

Original Research Article

Managing bilateral inguinal hernia laparoscopically: is it gold standard?

Kalpesh H. Patel^{1*}, Jayesh B. Gohel², Bhumika J. Patel³

¹Department of Surgery, GMERS Medical College, Dharpur-Patan, Gujarat, India

²Department of Surgery, GMERS Medical College, Gandhinagar, Gujarat, India

³Department of Pharmacology, GMERS Medical College, Sola, Ahmedabad, Gujarat, India

Received: 30 October 2016

Accepted: 29 November 2016

*Correspondence:

Dr. Kalpesh H. Patel,

E-mail: drkalpeshpatel@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Even after many studies done in recent years, no consensus has been achieved on the surgical technique of inguinal hernia repair. It was believed that in bilateral inguinal hernia cases laparoscopic surgery is very much advantageous as it can be done through same incisions as unilateral laparoscopic inguinal hernia repair (no additional incision required), whereas in open surgery for bilateral case separate groin incision for each side required. Aim of this study is to evaluate and compare results of bilateral inguinal hernia patients operated by laparoscopic (transabdominal preperitoneal) or open (lichenstein) repair.

Methods: A prospective comparative study was conducted in a tertiary care teaching hospital over the period of two years. 60 patients with bilateral inguinal hernia were taken up and randomly divided into two groups. Group I (study group) includes patients operated by bilateral laparoscopic hernia repair (TAPP) and Group II (control group) includes patients operated by open hernia repair (lichenstein tension free hernioplasty). All patients were followed up for 18 months post-operatively. All patients of both groups were monitored for operative time, conversion rate, length hospital stay, post-operative complications and recurrence, time to return to work.

Results: Statistically there was significant difference between both groups in terms of length of hospital stay and time to return to work. Group I patients where TAPP surgery performed, 22 patients (73.33%) were discharged within 36 hours of surgery, whereas in Group II patients - control group where open surgery performed, only 4 patients (13.33%) discharged within 36 hours. All 30 patients (100%) in group I had joined their routine work within 10 days of surgery; whereas in Group II patients only 4 cases (13.33%) joined duties on or before 10 days and most of the patients 26 (86.67%) had taken more than 10 days to resume their duties. But there was no significant difference between operative time, complication rates and recurrence rates. All cases in group I were completed laparoscopically (no conversion to open repair).

Conclusions: Simultaneous bilateral inguinal hernia repair laparoscopically does not increase the risk for the patient and has an equal morbidity compared with unilateral repair, length of hospital stay, and return to normal work and over all recovery after laparoscopic repair is faster than after open bilateral simultaneous repair. Laparoscopic inguinal hernia repair of bilateral hernias should be recommended as the gold standard.

Keywords: Bilateral inguinal hernia, Open hernia repair, Transabdominal preperitoneal

INTRODUCTION

Use of preformed mesh for repair inguinal hernias has gained wide acceptance.¹ Now-a-days mesh repair is replacing repairs by suturing such as the should ice repair

or maloney darn.^{2,3} However, there is no consensus regarding the merits of laparoscopic mesh placement compared with placement of mesh by using an open approach through a standard groin incision. In laparoscopy both hernial orifices can be observed

simultaneously and tension-free mesh repair carried out effectively.

Initial randomized controlled trial compared laparoscopic trans-abdominal pre-peritoneal (TAPP) mesh with open darn repairs, laparoscopic repair was less painful and enabled patients to return to work and normal activity more quickly.⁴ Several other studies and systematic reviews have largely confirmed these results.^{5,6} In UK, the National Institute for Clinical Excellence has published its guidance on the use of laparoscopic surgery for inguinal hernias.⁷

In case of bilateral inguinal hernia, when conventional open surgery to be done then bilateral 7-10 cm groin incision is usually required, whereas in case of laparoscopy one 10 mm and two 5 mm incision as required in unilateral case is sufficient to manage for bilateral case also and no additional incision required. Here we present results of a prospective study comparing results of laparoscopic TAPP hernia repair versus open lichenstein hernia repair.

METHODS

A prospective comparative study was conducted in a tertiary care teaching hospital over the period of two years from March 2013 to February 2015 in a surgical unit. Total 60 patients with bilateral inguinal hernia were enrolled for the study and randomly divided into two groups. Group I (study group) includes patients operated by bilateral laparoscopic hernia repair (TAPP) and Group II (control group) includes patients operated by open hernia repair (Lichenstein tension free hernioplasty).

In this study, male patients between 21-70 years with bilateral inguinal hernias were taken up. Parietex™ lightweight monofilament mesh was used in both groups. Group I with laparoscopic repair, 12 cm* 15 cm mesh used bilaterally which is fixed with Absorbatack™ (absorbable mesh fixation device).

Group II with open repair, 7.5 cm* 15 cm mesh used bilaterally fixed with prolene 2-0 sutures. Patients operated under general anaesthesia in group I, were as in group ii most patients operated under spinal anaesthesia.

