



Review Article

Patients Satisfaction Post Laparoscopic Transabdominal Preperitoneal Inguinal Hernia Repair with External Fixation Versus Post Internal Fixation

Mohamed Salah Abdelhamid¹, Ayman Hamdi Abouleid¹, Mohamed Hasan Abdelmola¹, Ahmed Mohamed Rashad¹, Mahmoud Ahmed Negida², Ahmed Zaky Gharib³

¹Surgery Department, Bani-Suef Faculty of Medicine, Bani-Suef University, Bani-Suef, Egypt

²Surgery Department, Kasr Elaini Faculty of Medicine, Cairo University, Cairo, Egypt

³Surgery Department, October 6th Faculty of Medicine, October 6th University, Giza, Egypt

Email address:

Mohamedsalah_2000@hotmail.com (M. S. Abdelhamid), Ayman_abouleid@hotmail.com (A. H. Abouleid),

dr-m_hasan@outlook.com (M. H. Abdelmola), rashad-77393@yahoo.com (A. M. Rashad), Dr-negida@yahoo.com (M. A. Negida),

dr-ahmedzaki@yahoo.com (A. Z. Gharib)

To cite this article:

Mohamed Salah Abdelhamid, Ayman Hamdi Abouleid, Mohamed Hasan Abdelmola, Ahmed Mohamed Rashad, Mahmoud Ahmed Negida, Ahmed Zaky Gharib. Patients Satisfaction Post Laparoscopic Transabdominal Preperitoneal Inguinal Hernia Repair with External Fixation Versus Post Internal Fixation. *Journal of Surgery*. Vol. 4, No. 2, 2016, pp. 20-23. doi: 10.11648/j.js.20160402.13

Received: February 25, 2016; **Accepted:** March 5, 2016; **Published:** March 23, 2016

Abstract: Laparoscopic transabdominal preperitoneal inguinal hernia repair with external fixation is a new technique in which there is a marked reduction in the cost without affecting the outcome. The issue of mesh fixation in laparoscopic repair of inguinal hernia repairs remains unsolved. The need for fixing the mesh arises from the fear of increasing recurrence rates. However, specific complications have emerged as a result of mesh fixation. The aim was to find out which is more satisfactory to the patients: external fixation or internal fixation. In 80 patients the mesh was fixed from the interior using staples while in the other 80 patients it is fixed to the exterior using prolene threads (Abdelhamid Technique). We conducted a prospective study for laparoscopic TAPP inguinal hernia repair on 160 patients between September 2008 until May 2014 and we follow the patients till May 2015. In 80 we fixed the mesh to the exterior and in another 80 from the interior. There were 90 patients with direct inguinal hernia: 45 done through external fixation (gp1) and 45 through internal fixation of the mesh (gp2). 70 patients with indirect inguinal hernia: 35 external fixation (gp3) and 35 internal fixation (gp4). We follow the patients for recurrence, impulse on cough, inguinal pain and sense of discomfort. The operative time ranged from 35 – 70 minutes for external fixation, 30 – 60 minutes for internal fixation. During this period we did not encounter any recurrence, but in group 1 there is one patient complained of impulse on cough and in group 2 there were three who had the same complaint. Regarding pain none of the external fixation patients complained of groin pain while in group 2 there were two and in group 4 there were two patients complained of groin pain. We concluded that in addition to much reduction in the cost as we did not use stapler nor tucker, external fixation is safe, easy to learn, external fixation is associated with no groin pain compared to internal fixation and much less incidence of impulse of cough making this technique more acceptable to the patients.

Keywords: Laparoscopic Transabdominal Preperitoneal Inguinal Hernia Repair, Mesh Fixation, Cost, Stapling

1. Introduction

3500 yrs ago, Egyptian physicians reported the management of hernia by conservative means that included the snugly fitting bandage for reduction and support. For 100 years the

Bassini-type repair for inguinal hernia was the standard method. The Lichtenstein “tension free” mesh repair replaced it on the grounds of much lower recurrence rates, <5% vs. ~ 15%. However, open procedures all have significant long-term discomfort rates of up to 53%. Laparoscopic repair

has become a genuine option in the last 15 years and offers low recurrence (<1%) and minimal long-term discomfort. However, it has not been widely taken up [1]. Laparoscopic inguinal hernia repair (LIHR) has comparable results to open hernia repair (OHR).

