

A Study of Outcomes of Conventional Open Hernia Repair with Self-Fixation Mesh versus Total Extra Peritoneal (Tep) Suture-Free Mesh Repair

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Abstract

Study objective: To compare the outcomes of self-fixation mesh for open hernia repair with TEP suture free mesh repair in terms of patients with post-operative pain one month after surgery and recurrence rate of hernia.

Methods & Material: The study was conducted at Sharif Medical & Dental College, Lahore, Pakistan. 100 cases of inguinal hernia were operated. In 50 patients (Group A) open hernia repair was done. In another 50 cases (Group B) TEP mesh repair was done. Data was analyzed using IBM SPSS 24. Post-operative surgical outcomes in terms of patients with pain one month after surgery and hernia recurrence were studied in two groups. Descriptive statistics (frequencies and percentages) were calculated. Chi-square test of statistical significance for quantitative variables was applied.

Results: In group B only 1/50 patient suffered from post-operative pain one month after surgery as compared to 21 in Group A. Similarly incidence of hernia recurrence was 1/50 in Group B as compared to 8/50 in Group A.

Both for post-operative pain and hernia recurrence there was a statistically significant difference between the two groups. In Group A number of patients with post-operative pain one month after surgery and those with hernia recurrence was significantly high than in Group B ($p < 0.001$, $p < 0.05$).

Conclusion: In terms of post-operative pain one month after surgery and incidence of hernia recurrence TEP suture free repair is a superior method of hernia repair as compared to conventional open repair.

Keywords: TEP repair, Open hernia repair, Post-Operative Pain, Post-Operative Hernia Recurrence

Introduction

“Hernia is a protrusion of a viscous or a part of a viscous through an opening in one wall of its contained cavity” [1]. Inguinal hernia is the most common form of hernias involving the abdominal wall [2]. The two commonly employed techniques for inguinal hernia repair (IHR) are open and laparoscopic. Open hernia repair using the Lichtenstein repair is the most commonly used technique over a long period of time. Laparoscopic IHR was started in early 1990s, however use of self-fixation mesh in laparoscopic hernia repair is relatively recent in practice [3]. Comparison of open and Laparoscopic IHR shows that open repair has the advantage of being done in the local anesthesia whereas laparoscopic surgery has the advantage of less pain after surgery. Although open mesh based tension free repair remains the gold standard, laparoscopic repair in the hands of a trained surgeon produces excellent results [4]. In comparison between open repair and laparoscopic repair, EK Lund et al, found that 5 years after operation, 1.9% of patients with laparoscopic repair continues to report moderate pain compared with 3.5% of those with open

repair [5]. A number of studies have shown laparoscopic repair of inguinal hernias to have advantages over conventional open repair. These include reduced post-operation pain, earlier return to work, less recurrence rates [4,6]. Nevertheless, patient preference and the surgeon’s expertise are the key factors that determine the choice of a particular repair.

Objective

The objective of this study was to compare the outcomes of using self-fixation mesh for open hernia repair versus TEP suture free mesh repair in terms of patients with post-operative pain one month after surgery and recurrence rate of hernia.

Materials and Methods

This study was conducted in Sharif Medical & Dental College from November 2015 to January 2017. A pre-determined sample of hundred cases were included in the study. The patients were admitted for hernia repair through surgical outdoor. Those who fulfill the inclusion criteria were operated upon via one of the two techniques. On the basis of the method used for repair, two equal groups of patients were constituted. Group A comprised of patients in whom open hernia repair was done. In group B, TEP suture-free

repair was the method of choice. Inclusion criteria for both groups of patients were those who were 15 to 60 years of age, belonging to both genders, with no comorbid conditions or obesity. Elective surgery was performed after taking the informed consent from all patients. The two groups underwent inguinal hernia repair by the same team of surgeons [7]. We used fibrin self-adhesive hernia mesh for open inguinal hernia repair. It was placed between inguinal ligament and conjoint tendon and no fixation was done as the mesh is self-adhesive.

