

LAPAROSCOPIC TEP VERSUS OPEN HERNIOPLASTY: A COMPARATIVE STUDY OF EXTRAPERITONEAL TENSION FREE MESH REPAIRS IN INGUINAL HERNIA

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HOW TO CITE THIS ARTICLE:

Rehan Sabir Momin, Sadiq Hussain, Shadan Quadri. "Laparoscopic Tep Versus Open Hernioplasty: A Comparative Study of Extraperitoneal Tension Free Mesh Repairs in Inguinal Hernia". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 72, September 07; Page: 12493-12498, DOI: 10.14260/jemds/2015/1799

ABSTRACT: Inguinal hernia repair is now one of the most commonly performed general surgical procedures in practice. 'Tension-free repair' is the procedure of choice.^[1] due to its low recurrence rate, these tension-free repair procedures can be roughly categorized into two groups: laparoscopic and open anterior approach. TEP is accepted as the most ideal method because it can avoid entry into the peritoneal cavity, which can cause intraperitoneal complication such as bowel injury or obstruction.^[2] Among open tension-free methods are Lichtenstein's operation or Prolene hernia system. In this article, we examine the advantages and disadvantages of two extra peritoneal inguinal hernia repair methods, which are open lichtenstein's hernioplasty and Laparoscopic Total Extra Peritoneal approaches of inguinal hernia repair. **AIMS AND OBJECTIVES:** The aim of this study was to compare the effectiveness and safety of laparoscopic and conventional open hernioplasty repair in the treatment of inguinal hernia and their results were studied in terms of operation time, patient comfort, hospital stay, return to normal activity and postoperative complications. **METHODS:** This study was done in a post-graduate teaching hospital where 50 cases were included. Of which 25 cases were operated by laparoscopic method and other 25 cases by conventional open hernioplasty. Outcome were compared in demographics and perioperative details with postoperative data. **CONCLUSION:** Since evidence in the literature does not point to either the laparoscopic or open approaches the clear superior procedure, surgeon preference and circumstantial influences will probably continue to dictate the approach employed in inguinal hernia repair. For primary inguinal hernias in general, the open hernioplasty is superior to the laparoscopic technique, both in terms of recurrence rates and in terms of safety whereas in bilateral inguinal hernia, recurrent inguinal hernia and sliding hernia, laparoscopic approach can be recommended.

KEYWORDS: Laparoscopic Inguinal Hernia, Hernioplasty.

INTRODUCTION: Inguinal hernia repair is one of the most common procedures done in general surgical practice. There are various methods for inguinal hernia repair, but 'Tension-free repair' is the procedure of choice.^[3] These tension-free repair procedures can be roughly categorized into two groups; laparoscopic and open anterior approach. In laparoscopic hernia repair approaches, Total Extraperitoneal Repair (TEP), Trans Abdominal Preperitoneal Repair (TAPP) and Intraperitoneal Onlay Mesh Repair (IPOM) are known procedures. Among them, TEP is accepted as the most ideal method because it can avoid entry into the peritoneal cavity, which can cause intraperitoneal complication such as bowel injury or obstruction.^[4] Open tension-free methods are Lichtenstein's operation, repair using mesh plug or prolene hernia system (PHS).^[5,6]

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Recently, there are many reports comparing laparoscopic and open tension-free methods.^[7-9] However, there have been few reports comparing open tension free mesh repair with laparoscopic TEP. Thus, we designed this study and have reviewed our data.

In 1982, Ger attempted minimal access groin hernia repair by closing the opening of an indirect inguinal hernial sac using clips. In 1989, Bogojavlensky used intra-corporeal suture to the deep ring after plugging a preperitoneal mesh into the sac. Presently, technique for laparoscopic hernia repair has come from Stoppa's concept of pre-peritoneal reinforcement of fascia transversalis over the myopectineal orifice with prosthetic mesh. Phillips and McKernan described the totally extraperitoneal (TEP) technique of endoscopic hernioplasty where the peritoneal cavity is not breached and the entire dissection is performed bluntly in the extraperitoneal space with a balloon device or the tip of the laparoscope itself. Sound understanding of the posterior anatomy of the inguinal region is required.