Many studies have shown that LIHR gives similar results in terms of recurrence as compared with OHR but with the added advantage of less chance of post operative pain, wound infection and early return to activity [2]. Following the laparoscopic revolution, laparoscopic hernia repair has become one of more common laparoscopic operations. Several studies have demonstrated a definite advantage over open repair with regard to reduced post-operative pain [3, 4, 5] and earlier return to work and normal activities [6, 7, 8]. It is unknown at present what the best method is among mesh implantation, central incision, reconstructing the deep inguinal ring, or a non-incised mesh implant in laparoscopic hernia surgery [9]. No influence on postoperative complaints or complications could be demonstrated by different mesh fashioning and fixation alternatives [10]. Cost has been a major point of criticism against the laparoscopic approach, particularly in term of disposable items of which a stapling device is the most expensive [11]. That is why we tried to find out a way that can eliminate the use of expensive devices to reduce the cost without affecting the outcome.

2. Patients

This work was conducted at Al Hayat Hospital Jeddah, KSA, Bani Suif University Hospital and Bani Suif Health Insurance Hospital between September 2008 until May 2014. Included in the study were 160 patients with unilateral inguinal hernia both direct and indirect. Both bilateral and recurrent hernias were excluded from the study. There were 90 patients with direct inguinal hernia 45 done through external fixation (g1) another 45(gp2) done through internal fixation of the mesh. 70 patients with indirect inguinal hernia 35 done through external fixation (gp3) and 35 done with internal fixation (gp4). We follow the patients for recurrence, impulse on cough, inguinal pain and sense of discomfort, till May 2015.

3. Methods

Anesthesia:

General Endotracheal Anesthesia is used.

The Technique:

A pneumoperitoneum is created using a Verres needle and an intra-abdominal pressure of 15mm Hg is maintained. The 10mm trocar in infra-umbilical position is inserted. The telescope is then inserted and the intraabdominal cavity explored. Two 5mm 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, it 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 the EndoShear*instrument connected to an electocautery source. The incision is extended from the lateral aspect of the inguinal region to the Lateral Umbilical Ligament as high as possible to maximize the 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 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

To 60 patients the mesh was stapled against the posterior surface of the anterior abdominal wall using automatic gun stapler, for the other 60 patients before inserting the mesh, its middle bilaterally is anchored to two prolene threads that are tied with the knots towards the back (fig. 1, 2), to be facing the abdominal wall when it is pulled using the port closure device, which is introduced obliquely twice, first just medial to the anterior iliac spine, second lateral to midline (fig. 3), pulled (fig 4) then tied in place. We used 8x12cm mesh to cover the myopectineal orifice applied onlay on cord structures.

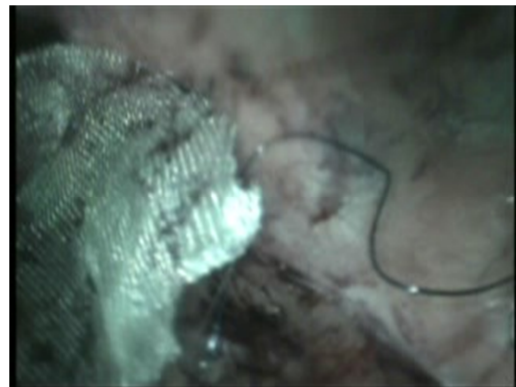


Figure 1. Lateral thread.



Figure 2. Medial thread.

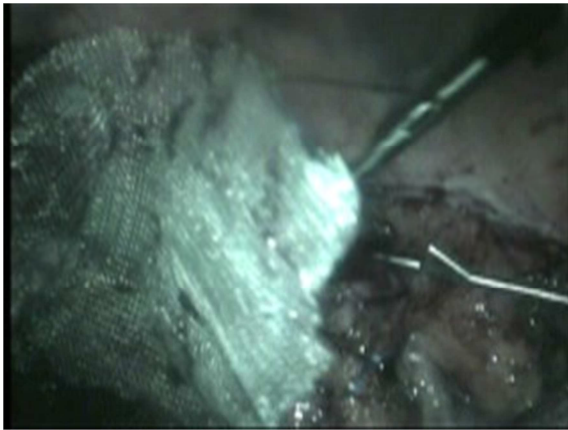


Figure 3. Port closure device opened.

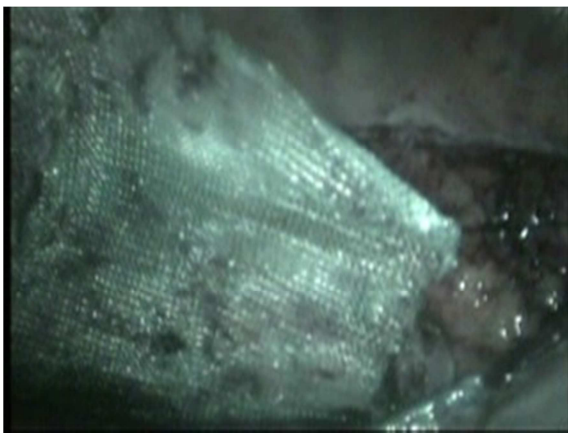


Figure 4. Pulling the lateral thread.

