**COMPARISON OF RESULTS BETWEEN FIXATION AND NON FIXATION OF MESH IN TEP -Our Experience**

**Dr. Ambar Gangopadhyay ,Dr. Bikash Chandra Ghosh.**

Abstract

Purpose: To compare advantage of non-fixation versus fixation of mesh in

laparoscopic TEP repair of inguinal hernias.

Method: In this randomised control study 60 patients of inguinal hernia were taken, out

of which in 30 patients TEP with mesh fixation using metallic tacks were done and in

other 30 patients mesh was not fixed at all. Patients were monitored during intraoperative

and early postoperative periods to look for any complications. In the

postoperative periods patients were followed for six months look for recurrences. Both

groups were analyzed using suitable statistical software.

Results: Difference in average pain score at first 12 hrs was not statistically significant

(p = .060) but at 24 hrs, 72 hrs, 1 month and 6 months was significant statistically (p =

.003, p = .003, p = .000, p = .001 respectively). There was no recurrence in either of

the groups (fixation vs. non fixation).Complications were more in fixation group, but this

was not statistically significant. Hospital stay was more for fixation group which was

statistically significant (p=0.000). The mean operative time was less in non-fixation

group compared to fixation group (56.83+20.489 minutes vs. 95.83+18.804 minutes

with p=.000).

Conclusion: Mesh fixation appears to be unnecessary in TEP repair of inguinal hernias.

It is associated with higher operative time, higher postoperative complication and an

increased likelihood of developing chronic groin pain. The omission of mesh fixation

did not increase the risk of early hernia recurrence.

Keyword: Inguinal hernia, hernioplasty, laparoscopic inguinal hernia repair, totally extra peritoneal repair,mesh fixation

**Introduction:**

The advent of laparoscopic surgery has revolutionized the treatment of hernia surgery. Laparoscopic hernia repair can be done by two methods – TAPP and TEP.Each of these methods have their advantages and disadvantages. In TEP mesh is placed in the extra peritoneal space which is fixed by various fixation devices, so that it does not get displaced leading to recurrence. Various types of metallic and non metallic tacks are used. These devices have their own disadvantages like postoperative chronic pain due to nerve injury or entrapment, or pubalgia caused by stapling of prosthesis to Cooper’s ligament, bleeding or hematomas in Retzius space. This has led many surgeons to use alternative methods of fixation or avoiding fixation at all. The question is-“does placement of mesh in preperitoneal space require fixation at all”. Further non-fixation has its own advantages besides being cost effective.

**Aims and Objective:**

This study analyses outcome between fixation and non fixation of mesh in totally extra peritoneal repair of inguinal hernia. The parameters for comparison include –operative time, postoperative complication (haematoma, infection), hospital stay, recurrence and pain.

**Materials and Methods:**

The study was carried out in the Department of Surgery, R.G.Kar Medical College and Hospital.All patients admitted in General surgical unit presenting with uncomplicated inguinal hernias were included.

Total 60 patients were included in the study, 30 patients underwent TEP repair without mesh fixation and in remaining 30 patients the mesh was fixated using metallic tacks.

Medically unfit persons having previous midline or paramedian incisions and obstructed hernias were excluded from the study.

Parameters used for comparison were

* Duration of operation
* Intra and Post operative complication
* Duration of hospital stay
* Long term groin pain
* Recurrence

**STATISTCAL ANALYSIS**

* The end point data was analysed according to intention to treat principle.
* SPSS Version “ 17 software was used and Epi info version
* And χ2 test (Chi-square test) was used to compare categorical data :-

- Intra operative and Post operative complication

* Independent Sample t- Test was used to compare ordinal data:-

- Ages

- Operative time

- Pain

- Hospital stay

**RESULT AND ANALYSIS**

**Operative time**: Mean operative time in fixation group was 95.83 minutes and non fixation group 56.83 minutes. t= 7.681 and p= .000, shows that difference in operative time between the two groups was statistically significant.

