

**Journal of Nobel Medical College**

Available Online: [www.nepjol.info](http://www.nepjol.info), [www.nobelmedicalcollege.com.np](http://www.nobelmedicalcollege.com.np)  
Volume 7, Number 2, Issue 13, July-December 2018, 30-34

**Original Article****Comparative study of laparoscopic hernia repair versus open hernia repair**

*Rohit Prasad Yadav\*<sup>1</sup>, Dipendra Thakur<sup>1</sup>, Bashu Dev Baskota<sup>2</sup>, Amit Kumar Shah<sup>2</sup>,  
Kaushal Samsher Thapa<sup>1</sup> and Sakar Babu Gharti<sup>1</sup>*

<sup>1</sup>Department of General Surgery, Nobel Medical College Teaching Hospital, Biratnagar

<sup>2</sup>Department of General Surgery, B & C Medical College Teaching Hospital and Research Center, Birtamod  
Received: 10<sup>th</sup> November, 2018; Revised after peer-review: 15<sup>th</sup> December, 2018; Accepted: 22<sup>th</sup> December, 2018  
DOI: <https://doi.org/10.3126/jonmc.v7i2.22303>

**Abstract****Background**

Hernia is the abnormal exit of an organ or fatty tissue, such as the bowel, through the weak wall of the cavity in which it normally resides. Repair of inguinal hernia is common surgical procedures. This study aims to compare between laparoscopic and open hernia repair.

**Method**

This study is non comparative study. Our study includes 76 patients who had undergone surgery for inguinal hernia. Among them 38 patients undergone laparoscopic hernioplasty and 38 patients undergone open hernioplasty from June 2016 to August 2018.

**Results**

Mean hospital stay was 2.95 days in group 1 and 4.03 in group 2. VAS was found to be 2.45 in group 1 and 5.71 in group 2 which is significantly low in group 1 patients with  $p < 0.001$ . Duration of surgery is more in group 1 with mean duration of 94.08 minutes comparing to group 2 with mean duration of 43.55 minutes (with  $p < 0.001$ ).

**Conclusion**

Laparoscopic hernia repair offers advantages over open repair in terms of less hospital stay and lower pain score for patient not contraindicated for general anesthesia and complicated hernia.

**Keywords:** *Inguinal, Hernia, Hernioplasty*

**Introduction**

Hernia is the abnormal exit of an organ or fatty tissue, such as the bowel, through the weak wall of the cavity in which it normally resides. Repair of inguinal hernia is one of the common surgical procedures done worldwide [1]. Anatomical understanding of inguinal canal anatomy increased through the work of Camper, Scarpa, Cooper, Hasselbach and Hunter. Still, it was not until the late nineteenth century, when Edoardo Bassini proposed his first successful reconstruction of the

inguinal floor that surgical techniques started rapidly evolving. Then, in the late twentieth century the tension-free repair, introduced by Irving Lichtenstein, caused a dramatic drop in recurrence rates and became the procedure of choice [2]. However, the introduction of a laparoscopic technique by Ralf Ger in the early 1990s sparked a new debate over the best method of inguinal hernia repair [3]. In 1984, Lichtenstein et al coined the term "Tension-Free Hernioplasty" and broke the convention by advocating routine use of

mesh for hernia repair, thereby making tissue repair a thing of the past. Real controversy started in 1990, when laparoscopic Tension-Free repair came in to vogue and was routinely advocated and aggressively marketed by promising less pain and shorter recovery period, but the things in the small prints were completely ignored [4]. The lack of consensus in the literature as to the optimum repair technique or prosthetic mesh to insure a long term durable result is also surprising [5, 6]. (The life time risk for men is 27% and for women is 3%. The wide use of mesh in the groin hernia repair has gained more popularity and has almost replaced the suture repairs such as Shouldice or Maloney repair [7, 8]. There is, however, a very large debate on relative merits of laparoscopic mesh placement by using two to three small abdominal incisions compared with placement of mesh by using an open approach through a standard groin incision [9]. We discuss the advantages and disadvantages of laparoscopic hernia repair versus open hernia repair.

### Methods

The following study is a non-randomized comparative study done in single center. The study includes 76 patients treated with hernioplasty among them 38 cases were of laparoscopic hernioplasty and 38 cases were of open hernioplasty in the Department of General Surgery, B & C Medical College Teaching Hospital and Research Center, Birtamod during the study period of June 2016 to August 2018. Written consent taken from all the cases. All patients of both sex, who were 18 years of age or older with a diagnosis of inguinal hernia, either bilateral or unilateral and were medically fit to undergo the procedure were included in the study. Patients with age less than 18 years of age, contraindication to general anesthesia

(for laparoscopic repair)/Regional anesthesia (for open repair), patients with complicated inguinal hernia like obstruction, strangulation or gangrene were excluded in study. TEP (Totally extraperitoneal hernia repair) in laparoscopy surgery and Lichtenstein's hernia repair was done in open inguinal hernia surgery. Laparoscopic surgery was done by Single surgeon and open hernia repair was done by other surgeons in the same unit. Data were collected using specific set of questionnaire. Preoperatively patient were allowed to choose either laparoscopic hernia repair or open hernia repair for inguinal hernia after counseling about advantages and disadvantages of respective procedures along with type of anesthesia. Post-operative analysis was done with respect to operative duration, VAS and hospital stay. At the end comparison were made between laparoscopic hernia repair and open Lichtenstein's mesh repair.