Step 5: Closing the Peritoneum

It is closed while reducing the pressure with vicryl 2/0

For post operative pain relief, injection diclofenac sodium 75mg i.m. will be given post-operatively in the recovery room to all patients. Pain will be recorded at 1, 6, 24 hours after operation, at the time of discharge on a Visual Analogue Scale (VAS) with end points labeled as no pain and worst possible pain on a scale of 10. (Visual analogue scale No pain Worst possible pain 0 1 2 3 4 5 6 7 8 9 10)

4. Results

All these patients underwent TAPP repairs. There were no visceral nor vascular injuries with zero conversions to open surgery. The time of surgery ranged from 35 minutes to 70 minutes from the first incision until the last suture in the external fixation group of patients, on the stapled mesh group of patients ranged from 30-60 minutes. We followed our patients until May 2015. During this period we did not encounter any recurrence, but in group 1 there is one patient complained of impulse on cough and in group 2 there were three had the same complain.

Regarding pain non of the external fixation patients complained of groin pain while in group 2 there were two and in group 4 there were two patients complained of groin pain. The port sizes are reduced in external fixation group of

patients with considerable reduction in the cost. The outlet puncture with the prolene thread showed no infection, no reaction at all until it is pulled and cut.

5. Discussion

Laparoscopic hernia repair was first described by Ger in 1990, who placed a simple mesh plug in the defect [12]. Laparoscopic inguinal hernia repair (LIHR) has comparable results to 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, wound infection and early return to activity [13]. Several laparoscopic procedures have successfully passed the stage of feasibility assessment and are currently under scrutiny with regard to indications. Laparoscopic repair of inguinal hernia is a typical example of such investigations [14]. Mechanisms of recurrence may be related to technical difficulties and the use of inadequate mesh size and positioning [15]. A model that takes into account the additional equipment cost and time cost related to laparoscopic surgery, as patients return to work earlier. Unfortunately, this analysis showed that an early return to work does not offset the additional costs associated with laparoscopic hernia repair [16]. Reliable laparoscopic fixation of meshes prior to their fibrous incorporation is intended to minimize recurrences following transabdominal preperitoneal hernia (TAPP) [17]. It is not necessary to secure the mesh during laparoscopic TAPP inguinal hernia repair from the interior and fix it only to the exterior [18]. By all criteria of success – recurrence, recovery, long term symptoms and economics – laparoscopic inguinal hernia repair in the way we are doing is the winner. The end result on both groups nearly the same except that the operative time is longer in the external fixation group of patients. One patients in group 1 complained of impulse on cough while 3 in group 2 complained the same this can be explained by better application of the mesh through external fixation and much better coaptation of the mesh against the abdominal wall as after application the mesh stand like a diaphragm against the abdominal wall and this manipulation after application omit the disparity in size that could be met with internal fixation. Four patients in the stapled mesh groups of patients got groin pain with no such pain in external fixation of the mesh. This pain mostly due to the use of staples that not used with external fixation. In external fixation group of patients we omitted the use of the disposable 12mm trocar and the use of any hernia tucker which are the most expensive parts in the cost of TAPP hernia repair. Fibrin glue (Tissocol) is an effective method for mesh fixation during TAPP [19]. External fixation has the advantage of being fixed well. TAPP repair is a technically demanding laparoscopic technique, but once mastered, is safe and effective with a high degree of patient satisfaction [20]. Stapling the mesh is not necessary in most cases, thus resulting in a remarkably low cost. Again external fixation of the mesh is superior as it is associated with fixation and at the same time low cost. The issue of mesh fixation in laparoscopic repair of inguinal hernia repairs

remains unsolved. The need for fixing the mesh arises from the fear of increasing recurrence rates. However, specific complications have emerged as a result of mesh fixation and in our study we got four patients with post TAPP groin pain. Avoiding stapling of the mesh helps in decreasing complications and operative costs without affecting recurrence rates. [21]

6. Conclusion

We concluded that in addition to much reduction in the cost as we did not use stapler nor tucker, external fixation is safe easy to learn, external fixation is associated with no groin pain compared to internal fixation and much less incidence of impulse of cough making this technique more acceptable to the patients.

