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Original Research Article

Trans abdominal pre-peritoneal versus totally extra-peritoneal laparoscopic techniques for inguinal hernia repair: a comparative study

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ABSTRACT

Background: Laparoscopic inguinal hernia repair has been controversial as far as the choice of approach is considered. Laparoscopy has obvious advantages over the open technique. TAPP and TEP are the most common laparoscopic approaches. A multitude of research data is available on these, but, evidence based medicine does not allow conclusions to be drawn about the relative effectiveness of TEP compared with TAPP. The scarcity of data about the relative merits and risks of both the methods induced the need to undertake this study.
Methods: The study was undertaken for patients admitted in surgery department in a single unit who underwent laparoscopic inguinal hernia repair, either TAPP or TEP, after appropriate patient selection and counseling. 40 patients were assessed in the study between May 2014- May 2016.
Results: In our study we found both TAPP and TEP to be safe and feasible options for inguinal hernia repair. TAPP could be the preferred option as it allows visualization and simultaneous repairs of clinically undiagnosed contra-lateral defects.
Conclusions: We concluded in this study that laparoscopic inguinal hernia repair may safely be offered to properly selected patients. TAPP and TEP fair equally well in terms of operative time, intra and postoperative complications and patient recovery. TAPP is a better technique as it allows intra-operative diagnosis and repair of previously undiagnosed contra-lateral hernia.

Keywords: Inguinal hernia, TAPP, TEP

INTRODUCTION

Inguinal hernia repair is the most frequent operation in general and visceral surgery worldwide. In western countries, including the United States, more than 1.5 million procedures are performed every year.[1] The laparoscopic approach may appear exhaustive in terms of the learning curve associated with the technique and the apparent cost incurred. But the role of laparoscopic repair has been well eslablished.[2] Trans-abdominal pre-peritoneal (TAPP) and totally extra-peritoneal (TEP) are the most common techniques of laparoscopic inguinal hernia repair. TEP repair differs from TAPP in avoidance of peritoneal cavity entry and mesh placement from outside the peritoneum. TAPP requires peritoneal cavity entry with placement of mesh in the pre-peritoneal space and closure of peritoneum above the mesh. TEP repair was first reported in 1993.[3]

Laparoscopic hernia repair is associated with a "learning curve" in its performance.[4] TAPP has been associated with higher rates of port-site hernias and visceral injuries

whilst TEP has been associated with increased conversion rates.[5] Cochrane data analyzing directly the two techniques of laparoscopic repair do not give definitive evidence in favor of either.[6]

In the scarcity of literature suggesting superiority of either of the two laparoscopic hernia repair techniques, the present study was undertaken to assess the feasibility and safety of these procedures in our set up. We also compared the outcome of both the procedures and evaluated the results in order to find the preferred option in our perspective.

METHODS

This retrospective study was conducted in SGRRIMHS and SMIH, Dehradun in department of general surgery. 40 patients admitted in single unit with the diagnosis of inguinal hernia were analyzed. These were subjected to either TAPP or TEP after appropriate counseling. Male patients in age group 20-60 years were included in the study. Patients with co-morbidities, complicated hernia and previous surgery were excluded from the study.

The surgical procedure in TAPP included access to peritoneal cavity with mesh placement through a peritoneal incision. Mesh was placed in the pre-peritoneal space covering all potential hernia sites. It also allowed simultaneous correction of previously undiagnosed hernia on clinical examination. The mesh was fixed using a tacker. In TEP, infra-umbilical trocar was inserted in pre-peritoneal space. The mesh was inserted in the pre-peritoneal space thus avoiding entry into the peritoneal cavity. Tacker was used for mesh fixation.

Both techniques were compared in terms of mean operative time, intra and post-operative complications, duration of hospital stay and recurrence. The results were analyzed and tests of significance (p value) determined by using the two sample t test and chi square test.

