

A Comparative Study of Non-Fixation Versus Fixation of Mesh in Totally Extraperitoneal Repair of Inguinal Hernia

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Abstract

Background: To compare non-fixation versus fixation of mesh in totally extraperitoneal repair of inguinal hernia. **Subjects and Methods:** Eighty- four patients of inguinal hernia of either gender was enrolled in present study. We divided patients into 2 groups of 42 each. Group I was non-fixation and group II was fixation group. Parameters such as the operative times, immediate post-op pain, incidence of urinary retention, duration of hospital stay, days taken to return to activity, recurrence rates and chronic groin pain was recorded. Pain was determined using visual analog scale. **Results:** There were 22 males and 20 females in group I and 18 males and 24 females in group II. Duration of symptoms (months) was primary symptoms seen in 36 and 34 and recurrent hernia in 6 and 8 in group I and II respectively. Side was unilateral seen in 32 and 28 in group I and II and bilateral in 10 and 14 in group I and II. ASA grade I was seen among 30 in group I and 32 in group II and II in 12 in group I and 10 in group II. respectively. A significant difference was seen ($P < 0.05$). The mean pain score at 24 hours was 3.52 and 3.02, chronic groin pain was seen in 3 and 4, mesh infection in 2 and 1, post site hernia in 1 and 1 and recurrence in 2 and 0 in group I and II respectively. A significant difference was seen ($P < 0.05$). **Conclusion:** Non- fixation inguinal repair offered advantage of decreased operative time and less post-operative pain.

Keywords: Inguinal Repair, Transabdominal Preperitoneal Repair, Totally Extraperitoneal Repair.

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Introduction

Inguinal hernia is the most common type of hernia. The incidence is approximately 25% in males and 2% in females. There are numerous procedures for inguinal hernia repair and even further variations in techniques.^[1] Two laparoscopic techniques have become the most common procedures for the repair of these hernias: transabdominal preperitoneal repair (TAPP) and totally extraperitoneal (TEP) repair.^[2] Of these two, TEP has emerged as the favored technique. Laparoscopic TEP hernia repair has gained ground, in recent years, and is preferred over TAPP, as it is less invasive and is associated with fewer complications such as port-site hernias and visceral injuries.^[3]

Surgeons have previously fixed the mesh using laparoscopic stapling devices, tacks, and suturing techniques, and recently adhesives. Fixation of mesh is done to prevent migration of mesh resulting in recurrence.^[4] However, fixing the mesh increases the cost, duration of procedure, hospital stay, and complications like postoperative pain. Some authors recommend systematic fixation of the mesh as a measure to prevent early recurrences, but others have not shown any

advantage of fixing the mesh with the endoscopic approach.^[5] The pioneers of TEP/TAPP typically implanted a flat standard pure polypropylene mesh (StdPPM) and considered mesh fixation mandatory. Disposable staplers and tackers were soon devised to evade cumbersome suturing. The preperitoneal mesh position in itself renders fixation redundant.^[6] We performed present study to compare non-fixation versus fixation of mesh in totally extraperitoneal repair of inguinal hernia.

Subjects and Methods

A sum total of eighty- four patients of inguinal hernia of either gender was enrolled in present study. Ethical clearance was also obtained from institutional ethical review committee. Written consent was taken from all patients.

We divided patients into 2 groups of 42 each. Group I was non-fixation and group II was fixation group. Parameters such as the operative times, immediate post-op pain, incidence of urinary retention, duration of hospital stay, days taken to return to activity, recurrence rates and chronic groin pain was recorded. Pain was determined using visual analog scale. Results of the study was compiled and assessed

statistically with SPSS version. 21.0. The level of significance was set below 0.05.

Results

Table 1: Distribution of patients

Groups	Group I	Group II
Technique	non-fixation	fixation
M:F	22:20	18:24

There were 22 males and 20 females in group I and 18 males and 24 females in group II [Table 1].

Table 2: Assessment of parameters

Parameters	Variables	Group I	Group II	P value
Duration of symptoms (months)	Primary hernia	36	34	<0.05
	Recurrent hernia	6	8	
Side	Unilateral	32	28	<0.05
	Bilateral	10	14	
ASA grade	I	30	32	<0.05
	II	12	10	

Duration of symptoms (months) was primary symptoms seen in 36 and 34 and recurrent hernia in 6 and 8 in group I and II respectively. Side was unilateral seen in 32 and 28 in group I and II and bilateral in 10 and 14 in group I and II. ASA grade I was seen among 30 in group I and 32 in group II and II in 12 in group I and 10 in group II respectively. A significant difference was seen (P< 0.05) [Table 2, Figure 1].