**Average pain scores in different stages (VAS SCORE):**

**Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Fixation | Non fixation |  |  |  |
| Different stage | Mean + SD | Mean + SD | t | df | P |
| 12hrs | 38.67+18.889 | 30.00 + 15.97 | 1.919 | 58 | .060 |
| 24hrs | 24.33 +16.121 | 12.33 + 13.817 | 3.096 | 58 | .003 |
| 72hrs | 13.00 + 15.347 | 3.67+ 6.687 | 3.054 | 58 | .003 |
| 1 month | 7.33 + 10.807 | 000 | 3.717 | 58 | .000 |
| 6 month | 4.33 + 6.789 | 000 | 3.496 | 58 | .001 |

There was more pain in fixation group at 24 hrs, 72 hrs, 1 month and 6 months in comparison to non fixation group. Difference in average pain score at first 12 hrs was not statistically significant (p = .060) but at 24 hrs, 72 hrs, 1 month and 6 months it was statistically significant (p = .003, p = .003, p = .000, p = .001 respectively).

**Duration of hospital stay**: Average duration of hospital stay in fixation group was 3.63 days and non fixation group was 2.93 days. With t = 3.986 and p = .000. The difference in average duration of hospital stay was statistically significant.

**Intraoperative complications:** There was 23.33% complications noted within fixation group whereas there was 13.33% complications in non-fixation group. Thus there was more complication in fixation group, with X2= 0.45 and p= 0.504.The difference in proportion of patients between two groups regarding intra-operative complication was not statistically significant (p = 0.504, OR = 1.98<OR<9.41).

**Post-operative Complications:** There was 20% complications post operatively in fixation group and 10% in non fixation group, with X2 = 0.45 and p = 0.504. Difference in proportion of patient regarding post operative complication in both group was not statistically significant (p = 0.504, OR = 2.25<OR<12.97).

**Recurrence:** There was no recurrence in both groups during the study period considering the fact that the time period of the study was quite short.

**DISCUSSION**

Many surgeons who perform TEP appear to hold the unproven belief that mesh fixation is necessary for the prevention of hernia recurrence. At the same time it is widely acknowledged that this need for surgical fixation is only temporary, as tissue incorporation into the mesh, characterized by significant cellular ingrowth by two weeks and collagen deposition within two months, achieves effective permanent fixation. It was not the intention of the present study to investigate the long-term recurrence rate of TEP. Rather, it was to test the hypothesis that, without fixation, the mesh might move or fold before tissue ingrowth has had an opportunity to occur, and lead to recurrence by the uncovering of hernial defects.

In the present study there was no recurrence in either of the groups (fixation vs. non fixation). The results are similar to other studies, where there was no recurrence in either of the groups.[[1]](#endnote-1)

In this study difference in average pain score at first 12 hrs was not statistically significant (p = .060) but at 24 hrs, 72 hrs, 1 month and 6 months was statistically significant (p = .003, p = .003, p = .000, p = .001 respectively). Thus concluding that though postoperative pain in first 12 hrs was comparable in both groups. The pain score was more in the fixation group after 12 hr period. Similar results were found in other studies whereas some other studies differ[[2]](#endnote-2) [[3]](#endnote-3).[[4]](#endnote-4)

The mean operative time was less in non-fixation group compared to fixation group (56.83+20.489 mins vs. 95.83+18.804 mins with p=.000). This is advantageous in terms of exposure to anaesthetic drugs and early postoperative recovery. The results are comparable to standard studies[[5]](#endnote-5).

In present study there was 23.33% and 13.33% complications in fixation and non fixation groups respectively with X2 = 0.45, p = 0.504 which was not statistically significant. It shows there was no statistically significant difference in intra operative complications.

This study reported a median hospital stay of 3.63+0.556 days in fixation group and 2.93+0.785 days in non fixation group, with p = 0.000, showing statistically significant difference between two groups[[6]](#endnote-6).