RESULTS

There were 19 (48%) patients in TAPP group and 21 (52%) patients in TEP group. The mean age of patients undergoing laparoscopic hernia repair was 33.93 years (Table 1). Direct inguinal hernia was the primary diagnosis in 16 (40%) patients and indirect inguinal hernia in 24 (60%) as shown in Table 2. There were 9 patients of direct inguinal hernia in TAPP group and 7 in TEP group. The distribution according to diagnosis in both the groups is depicted in Table 4. There was no significant difference between the two groups.

Table 1: Age distribution.

Total no. of cases N = 40		
Age (years)	**Mean**	**SD**
	33.93	7.83

The mean operative time was 97.11 minutes in TAPP and 116.6 minutes in TEP group. The time taken in TEP was significantly more than TAPP group (Table 3). No major intra-operative complication was observed in either group.

Table 2: Descriptive analysis of the data.

Parameter		
Type of hernia	**Cases (n)**	**%**
Direct	16	40
Indirect	24	60
Surgery done		
TAPP	19	48
TEP	21	52

Table 3: Comparison of operative time.

Surgery	Mean (minutes)	S.D	p value
TAPP	97.11	12.72	<0.0001*
TEP	116.6	13.27	

*Indicates highly significant using the two sample t test.

In the intra-operative period, contra-lateral hernia was detected in 4 previously undiagnosed cases in TAPP group. It was a statistically significant finding as depicted in Table 4.

The post- operative complications are cited in table 4. 1 (5.26%) patient developed seroma in TAPP group. Urinary tract infection was recorded in 2 (10.52%) patients undergoing TAPP and 2 (9.52%) patients in TEP group. There was no significant difference in both the groups.

73.68% patients in the TAPP group were discharged on day 5. In TEP group 76.19% patients were discharged on 5th post-operative day. The hospital stay was comparable in both groups as shown in Table 4.

All patients had a follow-up of minimum 6 months. One (5.26%) patient in the TAPP group had recurrence of hernia. No recurrence was observed in patients undergoing TEP (Table 4).

DISCUSSION

The mean age in our study group was 33.93 years. More et al have cited similar age incidence in their comparative study of TAPP versus TEP.[7] In our study we found no significant difference between the type and distribution of hernia in the two groups which is comparable to the study by More et al.[7]

We found TEP to be associated with significantly increased operative time as compared to TAPP. TEP as the modality of laparoscopic repair has come in vogue since past two decades since the first introduction by Dulucq.[8] It is associated with learning curve and the

perceived pressure of the surgeons to complete operation expediently may lead to higher conversion rates.[9] Though we observed longer operative times in TEP, we had no conversion to open repair. Higher conversion rate of TEP has been reported in a large systematic review by McCormack et al.[5]

In this study there was 1 patient who developed seroma in post-operative period in the TAPP group. Kockerling et al found significant association of seroma formation in TAPP as compared to TEP in a large series of 17,587 patients.[10]

Table 4: Comparison of variables in two groups.

Variable	Tapp -no. of cases (%)	Tep (no. of cases)	Total cases	P value
Type of hernia				
Direct	9	7	16	>0.05
Indirect	10	14	24	
C/L hernia detected intra-operative				
None	15	21	36	<0.0001*
Yes	4	0	4	
Post-operative complications				
Seroma	1	0	1	>0.05
UTI	2	2	4	
Hospital stay				
4 days	2	2	4	>0.05
5 days	14	16	30	
6 days	3	3	6	
Recurrence				
Yes	1	0	1	>0.05
None	18	21	39	

*Indicates highly significant using chi square test.

It was observed in our study that in significant number of patients undergoing TAPP, contralateral hernia was diagnosed in cases with previously clinically unrecognized hernia. This is a major advantage of TAPP and has been highlighted in the guidelines by International Endohernia Society.[1]

CONCLUSION

Laparoscopic hernia repair either TAPP or TEP may safely be offered to properly selected patients. TAPP offers the advantage of simultaneous detection and correction of contra-lateral hernia. TAPP was also associated with shorter operative time with no significant difference in the post-operative recovery. Therefore TAPP may be preferred for laparoscopic repair of inguinal hernia.

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