

Comparative study between laproscopic transabdominal pre-peritoneal repair and totally extra-peritoneal repair of inguinal hernia

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Abstract

Background: Since the dawn of general surgery hernia repair techniques had evolved a lot. Today with advanced technology in force surgeries has become more precise and fruitful. Similarly hernia repair techniques has advanced from extra-peritoneal open repair to extra and trans-peritoneal laparoscopic repair.

Keywords:

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INTRODUCTION

Hernia is a protrusion of a part or whole viscus through an abnormal opening in the walls of its containing cavity.¹The word hernia is derived from latin word for rupture. Although a hernia can occur at various sites of body, these defect mostly involve abdominal wall particularly inguinal region. Abdominal wall hernia occur at only sites where the aponeurosis and fascia are not covered by striated muscle.²75% of all abdominal hernia occur in the groin. Ratio of indirect to direct hernia is 2:1, with femoral hernia making up a small proportion. Hernias are more common on right side and 7 times more common in male than compared to female.³ Incidence and prevalence of inguinal hernia is considerably high. Incidence rate is approximately 1 in 544. lifetime risk of inguinal hernia in man is 27% whereas in female is 3%.⁴Surgery for inguinal hernia is the one of most common surgery performed everywhere.⁵This surgery is so common that even modest improvement in clinical outcomes would have a significant medical impact.⁶ In

the last 2 decades, inguinal hernia repair, like many surgical diseases, has undergone many paradigm shifts. The introduction of synthetic mesh shifted the majority of clinicians from tissue repair to an increased favoured 'TENSION FREE REPAIR'. As laparoscopy became widespread, total extra-peritoneal and trans-abdominal pre-peritoneal repair with mesh were introduced and have flourished. The most important advancement in hernia surgery has been the development of tension free repair using mesh, which significantly improved outcome of patients.⁷Success of inguinal hernia is measured by permanence of operation, minimal complication, minimal cost, earlier return to normal activities and lowest recurrence.⁷ Presently, several techniques of laparoscopic hernia repair are used. Most common is the trans-abdominal pre-peritoneal repair (TAPP) using laparoscopic entry in to abdominal cavity, a peritoneal incision, through pre-peritoneal dissection, prosthesis fixation, and closure of flap. The total extra-peritoneal repair (TEP) avoids entry in to the abdominal cavity, instead creating a pre-peritoneal space in the groin using CO₂ in combination with blunt dissection or a balloon dissector⁸

CASE REPORTS

A comparative study of laparoscopic inguinal hernia repair between TAPP and TEP were compared with respect to safety, postoperative pain, analgesia, early mobilization, rate of recurrence hospital stay and conversion to open surgical repair in 60 patients. 30 of which were repaired by TAPP and rest of 30 patients were repaired by TEP.

OBJECTIVES

The objectives of this project is to compare between laparoscopic trans-abdominal pre-peritoneal repair (TAPP) and totally extra-peritoneal repair (TEP) of inguinal hernia with respect to:

1. Safety
2. Post operative pain
3. Analgesia
4. Early mobilization
5. Complication
6. Recurrence rate
7. Conversion to open
8. Hospital stay.

OBSERVATIONS

Table 1: Age distribution

Age	No. of patient	%
21-30	16	26.67
31-40	19	31.67
41-50	12	20.00
51-60	8	13.33
61-70	4	6.67
71-80	1	1.67
Total	60	100

A total of 65 hernia were repaired in 60 patients. There were 60 males in the study and no female, the median age

TYPE OF HERNIA

Table 3.1: Type of inguinal hernia in TAPP group

Type of hernia	No. of patients in TAPP group	%
Indirect	23	76.67
Direct	3	10.00
Bilateral indirect	3	10.00
Bilateral direct	0	0.00
Recurrent	1	3.33
Total	30	100

Thus in TAPP group 77.66% patients have indirect inguinal hernia, 10% patients have direct and 10% patients have bilateral hernia and 3.33 patients have recurrent inguinal hernia.

Table 3.2: Type of inguinal hernia in TEP group

Type of hernia	No. of patients in TEP group	%
Indirect	22	73.33
Direct	6	20
Bilateral indirect	1	3.33
Bilateral direct	1	3.33
Recurrent	0	0
Total	30	100

Thus in TEP group 73.33% patients had indirect inguinal hernia, 20% have direct, 3.33% have bilateral indirect, 3.33% have bilateral direct and 0% have recurrent inguinal hernia.