References

- [1] Wall ML, Cherian TH, Lotz JC (2008) Laparoscopic Hernia Repair-The Best Option?. *Acta Chir Belg* 108: 186-191
- [2] Fingerhut A, Millat B, Veyrie N, Chouillard E, Dziri C (2006) Inguinal Hernia Repair – Update 2006. In: Neugebauer E AM, Sauerland S, Fingerhut A, Millat B, Buess G. *EAES Guidelines For Endoscopic Surgery*. Springer, Berlin Heidelberg, pp 297-309
- [3] Wellwood J, Sculpher MJ, Stoker D (1998) Randomised controlled trial of laparoscopic versus open hernia repair for inguinal hernia: outcome and cost. *Br Med J* 317: 103-10
- [4] Wright Dm, Kennedy A, Baxter JN (1996) Early outcome after open versus extraperitoneal endoscopic tension-free hernioplasty. *Surgery* 119: 552-7
- [5] Millikan KW, Kosik ML, Doolas A (1994) A prospective comparison of transabdominal peritoneal laparoscopic hernia repair versus traditional open hernia repair in a university setting. *Surg Laparosc Endosc* 4: 247-53
- [6] Kiruparan P, Pettit SH (1998) Prospective audit of 200 patients undergoing laparoscopic inguinal hernia repair with followup from 1 to 4 years. *JR Coll Surg Edin* 43: 13-6
- [7] Brooks DC (1994) A prospective comparison of laparoscopic and tension-free open herniorraphy. *Arch Surg* 129: 361-6
- [8] Seid AS, Amos E (1994) Entrapment neuropathy in laparoscopic herniorraphy. *Surg Endosc* 8: 1050-3
- [9] Schmedt CG, Sauerland S, Bittner R (2005) Comparison of endoscopic procedures vs Lichtenstein and other open mesh techniques for inguinal hernia repair. *Surg Endosc* 19: 188-99
- [10] McCormack K, Wake B, Perez J, Fraser C, Cook J, McIntosh E (2005) Laparoscopic surgery for inguinal hernia repair: systemic review of effectiveness and economic evaluation. *Health Technol Assess* 9: 1-203
- [11] Ridings P, Evans DS (2000) The transabdominal pre-peritoneal (TAPP) inguinal hernia repair: a trip along the learning curve. *J R Coll Surg Edinb* 45(1): 29-32
- [12] Neugebauer EAM, Troidi H, Kum CK (2006) The EAES Clinical Practice Guidelines on Laparoscopic Cholecystectomy, Appendectomy and Hernia Repair. In: Neugebauer EAM, Sauerland S, Fingerhut A, Millat B, Buess G (eds) *EAES Guidelines For Endoscopic Surgery*. Springer, Berlin Heidelberg, pp 265-289
- [13] Koniger J, Redecke J, Butters M (2004) Chronic pain after hernia repair: a randomized trial comparing Shouldice, Lichtenstein and TAPP. *Langens Arch Surg* 389: 361-365
- [14] Tatulli F, Chetta G, Caputi A, Mastrototaro P, Ruggieri T (2009) Laparoscopic inguinal hernia repair: audit of our experience with laparoscopic trans-abdominal pro-peritoneal repair (TAPP). *Chir Ital* 61(1): 47-53
- [15] A Watson, P Ziprin, S Chadwick (2006) TAPP Repair for Inguinal Hernias – A New Composite Mesh Technique. *Ann R Coll Surg Engl*, 88(7): 678
- [16] Voyles CR, Hamilton BJ, Johnson WD, Kano N (2002) Meta-analysis of laparoscopic inguinal hernia trials favors open hernia repair with preperitoneal prosthesis. *Am J Surg* 184: 6-10
- [17] Schwab R, Schumacher O, Junge K, Binnebosel M, Klinge U, Becker HF (2008) Biomechanical analyses of mesh fixation in TAPP and TEP hernia repair. *Surgical endoscopy* 22(3): 731-8
- [18] Abdelhamid MS,(2011) Transabdominal pre peritoneal inguinal hernia repair with external fixation. *Hernia* 15(2): 185-188
- [19] Olmi S, Erba L, Bertolini A, Scaini A, (2006) Fibrin glue for mesh fixation in laparoscopic transabdominal preperitoneal (TAPP) hernia repair indications, technique and outcomes. *Surgical Endoscopy volume* 20 (12): 1846-1850
- [20] Kapis S, Mavromatis T, Andrikopoulos S, Georgiades C, Floros D, Diamantopoulos G, (2009) Laparoscopic Transabdominal Preperitoneal Hernia Repair (TAPP): Stapling the Mesh Is Not Mandatory *Journal of Laparoscopic & Advanced Surgical Techniques volume* 19 (3): 419-422
- [21] Abdelhamid MS*, Sadat AM, Abdelhaseeb AR, Nabil TM, Abdelbasset MS, Bechet AM, Nafady HA, Shawky KA (2013) Transabdominal Pre-Peritoneal Mesh for Inguinal Hernia Repair with External Fixation versus Mesh Stapling *Journal of Surgical Science*, volume 4, 516-519 Published Online November 2013 (<http://www.scirp.org/journal/ss>) <http://dx.doi.org/10.4236/ss.2013.411100> Open Access SS