**Conclusion**

Mesh fixation appears to be unnecessary in TEP repair of inguinal hernias. It is associated with higher operative time, higher postoperative complication and an increased likelihood of developing chronic groin pain. The omission of mesh fixation did not increase the risk of early hernia recurrence.[[7]](#endnote-7) [[8]](#endnote-8) [[9]](#endnote-9) [[10]](#endnote-10) [[11]](#endnote-11) [[12]](#endnote-12)

**References**

1. [[Garg P](http://www.ncbi.nlm.nih.gov/pubmed?term=Garg%20P%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Nair S](http://www.ncbi.nlm.nih.gov/pubmed?term=Nair%20S%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Shereef M](http://www.ncbi.nlm.nih.gov/pubmed?term=Shereef%20M%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Thakur JD](http://www.ncbi.nlm.nih.gov/pubmed?term=Thakur%20JD%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Nain N](http://www.ncbi.nlm.nih.gov/pubmed?term=Nain%20N%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Menon GR](http://www.ncbi.nlm.nih.gov/pubmed?term=Menon%20GR%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Ismail M](http://www.ncbi.nlm.nih.gov/pubmed?term=Ismail%20M%5BAuthor%5D&cauthor=true&cauthor_uid=21533969) et al on Oct 2011] [↑](#endnote-ref-1)
2. [ [Cody A. Koch](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=search&db=PubMed&term=%20Koch%2BCA%5bauth%5d), [Susan M. Greenlee](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=search&db=PubMed&term=%20Greenlee%2BSM%5bauth%5d), RN, [Dirk R. Larson](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=search&db=PubMed&term=%20Larson%2BDR%5bauth%5d), [Jeffrey R. Harrington](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=search&db=PubMed&term=%20Harrington%2BJR%5bauth%5d), and [David R. Farley](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=search&db=PubMed&term=%20Farley%2BDR%5bauth%5d) et al Oct 2006 .] [↑](#endnote-ref-2)
3. [Tam KW, Liang HH ,Chai CY et al in 2010] [↑](#endnote-ref-3)
4. [ [Khajanchee YS](http://www.ncbi.nlm.nih.gov/pubmed?term=Khajanchee%20YS%5BAuthor%5D&cauthor=true&cauthor_uid=11727079), [Urbach DR](http://www.ncbi.nlm.nih.gov/pubmed?term=Urbach%20DR%5BAuthor%5D&cauthor=true&cauthor_uid=11727079), [Swanstrom LL](http://www.ncbi.nlm.nih.gov/pubmed?term=Swanstrom%20LL%5BAuthor%5D&cauthor=true&cauthor_uid=11727079), [Hansen PD](http://www.ncbi.nlm.nih.gov/pubmed?term=Hansen%20PD%5BAuthor%5D&cauthor=true&cauthor_uid=11727079) et al(6) on October 2001] [↑](#endnote-ref-4)
5. [[Teng YJ](http://www.ncbi.nlm.nih.gov/pubmed?term=Teng%20YJ%5BAuthor%5D&cauthor=true&cauthor_uid=21487873), [Pan SM](http://www.ncbi.nlm.nih.gov/pubmed?term=Pan%20SM%5BAuthor%5D&cauthor=true&cauthor_uid=21487873), [Liu YL](http://www.ncbi.nlm.nih.gov/pubmed?term=Liu%20YL%5BAuthor%5D&cauthor=true&cauthor_uid=21487873), [Yang KH](http://www.ncbi.nlm.nih.gov/pubmed?term=Yang%20KH%5BAuthor%5D&cauthor=true&cauthor_uid=21487873), [Zhang YC](http://www.ncbi.nlm.nih.gov/pubmed?term=Zhang%20YC%5BAuthor%5D&cauthor=true&cauthor_uid=21487873), [Tian