Types of hernia according to Nyhus classification

Table 4.1: Types of hernia according to nyhus classification in TAPP

Type of hernia	No. of patients in TAPP group	%
I	23	76.67
II	3	10.00
IIIa direct	4	13.33
IIIB indirect	0	0

was 39.81 years with range from 21 years to 71 years. The age distribution is shown in this table.

SIDE OF HERNIA

Table 2.1: Side of hernia in TAPP group

Side of hernia	No. of patients in TAPP group	%
Right side	17	56.67
Left side	10	33.33
Bilateral	3	10.00
Total	30	100

Thus in our study group of inguinal hernia which were repaired by TAPP method, 57% patients have right sided hernia, 33% left sided and 10% bilateral hernia.

Table 2.2: Side of hernia in TEP group

Side of hernia	No. of patients in TEP group	%
Right side	19	63.33
Left sided	9	30.00
Bilateral	2	6.67
Total	30	100

Thus in our study group of inguinal hernia which are repaired by TEP method 63% patients have right sided hernia, 30% have left sided hernia and 7% bilateral inguinal hernia.

IIIc femoral	0	0
IVa direct	0	0
IVb indirect	0	0
IVc femoral	0	0
IVd (a+b+c)	0	0
Total	30	100

Thus in our TAPP study group there were no patient of femoral hernia. Study constitutes 76.67% of type I indirect inguinal hernia, 10% of type II inguinal hernia and 13.33% of type IIIa direct inguinal hernia.

Table 4.2: Type of hernia according to Nyhus classification

Type of hernia	No. of patients in TEP	%
I	20	66.67
II	3	10.00
III a direct	6	20.00
III b indirect	0	0
III c femoral	0	0
IV a direct	1	3.33
IV b indirect	0	0
IV c femoral	0	0
IV d (a+b+c)	0	0
Total	30	100

Thus in our study group there was no patients of femoral hernia, study constitutes 66.66% type I indirect inguinal hernia, 10% type II indirect inguinal hernia, 20% type III a direct inguinal hernia and 3.33% type IVa direct inguinal hernia.

Table 4.3: Types of hernia according to Nyhus classification (TEPP+TEP)

Type of hernia	No. of patients	%
(TEPP+TEP)		
I	43	71.666
II	6	10.000
III a direct	10	16.666
III b indirect	0	0
III c femoral	0	0
IV a direct	1	1.6666
IV b indirect	0	0
IV c femoral	0	0
IV d (a+b+c)	0	0
Total	60	100

Post operative pain: post operative pain evaluated by the patients visual analog score.

Table 5.1: visual analog score (VAS) of patients operated by TAPP method.

VAS in TAPP group	No. of patients	%
1-2	8	3.33
2-3	17	80
3-4	5	16.66
4-5	0	0
Total	30	100

The mean visual analog score of our TAPP study group on POD-0 was 4.53, on POD-1 was 3.76, on POD-2 was 2.80, and on POD -5 was 0.76.

Table 5.2: Visual analog score (VAS) of patients operated by TEP method in present study

VAS	No. of patients	%
1-2	0	0
2-3	15	50
3-4	15	50
4-5	0	0
Total	30	100

The mean Visual analog score of our TEP study group on POD-0 was 5.10, on POD-1 was 3.83, on POD-2 was 2.87, and on POD-5 was 1.

Post Operative Analgesic Requirement

In our study, patient were given 1 dose of intramuscular injection of Diclofenac sodium on the day of operation. Thereafter, tablet Diclofenac sodium 50 mg was given as and when the patient asked for the same and number of Diclofenac sodium required.

