



E-ISSN: 2616-3470

P-ISSN: 2616-3462

© Surgery Science

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2020; 4(2): 229-232

Received: 12-02-2020

Accepted: 14-03-2020

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## Assessment of perioperative outcome in primary unilateral inguinal hernia: A comparative study

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DOI: <https://doi.org/10.33545/surgery.2020.v4.i2d.422>

### Abstract

**Background:** An inguinal hernia is a protrusion of abdominal-cavity contents through the inguinal canal. Various technique available to repair of inguinal Hernia: Open suture repair, Open mesh repair and Laparoscopic hernia repair (TEP/TAPP). In this study comparison was done between laparoscopic procedure Transabdominal pre-peritoneal repair (TAPP) and totally extraperitoneal repair (TEP).

**Materials & methods:** The study compared the result of two laproscopic hernioplasties in 50 cases divided in two groups. 25 cases in TEP group and 25 cases in TAPP group admitted in department of surgery, Govt. medical college and Rajindra hospital, Patiala. The evaluation and comparison was done in term of operative time, postoperative pain, Recurrence, cost effectiveness, and technical adaptation of surgery.

**Results:** Difference in duration of surgery, cost effectiveness and technical adaptation in TEP and TAPP was not statistically significant. On observation post operative complication was more associate with TAPP than TEP. In case of hospital stay and time to return to usual activity no statistical difference present between TEP and TAPP. Pain was analysed by vast scale when pain was compared at the end of one month, it was inferred that number of patients in TEP more than TAPP have pain and p value was 0.6836 which was not significant.

**Conclusion:** Higher incidence of postoperative complications is associated with TAPP in comparison to TEP. However; there was no difference in hospital stay, cost effectiveness, and technical adaptively.

**Keywords:** Prolene mesh, Metallic tackers, extra peritoneal

### Introduction

An inguinal hernia is a protrusion of abdominal-cavity contents through the inguinal canal. Various technique available to repair of inguinal Hernia: Open suture repair, Open mesh repair and Laparoscopic hernia repair (TEP/TAPP). Important anatomical landmarks associated are Triangle of doom, Myopectineal orifice and Corona Mortis/circle of death. Triangle of doom is an inverted 'v' shaped area with its apex at the deep (internal) inguinal ring. Is bound laterally by gonadal vessel and medially by vas deferens (Male) or round ligament of uterus (Female), contain external iliac vessels [1-3]. Myopectineal orifice is a u shaped structure, inguinal ligament divides the myopectineal orifice into two regions, the suprainguinal region, contain spermatic cord or the round ligament of the uterus and subinguinal region, contain femoral nerve and vessel and femoral canal [4]. Corona Mortis/circle of death is the pubic branch of inferior epigastric artery anastomosing with obturator artery. In 25 to 30% cases of individuals the pubic branch large and replace the obturator artery. This large branch (aberrant obturator artery) can partially in circle the neck of sac [5].

Laparoscopic Inguinal hernia repair:

1. Transabdominal pre-peritoneal repair (TAPP)
2. Totally extraperitoneal repair (TEP) [6, 7]

In this study comparison was done between laparoscopic procedure TAPP and TEP in respect to operative time, postoperative complication (pain, seroma formation, port side hernia, gut injury, vascular injury, mesh/deep infection), amount of analgesic used, Hospital stay, cost effectiveness and technical adaptivity.

### Materials & Methods

The present study was conducted in the department of general surgery with the aim of

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comparing the postoperative outcome between laparoscopic procedure TAPP and TEP. Armamentarium included:

- Sutures: Nylon 2-0 C/N for skin closure, Prolene 2-0 R/B, Prolene no.1 R/B, Silk 1-0 C/N, Vicryl 2-0 R/B for peritoneal closure.
- Prolene mesh: 15x10cm, 12x10cm
- Metallic tackers.

**Inclusion criteria**

- Patient fit for general anesthesia.
- Above 18 yrs of age.

**Exclusion criteria**

- Obesity with BMI > 30
- Patient on anti-coagulant
- Pregnancy
- Unfit for General anaesthesia
- Patient below 18 years

The study compared the result of two laparoscopic hernioplasties in 50 cases divided in two groups. 25 cases in TEP group and 25 cases in TAPP group admitted in department of surgery, Govt. medical college and Rajindra hospital, Patiala. The evaluation and comparison was done in term of operative time, postoperative pain, Recurrence, cost effectiveness, and technical adaptation of surgery. Monthly follow-up examinations were done in first 6 month postoperatively.