The TEP was performed extra peritoneal and polypropylene 3D mesh was used with no fixing or suturing. The outcomes were recorded in a predesigned form. Data was analyzed, tabulated and statistical analysis was done using SPSS version 24 IBM. Descriptive statistics such as frequencies and percentages were calculated. Chi-square test of significance for quantitative variables was applied to detect whether or not there was any statistically significant difference between the two groups with regards to the post-surgical complications namely pain and hernia recurrence.

Results

Out of the 100 patients, 10 were females while 90 were males. Male to female ratio was 1:9. 80 males had indirect hernia while 10 had direct hernia. In females, direct hernia were 2 and indirect were 8.50 patients underwent self-fixation open mesh repair while in 50 patients suture less fixation TEP repair was done. 07 females consented for open repair and 03 for TEP. Among males 43 consented for open and 47 consented for TEP hernia repair. The highest number of patients presented between 30-40 years (n=70), followed by 15-30 years (n=20) and 45-60 years (n=10). Patients with post-operative pain one month after surgery were significantly more in group A (21/50) (42%) than in group B (01/50) (02%). Eight out of fifty (08/50) (16%) patients in group A had recurrence of symptoms within two months whereas 01/50 (02%) patients in group B reported the same.

Table 1: Gender Distribution

Males	Females	Total
90	10	100

Table 2: Type of Hernia

Type	Males	Females	Total
Indirect	80	02	82
Direct	10	08	18
Total	90	10	100

Table 3: Frequency of Post-Surgical complications in two surgical methods of Hernia repair

Post-surgical complications	Group A	Group B	Total
Post-operative Pain	21	01	22
Hernia recurrence	08	01	09
Total	29	02	31

Table 4: Cross tabulation between the surgical methods used and incidence of post- operative pain

Groups	PAIN YES	PAIN NO	Row total
A Open Hernia Repair	21(a)	29 (b)	50 (e)
B TEP Hernia Repair	01(c)	49(d)	50(f)
Column total	22(g)	78(h)	100(N)

$x^2 = 23.3$

$df = 1$

$p < 0.001$

There is a highly statistically significant difference in group A and group B regarding the incidence of post-operative pain and therefore the need for medication.

In group A, the incidence of patients with post-operative pain one month after surgery is significantly high than in group B ($p < 0.001$).

Table 5: Cross tabulation between the surgical methods used and the incidence of post-operative recurrent hernia

Groups	Groups Recurrence YES	Recurrence NO	Row total
A Open Hernia Repair	01 (a)	49 (b)	50 (e)
B TEP Hernia Repair	08 (c)	42 (d)	50 (f)
Column total	09 (g)	91 (h)	100 (N)

$x^2 = 5.9$

$df = 1$

$p < 0.05$

There is a statistically significant difference between group A and group B as regard to post-surgical hernia recurrence. The incidence of post-surgical recurrent hernia in group A is significantly high than in group B ($p < 0.05$).

Discussion

TEP approach is a safe and effective method of inguinal hernia repair. Laparoscopic IHR was associated with early discharge from hospital, quicker return to work and significantly fewer post-operative complications than open IHR [6,7]. Our study showed that our patients with TEP had no post-operative pain (measured on a pain scale) one month after surgery and only one recurrence was there whereas in open IHR, the number of patients with pain one month post-operatively and hernia recurrence was significantly high.

Self-adhesive mesh for prosthetic reinforcement following IHR is atraumatic and associated with infrequent post-operative complications or pain. Also, self-gripping mesh for IHR is a good and safe option, easy to handle and associated with a low incidence of post-operative pain (<3%) [8]. In one similar study, fibrin sealant for mesh fixation in Lichtenstein repair of medium sized inguinal hernias is well tolerated and reduces the rate of pain /numbness and groin discomfort by 45% [9,10]. Clinical evidence published

