

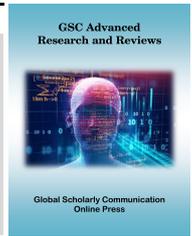


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(SHORT COMMUNICATION)



Modified Abdelhamid technique (modified TAPP with external fixation)

Mohamd Salaheldin Abdelhamid *

Surgery department, Beni_Suef, faculty of medicine, Beni_Suef, Cairo, Egypt.

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Abstract

Purpose Better fixation of the mesh with better application to the posterior inguinal wall. Background: Stapling of the mesh is costly, that is why in Abdelhamid technique we are fixing it to outside, reducing the cost and port sizes without jeopardizing the outcome. Our technique can adjust the tension applied to the mesh with better justification of the size of the mesh. Patients: The study was conducted at Beni _ Suef university hospitals, between April 2018 and April 2020. Included in the study were 30 patients with unilateral primary inguinal hernia. Methods: A prospective trial was conducted modifying Abdelhamid technique for laparoscopic. TAPP inguinal hernia repair in which we fixed the mesh to the anterior abdominal wall using two prolene threads that passed to the exterior and were tied in place but the mesh was applied under the cord. Results: The operative time ranged from 40 to 60 min and follow up was for 12–16 months, during which time there was no hernia recurrence, nor TAPP pain. The procedure showed better application of the mesh on the posterior inguinal wall with reduced port sizes and was also associated with reduced cost. Conclusion: Direct application of the mesh to the posterior inguinal wall is associated with better fixation with completely abolishing the disparity in the size between the mesh and the posterior abdominal wall.

Keywords: Laparoscopic transabdominal preperitoneal; Inguinal hernia; Repair; Mesh; Fixation; Cost

1. Introduction

3500 years ago, Egyptian physicians documented hernia management by conservative means that included the snugly fitting bandage for reduction and support.) Ebers prepared a partial translation of the papyrus in 1875, which was later completed by Bendix Ebbell, a Norwegian physician. Ebbell's study of the papyrus suggested that the ancient Egyptians had attained a high level of surgical skill and had developed procedures for hernia management (1).

The most notorious writer Albucasis (936-1013) discussed hernia at length in chapters 65 -67 of the Al Maqalat, in his ALTASRIF, he acknowledged that early hernia swelling may become reduced spontaneously mostly may become permanent through formation of adhesions . It is clear that in the original arabic manuscripts, Albucasis was speaking about herniorrhaphy and not trans fixation about 800 years before Bassini (2). It was the Italian surgeon Eduardo Bassini (1844-1924) who around 1884 invented such new concept with his muscular reinforcement technique of the posterior wall (3). Inguinal hernia intervention is the most commonly performed operation in modern surgery and so even slight improvements in clinical outcomes are essential.

The most important criteria for the choosing of operation are safety (morbidity and mortality), reoperation and patient satisfaction. In recent years, great importance has been paid for post repair pain, LOS and convalescence [4].

* Corresponding author: Mohamd Salaheldin Abdelhamid
Surgery department, Beni_Suef, faculty of medicine, Beni_Suef, Cairo, Egypt.

The myopectineal orifice is bounded by the internal oblique muscle and the transverse abdominal muscle superiorly, lateral border is the iliopsoas muscle, while the rectus muscle and sheath lie medially, while the pecten of the pubis below. This bony muscular orifice is dissected by the inguinal ligament, while the spermatic cord and femoral vessels pass nearby, and sealed like a drum on its inner surface by the transversalis (endopelvic) fascia only which keep its integrity [5]. Laparoscopic inguinal hernia repair [LIHR] was first mentioned in 1990 by Ger, who insert a simple mesh plug in the defect [6]. LIHR results were comparable to the results of open hernia repair [OHR].

Many studies have shown that LIHR gives similar results in terms of recurrence as OHR but with the added advantage of reduced post-operative pain and wound infection, and an earlier return to activity [7]. Several laparoscopic procedures have successfully passed the stage of feasibility assessment and are currently under scrutiny with regard to indications. LIHR is a typical example of such investigations [8]. It is not necessary to secure the mesh during laparoscopic TAPP inguinal hernia repair from the interior [9]. External fixation allows a reduction in size of the ports needed, and leads to a considerable reduction in cost with less post TAPP pain with mild increase in operative time. [9,10] Cost is the main point of criticism in the battle against the standardization of minimal invasive surgery, particularly in terms of disposable instruments, of which a stapling device is the most expensive [11]. For that reason, we tried to find a solution that can overcome the use of such expensive devices to reduce costs but without affecting outcomes [12].

Patients: The study was conducted at Beni _ Suef university hospitals, between April 2018 and April 2020. Included in the study were 30 patients with unilateral primary inguinal hernia.

Method: Prior to start the research we got approval from the ethical committee at our university. A written consent taken from every patient after explaining the technique to the patients. A prospective trial was conducted for modifying Abdelhamid technique for laparoscopic TAPP inguinal hernia repair in which we fixed the mesh to the anterior abdominal wall using two prolene threads that passed to the exterior and were tied in place as in Abdelhamid technique but the mesh was applied under the cord. Anesthesia General anesthesia was used.

2. Surgical technique

A pneumoperitoneum is created using a Verres needle, and an intra-abdominal pressure of 15 mm Hg is maintained. The 10 mm trocar in infra-umbilical position is inserted. The telescope is then inserted and the abdominal cavity explored. Two 5 mm trocars are inserted lateral to each rectus muscle, at the same level as the umbilical trocar.

