



General Surgery

A COMPARATIVE STUDY OF ONLAY MESH REPAIR (LICHTENSTEIN'S) AND LAPAROSCOPIC TOTALLY EXTRA PERITONEAL MESH REPAIR IN THE TREATMENT OF INGUINAL HERNIA

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ABSTRACT To compare the results of Onlay (Lichtenstein's) and Laparoscopic totally extra peritoneal mesh repair in the treatment of inguinal hernia in terms of Post-operative pain, Analgesic requirements, Nerve entrapment & its sequel, Cord oedema, Orchitis, Scrotal oedema, recurrence in patients who presented to the department of General Surgery in the past two years. There was a significant difference in the overall complication rate between the two groups. Orchitis and Nerve paresis were virtually absent in the Laparoscopic mesh repair (TEP) group, which were present in a few number of patients in the onlay mesh repair group which is statistically significant ($p < 0.05$). There was no recurrence at all in both the groups during this limited follow-up period. A longer period of study is therefore needed to identify recurrence within these groups to know the apparent advantage of mesh repairs.

KEYWORDS : TEP, TAPP, TOTALLY EXTRA PERITONEAL MESH REPAIR

INTRODUCTION

Inguinal hernia is one of the most common general surgical problems. It has an incidence of 10-15% in adults. The male/female ratio is 12:1. The incidence varies with age - in full-term babies it is between 10-20/1000. In preterm infants it is much higher between 7-12%. Treatment for inguinal hernia has been constantly evolving starting from the earliest surgery through a scrotal incision to the present day laparoscopic preperitoneal mesh repair. Two of the procedures commonly used today are Tension free mesh repair - onlay or Laparoscopic Hernioplasty - TAPP (or) TEPP. In this study a comparison has been done between the only and Laparoscopic mesh repair (TEP) techniques in patients with inguinal hernia who presented to the department of General Surgery at Government General Hospital, Chennai during the past two years. The literature regarding this is also reviewed and discussed.

MATERIAL AND METHODS

Fifty patients were included in the study - all of whom presented to the department of General Surgery in the past two years. Patients were randomly allocated into either of the 2 groups - one group undergoing Onlay mesh repair and the other group undergoing Inlay mesh repair. Only elective cases were included in the study. Emergency cases were excluded from the study. Female patients were excluded from the study. Patients under 18 years of age were excluded from the study. Apart from the routine investigations, patients above 40 years of age and those complaining of symptoms of prostatism were investigated for evidence of prostatic hypertrophy by Digital rectal examination & Ultrasonogram of the Abdomen to determine the size of the prostate and assess for residual urine. Those found to have benign prostatic hypertrophy were treated for BPH before they were subjected to hernia repair. Onlay (Lichtenstein's) mesh repair, Laparoscopic (TEP). The two repairs compared are described in detail. Lichtenstein's mesh repair Incision The skin incision is made along the line joining the anterior superior iliac spine and pubic tubercle in its medial two-thirds parallel to the inguinal ligament. The subcutaneous tissue in its two layers - the fatty layer of Camper and the membranous layer of Scarpa are incised along the same line. Three named vessels are encountered - the superficial epigastric vein, the superficial external pudendal vein and the superficial circumflex iliac vein. They are cut and ligated. The external oblique aponeurosis is opened in the line of its fibres and the iliohypogastric and the ilioinguinal nerves are identified and preserved. Dissection Now the cord structures come into view. The cremaster is split open longitudinally and excised. The internal spermatic fascia is opened. The sac is dissected off its cord structures and an indirect sac is dissected well beyond the deep ring and ligated and excess sac excised. A direct sac is just invaginated by imbricating sutures. Now the repair begins. Polypropylene mesh was used for the study. A sheet of mesh of size 11x6cm is trimmed suitably and is placed on the posterior wall over the transversalis fascia. The mesh is sutured

along its lower edge to the pubic tubercle, the lacunar ligament and the inguinal ligament using a continuous suture of 3-0 polypropylene. The medial edge is sutured to the rectus sheath. The superior edge is sutured to the conjoint tendon or muscle of the internal oblique with a few interrupted sutures. The lateral edge of the mesh is split up and the tails are passed around the cord at the internal ring and fixed. (TEP) Position : Supine with 150 trendelenburg's position. Surgeon stands on the opposite side of the hernia monitor on the foot end of the table. Ports : 10 mm - Subumbilical (camera) 5mm - one third distance from the umbilicus to pubic symphysis 5 mm - Midway between umbilicus & Anterior superior Iliac spine (on the side of the hernia). An incision made on the lower half of the umbilicus in the mid line, The tissues are separated with curved dissector & two curved retractors are used to expose the anterior rectus sheath on the same side of the hernia, The rectus sheath is incised transversely and the rectus muscle is identified & retracted laterally, A curved dissector is used to create a space between the rectus muscle & posterior rectus Sheath, A blunt nosed canula without obturator is introduced into the space, A 00 scope is then inserted through the canula & space is formed by forward & backward with telescopic movement under continuous insufflation of CO₂ at 12mm Hg, For widening the space, 5mm trocar is introduced at one third distance from the umbilicus in the mid line, After widening the space, 2nd trocar is introduced midway between umbilicus and anterior superior Iliac spine. Using curved dissector & scissors laterally space is extended deep to the inferior epigastric vessels. Lateral & cranial dissection is performed till it reaches the line joining the umbilicus and anterior superior Iliac spine. trocar is introduced at the highest point of dissection. Cooper's ligament on the same side of the hernia should be exposed by using sharp and blunt dissection. Retropubic space can now be widened in the mid line and on the side of the hernia up to the level of obturator nerve & vessels. Lateral to the inferior epigastric vessel, keeping it up against rectus muscle areolar tissue is best dissected using a combination of blunt & sharp dissection gaining easy access to the space lateral to the internal ring.