Exclusion criteria

- Patient age <21 years and >70 years
- Patients unfit for either general or spinal anaesthesia
- Recurrent cases of inguinal hernia
- Patients presented to emergency department with incarcerated/strangulated hernia
- Previous history of laparotomy
- Patients with simultaneous medical diseases, DM, severe anemia, hematological disorders, hepatic or renal conditions, poor nutritional status, having malignancy, immune-compromised status

Peri-operative antibiotic cover given in both groups with injection ceftriaxone 1 gm at the induction of anaesthesia.

All patients were operated in one surgical unit only, operated by same surgeon with standardized surgical techniques, after the completion of proper training and learning curve of the operating surgeon. All patients of this study (both groups) were catheterized pre-operatively with Foley's catheter no. 14/16.

Post-operatively no antibiotic was administered; even no scrotal support was given post-operatively. Bilateral groin strapping done with adhesive dynaplast done in all cases of laparoscopic hernia repair. All patients were followed up for 18 months post-operatively.

All patients of both groups were monitored for

- Operative time
- Conversion rate
- Hospital stay
- Post-operative complications
- Time to return to work
- Recurrence rate.

Statistical analysis was done by Graph Pad Prism 7.02 Version Software. P-value was calculated by Fischer's exact test.

RESULTS

In this study patient's age ranges from 21-70 years, with highest patients (31.67%) in 41-50 years age group followed by 51-60 years age group (21.67%).

Operative time in Group I patients where bilateral TAPP surgery performed, 23 cases (76.67%) were completed within 2 hours and in 6 cases (20%) surgery taken 3 hours to complete; whereas in Group II patients – control group where bilateral open surgery performed, 29 cases (96.67%) were completed within 2 hours and in only 1 case (3.33%) surgery was taken up to 3 hours to complete (Table 2).

Regarding length of hospital stay in Group I patients where TAPP surgery performed, 22 patients (73.33%) were discharged within 36 hours of surgery and all 30 (100%) patients were discharged within 3 days of surgery; whereas in Group II patients - control group where open surgery performed, only 4 patients (13.33%) discharged within 36 hours, 19 patients (63.33%) discharged between 1.5-3 days and 7 patients (23.34%) discharged after 3rd day onwards. No patient died in our study (Table 3).

Time to return to routine work Group I patients where laparoscopic surgery was performed, all 30 patients (100%) had joined their routine work within 10 days of surgery; whereas in Group II patients - control group where open surgery was performed, only 4 cases

(13.33%) joined duties on or before 10 days and most of the patients 26 (86.67%) had taken more than 10 days to resume their duties (Table 4).

Conversion rate from laparoscopic surgery to open surgery in group I (study group) patients was nil (all cases completed uneventfully with laparoscopic hernia repair TAPP).

Table 1: Age incidence.

Age (years)	Group I (study group)		Group II (control group)	
	Number	Mean±SD	Number	Mean±SD
21-30	3	25.33±4.51	4	27.50±2.65
31-40	7	36.14±3.58	5	36.20±3.56
41-50	9	47.22±3.35	10	47.50±3.27
51-60	6	56.17±2.79	7	56.57±3.41
61-70	5	64.40±2.61	4	67.50±2.89

Table 2: Operative time.*

Operative time (hours)	Group I		Group II	
	Number	Percentage	Number	Percentage
1-2	24	80.00	29	96.67
2-3	6	20.00	1	3.33

* P value calculated by Fischer's exact test is 0.1028 considered not significant (P value less than 0.05 is considered as statistically significant).

Table 3: Length of hospital stay.**

Hospital stay	Group I		Group II	
	Number	Percentage	Number	Percentage
≤ 2 days	22	73.33	4	13.33
≥ 2 days	8	26.67	26	86.67

** P value calculated by Fischer's exact test is 0.0001 considered extremely significant (P value less than 0.05 is considered as statistically significant).

Table 4: Time to return to work.***

Time to return to work	Group I		Group II	
	Number	Percentage	Number	Percentage
≤ 10 days	30	100.00	4	13.33
> 10 days	0	00.00	26	86.67

*** P value calculated by Fischer's exact test is 0.0001 considered extremely significant (P value less than 0.05 is considered as statistically significant).

Table 5: Post-operative complications.

Post-operative complication	Group I (study group)	Group II (control group)
Wound seroma	0	2
Pneumoscrotum	11	0
Scrotal hematoma	6	4
Lateral cutaneous nerve parasthesia	0	9
Injury to inferior epigastric vessels	3	0
Injury to bladder/intestine/ vas deferens/ iliac vessels	0	0
Death	0	0

All the patients of both groups were followed up for 18 months, no recurrence was found in any patient in this study.

DISCUSSION

With the introduction of lichtenstein mesh repair, recurrence rates have fallen dramatically to below 2%, and therefore length of hospital stay, return to normal activity and potential long term complications especially chronic pain, lateral cutaneous nerve parasthesia are now more clinically important than before because they are mostly irreversible. Both laparoscopic (TAPP) and lichtenstein (open) mesh repairs are associated with good long term results and a low incidence of recurrence, but laparoscopic repair show advantage in terms of shorter hospital stay, early return to normal work and caused

fewer post-operative complications like groin pain and permanent parasthesia than Lichtenstein mesh repair.

