International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 7; Issue 4(G); April 2018; Page No. 11806-11808
DOI: http://dx.doi.org/10.24327/ijcar.2018.11808.2056

Research Article

A COMPARATIVE STUDY OF POSTOPERATIVE COMPLICATIONS IN LICHTENSTEIN TENSION FREE REPAIR AND LAPAROSCOPIC TOTAL EXTRAPERITONEAL (TEP) REPAIR OF PRIMARY INGUINAL HERNIA

Khatana P. S., Jitendra Kumar and Rajib Baishya

Department of Surgery and Urology A, B & C: DR B. S. A. Medical Colllege and Hospital, Rohini, New Delhi -110085

A R T I C L E I N F O

Article History:

Received 11th January, 2018
Received in revised form 20th February, 2018 Accepted 8th March, 2018
Published online 28th April, 2018

Key words:

Inguinal hernia; Herniorrhaphy; Hernioplasty; Lichtenstein hernia repair; Totally extraperitoneal lap hernia repair; transabdominal preperitoneal hernia repair.

A B S T R A C T

Inguinal hernia surgery is one of the most commonly performed surgery on daily basis. With the advancement of laparoscopic surgery, now a day, Laparoscopic repair of inguinal hernia is frequently employed and preferred by many surgeons and patients. Still there is huge debate is going on that which approach whether open or laparoscopic repair is better. Aim of this study is to compare the difference between the outcomes of laparoscopic TEP and Lichtenstein open hernia repair. Out of total of 50 patients, which were randomized in to two groups, 25 patients in group A underwent laparoscopic procedure and 25 patients in group B underwent open (Lichtenstein) surgery. The workup of the patients was divided into pre-operative evaluation, operative procedures, post-operative monitoring and follow-up.The age group profile shows that out of 25, most patients were between 20 – 50 years of age. Majority of patients [34 (68%)] had right sided inguinal hernia.There was no short-term recurrence in either group of the present study for the mean follow-up period of 20 weeks (range 3-47 weeks). In the hand of experienced surgeon, there was no significance difference in the post-operative complications between the Laparoscopic and Lichtenstein hernia group found.

INTRODUCTION

Till date, inguinal hernia surgery is one of the most commonly performed surgery. Inguinal herniorrhaphy through an anterior open approach is time tested, safe and well understood operation with high success rate which can be performed using general, regional or local anaesthesia. The classical open surgery of strengthening of the posterior wall of the inguinal canal has evolved over the period of time through various named operations likeBassini, Mc Vay, Shouldice, to name a few. Now, gold standard for management of hernia surgery is tension free hernioplasty using prosthetic mesh (Lichtenstein) technique.

The concept of tension free repair was introduced by Lichtenstein and colleagues who reported 1000 consecutive prosthetic hernioplasties followed over a five years period without recurrence.[1] This prosthetic hernioplasty consists of the repair of floor of the inguinal canal wherein a prosthetic mesh is sutured to the deep ring and is sutured to cover the Hesselbach's triangle medially as well lateral to the deep ring and also sutured to the internal oblique aponeurosis and shelving margin of engulfs inguinal ligament below.

Corresponding author:* **Khatana P. S
Department of Surgery and Urology A, B & C: DR B. S. A. Medical Colllege and Hospital, Rohini, New Delhi -110085

Laparoscopic surgery gained momentum after the successful beginning with laparoscopic cholecystectomy and its use was extended to other area including that of inguinal hernias surgery. The first laparoscopic approach to hernia surgery is credited to Ger in 1982. [2]Over the last few years laparoscopic hernia repair has evolved from simple closure of small indirect hernia to the placement of mesh plug and mesh patch over the internal ring.

Now, Laparoscopic surgery is frequently employed and preferred by many surgeons and patients. Currently, mainly two techniques of laparoscopic hernia repair are in practice. One is trans abdominal pre-peritoneal (TAPP) repair and another is totally extra peritoneal repair (TEP). TAPP repair is comparatively simple to learn and perform but at same time TEP repair has inherent advantage of not breaching the peritoneum.[3,4.]