After the dissection, 15×10cm mesh is stapled in place over the myopectineal orifice. The mesh is in direct contact with the fascia of the transversalis muscle in the pre-peritoneal space, which later gets fixed due to adhesions. Recurrences after laparoscopic repair most often result from using small sized mesh or not using staples to fix the mesh. The operative time to perform unilateral primary inguinal repair has been reported as longer for Laparoscopic TEP compared to open repair.

The mean difference in 36 of 37 randomized trials is 14.81 minutes.^[10] Patients experience less pain after laparoscopic repair as compared to any open inguinal hernia repair. Complications were more commonly seen in Laparoscopic repairs earlier due to steep learning curve for the surgeons as compared to open approaches but nowadays it has become less after proper steps and protocols are followed.^[11,12]

Patient can return to their work early after laparoscopic TEP repair. Also Laparoscopic approaches allow assessment and treatment of the co-existing contralateral side inguinal hernia during the same operation without the need for further surgical incisions.^[13]

METHODS: This study was done in a post-graduate teaching hospital where 50 cases were included. Of which 25 cases were operated by laparoscopic total extraperitoneal repair and other 25 cases by conventional open lichtenstien's hernioplasty. Outcome was compared in demographics and perioperative details with postoperative data.

Objectives of this Study: This study was done to compare the effectiveness and safety of laparoscopic total extraperitoneal repair and conventional open hernioplasty repair in the treatment of inguinal hernia in terms of operating time and technique used, post-operative pain and recovery, post-operative complications and recurrence rates.

Exclusion Criteria in this Study were:

1. Bilateral Inguinal Hernias.
2. Patients who had previously undergone a hernia repair with the use of mesh.
3. Patients who had shorter than 12 months of follow up were excluded.
4. Congenital Inguinal Hernias in paediatric age group.

Laparoscopic TEP Technique: Laparoscopic TEP repair was performed using a three-port technique. To create the pre-peritoneal space, a 15mm skin transverse incision was made at the inferior edge of umbilicus.

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The incision was carried down to the contralateral side of the anterior sheath of the rectus abdominis muscle. A small incision was then made in the anterior sheath to expose the rectus abdominis muscle. A channel between the rectus muscle and posterior sheath was created, so that a small tunnel is made in the direction to pubis between the rectus abdominis muscle and the peritoneum. Using space maker dissection balloon, the pre-peritoneal space was developed. Finally, another 5mm port was placed 2cm superior to symphysis pubis in the midline and another 5mm port was placed in the middle between the two existing ports.

In most direct inguinal hernias, the loosened Transversalis fascia was fixed to Cooper's ligament with a 5mm spiral tack to reduce dead space. In indirect inguinal hernias, the sac was completely isolated and reduced.

The operative time was recorded from skin incision to skin closure. Hematoma was defined as presence of ecchymosis on operative site. Scrotal swelling was included only when the patient complained during follow-up and seroma was defined as the case in which the aspirated fluid was over 5ml. Sustained pain was defined if operative site pain was sustained 3 months after surgery. The length of hospital stay was defined as the total number of nights spent in the hospital after surgery. Recurrence after operation was diagnosed upon physical examination. The patients were followed up in the outpatient clinic department regularly.

OBSERVATION:

1. Demographics for Cases operated by TEP and Open Hernioplasty were:

Age of the patients were between 15 years to 80 years.

Male to Female ratio was 48:2.

Right sided Inguinal Hernia were 36.

Left sided Inguinal Hernias were 14.

Indirect Inguinal Hernia were 41 cases (82%).

Direct Inguinal Hernia were 9 cases (18%).

Recurrent Inguinal Hernias: 3 cases of Recurrent were present, 1 was operated by TEP and other 2 by Open hernioplasty.

Total Extraperitoneal repair was done under endotracheal intubation General Anaesthesia.

Open Hernioplasty was done under Spinal Anaesthesia.

2. Perioperative Outcomes between TEP and Open Hernioplasty Repair were:

Operative Time: 60mins to 320mins in TEP,

40mins to 120mins for Open Hernioplasty.

Hospital Stay: 1 to 7 days (Average 1.5) in TEP,

1 to 15 days (Average 3.5) in Open Hernioplasty

Analgesics required number of times in a day: 1 to 2 times in TEP cases,

2 to 3 times in Open Hernioplasty cases.