JH](http://www.ncbi.nlm.nih.gov/pubmed?term=Tian%20JH%5BAuthor%5D&cauthor=true&cauthor_uid=21487873), [Han JX](http://www.ncbi.nlm.nih.gov/pubmed?term=Han%20JX%5BAuthor%5D&cauthor=true&cauthor_uid=21487873). A meta-analysis of randomized controlled trials of fixation versus nonfixation of mesh in laparoscopic total extraperitoneal inguinal hernia repair. [Surg Endosc.](http://www.ncbi.nlm.nih.gov/pubmed/21487873) 2011 Sep;25(9):2849-58. ] [↑](#endnote-ref-5)
6. [[Garg P](http://www.ncbi.nlm.nih.gov/pubmed?term=Garg%20P%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Nair S](http://www.ncbi.nlm.nih.gov/pubmed?term=Nair%20S%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Shereef M](http://www.ncbi.nlm.nih.gov/pubmed?term=Shereef%20M%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Thakur JD](http://www.ncbi.nlm.nih.gov/pubmed?term=Thakur%20JD%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Nain N](http://www.ncbi.nlm.nih.gov/pubmed?term=Nain%20N%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Menon GR](http://www.ncbi.nlm.nih.gov/pubmed?term=Menon%20GR%5BAuthor%5D&cauthor=true&cauthor_uid=21533969), [Ismail M](http://www.ncbi.nlm.nih.gov/pubmed?term=Ismail%20M%5BAuthor%5D&cauthor=true&cauthor_uid=21533969) et al on Oct 2011 ] [↑](#endnote-ref-6)
7. [P. RIDINGS and D.S. EVANS. The transabdominal pre-peritoneal (TAPP) inguinal hernia repair: a trip along the learning curve.J.R.Coll.Surg.Edinb. February 2000; 45: 29-32.] [↑](#endnote-ref-7)
8. [Vishal R. Saggar, Rathindra Sarangi**.**Laparoscopic Totally Extraperitoneal Repair of Inguinal Hernia A Policy of Selective Mesh Fixation over a 10-Year Period. Journal of Laparoendoscopic and Advanced Surgical Techniques. April 2008; 18(2): 209-212] [↑](#endnote-ref-8)
9. [Evangelos Messaris, Guy Nicastri, Stanley J. Dudrick. Total Extraperitoneal Laparoscopic Inguinal Hernia Repair without Mesh Fixation.Arch Surg. 2010; 145(4):334-338.] [↑](#endnote-ref-9)
10. # [ Taylor C,Layani L, Liew V, Ghusn M, Crampton N, White S. Laparoscopic inguinal hernia repair without mesh fixation, early results of a large randomised clinical trial. Surg Endosc.2008; 22(30):757-62.]

    [↑](#endnote-ref-10)
11. [[Hung Lau](http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=search&db=PubMed&term=%20Lau%2BH%5bauth%5d). Fibrin Sealant Versus Mechanical Stapling for Mesh Fixation During Endoscopic Extraperitoneal Inguinal Hernioplasty. Ann Surg. 2005 November; 242(5): 670–675. ] [↑](#endnote-ref-11)
12. [[Morrison JE Jr](http://www.ncbi.nlm.nih.gov/pubmed?term=Morrison%20JE%20Jr%5BAuthor%5D&cauthor=true&cauthor_uid=18287980), [Jacobs VR](http://www.ncbi.nlm.nih.gov/pubmed?term=Jacobs%20VR%5BAuthor%5D&cauthor=true&cauthor_uid=18287980). Laparoscopic preperitoneal inguinal hernia repair using preformed polyester mesh without fixation: prospective study with 1-year follow-up results in a rural setting. [Surg Laparosc Endosc Percutan Tech.](http://www.ncbi.nlm.nih.gov/pubmed/18287980) 2008 Feb;18(1):33-9]. [↑](#endnote-ref-12)