

Post-Operative Pain in Transabdominal Preperitoneal (TAPP) Hernia Repair: Mesh Fixation with Tacks Versus Non-Fixation

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ABSTRACT

Objective: To find the post-operative pain in transabdominal preperitoneal (TAPP) hernia repair: Mesh fixation with tacks versus non fixation.

Study Design: Comparative study

Place and Duration of Study: Department of Surgery Unit B, Mardan Medical Complex, Mardan from 1st October 2019 to 30th September 2021.

Methodology: One hundred participants who were admitted for inguinal hernia repair through laparoscopic surgical procedure were enrolled as study participants and divided into two groups. General anesthesia was administered to all patients and a carbon dioxide pressure of 14mmHg was used for keeping pneumo-peritoneum during the surgical procedure. An incision in peritoneum was made post identification of herniasac. Pain index was measured by Visual Analogue Scale at day 1, day 3, day 7 and day 14 followed by one and six months post-surgery.

Results: The mean age of group A and group B patients in the present study were 51.2±9.5 and 52.1±9.7 years respectively with majority being males in both groups. Majority of patients in both group had unilateral herni. Group B had shorter surgery duration with lessen hospital stay however chances of recurrence as 12% and wound infection as 6% was higher in it respectively. The post operative pain was 65±9.3 and 66±9.1 in group A and B.

Conclusion: Mesh fixation is a longer duration process requiring longer hospital stay, however it provides less chances of complications as wound infection and recurrence. There was no difference in post operative pain in both groups.

Keywords: Hernia Repair, Fixation, Mesh, Surgical Method

INTRODUCTION

Inguinal hernia is the most common type of hernia that accounts for ~75% of all hernia cases.^{1,2} Hernia is a condition in which bulging of internal organ or intestine occur due to tear in tissue or muscle. Inguinal hernia is a bulge in lower/groin region. It could be occurred due to muscle weakening in lower abdomen. Incidence of inguinal hernia is different at different stages and ages and accounts for 15-45%.³ Prevalence of hernia is also higher in higher age men (<15%) as compared to women (<5%).^{4,5} Inguinal hernia sometimes also increases the chances of potential life threatening complications.

Numerous surgical methods have been developed for improving inguinal hernia. Inguinal anatomy is important for the better understanding and recognition of its nature.⁵ With the production and development of artificial meshes, hernia surgery with meshes is now considered gold standard especially for inguinal hernia procedure [6-9]. Although open repair treatment with mesh is recognized as a safe and easy approach, laparoscopic repair is a more preferred and effective method with very low recurrence rate and remarkable improvements. It can be performed by laparoscopic totally extraperitoneal (TEP) and transabdominal preperitoneal (TAPP).^{10,11} Various studies have elaborated that inguinal hernia recurrence can be prevented with the improvement of surgical procedures and surgical skills in proper implementation. It can be recurred due to lack of appropriate coverage due to smaller mesh, non-fixation of mesh and inadequate dissection of peritoneal space.¹²⁻¹⁷

Post-operative (PO) groin pain has developed in many cases and increases the risk of associated damage. Few studies also evaluated the PO complications either due to mesh fixation or non-fixation, still application of laparoscopic procedure is controversial. Aim of the present study is to evaluate the associated risks of this surgical procedure. Patients' pain level is also determined to report accurate results.

MATERIALS AND METHODS

The comparative study was conducted at Department of Surgery Unit B, Mardan Medical Complex, Mardan from 1st October 2019 to

30th September 2021. A total of 100 patients were divided into two groups. Mesh was fixed in group A of 50 patients while not fixed in Group B of 50 patients through sutures. An informed consent was taken from each patient. Those patients who were admitted for inguinal hernia repair through laparoscopic surgical procedure were enrolled as study participants. The sample size was generated after considering the prevalence of 6.7% and 13% for fixation and non-fixation methods respectively. The confidence of interval was taken as 95% while power of test was considered as 80%. The age group for this study design was taken as 18-50 years according to the patients enrolled. The exclusion criteria depended upon complication; surgery postpone due to any reason. Type of hernia, side of hernia such as unilateral or bilateral and related disease history was entered on a well structured proforma in addition to the demographic history of each patient. The age and weight of each enrolled patient was also documented. General anesthesia was administered to all patients and a carbon dioxide pressure of 14mmHg was used for keeping pneumo-peritoneum during the surgical procedure. A ten mm trocar was inserted at the umbilical with a 5mm and a 10 mm trocar at both lateral sides. An incision in peritoneum was made post identification of hernial sac. Incision was extended from anterosuperior iliac spine through harmonic scalpel till the lateral leaflet of medial-umbilical ligament. Peritoneum flaps were dissected from Upward as well as downward from sematic-cord structures. After reducing hernial sac size a mesh of 10×15cm was placed. Spiral tacks were then applied for fixation of the mesh in the cooper's ligament, presented as medial as well as lateral to epigastric vessels. Avoidance of triangle doom tacks and pain was prioritized. The size of mesh, surgical team and laparoscopic settings were kept similar in both cases. Pain index was measured by Visual Analogue Scale at day 1, day 3, day 7 and day 14 followed by one and six months post-surgery. Data was analyzed by using SPSS version 25.0 applying Chi square test and student's 't' test for analysis. P value was taken as significant as a point of less than 0.05.