3. Post-Operative Complications between TEP and Open Hernioplasty Repair were:

Haematoma were seen in 20 cases of TEP and 2 cases of Hernioplasty cases,

Cord Oedema were noted in 7 cases of TEP and 3 cases of Hernioplasty cases,

Seroma developed in 8 cases of TEP and 2 cases of Hernioplasty cases.

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DISCUSSION: This study compared two tension-free, mesh-based extraperitoneal hernia-repair techniques: 1) Lichtenstein open procedure and 2) Laparoscopic procedure. Recurrence rates were significantly higher with laparoscopic repair of primary hernias than with open repair of primary hernias, but recurrence rates were similar for the repair of recurrent hernias using both the techniques. Intraoperative and immediate postoperative complications were more frequent in the laparoscopic-repair group than in the open-repair group.

These results are consistent with others studies which have reported that patients who underwent laparoscopic repair returned to their usual activities one day sooner than those who underwent an open repair. Patients who underwent an open repair experienced significantly higher levels of pain than those who underwent a laparoscopic repair. Laparoscopic repair compared favorably with Lichtenstein repair for primary indirect and direct hernias, bilateral recurrent hernias.^[14]

Advantages of Total Extraperitoneal Laparoscopic Repair: The laparoscopic operations caused significantly less pain in the early postoperative period, leading to earlier mobilization and earlier return to work than open mesh repair. Furthermore, laparoscopic TEP repair is associated with greater patient satisfaction and better cosmetic results than its open counterpart. On the basis of these early experiences, laparoscopic extraperitoneal hernia repair seems to be as good as, if not superior to, the existing open Lichtenstein repair in terms of postoperative pain, hospital stay, return to work, and cosmesis provided the long-term recurrence rates also are comparable.

It is possible to achieve high standards even during the learning phase of the surgeon if there is strict adherence to the protocols.^[15] The TEP technique took no longer to perform and was associated with less postoperative pain, a shorter period of sick leave and a faster recovery, compared with open Lichtenstein hernia repair. At present, the laparoscopic repair of hernias finds its clinical niche in patients with bilateral or recurrent hernias or in patients with unilateral hernia who desire a minimal period of postoperative disability.^[16]

Open hernia repair requires an incision at the point of maximum weakness, dividing of muscle and then suturing to repair the defect. This damage must heal before the wound become comfortable. Type of anesthetic used to affect the repair does not affect the period of discomfort. In a laparoscopic repair no incision is made in the groin.

The small wounds which are made heal rapidly and have been shown to cause negligible postoperative pain. Further mesh is placed inside the groin muscle in the preperitoneal layer and this seems a more logical position to prevent peritoneal contents bulging out of a muscle defect than placing a mesh on the outside of the defect. Laparoscopic repair has no surgical weakness postoperatively.

Advantages of Open Hernioplasty: Laparoscopic hernia repair is relatively costly; difficult to learn with a steep learning curve, carries the risk of serious visceral and or vascular injuries. All cases of groin hernia are not suitable for laparoscopic hernia repair as it is contraindicated in strangulated hernia, sliding hernia, irreducible hernia and patients who are elderly or have co-morbid conditions.

Laparoscopic hernia repair can be not be performed as day care surgery or under local anesthesia. Open mesh repair is economical, easy to teach and learn without any steep learning curve. Open hernia repair does not need any specialized training and results are some in both specialist and non-specialist center.

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Open hernia repair does not carry any risk of serious visceral or bowel injuries. Open mesh repair is suitable for all types of groin hernias including strangulated, irreducible, sliding hernia or in elderly patients and patients with co-morbidity.^[17]

CONCLUSION: We conclude that for primary hernias, the open technique of tension-free repair is superior to the laparoscopic technique, both in terms of recurrence rates and in terms of safety. Laparoscopic hernia repair is safe and provide less postoperative morbidity in experienced hands and definitely has many advantages over open repair. For bilateral inguinal hernia, recurrent inguinal hernia, sliding hernia and primary inguinal hernias laparoscopic approach can be recommended.^[18]

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Date of Submission: 16/08/2015.
Date of Peer Review: 22/08/2015.
Date of Acceptance: 01/09/2015.
Date of Publishing: 04/09/2015.