Table 6.1: Distribution of patients in TAPP and TEP group requiring postoperative analgesia

Post operative day	TAPP group		TEP group	
	No. of Patients requiring analgesia	% of patients requiring analgesia	no. of patients requiring analgesia	% of patients requiring analgesia
POD-0	18	60	20	66.66
POD-1	6	20	4	13.33
POD-2	3	3	3	10
POD-5	2	6.66	2	6.66
POD-8	1	3.33	1	3.33
POD-30	0	0	0	0

In our study, in TAPP group about 60% patients required analgesic on POD-0, 20% on POD-1, 10% on POD-2. In our TEP study group about 66.66% patients required analgesia on POD-0, 13.33% on POD-1, and 10% on POD-2

Post-Operative Hospital Stay

Table 7.1: Distribution of post- operative stay in TAPP group

Post operative Hospital stay	TAPP group		TEP group	
	No. of patients	% of patients	No. of patients	% of patients
Same day	00	00	00	00%
Overnight	28	93.33%	27	90%
Two nights	01	3.33%	02	6.66%
three or more nights	01	3.33%	01	3.33%

All the patients in our study group received general anaesthesia for which patients were observed for at least 24 hrs for post operative pulmonary complication as well as complications due to pneumoperitonium. But no patient was discharge before 24 hrs. in our study 93.33% patients in TAPP group and 90% in TEP group were discharged on first post operative day and 3.33% of patients in TAPP group and 6.66% patients in TEP group were discharged on post operative day two.



Operating Time

Table 8.1: Operative time required in TAPP and TEP group

Operative time Min	TAPP group		TEP group	
	No. of patients	% of patients	No. of patients	% of patients
40-45	7	23.33%	2	6.67%
46-50	12	40%	9	30%
51-55	5	16.67%	8	26.67%
55-60	3	10%	5	16.67%
61-65	1	3.33%	2	6.67%
66-70	1	3.33%	2	6.67%
71-75	1	3.33%	1	3.33%
>75	0	0%	1	3.33%

Thus the average operative time for TAPP was 50.07 minutes while for TEP was 53.3 min. In standard P. schrenk study operative time of TAPP was 46 minutes and for TEP was 52.3 minutes.

Time Required To Returned To Activity

Table 9: Time to return to activity of daily living in TAPP group

Time to return to activity No. of days	TAPP group		TEP group	
	No. of patients	% of patients	No. of patients	% of patients
POD-1	22	73.33%	24	80%
POD-2	5	16.66%	3	10%
POD-3	2	6.66%	3	10%
POD-4	1	3.33%	0	0%
Total	30	100%	30	100%

In our TAPP study group, about 22 (77.335%) patients on POD-1, 5 (16.66%)patients on POD-2, 2 (6.66%) patients on POD-3, and 1 (3.33%) patient on POD-4 returned to activity. While in TEP group about 24 (80%) patients, 3 (10%) patients on POD-2, and 3 (10%) patients on POD-3 returned to activity.

Time Required To Returned To Work

Table 10: Time to return to activity of work in TAPP group

Time required to Routine daily duties Days	TAPP group		TEP group	
	No. of patients	% of Patients	No. of patients	% of Patients
7 days	00	00%	00	00%
7 to 14 days	02	6.66%	03	10%
15 to 21 days	02	6.66%	03	10%
22 to 28 days	23	76.66%	22	73.33%
29 to 35 days	03	10%	02	6.66%
>35 days	00	0%	00	0%
Total	30	100	30	100

In our TAPP study group 23 (76.66%) patients returned to work between 22 to 28 days, 3 (10%) patients returned to work between 29 to 35 days, 2 (6.66%) patients returned to work between 7 to 14 days and 2 patients (6.66%) returned to work between 15 to 21 days. In our

TEP study group 22 (73.33%) patients returned to work between 22 to 28 days, 3 (10%) patients returned to work between 7 to 14 days, 3 (6.66%) patients returned to work between 15 to 21 days and 2 (6.66%) patients returned to work between 29 to 35 days.

Complication

Out of 60 patients treated by laparoscopic inguinal hernia repair, only 6 patients (3 patients from TAPP group and 3 patients from TEP group) developed complications which were not life threatening complications.

Complication	TAPP group		TEP group	
	No. of patients	% of Patients	No. of patients	% of Patients
Seroma / haematoma	01	3.33%	02	6.67%
Bleeding	00	0%	00	0%
chronic local pain	01	3.33%	00	0%
Testicular pain and swelling	01	3.33%	01	3.33%
Sepsis	00	0%	00	0%
Neuralgia	00	0%	00	0%
Others	00	0%	00	0%
Total	03	9.99%	03	9.99%

One patients from TAPP group and 2 patients from TEP group develop seroma post-operatively which was simply managed by aspiration under all aseptic precautions. One patients from TAPP group experienced chronic local pain which subsides with uses of analgesics. One patient from TEPP and one patient from TEP develop cord edema which subsided by uses of scrotal support. Neither recurrence nor port site hernia observed during follow up period post-operatively.