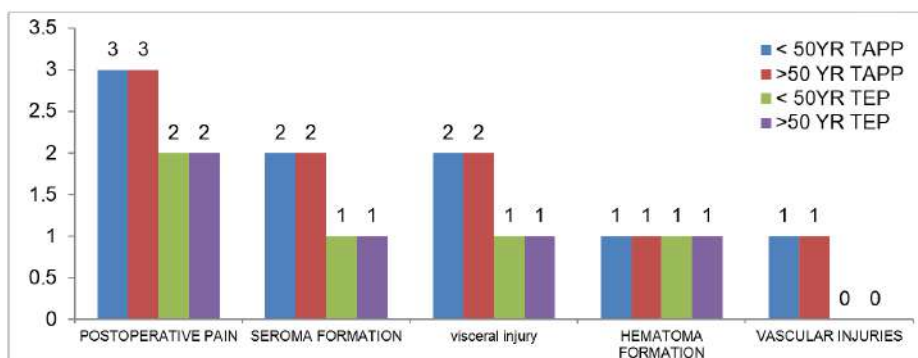
Patients were evaluated in term of:

- Recurrence of hernia
- Time to return to usual activity

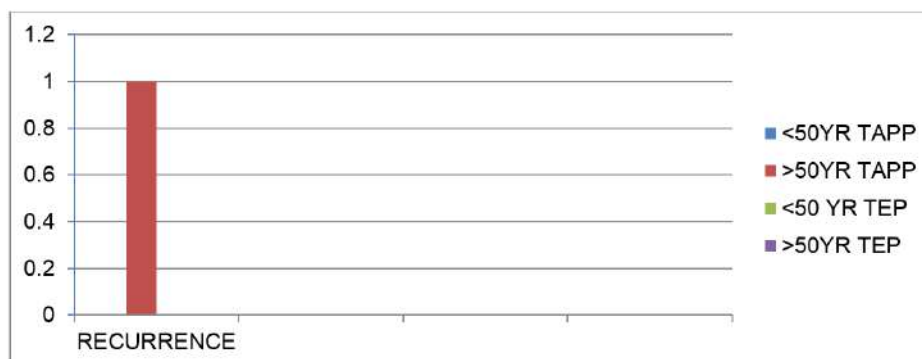
All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test and student t test were used for assessment of level of significance.

**Results**

Difference in duration of surgery, cost effectiveness and technical adaptation in TEP and TAPP was not statistically significant. On observation post operative complication was more associate with TAPP than TEP. In more than 50 years age group, one case recurrence occurred in TAPP. In case of hospital stay and time to return to usual activity no statistical difference present between TEP and TAPP. Difference in duration of surgery, cost effectiveness and technical adaptation in TEP and TAPP was not statistically significant. On observation post operative complication was more associate with TAPP than TEP. In case of hospital stay and time to return to usual activity no statistical difference present between TEP and TAPP. Pain was analysed by vast scale when pain was compared at the end of one month, it was inferred that number of patients in TEP more than TAPP have pain and p value was 0.6836 which was not significant. It was seen that most of the patients were discharge 2 at to 3 days. P- value was observe to be 0.06810. Laproscopic repair helps with early return to daily activities and hence is an improvement in ergonomics.



**Graph 1:** Post-operative complication in relation to age of patient



**Graph 2:** Recurrence in related to age

**Table 1:** Postoperative complication in relation to age of patient

Parameter	< 50YR TAPP	>50 YR TAPP	< 50YR TEP	>50 YR TEP
Postoperative Pain	3	3	2	2
Seroma Formation	2	2	1	1
Visceral Injury	2	2	1	1
Hematoma Formation	1	1	1	1
Vascular Injuries	1	1	0	0

**Table 2:** Recurrence in related to age

Parameter	<50YR TAPP	>50YR TAPP	<50 YR TEP	>50YR TEP
RECURRENCE	1	0	0	0

**Table 3:** Pain Discomfort 1 Month

Groups	Yes		No		Total	
	No. of Patients	%age	No. of Patients	%age	No. of Patients	%age
Group-A	4	57.14%	21	48.84%	25	50%
Group-B	3	42.86%	22	51.16%	25	50%
Total	7	100%	43	100%	50	100%
$\chi^2$	0.166					
p-value	0.683					
Sig.	NS					