Prospective randomized controlled studies between laparoscopic inguinal herniorrhaphy and tension free open mesh hernioplasty and furthermore between laparoscopic TEP repair and Lichtenstein repair are very limited in number. There is need to study the different aspects of two types of repairs in terms of operation time, intraoperative and postoperative complications, difference in pain and return to work and short-term follow-up. The present study is under taken to evaluate these aspects.

MATERIAL & METHODS

The study was conducted in the department of Surgery, Dr B. S. A. Medical College & Hospital. All patients having unilateral or bilateral hernias who were suitable for general anaesthesia were included in this study. Patients with recurrent inguinal hernia, Complete (scrotal) inguinal hernia, complicated hernia, and history of previous lower abdominal surgery or radiotherapy were excluded from this study.

A total of 50 patients were randomized in to two groups using sealed envelope opened by a person other than the operative team (usually by a nursing staff), matched according to age, weight and bodily habitus. 25 patients in group A underwent laparoscopic procedure and 25 patients in group B underwent open (Lichtenstein) surgery. The workup of the patients was divided into pre-operative evaluation, operative procedures, post-operative monitoring and follow-up.

Under pre-operative evaluation patients have been workup with all requisite investigations and prepared completely for general anaesthesia. Informed consent for laparoscopic as well as open procedures were taken from the patients. Standard operative procedure was followed in each group of patients. Mann Whitney U test, student's 't' test, chi square ($X^{2)}$ test and Fisher's exact test were used to study the difference of various parameters in the both groups.

RESULTS

The age group profile shows that out of 25, most patients were between 20 – 50 years of age. 11 (44%) patients were in the age group of 20-35 and 9 (36%) in age group of 36-50. There was no patient above the age of 65 years. In term of age profile, there was no significant difference between the two groups. (Table 1).

Table 1 Patients age profile (Mean, SD, Range)

Age (Years)	Laparoscopic TEP	Open Lichtenstein
Mean	36.72	37.8
Range	15 – 54	19 – 63
S.D.	12.08	12.43

Majority of patients [34 (68%)] had right sided inguinal hernia.19 (76%) patients were in the TEP group & 15 (60%) were in the open group. (Table 2.)

Table 2 Side of hernia operated in each group

Side	TEP (n=25)	Lichtenstein(n=25)
Right	19 (76%)	15 (60%)
Left	6 (24%)	10 (40%)

Each case was classified intra-operatively according to Nyhus classification of inguinal hernia. We noted that 13 (52%) cases in TEP group and 11 (44%) patients in Lichtenstein group were having Nyhus type I inguinal hernia. The Mean operation time of laparoscopic TEP repair was 75.72 minutes with S.D. of +/- 31.57. The mean operative time of open Lichtenstein reapir was 54 min with S.D. of +/- 15.0. (Table 3.)

Table 3 Operation time (Mean, Median, Range & S.D.) in two groups)

Operation Time (Minutes)	TEP	Lichtenstein
Mean	75.72	54
Median	70	50
Range	38 – 165	25 – 90
S.D.	+. 31.57	+. 15.0

The post-operative pain was recorded at 12 hrs, 24 hrs, 48 hrs, 72 hrs & 7 days after oeration by using Visual Analogue Scale (VAS) pain scoring system. Though mean VAS in the TEP group on the 7th day was less than the open group, the difference was statistically not significant. However, there was significant difference in number of patients pain free in the TEP group at 48 hrs ($p<0.05$) and at 72 hrs ($p<0.0$). (Table 4.)

Table 4 Number of patient's pain free beyond 2 hrs

Time after Operation	TEP (n=15) (%)	Lichtenstein (n=25) (%)	p-value
48 hrs	8(32)	2(8)	<.05
72 hrs	17(68)	9(36)	<.05)
7th day	19(76)	16(64)	Not significant

There were 3 (12%) cases of seroma formation in the TEP group detected on 7th post-op day and 2 (8%) cases of hematoma formation diagnosed on the 2nd post-operative day in open Lichtenstein group which resolved without intervention within 6 weeks. There were two cases of neuralgia manged with diagnostic and therapeutic Genito-femoral nerve block by anaesthetist. (Table 5.)