Step 1: Creating the peritoneal flap. The repair is initiated. The laparoscope is pointed toward the afflicted inguinal canal. The peritoneal defect or hernia is identified. The other inguinal canal is inspected. If an asymptomatic hernia sac is found on the other side, the patient is excluded from the study. The lateral umbilical ligament is located as well as the inferior epigastric artery and vein. A peritoneal incision is made using an electrocautery source. The incision is extended from the lateral aspect of the inguinal region to the lateral umbilical ligament as high as possible to maximize exposure of the region.

Step 2: Exposing the inguinal structures Cooper's ligament is exposed as well as the inferior epigastric vessels and the spermatic cord. It is essential to expose the uncovered abdominal wall meticulously (without peritoneum) and remove all fatty layers.

Step 3: Dissecting the hernia sac. The indirect inguinal hernia sac should be dissected carefully from the spermatic cord. Particular care should be taken not to dissect lateral and inferior to Cooper's ligament, as the iliac artery and vein will enter the femoral canal at this site.

Step 4: Inserting and anchoring the mesh: The upper boarder of the mesh is slit open for 2 cm and at the end of this slit a hole is done to accommodate the cord. Before inserting the mesh, its mid-point is anchored bilaterally to two prolene threads that are tied with the knots towards the back, to be facing the abdominal wall when it is pulled using the port closure device. The threads are pulled twice, first obliquely just medial to the anterior iliac spine, second lateral to midline, pulled then tied in place. We used an 8 x 12 cm mesh to cover the myopectineal orifice, applied posterior to cord structures.

Step 5: Closing the peritoneum. The peritoneum is closed while reducing the pressure with vicryl 2/0. For post-operative pain relief, injection of diclofenac sodium 75 mg IM. is given post-operatively in the recovery room to all patients.

3. Results

All study patients underwent modified Abdelhamid technique. There were no visceral or vascular injuries, and no conversions to open surgery were required. The time of surgery from the first incision until the last suture ranged from 40 to 60 min. We followed patients until April 2020, thus follow up ranged from 12 months until 16 months. During this period we did not encounter any recurrences. Regarding pain, no single patient required extra analgesic until discharge from hospital (other than injection of diclofenac sodium 75 mg IM. Most patients complained of varying degrees of discomfort at the site of the pulled threads, but did not require additional analgesic, only reassurance. At regular outpatient follow up no patient complained of pain at the external fixation site. Some complained of pain at the port site but there were no need for additional analgesic. The port sizes were reduced, leading to a considerable reduction in the cost of the operation. The outlet punctures with the prolene threads showed no infection, and no reaction at all was observed until it was pulled out, cut and removed.

4. Discussion

The chances for recurrence can be lowered too much by keeping the mesh in place until. It is incorporated inside the fibrous ingrowth. Using fibrous tissue in the repair after recurrence has already occurred is illogical [13]. LIHR goes beyond this scarred tissue. Stapling the mesh can be eliminated and help decrease the cost [14,15]. Abdelhamid technique may be considered an excellent choice as it offers both efficient fixation and lower cost. The problem of mesh migration due to a non-fixation technique was not faced during this study. Lower pain levels post operatively was also gained due to the elimination of the need to a 12 mm port. The issue of nerve entrapment associated with the use of tuckers and staplers was also eliminated.

Abdelhamid technique had combined the benefit of fixation with less postoperative. Complications with lower costs and lower recurrence rate [9,10,12,14]. As much as preperitoneal repair seems an easy option, insertion of a mesh in the space of Bogros is associated with severe dissection. On the contrary, TAPP with external fixation guarantees an additional benefit of safety. As mesh stapling is not a necessity, noticeable decrease in cost is gained. The safer fixation and lower cost offered by Abdelhamid technique makes it of choice [12]. In addition to the cost decrease as no fixation device is needed, Abdelhamid technique is easily learned with much less groin pain in comparison with internal fixation and lower incidence of impulse of cough making it more acceptable to the patients [11].

The added benefits of modified Abdelhamid technique is that the middle of the mesh is fixed in place by the weight of the cord, that external fixation is very beneficial as it is applied to the periphery without any additional cost nor stapling, added to this more application to the posterior inguinal wall. Tissocol is a fine option for mesh fixation during TAPP [15]. However, mesh adjustment isn't an option once fixed with Tissocol. On the contrary in modified Abdelhamid technique, mesh adjustment is easy before its well-fixation to the anterior abdominal wall with allowance of some degree of tension. Easier application and better adaptation is offered by modified Abdelhamid technique as the mesh acts as a barrier against the abdominal wall and this manipulation eliminates the issue of size difference faced with internal fixation. Without this manipulation, the size of the mesh after deflating is usually bigger than the stretched anterior abdominal wall. Again external fixation of the mesh is of choice as it offers safe fixation and lower cost for treatment of recurrent inguinal hernias that are caused by the use of traditional (no mesh) methods. Finally the mesh will stand as a diaphragm with reasonable tension. Olmi et al. [15] stated that their experience demonstrates that fibrin glue (Tissocol) is an effective method for mesh fixation during TAPP. Kapisir et al. [16] stated that TAPP repair is a technically demanding laparoscopic technique but, once mastered, is safe and effective with a high degree of patient satisfaction. Stapling the mesh is not necessary in most cases, thus resulting in remarkably low costs. External fixation is associated with less pain and less analgesics; this is because the use of a 12-mm port is omitted, and the possibility of nerve entrapment is also abolished as no tuckers or staplers are used [9,10]. The issue of mesh fixation in LIHR remains unsolved. The need to fix the mesh arises from the fear of increasing recurrence rates. However, specific complications have emerged as a result of mesh fixation. Avoiding routine fixation of the mesh helps to decrease complications and operative costs without increasing recurrence rates. [12,14].

5. Conclusion

Direct application of the mesh to the posterior inguinal wall is associated with better fixation with completely abolishing the disparity in the size between the mesh and the posterior abdominal wall.

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