to date supports the use of Tissucol as an option for mesh fixation in open and lap/ endoscopic IHR [8-10]. It is also viewed that glue mesh fixation is comparable to suture mesh fixation in terms of post-operative pain, chronic groin pain and length of hospital stay [8-10]. Contrary to our study results, in various other studies, it was revealed that glue fixation was not associated with an increased risk of hernia recurrence [8-10]. Also that elective Lichtenstein repair for inguinal hernia using glue mesh fixation compared to sutures is faster, less painful with comparable hernia recurrence rates. Though this may be true when we talk of open Lichtenstein repair compared between self fixation and suturing but not as of TEP which is far superior in terms of less post op pain and recurrence rates [11,12]. Even between TAPP/ TEP, it has been revealed in 8 month randomized studies that TAPP is associated with high rates of port site hernias and vascular injuries [13]. In a similar comparison of TEP/open Lichtenstein repair, it has been documented that TEP has an advantage over Lichtenstein as respect to chronic post-operative pain.8 Laparoscopic hernia repair TEP seems to be the favored approach for most types of inguinal hernia. It has also been seen that laparoscopic surgery was associated with less long term numbness and probably less pain in groin [8]. In our study, it was clearly defined that TEP suture free repair was far superior to open self-fixation Lichtenstein repair in terms of post-operative pain and negligible recurrence rate.

Conclusion

It is submitted that though open self-fixation mesh repair is easy to perform than TEP mesh repair but it has a higher incidence of recurrent hernia and patients with post-operative pain after one month of surgery.

Recommendation

It is therefore recommended that if the surgeon is trained in the technique he/she should go for laparoscopic IHR using TEP.

References

1. Sodha N (2016) A Prospective Comparative Study of Local Anesthesia Versus Spinal Anesthesia For Hernioplasty: A Hospital Based Study. *Journal of Advanced Medical and Dental Sciences Research* 4: 88.
2. Ruhl CE, Everhart JE (2007) Risk factors for inguinal hernia among adults in the US population. *American journal of epidemiology* 165: 1154-1161.
3. Carter J, Duh QY (2011) Laparoscopic repair of inguinal hernias. *World journal of surgery* 35: 1519-1525.
4. Memon MA, Cooper NJ, Memon B, Memon MI, Abrams KR (2003) Meta-analysis of randomized clinical trials comparing open and laparoscopic inguinal hernia repair. *British Journal of Surgery* 90: 1479-1492.
5. Eklund A, Montgomery A, Bergkvist L, Rudberg C (2010) Chronic pain 5 years after randomized comparison of laparoscopic and Lichtenstein inguinal hernia repair. *British Journal of Surgery* 97: 600-608.
6. McCormack K, Wake BL, Fraser C, Vale L, Perez J, et al. (2005) Transabdominal pre-peritoneal (TAPP) versus totally extraperitoneal (TEP) laparoscopic techniques for inguinal hernia repair: a systematic review. *Hernia* 9: 109-114.
7. Karthikesalingam A, Markar SR, Holt PJ, Praseedom RK (2010) Meta-analysis of randomized controlled trials comparing laparoscopic with open mesh repair of recurrent inguinal hernia. *British Journal of Surgery* 97: 4-11.
8. Grant AM, Scott NW, O'dwyer PJ (2004) Five-year follow-up of a randomized trial to assess pain and numbness after laparoscopic or open repair of groin hernia. *British journal of surgery* 91: 1570-1574.
9. Fortelny RH, Petter-Puchner AH, Glaser KS, Redl H (2012) Use of fibrin sealant (Tisseel/Tissucol) in hernia repair: a systematic review. *Surgical endoscopy* 26: 1803-1812.
10. Tarchi P, Cosola D, Germani P, Troian M, De Manzini N (2014) Self-adhesive mesh for Lichtenstein inguinal hernia repair. Experience of a single center. *Minerva chirurgica* 69: 167-176.
11. Campanelli G, Pascual MH, Hoferlin A, Rosenberg J, Champault G, et al. (2012) Randomized, controlled, blinded trial of Tisseel/Tissucol for mesh fixation in patients undergoing Lichtenstein technique for primary inguinal hernia repair: results of the TIMELI trial. *Annals of surgery* 255: 650-657.
12. Champault G, Torcivia A, Paolino L, Chaddad W, Lacaine F, et al. (2011) A self-adhering mesh for inguinal hernia repair: preliminary results of a prospective, multicenter study. *Hernia* 15: 635-641.
13. Wake BL, McCormack K, Fraser C, Vale L, Perez J, et al. (2005) Transabdominal pre-peritoneal (TAPP) vs. totally extra peritoneal (TEP) laparoscopic techniques for inguinal hernia repair. *The Cochrane Library* CD004703.

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