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Shouldice Method versus other Methods for inguinal hernia repair patients-100 cases

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ABSTRACT

Introduction: The surgical treatment of inguinal hernias has evolved through several generations to reach a modern era. It has been said that the history of groin hernia is history of surgery itself. Hernia is one of the most common surgical conditions encountered in day-to-day practice. It is a common problem, more in industrial workers who are doing strenuous work over a long period of time.The common aim in treatment of hernia is to restore the anatomical integrity of the disrupted tissue, performing a strong repair and to prevent further recurrences.

Methods: This Hospital based interventional study was conducted at Dept. of Surgery, Cox's bazar Medical College, Cox's bazar, Bangladesh from January to December 2023. Total 100 selected cases of uncomplicated inguinal hernias treated in our institution by random sampling. All the patients were investigated pre- operative check-up in out-patient clinic for planned surgery. All patients were admitted in our hospital and surgery done under anesthesia (spinal, general, local). All patients in our study received pre- operative antibiotic. In operative technique, the difference lies in the repair of the posterior wall.

Results: Out of 100 patients, Shouldice repair was done in 25 patients and other three method of repair was also done in 25 patients each. In present study, wound haematoma occurred in three patients, which may be attributed to the extensive dissection. Seven patients developed wound infection, treated by antibiotics and dressing. Three patients developed scrotal oedema, which was treated by scrotal support and anti-inflammatory agents. Two patients developed urinary retention, relieved by analgesics, hot water bag and ambulation. None of them required catheterization. In the present study we encountered two cases of recurrences (2.0%).

Conclusion: In Shouldice repair, double breasting ensures the strong repair. In this method of repair minimal tension on the suture line, so relaxing incision are not necessary. Deep inguinal ring is narrowed in the lateral aspect of the repair. Recurrence rate is remarkably low. But the repair is difficult to perform and extensive dissection required and it takes longer operative time.

Key words: Inguinal hernia, Shouldice repair of hernia, Lichtenstein tension-free repair.

I. INTRODUCTION

The surgical treatment of inguinal hernias has evolved through several generations to reach a modern era. It has been said that the history of groin hernia is history of surgery itself [1].Hernia is one of the most common surgical conditions encountered in day to day practice. It is a common problem, more in industrial workers who are doing strenuous work over a long period of time [2]. Innumerable techniques have been described and are in use for the repair of inguinal hernia. Any method which reduces the recurrence rate as well as lowers the morbidity and post-operative complication rate, must however be considered superior. Bassini revolutionized the surgical repair of the groin hernia with his novel anatomical dissection and low recurrence rates in 1884. Darn repairs were first introduced in the early 20th century to reduce wound tension by using either autologous tissue or synthetic suture to bridge the gap between fascial tissues. Muscle and fascial flaps were attempted without consistent success [2,3]. Francis Usher in 1958 used polypropylene as first successful synthetic prosthesis. The tension free concept got its breakthrough with Irving Lichtenstein who used polypropylene meshes for suturing [3]. Prolene Hernia System is a novel device developed for tension-free repair of inguinal hernia. Till date there are a lot of reconstructive procedures in management of inguinal hernias like the Bassini’s repair, the Shouldice repair, the Lichtenstein tension free repair, various types of meshes and laparoscopic repairs. The common aim in treatment of hernia is to restore the anatomical integrity of the disrupted tissue, performing a strong repair and to prevent further recurrences. In this study, the repair of adult inguinal hernia by different techniques is compared with the standard

series reported in literature. Shouldice, in 1953, had described the multilayered repair and is most successful of "pure tissue" methods with less recurrence rate [2]. It is very difficult to compare the recurrence rate significantly because of short follow up. It has been found from the study that the results of hernia repair depend upon proper selection of cases, skillful operative technique and proper post-operative management. Suture repair for inguinal hernia is recently been described by Mohan Desarda where a 1-2cm strip of external oblique muscle 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 muscles contract, this strip of aponeurosis tightens to add further physiological support to posterior wall. This operation is currently being evaluated [4]. 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 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 [5-7].

