

## Original Article

# Three Port Midline Approach for TEP Hernia Repair; Technique and Comparison with Open Technique: One Unit Experience in Mubarak Al-Kabeer Hospital, Kuwait

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**ABSTRACT**

**Objective:** 1. To describe a new midline three ports technique for laparoscopic TEP repair. 2. To evaluate and compare the outcome, complications and analgesic requirement between total extraperitoneal (TEP) repair and Lichtenstien open repair.

**Setting:** Surgical department, Mubarak Al Kabeer Hospital.

**Subjects/method:** A prospective study was done over a one year period, between the beginning of November 1999 to end of October 2000 on 60 patients presenting with reducible inguinal hernia. Patients were randomized into two groups: 30 patients for laparoscopic TEP repair and 30 patients for Lichtenstien open repair. The two groups were comparable in age, sex, and type of hernia.

**Results:** Analgesic requirement postoperatively was

significantly greater in Lichtenstein open repair group ( $P < 0.001$ ). Postoperative complications encountered during the study were in the form of seroma, wound haematoma and neuralgia. These developed in 9 patients after Lichtenstein open repair and in 2 patients in laparoscopic TEP repair ( $P < 0.001$ ). In our study, laparoscopic TEP repair required less analgesia and lead to significantly fewer complications than Lichtenstein repairs and none of the cases required conversion.

**Conclusion:** Laparoscopic TEP repair has advantages over Lichtenstein open repair. There were less postoperative complications and less analgesia was required. Hence, it is a suitable procedure for bilateral inguinal hernia repair and recurrent inguinal hernia repair.

**KEYWORDS:** laparoscopic total extra peritoneal repair (TEP). Lichtenstein repair

**INTRODUCTION**

Since the 1970s surgeons began to incorporate prosthetic material in hernia repair to eliminate tension and hence decrease the rate of recurrence. Currently, polypropylene mesh repair is the most popular material used in open and laparoscopic repair<sup>[1]</sup>. The interest in laparoscopic inguinal hernia repair began in 1990<sup>[2]</sup>. With the introduction of the modern laparoscopes, two laparoscopic techniques were developed for hernia repair: the Trans abdominal pre peritoneal (TAPP) and the Total Extra peritoneal (TEP). Most surgeons used the trans abdominal pre peritoneal repair (TAPP) approach to reach the posterior floor of the groin. The laparoscopic (TEP) repair combines the advantages of open pre peritoneal repair with those of minimal access surgery with encouraging results<sup>[3]</sup>. It eliminates the complications associated with violations of the peritoneal cavity and it may reduce operation time. In this study, we set out to assess the analgesic requirement, time to return to work and morbidity following laparoscopic TEP and Lichtenstein technique for inguinal hernia repair.

**PATIENTS AND METHODS**

Over a period of one year, from the beginning of November 1999 to the end of October 2000, the patients admitted for elective inguinal hernia repair were included in this study. The patients were randomized to open Lichtenstein tension-free repair or laparoscopic TEP repair. After discharge from hospital, first follow up visit to the surgical outpatient was at 2 weeks then every 2 months for a year. A questionnaire regarding post-operative pain, the frequency of analgesia required, the time of return to work and morbidity was recorded for each patient. Pain control was by oral NSAID and intramuscular pethidine injections. Patients with complicating medical condition e.g. diabetes were excluded.

**OPERATIVE TECHNIQUE**

Laparoscopic TEP repair was performed under general anesthesia by two surgeons qualified in TEP repair. A small transverse sub umbilical skin incision was made, then the rectus sheath was slit transversely to gain access to the extra peritoneal space. A plane below the rectus muscle was

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developed initially by digital dissection and later by inserting balloon dissectors that was inflated by air, under laparoscopic vision. After creating the optimum space, the balloon was deflated and withdrawn. A 10 mm trochar was inserted through which the laparoscope was introduced. The extra peritoneal space pressure was maintained at 12 mm Hg under continuous carbon monoxide flow. Two more working ports were placed in midline: a 5 mm trochar was inserted 3 cm above the symphysis pubis and a 10 mm trochar mid-way between the infraumbilical port and the suprapubic port. After reducing the hernia sac at least 5 to 7 cm from the deep inguinal ring, the myopectineal orifice was covered with a 10 x 14 cm piece of prolene mesh, which is fixed medially to the pubic bone by stapler. Lichtenstein repair was performed under general anesthesia using the technique described by Lichtenstein et al<sup>[4]</sup>. Rating time was not included in the study as there was no much difference in time of surgery between two groups. At the time of discharge from hospital, the amount of analgesic or narcotics received by the patient was noted. The hospital stay and early complications were also recorded.