RESULTS AND DISCUSSION

This study was conducted from December 2007 to December 2013 total 60 patients of inguinal hernia above 20 years age admitted in our hospital were included in this study. All the admitted patients divided in to two groups randomly. One group underwent TAPP (trans-abdominal pre-peritoneal repair) hernia repair another group TEP (total extra-peritoneal repair) hernia repair. Both the groups were compared in relation to aims and objectives. Results and observations noted in both the groups were discussed and the results of study summarized. Also the results and observations of our study were compared with the standard studies (case

studies as well as meta analysis studies). In present study all the patients included were male patients. 70% patients belong to 20-50 years age group. This age group constitutes the major working population of the country. So surgical outcome of these patients significantly influences the economy and health care delivery system of our society. In this study there were total 60 patients with inguinal hernia, 30 patients were operated by trans-abdominal pre-peritoneal repair (TAPP) and remaining 30 by Total extra-peritoneal repair (TEP). 60% of the patients had right sided inguinal hernia, and 31.67% patients had left sided inguinal hernia, 8.33% had bilateral inguinal hernia. 81.67% patients have indirect inguinal hernia and 18.33% have direct inguinal hernia. According to nyhus classification 71.67% of inguinal hernias were of type 1, 10% were of type 2, 16.67% were of type 3a, and 1.67% was of type 4a.

Post operative pain

To compare post operative pain in our study group of patients, we used Visual Analog Scale (VAS) which is used in many international studies. We compared Visual Analog Scale (VAS) pain score in our study with standard P. Schrenk *et al*⁵⁰ study.

Table A.1: Comparison of Visual Analog Score of patients, operated by TAPP and TEP method in P Schrenk *et al*⁵⁰ study and present study

Post operative Visual Analog Score	TAPP group		TEP group	
	P. Schrenk <i>Et al</i> ⁵⁰	Present Study	P. Schrenk <i>Et al</i> ⁵⁰	Present Study
POD-0	4.8	4.53	6.5	5.10
POD-1	3.76		6	
POD-2	3	3.77	3.3	3.83
POD-5	1		1	
POD-8	-	2.8	-	2.87

The Visual Analog Score of trans-abdominal pre-peritoneal repair in our study on POD-0 was 4.53, on POD-1 it was 3.77, on POD-2 it was 2.8 and on POD-5 it was 0.78. This is comparable to postoperative Visual Analog Score of TAPP group of P. Schrenk *et al*⁵⁰ study The Visual Analog Score of totally extra-peritoneal repair was 5.10, 3.83, 2.87, and 0.70 on POD-0, POD-1, POD-2,

and POD-5 respectively. These results are comparable with the post operative Visual Analog Score of P. Schrenk *et al*⁵⁰ study. Only one patients in our study operated by trans-abdominal pre-peritoneal repair (TAPP) experienced chronic pain which got relieved after simple scrotal support. No patient in our groups experienced severe pain.

Table A.2: Statistical comparison of post operative pain between TAPP and TEP

Post operative VAS	TAPP study		TEP study		T test	P value
	Group		Group			
	Mean	S.D.	Mean	S.D.		
POD-0	4.53	1.04	5.10	0.76	2.40	0.02
POD-1	3.77	0.90	3.83	0.75	0.31	0.76
POD-2	2.80	0.71	2.87	0.63	0.38	0.70

Statistically postoperative pain on POD-0 (on the day of operation) appears be significant in patients operated by totally extra-peritoneal repair (TEP) of inguinal hernia. Patients whose inguinal hernia were repaired by totally extra-peritoneal repair (TEP) experienced more pain on the day of operation. Thereafter there was no significant difference in post operative pain.