II. MATERIAL AND METHODS

This Hospital based interventional study was conducted at Dept. of Surgery, Cox's bazar Medical College, Cox's bazar, Bangladesh from January to December 2023. Total 100 selected cases of uncomplicated inguinal hernias treated in our institution by random sampling. All the patients were investigated pre-operative check-up in out-patient clinic for planned surgery. All patients were admitted in our hospital and surgery done under anesthesia (spinal, general, local). All patients in our series received pre-operative antibiotic. In operative technique, the difference lies in the repair of the posterior wall. In the present study comparison of inguinal hernia repair by Shouldice versus other three methods modified Bassini's repair, pre-peritoneal mesh repair and Lichtenstein tension-free repair had been studied with a regular follow up. The selection of the patients for type of an aesthesia was done on the basis of associated cardiac and respiratory diseases.

Shoudice repair

An incision is made in the transversalis fascia from internal ring to the pubic tubercle parallel to the inguinal ligament. And flap is made. Multilayer repair is done. First layer of repair is done by suturing the lower lateral flap with deep surface of upper flap. Repair is begun at medial end with the first suture close to the pubic crest but not involving periosteam. Laterally, last bite medial to the emerging cord creates new internal ring with the underlying transversalis margin below and full thickness of the upper flap above. Second layer of repair is done with the same running suture is used in the reverse direction to create the second layer. The full thickness of the upper flap of transversalis fascia is sutured to the base of the lower edge of transversalis fascia. Sutures should be placed about 2-4 mm apart and bites of different depth taken. Third layer strated with passing suture through the inguinal ligament at the medial edge of the new internal ring and then takes a bite of the posterior surface of the aponeurotic tendon of the transverses abdominis and is tied.

Modified bassini's repair

In this method, the conjoined tendon is sutured to the margin of inguinal ligament by prolene material. The first suture passes through the periosteam of pubic tubercle. Stiches are taken at different level over the inguinal ligament.

Preperitoneal mesh repair

Abdomen opened via pfannenstiel, midline or suprainguinal incision. Hernia sac reached through pre-peritoneal space. Internally the dissection starts in the paravesical area and must expose successively cooper's ligament, the obturator area and the external iliac vessels. Sac dealt as described previously. Mesh (prolene) fixed with prolene stitches to transversalis fascia, iliopsoas muscle and obturator area.

Lichtenstein tension-free repair

In this repair a sheet of polypropylene mesh used to reconstruct the entire floor of the inguinal canal without any attempt to close the defect by suture. The mesh is sutured along its lower edge to the pubic tubercle, lacuner ligament and the inguinal ligament beyond the internal ring with a continuous suture of the prolene. The medial edge of mesh is sutured to the rectus sheath, also with prolene continuous suture. The superior edge is fixed with few interrupted sutures with internal oblique muscle. The patients were followed up at regular interval and on follow up, the patients were examined for complication, recurrences. All patients were advised not to do any strenuous work for 3 months.

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III. RESULTS

Total 100 cases included in our study. Mean age was 40.90 years and SD 17.09. Out of 100 cases, 37% had indirect hernia, 59% had direct hernia and 4% had recurrent hernias. 50% of our patients had right sided herniasas per Table-1. Most of the patients were in between18-30 years of age (34%). Most indirect hernia was present in age group 18-30 years and direct hernia in above 60 years of age as per Table-2. Out of 100 patients, Shouldice repair was done in 25 patients and other three method of repair also was done in 25 patients each as per Table-4. In present study, wound haematoma occurred in three patients, which may be attributed to the extensive dissection. 9 patients developed wound infection, treated by antibiotics and dressing. Three patients developed scrotal edema, which is treated by scrotal support and anti-inflammatory agents. Two patients developed urinary retention, relieved by analgesics, hot water bag and ambulation as perTable-5.None of them required catheterization. In the present study, we encountered two cases of recurrences (2.0%) as per Table-6.

Table-1: Age distribution of patient.

Age	Frequency	Percent (%)
18-30	34	34
31-45	24	24
46-60	28	28
>60	14	14
Total	100	100

Table-2: Types of hernia with age

Age	Indirect	Direct	Both
18-30	18	0	0
31-45	10	0	0
46-60	8	2	1
>60	0	9	2

Table-3: Types of hernia

Types of hernia	**Unilateral**	**Bilateral**
Indirect	31	6
Direct	40	19
Recurrent	4	-
Pantaloon	-	-

Table-4: Operative techniques

Operative technique	**Indirect hernia**	**Direct hernia**	**Recurrent hernia**
Shouldice repair	6	18	1
Bassini's repair	16	9	-
Pre- peritoneal mesh repair	8	15	2
Lichtenstein tension-free repair	7	18	-