RESULTS

The mean age of group A and group B patients were 51.2±9.5 and 52.1±9.7 years respectively. There were more males in both

groups than females. The mean weight of both group patients was almost similar with no significant difference (Table 1). In group A and group B majority of the cases such as 82% and 78% were having unilateral hernia. Bilateral hernia percentage was found less common among all the patients (Fig. 1).

The duration of study showed that group B had shorter surgery duration as well as hospital stay time. This group also was healthier for work in shorter time period than mesh fixation group A. There was no significant difference in post operative pain (Table 2). The present study also found that prevalence of wound infection and urine retention was higher in group B with higher recurring rate as compared to group A (Table 3).

Table 1: Demographic comparison between groups (n=100)

Variable	Group A	Group B	P value
Gender			
Male	38 (76%)	42 (84%)	0.33
Female	12 (24%)	8 (16%)	
Age (years)	51.2±9.5	52.1±9.7	0.12
Weight (kg)	72.9±9.7	72.5±5.0	0.40

Table 2: Distribution of surgery and hospital stay duration in both groups (n=100)

Variable	Group A	Group B	P value
Surgery duration	72.2±0.6	70.1±1.5	0.60
Hospital stay (days)	1.79±0.74	1.19±0.5	0.001
Back to work	8.8±2.3	7.0±1.93	0.031
Post-operative pain	65±9.3	66±9.1	0.70

Table 3: Comparison of seroma, wound infection and recurrence rate in group A and B

Variable	Group A	Group B	P value
Seroma	4 (8%)	3 (6%)	0.52
Infection of Wound	-	3 (6%)	0.24
Urine retention	17 (34%)	6 (12%)	0.031
Recurrence	-	3 (6%)	0.24

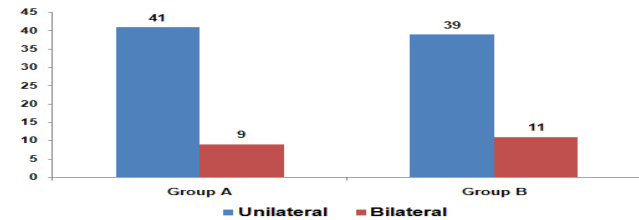


Fig 1: Distribution of hernia side among both groups

DISCUSSION

Inguinal repair through laparoscopic procedure has become a valid and good option from last few years. Likely benefits of laparoscopic procedure include less chances of recurrence, reduction in long term groin pain and quicker PO recovery.^{18,19} It can be performed laparoscopically by two ways: either TAPP and TEP. Both of these methods are similar except one difference, the peritoneum is incised in TAPP method and requires closure after placement of mesh.²⁰

Complications related to this surgical procedure usually divides into two: postoperative complications and operative complications. Operative complications are associated with laparoscopic access and related injuries of the surrounding structures including bladder and vascular structures. This can be reduced through meticulous dissection and preperitoneal anatomy. Post-operative complications are related to chronic groin pain and hernia recurrence which can be minimized by covering entire myopectineal orifice with mesh and with careful placement of traumatic fixation.^{18,19}

Several controversies are still associated with laparoscopic inguinal hernia repair. It can be well accepted and preferred treatment methods by clinicians and surgeons with improved education and related research. Several options are available for mesh fixation for laparoscopic inguinal hernia repair such as glue,

tacks, no fixation and suture fixation. Another major hurdle is the which type of mesh should be used. No convincing and published data is present on the efficacy and choice of mesh and the size of the mesh to cover all hernia space is likely considered more important than the mesh material.^{18,19}

CONCLUSION

Mesh fixation is a longer duration process requiring longer hospital stay, however, it provides less chances of complications as wound infection and recurrence in comparison to non Fixation procedure. There was no variance in post operative pain in fixation and non Fixation procedure.

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