Post operative requirement of analgesia

Table B.1: Comparison of postoperative analgesia requirement of patients operated by TAPP and TEP method in P. Schrenk *et al*⁵⁰ study and present study

Post operative analgesia Requirement	TAPP group		TEP group	
	P.Schrenk <i>et al</i> ⁵⁰	Present Study	P.Schrenk <i>Et al</i> ⁵⁰	Present group
POD-0	38%	60%	58%	65%
POD-1	18%	25%	58%	20%
POD-2	8%	15%	10%	15%

In our study about 60%, 25% and 15% patients were operated by TAPP on POD-0, POD-1, POD-2 required analgesia. While 65%, 25% and 15% patients operated by TEP required analgesia on POD-0, POD-1 and POD-2. No statistical difference found on comparison of postoperative analgesic requirement between TAPP and TEP. We applied test of proportion (z test) for comparison of analgesia requirement. The post operative requirement of analgesics is higher in TEP group as compare to TAPP group in our study. In

comparison to other standard study, the post operative requirement for the doses of analgesics is higher in our study. This might have a confounding factor of drug doses and the type of drug used. Analgesic requirement have a major impact on the day care suitability of the procedure. The Royal College Of Surgeon of England has suggested that to quantify the day care surgery, patient should not require parenteral analgesia after discharge. In our study we have given single dose of diclofenac sodium intra-muscular just after operation.

Post operative Hospital Stay

Table C.1: Comparison of post operative hospital stay between TAPP and TEP in present study and Fitzgibbon *et al*⁵⁷ study

Post operative Hospital stay	TAPP group		TAPP group	
	Present study	Fitzgibbon <i>et al</i> ⁵⁷	Present study	Fitzgibbon <i>et al</i> ⁵⁷
Same day	00%	55%	00%	40%
Overnight	93.33%	40%	90%	50%
Two nights	3.33%	3%	6.66%	10%
Three or more nights	3.33%	2%	3.33%	00%

All the patients in our study group received general anaesthesia for which patients were observed for at least 24 hours for post operative pulmonary complication as well as complications due to pneumo-peritoneum. So no patient in our study was discharged with in 24 hours. In our study 93.33% of patients in TAPP group and 90% of patients in TEP group were discharged on first post operative day and 3.33% of patients in TAPP group and 6.66% patients in TEP group were discharged on post operative day two, which is comparable to standard study Fitzgibbons *et al*⁵⁷ study.

Operating time

Table D.1

Study group	TAPP group		TEP group	
	Present study	Schrenk <i>et al</i> ⁵⁰	Present study	Schrenk <i>et al</i> ⁵⁰
Operative time (min)	50.07	46	55.13	52.3

The mean operative time in our study was 50.07 min utes for TAPP and for TEP was 52.3 minutes which is comparable with the standard Schrenk *et al*⁵⁰ study.

Table D.2: Statistical comparison of operating time between TAPP and TEP

TAPP		TEP		t- test	P value
Mean	S.D.	Mean	S.D.		
55.07	7.34	55.13	8.12	5.53	0.01

The operative time (duration of surgery) required for TEP was longer than the operative time required for TAPP and it is statistically significant.

Time required to return to daily activity

Table E.1: comparison of time required to return to daily activity between TAPP and TEP

Time required to returned to daily Activities	TAPP group % of patients	TEP group % of patients
POD-1	73.33%	80%
POD-2	16.66%	10%
POD-3	6.66%	10%
POD-4	3.33%	0%
Total	100	100

Table E.2: Comparison of average time required to return to daily activities TAPP and TEP in present study and P. Schrenk *et al*⁵⁰ study

Average time to return to Daily activities	TAPP		TEP	
	Present study	Schrenk <i>et al</i> ⁵⁰	Present study	Schrenk <i>et al</i> ⁵⁰
No. of days	1.4	8.6	1.3	8.5

Table E.3: Statistical analysis of comparison of average time required to return to daily activities

TAPP		TEP		t- test	P value
Mean	S.D.	Mean	S.D.		
1.40	0.77	1.30	0.65	0.54	0.59

Statistically the average time required to return to daily activities is no significant. Recovery time is important issue in terms of the degree of disruption to a patients life and the cost to society calculated by days missed from productive work. Outcome of any surgical treatment depends on early rehabilitation of patients. In our study the average time required to return to daily activities for

TAPP group is 1.4 days and for TEP group is 1.3 days. In standard Schrenk *et al*⁵⁰ study the average time required to return to daily activities for TAPP group was 8.6 days and for TEP group is 8.5 days. In standard Schrenk *et al*⁵⁰ the average time required to return to daily activities was long, probably as a result of cultural and socio-economical factors⁵⁰.