Table-5: Post-operative complications

Post-operative complications	**Total**	**Percentage in present study**
Woundhematoma	4	4.0
Woundinfection	9	9.0
Scrotaledema	4	4.0
Deepveinthrombosis	-	-
Chestcomplication	1	1.0
Retention of urine	2	2.0

Table-6: Recurrence

Type of hernia repair	Total	Recurrence	Recurrence (Percentage)
Should ice repair	25	-	-
Bassini's repair	25	1	6
Pre- peritoneal mesh repair	25	1	6
Lich ten stein tension-free repair	25	-	-

IV. DISCUSSION

Inguinal hernia is major surgical problem. The various techniques employed for repair of inguinal hernia accounts for various advantages of one technique over the other techniques. Thus, it is mandatory to study and compare the results of various techniques of hernia repair. Inguinal hernia is a very common condition afflicting mankind [8]. All inguinal hernias share the common feature of emerging thorough the myopectineal orifice of furchaud. It is used as gold standard surgery for all types and size of inguinal hernia, though it is far from the definition of an ideal hernia repair and has complications like chronic inguinal pain. Desarda procedure might be the ideal procedure satisfying the criteria for an ideal hernia repair as it is tension free, tissue based and as per results of various studies has less chronic groin pain than mesh repair as nerve entrapment does not occur. This procedure if proved successful can be used extensively in all types of hernias where the external oblique aponeurosis is well preserved. In the present study, comparison of inguinal hernia repair by Shouldice versus other three methods modified Bassini's repair [3], pre-peritoneal mesh repair [9] and Lichtenstein tension-free repair [10] had been studied with a regular follow up. Majority of patients were between 40-60 years group. Maximum age of patient was 72 year and minimum age was 18 years. In our study, direct inguinal hernia was more common in older age group while indirect inguinal hernia was more common in younger patients which can be comparable with other study [4]. Bilateral hernias were commonly seen in older age group. In present study, all patients having bilateral hernias were above 40 years. According to literature [5], the hernia is bilateral in 15 percent of cases, compared to 25% in our study as per Table - 1. Out of 100 cases, 38.0% had indirect hernia, 59.0% had direct hernia and 4.0% had recurrent hernias. 50% of our patients had right sided hernias, it is comparable to the incidence reported in the series by H. B. Devlin, et al. [6]. The selection of the patients for type of anesthesia was done on the basis of associated cardiac and respiratory diseases. As mentioned in literature, regional or general anesthesia is preferable unless the patient is aged or his general condition is poor, or is suffering from a severe cough or some undercurrent disease such as diabetes or nephritis, cardiac diseases where local anesthesia may be sagely employed [7]. Out of 100 patients, Shouldice repair was done in 25 patients and other three method of repair also was done in 25 patients each. In present study, wound haematoma occurred in three patients, which may be attributed to the extensive dissection. 9 patients developed wound infection, treated by antibiotics and dressing. Three patients developed scrotaledema, which is treated by scrotal support and anti-inflammatory agents. Two patients developed urinary retention, relieved by analgesics, hot water bag and ambulation. None of them required catheterization. In the present study, we encountered two cases of recurrences (2.0%). As the follow up was too short, recurrence was not as compared to standard series of A. Paul, et al [8].In this procedure, which might be done with local anesthesia and sedation or general anesthesia, the surgeon makes an incision in your groin and pushes the protruding tissue back into your abdomen [11-13]. The surgeon then sews the weakened area, often reinforcing it with a synthetic mesh (hernioplasty). Laparoscopic hernia surgery has evolved significantly in recent years, offering patients a less invasive option compared to traditional open surgery. These advancements have enhanced the effectiveness of the procedure, reduced recovery times, and improved overall patient outcomes. The main types of surgery for hernia are: Open (traditional) hernia repair surgery: A surgeon makes a single incision (cut) that allows them to operate on the herniated tissue. They put the organs and tissue back into place and use surgical instruments to stitch the tissue back together to make it stronger.

V. CONCLUSION

In Shouldice repair, double breasting ensures the strong repair. In this method of repair minimal tension on the suture line, so relaxing incision are not necessary. Deep inguinal ring is

narrowed in the lateral aspect of the repair. Recurrence rate is remarkably low. But the repair is difficult to perform and extensive dissection required and it takes longer operative time.

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