Table 5 Post-Operative complications

Complications	TEP (n=15) (%)	Lichtenstein (n=25) (%)
Seroma	3(12%)	Nil
Hematoma	Nil	2(8%)
Wound Infection		
Minor	1(4%)	1(4%)
Major	Nil	Nil
Neuralgia	2 (8%)	Nil
Urinary retention	Nil	Nil

In the Lichtenstein repair of open group 15 (60%) patients were discharged at 24 hrs after operation and 10 (40%) were discharged at 48 hrs (patients were not willing to go home because of pain). In the TEP group 13 patients were discharged at 24 hrs and 12 patients were electively discharged at 48 hrs. (Table 6)

Table 6 Post-operative Hospital Stay

Post-operative time duration at discharge	TEP (n=25)	Lichtenstein (n=25)	P Value
24 hrs	13 (52%)	13 (60%)	(0.75)
48 hrs	12 (48%)	10 (40%)	(0.75)

According to job types, patients in each group were divided into three groups. Job type I included manual worker, Job type II included desk worker and Job III were those who either retired or unemployed. The mean time to return to work was 12.13 days in TEP as compared to 20.93 days in the Lichtenstein group in job I. All details are depicted in Table 7.

Table 7 Return to work (Days), Mean, S.D.

	TEP (n=25)		Lichtenstein (n=25)	
	Job Type I (n=15)	Job Type II (n=10)	Job Type I (n=15)	Job Type II (n=10)
Mean (+. S.D.)	12.13 (+. 5.139)	15.8 (+. 15.78)	20.93 (+. 3.99)	16.8 (+. 3.71)
Range	7 – 25	7 – 60	15 – 30	14 – 24

All patients were followed up for maximum of 43 weeks and no short-term recurrences found in any of the patients.

DISCUSSION

The mean operative time of TEP repair 75.6 (range 38-135) minutes was significantly higher as compared to that of the open Lichtenstein repair which was 54 (range = 25-90

minutes). The operating time of TEP of 75.6 minutes in our series was comparable to the other study done in the past.[5.] But it was less than the operative time reported by Ramshaw (89 min) and more than the Spitz *et al*. [6,7] Our results of operating time for TEP and Lichtenstein (75 vs. 54 min. respectively) were comparable to the results of Heikkinen *et al* in a similar study (67.5 min vs. 53 min.). [8]

In our study, the mean pain score at 12 hrs and 24 hrs was significantly low in TEP as compared to Lichtenstein repair (P=0.04 and 0.05 respectively). The pain score at 48 hrs and 72 hrs were less in the TEP group but did not reach significant levels (p=0.06). The results were comparable to other studies except one (Schrenk *et al*.) who did not find any differences. [9-11.]

The incidence of seroma formation was 12% (3 cases) in the TEP group. All of these resolved completely within 6 weeks. Seroma formation was little higher in our series than earlier reported. [5,7.] There was no incidence of hematoma formation in TEP group in the present study as compared to few other studies which shows hematoma is a small (1-5%) part of the complication. [10,12.] Same way in respect of wound infection also our results found to be bit better than few other study. [13.]

The incidence of neuralgia was 8%(2cases) in our study which was comparatively higher than the results reported by other studies.[7,14.]These neuralgias in our cases were seems, not to be due to nerve entrapment by staples but probably nerve irritation due to sharp edge of mesh laterally.

The median hospital stay was 1 day each in TEP and Open Lichtenstein group, whereas Liem *et al* [10.] reported it to be 1 day and 2 days respectively while Topal *et al* [14.] reported 2 days in the TEP group. The mean time to return to work was significantly low (12.13) days in TEP group as compared to the Lichtenstein group (20.93 days) in patient with job type I (Heavy manual worker) (p=.04). Our results were comparable to similar studies done in the past.[8,10.]