Time required returning to work

Table F.1: comparison of the time required to return to work between TAPP and TEP

Time to return to routine Daily activities	TAPP group % of patients	TEP group % of patients
7 days	0%	00%
7 to 14 days	6.66%	10%
15 to 21 days	6.66%	10%
22 to 28 days	76.66%	73.33%
28 to 35 days	10%	6.66%
>35 days	0%	0%
Total	100	100

Table F.2: Comparison of average time required to return to work between TAPP and TEP in present study and P. Schrenk *et al*⁵⁰ study.

Average time to return to work	TAPP group		TEP group	
	Present group	Schrenk <i>et al</i> ⁵⁰	Present group	Schrenk <i>et al</i> ⁵⁰
No. of weeks	3.54 (24.80 days)	4.9	3.21 (22.93 days)	4.6

Table F.3: Statistical comparison between TAPP and TEP for average time required to return to work.

TAPP		TEP		t-test	P value
Mean	S.D.	Mean	S.D.		
24.80	4.32	22.93	4.60	1.62	0.11

Statistically there is no significant difference for time required for return to work for the patients operated by both TAPP and TEP method. Return to work largely depends up on the occupation of the patient whether he is labourer or sedentary worker and also the desire of the

patients to return to work. In our study most of the patients were labourer. Average period to joining to their routine daily work was 5 weeks in TAPP group and 6 weeks I TEP group.

Complications: comparison of complications occurred in TAPP and TEP group

Complications	TAPP group		TEP group	
	Present study	Lepere <i>et al</i> ⁴	Present study	Lepere <i>et al</i> ⁴
Seroma/ haematoma	3.33%	6.8%	6.66%	8%
Bleeding	0%	0%	0%	0%
Chronic local pain	3.33%	0%	0%	0.7%
Testicular events	3.33%	3.33%	3.33%	2.9%
Sepsis	0%	0%	0%	0.2%
Neuralgia	0%	0%	0%	0%
Others	0%	0%	0%	1%
Total	9.99%	10.1%	9.99%	12.5%

In our study one patient from TAPP group and two patients from TEP group develop seroma formation. Both are treated by needle aspiration under all aseptic precautions and patients got cured by this simple measure. One patient from TAPP group develop chronic local pain which subsided with analgesics. one patient from TAPP group and one patient from TEP group have edema of the cord which subsided with scrotal support. No any recurrence of hernia observed in follow up period in both group. Port site hernia didn't occur in both groups during the follow up period.

SUMMARY

In our comparative study we compared 30 patients operated by TAPP with 30 patients operated by TEP. All patients were men with mean age of 39.81 years. Right sided inguinal hernia was found more common than left inguinal hernia. Indirect inguinal hernia was more common than direct inguinal hernia. Out of 60 patients, 5 patients had bilateral inguinal hernia. One patient had right sided recurrent direct inguinal hernia. Out of 5 bilateral inguinal hernia 3 patient were operated by TAPP and 2 patients were operated by TEP. In our study group there were patients more than 60 years age with comorbid conditions like hypertension and bronchial asthma. One patient was operated for appendectomy by Mac Burney's incision previously and one patient had recurrent inguinal hernia who was operated by TAPP method. All patients were classified according to Nyhus classification where maximum patients belonged to Nyhus type 1. All patients were evaluated for postoperative pain by Visual analog scale during there hospital stay and during their follow up. The average VAS on POD-0, POD-1, POD-2, and POD-3 in TAPP group was 4.53, 3.77, and 2.80 while in TEP group it were 5.20, 3.83, and 2.87 respectively. It suggest that majority of patients had mild to moderate pain on the day of operation. The analgesic requirement on the day of operation was more in both groups and subsequently decreased. 93.33% patients from TAPP group and 90% from TEP group were discharged after over-night stay. The average operative time required in TAPP group was

50.07 minutes and in TEP group was 55.13 minutes. The operative time was more in bilateral hernia in both group. The average time required to return to daily activities was POD-1.4 for TAPP group and POD-1.3 for TEP group and return to routine work was 24.80 days in TAPP group and 22.93 days in TEP group respectively. There was no major life threatening complications in our study. Minor complications found were in the form of seroma formation, local pain and cord edema. There was no recurrence in any patient in both groups. We found come with a single case of port site hernia from both groups during follow up period till date. It may be due to our policy of routine closure of fascial sheath of 10 mm port.

