resolved)	4	7.3%
Scrotal haematoma	1	1.8%
Recurrence of hernia	0	0%

DISCUSSION

Several operative techniques are used for the management of inguinal hernia. Shouldice technique has been considered to be the gold standard in no-mesh technique. Recurrence rate after Shouldice repair has been reported to be 1-4% in specialized centres. Modified Bassini,s repair of inguinal hernia has a higher rate of recurrence and more incidence of chronic pain[19]. The Lichtenstein repair has become the most commonly performed operation for inguinal hernia. Chronic groin pain in 28.7% to 43.3% of the patients has been reported after this operation6,20. Main complications are mesh related like mesh migration, persistent stiffness, groin sepsis and inguinal nerve entrapment [20]. Laparoscopic repair of inguinal hernia is costly,technically complex and needs a long learning curve.

Desarda has developed his technique of inguinal hernia repair considering the physiological principle of defence which affords dynamic strength to the posterior wall of the inguinal canal. The author published his results of his first series in the year 2001[17]. The second series was published in the year 2006 with a follow up of 7 years[21]. In the present study there has been no recurrence over a follow up period of 3 months to 18 months. Most of the patients could be discharged on the second day and were back to basic activity on the first day.

The International Association for the pain defined chronic pain as lasting for more than 3 months after surgery. Due to use of synthetic mesh for hernia repair and inflammatory response to implanted foreign material pain may last longer.In the present study mean VAS score at the end of three months was found to be 0.82 mm. However in our study only one patient was found to suffer from chronic pain at the end of three months (1.8%). Study by Roy et al in Bangladesh showed similar result [22]. Most of the patients in our study were able to get back to basic activity on the first day after surgery with a mean of 1.18 days which was found to be similar to three other studies by Szopinski[23], Al Fatah[22] and Roy[24].

Wound infections comprised a major postoperative morbidity in 16.34% of patients in this study. Other studies on Desarda technique showed infection rates between 1.63% and 2.8%[22,24]

Higher rate of surgical site infection in our patients can be explained by the fact that in the particular period other clean surgeries were getting higher rate of infection due to some deficiency in central sterilization unit .Only one patient developed a haematoma. None developed a seroma. There was no recurrence of hernia over a period of follow up of three months to eighteen months. This study included only patients of Nyhus class 1 and class 2 inguinal hernia.In future Nyhus higher classes of inguinal hernia to be operated and assessed.

CONCLUSION:

Desarda's technique is safe and dependable method of no-mesh local tissue repair of inguinal hernia. It is cost-effective and has a low acceptable rate of short and long term complications. We have not recorded any recurrence of inguinal hernia over a follow up of 3 months to 18 months. The technique is easy to master. In this study only inguinal herniae of Nyhus class 1 and class 2 were included. Future studies that would include higher classes of jnguinal hernia would be conducted . Though this study showed a high rate of surgical site infection, cause of infection was found to be some deficiency in sterilization process.

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