## Discussion

A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls. A hernia can occur at various sites of the body, most commonly through the abdominal wall particularly the inguinal region. Surgery for inguinal hernia was first attributed to Erasistratus of Keos in the third century and probably described by Celsus in first century AD. Vascular injuries and deep/mesh infections were and there was no obvious difference between the two groups. However there was only one RCT1 (Randomized Control Trial) comparing TAPP and TEP which reported no statistically significant difference between the two when considering duration of operation, hematoma, length of stay, time to return to usual activities, and recurrences. There have been no literature on the learning effects and cost difference between the two techniques [7-10]. The purpose of this study was to compare the TAPP and TEP technique of laparoscopic inguinal hernia repair in terms of operative and post-operative complications and the final outcome.

This was a comparative study consisting of 50 patients, with 25 patients in laparoscopic TAPP group and 25 patients in laparoscopic TEP group. Two groups were comparable with respect to age majority of patient TEP & TAPP were of 45 to 75 years Mean age of TEP 52.68 and mean age in TAPP 55.16 year and p value is 0.6787 which is in significant. Rambhia SU *et al.* most of patient in TEP 61 to 70 years & TAPP 51 to 60 years with mean age in TEP 60.67 year and TAPP 61.28 [10]. All the patients in our study were males. This represents the low incidence of inguinal hernia in female in general population. While gone through literature incidence of inguinal hernia is very low among female.

In this study the mean operative time in TEP group was 46.44 minutes while it was 44.04 minutes in TAPP group. Hence the overall mean operative time was little bit less in laparoscopic TAPP repair than in laparoscopic TEP repair. Sinha R found that Mean operative time of TEP was  $36.45 \pm 1.898$  age minutes TAPP was  $26.7 \pm 1.174$  minutes [11]. Rambhia *et al.* compared the clinical effectiveness and relative efficiency of trans-abdominal pre-peritoneal (TAPP) versus totally extra peritoneal (TEP) techniques of laparoscopic inguinal hernia repair. Total 56 patients were included in the study. Hence, 29 patients were included in TAPP group while 27 patients were allocated to TEP group. Their follow up does not allow them to make any conclusion about recurrence [10]. In another study conducted by Sudarshan *et al.* authors compared TAPP and TEP laparoscopic approaches for inguinal hernia repair in terms of various outcomes. Postoperative complications like seroma formation; subcutaneous emphysema was seen in TEP group. Two cases of TEP were converted to TAPP and open lichtenstein procedure. Postoperative pain was less in both the group. Patients who

underwent TEP procedure spent less time in the hospital compared to those who underwent TAPP procedure. They concluded that there is no major difference in the outcome after TEP and TAPP surgeries except for some minor complications and the results are comparable in both techniques i.e. TAPP and TEP [12].

In a previous study conducted by Gallo *et al.*, authors found that a total of 20 patients were operated; 18 (90%) male and two (10%) female. The average surgical time was 45 min. None of the patients required conversion to an open procedure. A recurrence occurred seven days after surgery. They concluded that TEP hernioplasty is reproducible and good results are obtained with few complications [13]. Gangopadhyay *et al.* compared the outcome of Total Extra- peritoneal (TEP) versus Trans-abdominal Pre-peritoneal (TAPP) repair of inguinal hernia. They concluded that the TEP is comparatively superior than TAPP procedure in terms of post-operative complications, duration of hospital stay and return to normal activities [14].

A study was conducted by Mohamed *et al.* for comparing mesh fixation versus nonfixation in laparoscopic totally extraperitoneal (TEP) inguinal hernia repair. 40 patients were randomized into two equal groups (20 cases): group A: with mesh fixation and group B: without mesh fixation. All patients of both groups were males. Group A had a longer operative time than group B ( $P=0.018$ ). There was no significant difference in postoperative pain in both groups ( $P=0.6$ ). One (5%) patient in each group had an accidental peritoneal tear. 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 [15].

## Conclusion

From the above results, the authors concluded that higher incidence of postoperative complications is associated with TAPP in comparison to TEP. However; there was no difference in hospital stay, cost effectiveness, and technical adaptively. The choice of technique could be according to the surgeon skill and preference. But there is no sufficient evidence to recommend the use of TAPP rather than TEP and it will remain the surgeon choice.

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