CONCLUSION

In our comparative study of TAPP versus TEP for inguinal hernia repair, revealed following

1. In both group there was no significant difference regarding postoperative pain except that patients in TEP group experienced slightly more pain on the day of operation only.
2. While both groups are compared for operative time there was more operative time requirement in TEP group as compared to TAPP group. May be because of TEP is more technically demanding and difficult and our less experience with this technique.
3. Hospital stay in both the groups in our study was same.
4. Patients from both the group required same analgesic management.
5. Most of the patients from both the group return to daily activities on same time.
6. Return to work is highly depends upon the desire of the patients. We found no significant difference in both the group.
7. We do not found any significant difference in both groups when compared to complications but TEP definitely eliminates the complications related to violating the peritoneal cavity.
8. Both TAPP and TEP repair are equally efficient and safe for the treatment of inguinal hernia

repair. But TEP approach reduces the potential intra-peritoneal complications and may be procedure of choice in most situation.

REFERENCES

1. Andrew N. Kingsnorth, giorgi giorgobiani, David H. Bennet; hernia, umbellicus and abdominal wall; Bailey and Love's Short Practice of Surgery; 25th edition; Edward Arnold Ltd. 2008; 968-990.
2. Mark A. Malangoni, Michael J. Rosen; Hernia ; Sabiston Textbook of Surgery; 18thedition ; vol. 2 ; Saunders An Imprint of Elsevier 2008: 1155-1179.
3. Robert J. Fitzgibbons, Jr, Charles J. philipi, Thomas H. Quinn; Inguinal Hernia : Schwartz's Principle of Surgery; 8th edition ; The Mcgraw-Hill Companies, inc. 2005 ; 1353- 1394.
4. Paola Primatesta, Michael J. Goldacre ; Inguinal Hernia Repair ; incidence of elective and emergency surgery, readmission and mortality; International Journal of Epidemiology ; 1996 Aug; 25 (4) : 835-839.
5. Ira M. Rotkow, Alan W. Robbins ; Demographic classificatory and socioeconomic aspect of hernia repair in the United States; Surgical Clinics in North America: june 1993; 73(3): 413-426
6. Samir S. Awad ; Evidence based approach to hernia surgery; The American Journal of Surgery, 188 (supplement to dec. 2004) ; 15-25
7. Simon Nienhuijs, Erik staal, Luc Strobbe ; chronic pain after mesh repair of inguinal hernia : A Systemic Review ; The American Journal Of Surgery ; 2007 ; 194 ; 394-400
8. Anthony S. Lowham, Charles J. Phillipi, Robert J. Fitzgibbons, Giovanni M. Salerno; Laproscopic herniorrhaphy; Textbook of Laproscopy; 3rd edition ; Hulka and Reich; W.B. Saunders ; 469-482
9. Simons MP, Kleijnen J, Van Geldere D, *et al* ; Role of the Shouldice Technique in Inguinal Hernia Repair - a systemic reviews of controlled trails and meta analysis ; British Journal Of Surgery; 1996 ; 83 ; 734
10. Alan W Robbins, Iran M. Rutkow; The Mesh – Plug Hernioplasty ; Surgical Clinics Of North America ; june 1993; 73 (3) : 501-512
11. Alexander G. Nagy, Emma J.Patterson ; Laparoscopic Surgery : Historical Perspectives ; Surgical Laparoscopy ; 2nd ed by Karl A. Zucker; Lippincott Williams and Willikins 2001; 3-11
12. Annibatti R, Fitzgibbons R, Quin T; Surgical Anatomy Of The Inguinal Region; Abdominal wall hernia: principles and management; Bendavid R.; Ed. Spinger; 2001; 72-85.
13. Ara Darzi, Mark A. Talamani, David C. Dunn, Charles Nduka; step by step endoscopic inguinal anatomy; Atlas of Laparoscopic Surgical Technique ; W.B. Saunders Companies Ltd. 1997; 103-108.
14. B. DelleMagne, S. Markiewicz, C. Jehaes, J. Weerts; Extra peritoneal laparoscopic inguinal hernia repair: techniques and results ; Surgical Endoscopy; 1996; 10:228.
15. B.J. Ramshaw, J.G. Tucker, T.Conner, E.M. Mason; a comparison of the approaches to laparoscopic Herniorrhaphy; surgical endoscopy ; 1996; 10:29-32.

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