NICE recommended that open mesh should be the preferred surgical procedure for the repair of primary inguinal hernias and that laparoscopic hernia repair should be considered for repairing recurrent and bilateral hernias. An increase in the low risk of potentially serious intra-operative complications, have been reported in TAPP repairs, which in our study have not seen. Most of the trials have used the TAPP rather than TEP approach. This study compares the outcomes in patients treated by the most common method of laparoscopic repair (TAPP-transabdominal preperitoneal) with a standard open mesh hernioplasty as described by lichtenstein for bilateral hernia repair.⁸

Operative time

It varies with experience, is less important than surgical results but have cost implications.^{9,10} The operative time to perform unilateral primary inguinal hernia repair has been reported as longer for laparoscopic as compared to open repair, mean difference in 36 out of 37 studies is 14.81 min.¹¹ This difference disappears in bilateral and recurrent cases. In this study the operative time difference is statistically insignificant.

Complication rates and recurrence

It is possible to avoid most of the complications of laparoscopic inguinal hernia repair if the surgeon follows the set of well-defined steps and principals of laparoscopic hernia surgery.¹²⁻¹³ Intra-operative complications had not occurred in our study. Post-operative seroma/hematoma formations were seen in both groups. Parasthesia was not seen in laparoscopic repair as compared to open repair where it is more common. Pneumoscrotum was seen in laparoscopic repairs commonly but disappeared within 24 hours. Despite the correct and stable mesh position there is limited risk of late sliding of retroperitoneal fat under or in front of mesh into the enlarged internal ring.¹⁴ In this study no recurrence at the end of 18 months in any case of laparoscopic repair.

Length of hospital stay and return to normal work

In this study length of hospital stay and patient returning to his normal work was significantly less in laparoscopic repair group than open repair group. There is estimated absolute difference of 7 days in terms of time off work between laparoscopic and open repair group.¹⁵ Simultaneous bilateral inguinal hernia repair laparoscopically does not increase the risk for the patient and has an equal morbidity compared with unilateral repair, recovery after laparoscopic repair is faster than

after open simultaneous repair. Laparoscopic inguinal hernia repair of bilateral hernias should be recommended as the gold standard.¹⁶

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Amid PK, Shulman AG, Lichtenstein IL. Critical scrutiny of the open "tension free" hernioplasty. *Am J Surg.* 1993;165:369-71.
2. Devlin HB, Gillen PHA, Waxman BP, Macnay RA. Short stay surgery for inguinal hernia: experience of the shouldice operation. *Br J Surg.* 1986;73:123-4.
3. Maloney GE, Gill WG, Barclay RC. Operations for hernia technique of nylon darn. *Lancet.* 1948;2:45-8.
4. Stoker DL, Spiegelhalter DJ, Singh R, Wellwood JM. Laparoscopic versus open inguinal hernia repair: randomized prospective trial. *Lancet.* 1994;343:1243-5.
5. Collaboration EH. Laparoscopic compared with open methods of groin hernia repair: systematic review of randomized controlled trials. *Br J Surg.* 2000;87:860-7.
6. Collaboration EH. Repair of groin hernia with synthetic mesh: meta-analysis of randomized controlled trials. *Ann Surg.* 2002;235:322-32.
7. Laparoscopic surgery for inguinal hernia. Available at <https://www.nice.org.uk/guidance/t/a83/resources/laparoscopic-surgery-for-inguinal-hernia-repair-372977101>. Accessed on 12 July 2015.
8. Lichtenstein IL, Shulman AG, Amid PK, Monttlor MM. The tension-free hernioplasty. *Am J Surg.* 1989;157:188-93.
9. Phillips EH, Arregui M, Carroll BJ, Corbitt J. Incidence of complications following laparoscopic hernioplasty. *Surg Endosc.* 1995;9(1):16-21.
10. Felix E, Harbertson N, Vartanian S. Laparoscopic Hernioplasty. *Surg Endosc.* 1999;13:328-31.
11. Kumar S, Wilson RG, Nixon SJ, Macintyre IM. Chronic pain after laparoscopic and open mesh repair of groin hernia. *Br J Surg.* 2002;89(11):1476-9.
12. Mishra RK. Complications of laparoscopic surgery. *Current Medical J India.* 2004;10(3):15-7.
13. Chowbey PK. Complications in the groin hernia surgery and the way out. *JMAS.* 2006;2(3):174-7.
14. Kukleta JF, Klinik IP. Causes of recurrence in laparoscopic inguinal hernia repair. *Switzerland. J MAS.* 2006;2(3):187-91.
15. McCormack K. Laparoscopic techniques verses open techniques for inguinal hernia repair. *Cochrane Database Syst Rev.* 2003;(1):CD001785.
16. Wauschkuhn CA, Schwarz J, Boekeler U. Laparoscopic inguinal hernia repair: gold standard in bilateral hernia repair? Results of more than 2800 patients in comparison to literature. *Surg Endosc.* 2010;24:3026.

Cite this article as: Patel KH, Gohel JB, Patel BJ. Managing bilateral inguinal hernia laparoscopically: is it gold standard? *Int Surg J* 2017;4:296-9.