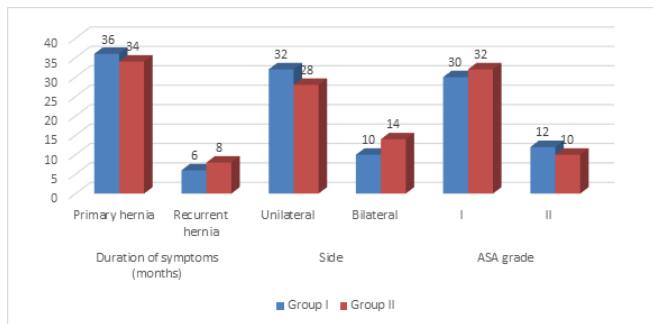


Figure 1: Assessment of parameters

Table 3: Pain score and short- term outcome

Parameters	Group I	Group II	P value
Pain score at 24 hours	3.52	3.02	<0.05
Chronic groin pain	3	4	>0.05
Mesh infection	2	1	>0.05
Post site hernia	1	1	>0.05
Recurrence	2	0	>0.05

The mean pain score at 24 hours was 3.52 and 3.02, chronic groin pain was seen in 3 and 4, mesh infection in 2 and 1, post site hernia in 1 and 1 and recurrence in 2 and 0 in group I and II respectively. A significant difference was seen (P< 0.05) [Table 3].

Discussion

Laparoscopic inguinal hernia surgery (LIHS) is the recommended procedure for bilateral and recurrent inguinal hernias (IH) while it is one of the options dealing with a

unilateral IH.^[2] Laparoscopic approach to inguinal hernia surgery started in the 1980s.^[8] Since then, many techniques of laparoscopic inguinal hernia repair had been developed.^[9] Today, only two techniques are commonly employed—totally extraperitoneal repair (TEP) and the transabdominal preperitoneal repair (TAPP). Of these two, TEP has emerged as the favored technique.^[10,11] We performed present study to compare non-fixation versus fixation of mesh in totally extraperitoneal repair of inguinal hernia.

Our results showed that there were 22 males and 20 females in group I and 18 males and 24 females in group II. Gangopadhyay A et al,^[12] compared advantage of non-fixation versus fixation of mesh in laparoscopic Totally Extra peritoneal (TEP) repair of inguinal hernias. A total of 60 patients were included in the study, of which 30 patients underwent TEP repair without fixation of mesh and for remaining 30 patients the mesh was fixed using metallic tacks. Difference in average pain score at 24 hrs, 72 hrs, 1 month and 6 months was significant statistically (p =0.003, p = 0.003, p< 0.001 and p=0.001 respectively) when compared in both groups. There was no recurrence in the study period in either of the groups. The duration of operative time and days of hospital stay was higher in fixation group and was statistically significant.

We observed that duration of symptoms (months) was primary symptoms seen in 36 and 34 and recurrent hernia in 6 and 8 in group I and II respectively. Side was unilateral seen in 32 and 28 in group I and II and bilateral in 10 and 14 in group I and II. ASA grade I was seen among 30 in group I and 32 in group II and II in 12 in group I and 10 in group II respectively. Egea et al,^[13] in their study operating time, morbidity rate, chronic pain, recurrences, and hospital cost were analyzed. Follow-up was considered complete when it included a physical examination at 24 months (mean, 36±12 months). The statistical study showed no significant differences with regard to epidemiological factors, hernia type, operating time, morbidity, or recurrences when the mesh was stapled, although the total cost of the process was higher. Stapling the mesh in total extraperitoneal inguinal hernioplasty offers no advantages and increases the cost of the process. Our results suggest the possibility of limiting the use of mesh fixation in total extraperitoneal inguinal hernioplasty to cases of direct bilateral hernias.

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oedema and postoperative surgical emphysema was present in two (10%) patients in each group. No cases of postoperative wound infection or mesh infection were seen in both groups. There was a recurrence in one patient in group B (after 1 week postoperative). The mean hospital stay is statistically insignificant in between both groups. The mean total cost is much higher in group A than group B. On comparing mesh fixation or non-fixation in laparoscopic TEP repair for inguinal hernia, they recommend the technique without mesh fixation as there were no differences in the complications, hospital stay, or recurrence, but longer operative time and higher cost were seen in mesh fixation technique.