RESULTS

During the past two years, fifty patients presenting with inguinal hernia were studied - twenty five patients undergoing onlay mesh repair and twenty five patients undergoing Laparoscopic mesh repair (TEP) as stated above at the Department of General Surgery. Allotment of cases into the two groups was done randomly. Female patients and patients presenting as emergency were excluded from the study. Patients less than 18 years were excluded. The following observations were made 1. TYPE OF HERNIA a. Direct inguinal hernia i. In patients undergoing onlay mesh repair - 11/25 - 44%. ii. In patients undergoing laparoscopic mesh repair (TEP)- 8/25 - 32%. iii. Both groups together 19/50 - 38%. b. Indirect inguinal hernia i. In patients undergoing onlay mesh repair - 13/25 - 52%. ii. In patients undergoing laparoscopic mesh repair (TEP)- 15/25 - 60%. iii. Both groups together 28/50 - 56%.

c. Pantaloon hernia i. In patients undergoing onlay mesh repair - 1/25 - 4% ii. In patients undergoing laparoscopic mesh repair, 2/25 - 8%. iii. Both groups together - 3/50 - 6%. In the study it was found that indirect hernias (56%) were more common than direct hernias (38%). 2. Side most commonly affected i. In patients undergoing onlay mesh repair a. Right side - 13/25 52% b. Left side - 8/25 32% c. Bilateral - 4/25 16% ii. In patients undergoing Laparoscopic mesh repair (TEP) a. Right side - 15/25 60% b. Left side - 7/25 28% c. Bilateral - 3/25 12% iii. Both groups together a. Right side - 28/50 56% b. Left side - 15/50 30% c. Bilateral - 7/50 14% In this study inguinal hernia was more common on the right side (56%) than on the left side (30%). 3. Age group Patients were divided into two groups based on their age - those less than 40 years and those more than 40 years.

DISCUSSION

The greatest contribution to hernia surgery was that of an Italian surgeon, Edoardo Bassini. He had a clear insight into the anatomy and physiology of the inguinal region, which enabled him to dissect and reconstruct the inguinal canal preserving the functional anatomy. He laid the inguinal canal open widely by splitting the aponeurosis of the external oblique muscle. He next opened the transversalis fascia from the pubic tubercle to beyond the internal inguinal ring. Thus, he was able to dissect and ligate the sac high in the retoperitoneal space. Realising the importance of repairing the transversalis fascia, he sutured the internal oblique and transversus abdominis muscle as well as the upper leaf of the transversalis fascia in one layer to the lower leaf of the transversalis fascia and the inguinal ligament. Bassini first performed the operation in 1884 reported in 1887. His cases had a very low recurrence rate and other complications. These phenomenal results earned him the title "Father of modern herniorrhaphy". During the next 100 years, most inguinal hernias were repaired by Bassini method or variations of it. Important among them were The multilayered repair of Shouldice in 1953. In 1898, George Lotheissen first reported the technique of suturing the conjoint tendon to the Cooper's (pectineal) ligament. A hernia repair done with undue tension is doomed to failure because of ischaemic necrosis of the tissues caused by pressure of sutures under tension. The Bassini repair or its modification is suitable only for cases where the musculoaponeurotic arch is close to the inguinal ligament to which it can be sutured without tension. When they are faraway, tension inevitably occurs with the Bassini method or its modification and leads to failure. The contribution of relaxing incision and slides in tension reduction were negligible. To overcome this problem, darns were introduced. Earlier darning was done with natural materials like external oblique aponeurosis, fascial grafts from the thigh, strips of fascia lata, skin etc. They were largely disappointing. Later silk was introduced, but failed for obvious reasons. It was not until Moloney introduced the nylon darn technique in 1948 that the results were satisfactory. At about the same time patches were introduced in the form of sheets of natural tissues, biological material, metals or synthetic sheets or weaves to fill in the gaps of weakened posterior wall. Between 1900 and 1909, Witzel, Goepel, Bartlett and McGavin used silver wire filigree sheets to fit the size and contours of the gaps in the tissue and sutured to the borders of the defect. However, the wire corroded, fragmented and was rejected through chronic sinuses.

CONCLUSION

In our study during the past two years in the department of, General Surgery, about fifty patients were studied for comparing Onlay (Lichtenstein's) mesh repair and Laparoscopic mesh repair (TEP) in the treatment of inguinal hernia. There was a significant difference in the overall complication rate between the two groups. Orchitis and Nerve paresis were virtually absent in the Laparoscopic mesh repair (TEP) group, which were present in a few number of patients in the onlay mesh repair group which is statistically significant ($p < 0.05$). There was no recurrence at all in both the groups during this limited follow-up period. A longer period of study is therefore needed to identify recurrence within these groups to know the apparent advantage of mesh repairs. C Analgesic requirement was significantly lower in the laparoscopic mesh repair (TEP) group when compared to the Onlay mesh repair group which is statistically significant. ($p < 0.05$) Cord oedema is present in a statistically significant minimal number of patients in the Laparoscopic mesh repair (TEP) group when compared to the Onlay mesh repair group. Based on the observation, results and analysis of this study, we recommend that "Laparoscopic - repair, is superior than Onlay (Lichtenstein's) mesh repair for treating Inguinal hernia" because of the following facts. iminal post operative pain, Less analgesic requirements, Less cord oedema, Nil orchitis and nerve paresis Apart from repairing the inguinal hernia, Laparoscopic mesh

repair has got the additional advantages of, Identification of an occult femoral hernia and repairing it. Identification of bilateral inguinal hernia. Laparoscopic hernioplasty, Operative time is three times more than open Hernioplasty.

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