## RESULTS

30 patients were enrolled in each group. All the patients were males except two females in the TEP group. Both groups were comparable in age distribution and their hernia characteristics (Table 1). The mean age in TEP group and in open Lichtenstein repair was 40 year (20-69) and 38 year (15-60) respectively. The total number of hernias repaired were 34 in laparoscopic TEP group distributed as follows; 9 right, 11 left, 4 bilateral and 6 recurrent. The 35 hernias repaired by open Lichtenstein repair were as follows: 10 right, 14 left, 5 bilateral and one recurrent. Two weeks follow up was 100%. 47.2% completed their 12 months follow up period. Pain control: (Table 2) 15 patients in TEP group required oral NSAID compared to 12 patients in the open group. 14 patients in the latter group required pethidine for pain control compared to 4 patients in TEP group. The difference in narcotic requirement was significantly lower in TEP group ( $P < 0.001$ ).

**Complications:** The differences between the two groups were statistically significant for the development of seroma or wound haematoma ( $P < 0.001$ ), but not for other complications (Table 3). Most of the patients in the two groups had 2 weeks of sick leave. There was no difference in the time taken off work between the two groups. No recurrence was detected during the follow up period in both groups.

**Table 1**  
Patient and hernia characteristics

	Laparoscopic TEP repair N: 30	Lichtenstein repair N: 30
Mean age	40 (20-69)	38 (15-60)
Sex		
Male	28	30
Female	2	
Type of hernia		
Right	9	10
Left	11	14
Bilateral	4	5
Recurrent	6	1
Total hernia repaired	34	35

**Table 2**  
Required number of patient analgesia ( $P < 0.001$ ) Chi square test

	Laparoscopic TEP repair N: 30	Lichtenstein repair N: 30
Analgesia	15	12
Sedation	0	14

**Table 3**  
Early post-operative complications. ( $P < 0.001$ ) Chi square test.  
N.S: not significant

	Laparoscopic TEP repair N: 30	Lichtenstein repair N: 30	P Value
Seroma/ Wound haematoma	1	6	<0.001
Neuralgia + paraesthesia	1	3	N.S
Retention of urine	0	2	N.S

## DISCUSSION

In our study, laparoscopic TEP repair was done through three small skin incisions in the midline below the umbilicus without division of muscles or aponeurosis and with no cord dissection. In the classical laparoscopic TEP, two midline ports and a third port inserted in the iliac fossa opposite to the hernial site are used. There has not been any report in the literature of the three midline ports approach to the extra peritoneal space. Our use of the balloon dissection may account for less bleeding in the minor blood vessels and hence less post operative morbidity. Laparoscopic TEP repair for inguinal hernia may be the procedure of choice in uncomplicated inguinal hernia. A relative contra indication for this technique is a previous lower abdominal surgery<sup>[5,6]</sup>. In our study, six cases of recurrent inguinal hernia had laparoscopic TEP repair. In these cases the repair was approached in

a virgin area. This accounted for less morbidity and post operative pain that was also noted in other studies<sup>[7]</sup>. Moreover, patients with laparoscopic TEP repair required analgesia for shorter duration than patients with Lichtenstein repair<sup>[8,9]</sup>. The cause of the pain in the two methods is different. In laparoscopic TEP repair it is probably due to the dissection of the parietal peritoneum. In Lichtenstein repair it is due to the dissection of the spermatic cord (including the cremasteric muscle and its associated fat), the suturing of the tissues and sometimes the tension in the sutures<sup>[10]</sup>. Laparoscopic TEP repair of inguinal hernia is reported to have reduced post operative pain and to have led to faster return to a normal life style than open Lichtenstein repair<sup>[11]</sup>. We did not notice a difference in the time taken off work in our study. There was significantly less postoperative morbidity in laparoscopic TEP repair than in open Lichtenstein repair as shown in table 3.

### CONCLUSION

Laparoscopic TEP repairs for inguinal hernia by using a 3 port midline technique to minimize post operative pain and morbidity may be the procedure of choice in uncomplicated inguinal hernia. It is suitable procedure for bilateral inguinal hernia repair. Its advantage over open repair in recurrent hernia is in minimizing recurrence and morbidity. Its cost effectiveness was excluded in this study. Laparoscopic TEP repair of inguinal hernia can be performed as a routine but with due attention to learning curve in order to avoid errors and early recurrence.

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