The mean time to return to work in the present study was 13.6 days and 19 days in TEP & Lichtenstein group respectively. While Champault *et al* reported it to be 17days and 35 days respectively. [9.]There was no short-term recurrence in either group of the present study for the mean follow-up period of 20 weeks (range 3-47 weeks). Other series in their study reported recurrence rate between 0.5% to 2%. [6.10,] The zero recurrence in the present study may be attributed to smaller study group, adequate dissection laterally and thereby using a large mesh.

CONCLUSION

On the basis of our results it can be well concluded that there is no significance difference in the post-operative complications between the Laparoscopic and Lichtenstein hernia group. Immediate post-operative pain is comparatively less in TEP group but overall there is not significant difference. Although there was no difference in the post-operative hospital stay between two groups but time to return to work earlier was significantly earlier in the TEP group esp. heavy manual worker.

Acknowledgements

I wish to express my deepest gratitude to all the patients as without their valuable cooperation this work would not have been possible. I must thank my son Aranya who helped immensely in typing, tabulation and other computer related work.

Declarations:
Funding: None
Conflict of interest: None declared
Ethical approval: Not required

References

1. Lichtenstein IL *et al*. The tension free hernioplasty. *Am JSurg*. 1089; 157: 188-93.
2. Ger R. *et al*. The management of certain abdominal hernias by intra-abdominal closure of the neck. *Ann R Coll Surg. Engl*. 1982; 64: 342.
3. Filipi CJ.*et al*. Laparoscopy herniorrhaphy. *Surg. Clin North Am* 1992; 72: 1109-24.
4. Mckernan JB. *Et al*. Laparoscopic repair of inguinal hernias using a totally extraperitoneal prosthetic approach. *Surg. Endosc*. 1993; 7: 26.
5. Kald A *et al*. Transperitoneal or totally extraperitoneal approach in laparoscopic hernia repair: results of 491 consecutive herniorrhaphies. *Surg. Lazarus. Endosc*. 1997; 7: 80-89.
6. Ramshaw BJ *et al*. Technical consideration of the different approaches to the laparoscopic herniorrhaphy: an analysis of 500 cases. *Am Surg*. 1996; 62: 69-72.
7. Spitz JD and Arregui ME. Sutureless gastroscopic extraperitoneal inguinal herniorrhaphy using reusable instruments: 203 repairs without recurrence. SurgLaproscEndoscPercutan Tech 2000; 10(1): 24-9.
8. Heikkinen TJ *et al*. A prospective randomized outcome and cost comparison of totally extra-peritoneal endoscopic hernioplasty versus Lichtenstein operation among employed patients. *Surg. Laparosc. Endosc.* 1998; 8: 338-44.
9. Champault GG *et al*. Inguinal hernia repair, totally pre-peritoneal laparoscopic approach vs. stoppa operation Randomized trial of 100 cases. *SurgLaproscEndsc*. 1997; 7(6): 445-50.
10. Liem MSL *et al*. Comparison of conventional anterior surgery and laparoscopic surgery for inguinal hernia repair. *N Eng J Med*. 1997; 336: 1541-47.
11. Schrenk R *et al*. Prospective randomized trial comparing post-operative pain and return to physical activity after transabdominal preperitoneal, total preperitoneal or shouldice technique for inguinal hernia repair. *Br J Surg*. 1996; 83: 1563-6.
12. Halkic N *et al*. Laparoscopic inguinal hernia repair with extra peritoneal double mesh technique. *J Laparosc Adv Surg Tech.* 1999, 492-4.
13. Liem MSL *et al*. The learning curve for totally extraperitoneal laparoscopic inguinal hernia repair. *Am J Surg*. 1996; 171: 281-85.
14. Topal B. and Hourlay R. Totally preperitoneal endoscopic inguinal hernia repair. *Br. J Surg*. 1997; 84: 61-3.
15. O'Riordain DS *et al*. Laparoscopic extraperitoneal inguinal hernia repair in the day-care setting. *Surg. Endosc.* 1999; 13(9): 914-7.