Conclusion

Non-fixation inguinal repair offered advantage of decreased operative time and less post-operative pain.

References

1. Bringman S, Ramel S, Heikkinen TJ, Englund T, Westman B, Anderberg B. Tension free inguinal hernia repair: TEP versus mesh-plug versus Lichtenstein, A prospective randomised controlled trial. *Ann Surg.* 2003;237(1):142–147. Available from: <https://doi.org/10.1097/00000658-200301000-00020>.
2. Davis CJ, Arregui ME. Laparoscopic repair for groin hernias. *Surg Clin North Am.* 2003;83(5):1141–1161. Available from: [https://doi.org/10.1016/s0039-6109\(03\)00122-1](https://doi.org/10.1016/s0039-6109(03)00122-1).
3. Arregui MR, Davis CD, Yucel O, Nagan RF. Laparoscopic mesh repair of inguinal hernia using a preperitoneal approach: a preliminary report. *Surg Laparosc Endosc.* 1992;2(1):53–58.
4. Kockerling F, Schug-Pass C, Jacob DA, Keller T. The intra and postoperative complication rate of TEP in patients undergoing unilateral endoscopic inguinal hernia repair is not higher compared with TAPP. *World J Surg.* 2013;37(4):933–934. Available from: <https://doi.org/10.1007/s00268-012-1858-8>.
5. Stark E, Oestreich K, Wendl K, Rumstadt B, Hagmuller E. Nerve irritation after laparoscopic hernia repair. *Surg Endosc.* 1999;13(9):878–881. Available from: <https://doi.org/10.1007/s004649901124>.
6. Dunn DC. Laparoscopic hernia repair without the use of staples or knotting manoeuvres. *Br J Surg.* 1995;82(12):1692. Available from: <https://doi.org/10.1002/bjs.1800821234>.
7. Spitz JD, Arregui ME. Sutureless laparoscopic extraperitoneal inguinal herniorrhaphy using reusable instruments: two hundred three repairs without recurrence. *Surg Laparosc Endosc Percutan Tech.* 2000;10(1):24–29.
8. Arvidsson D, Smedberg S. Laparoscopic compared with open hernia surgery: complications, recurrences and current trends. *Eur J Surg.* 2000;(585):40–47. Available from: <https://doi.org/10.1080/110241500750056544>.
9. Liem MS, Van Duyn EB, Van Der Graaf Y, Van Vroonhoven T. Recurrences after conventional anterior and laparoscopic inguinal hernia repair: a randomized comparison. *Ann Surg.* 2003;237(1):136–141. Available from: <https://dx.doi.org/10.1097/00000658-200301000-00019>.
10. Liem MS, Van Der Graaf Y, Van Steensel CJ, Boelhouwer RU, Clevers GJ, Meijer WS, et al. Comparison of conventional anterior surgery and laparoscopic surgery for inguinal hernia repair. *N Engl J Med.* 1997;336(22):1541–1547. Available from: <https://doi.org/10.1056/nejm199705293362201>.
11. Schumpelick V, Klinge U, Colak T, Akca T, Kanik A, Aydin S. Randomized clinical trial comparing laparoscopic totally extraperitoneal approach with open mesh repair in inguinal hernia. *Surg Laparosc Endosc Percutan Tech.* 2003;90:191–195.
12. Gangopadhyay A, Ghosh BC. To compare advantage of nonfixation versus fixation of mesh in Laparoscopic totally Extra Peritoneal (TEP) repair of inguinal hernias. *Asian J Med Sci.* 2018;9(4):35–40. Available from: <https://doi.org/10.3126/ajms.v9i4.19621>.
13. Moreno-Egea A, Martínez JA, Cuenca GM, Albasini JL. Randomized clinical trial of fixation vs nonfixation of mesh in total extraperitoneal inguinal hernioplasty. *Arch Surg.* 2004;139(12):1376–1379. Available from: <https://doi.org/10.1001/archsurg.139.12.1376>.
14. Mohamed HD, Sheikh E, Barakat M, Abdelhamid H, F A. A comparative study of mesh fixation versus non-fixation in laparoscopic totally extraperitoneal inguinal hernia repair. *Egypt J Surg.* 2019;38(2):348–55.

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