### Statistical analysis

Qualitative data will be expressed as percentages and proportions. Quantitative data will be expressed as mean and standard deviation. The differences between two groups with respect to continuous variables will be analyzed using t-test while categorical variables will be analyzed using chi-square test. Data were entered in Microsoft excel 2013 and converted in Statistical software package for social sciences (SPSS.V11.5) for analysis. P value <0.05 will be considered as statistically significant while P value <0.01 will be considered as statistically highly significant.

### Results

This study consists of 76 patients among which 38 patients (50%) were placed in group 1 (laparoscopic hernia repair) and 38 patients (50%) were placed in group 2 (Open Lichtenstein's repair)

**Table no 1. Distribution according to sex**

		Group			Total
		1 (laparoscopic hernia repair)	2 (Open Lichtenstein's repair)		
Sex	Male	No of patients (n)	35	34	69
		% within sex	50.7%	49.3%	100%
	Female	No of patients (n)	3	4	7
		% within sex	42.9%	57.1%	100%
Total		No of patients (n)	38	38	76
		% within sex	50.0%	50.0%	100%

P=0.692 Not significant

**Table no 2. Distribution according to age**

			Group		Total
			1	2	
Age group	< 30	No of patients(n)	9	5	14
		% in age group	64.3%	35.70%	100%
	30-39	No of patients(n)	6	3	9
		% in age group	66.7%	33.3%	100%
	40-49	No of patients(n)	3	4	7
		% in age group	43.9%	57.1%	100%
	50-59	No of patients(n)	6	11	17
		% in age group	35.3%	64.7%	100%
	> 60	No of patients(n)	14	15	29
		No of patients(n)			
	% in age group		48.3%	51.7%	100%
	Total		No of patients(n)	38	38
		% in age group	50%	50%	100%

**Table no 3. Mean age undergoing surgery**

Group		Mean	Standard deviation
Age	1	47.87	18.963
	2	55.21	19.692

P=0.100 Not significant (T test applied)

**Table no 4. Distribution according to diagnosis**

			Group		Total	
			1	2		
Diagnosis	Right inguinal hernia	No of patients(n)	27	21	48	
		% with diagnosis	56.3%	43.8%	100%	
	Left inguinal hernia	No of patients(n)	6	12	18	
		% with diagnosis	33.3%	66.7%	100%	
	B/L inguinal hernia	No of patients(n)	5	5	10	
		% with diagnosis	50%	50%	100%	
	Total		No of patients(n)	38	38	76
			% with diagnosis	50%	50%	100%

P= value 0.263 Not significant

**Table no.5 Group statistics**

Group		Mean	Standard deviation
Hospitalized days	1	2.95	1.064
	2	4.03	1.585
VAS	1	2.45	0.795
	2	5.71	1.088
Operative duration	1	94.08	12.673
	2	43.55	8.375

P values: Hospitalized days :<0.001 Significant VAS :<0.001 Significant Operative duration <0.001 significant (T test applied)

Table 1. shows gender distribution of the patient, both group 1 and 2 consists of mostly male i.e. 69 and only 7 female cases were noted. Regarding age distribution (table no. 2) in study, in group,1 age of patient ranged from 18-83 with mean age of 47.87 years. Age of the patients in group 2 ranged from 21-95 years with mean age of 55.10 years. The operating time (table no.5) duration was calculated from the time of induction till the time of wound closure. In this study the mean operating time in group 1 was 94.08 minutes while in group 2 was 43.55 minutes, with  $p < 0.001$ . The pain score (table no 5) was significantly less in group 1 with The mean value of just 2.45 and in group 2 with the mean value of 5.71. The post operative hospital (table no 5) stay for group 1 was less with the mean of 2.95 with  $p < 0.001$ , when compared with group 2 which has got a mean hospital stay of 4.03.

### Discussion

In this study most of the patient were male, both in group 1 and group 2 with just 4 females in group 1 and 3 females in group 2 which indicates the high incidence of inguinal hernia in male in general population .Majority of the patient operated were having right inguinal hernia in both groups with bilateral hernia making 13.16% in both the group .Regarding age group, in our study about 38.16 % patient falls under >60 years of age group followed by 22.37% patients of age group

50-59 and 18.42% patient of age group <30 which indicates that the incidents of inguinal hernia is more common in older age group. Though operating duration of surgical techniques varies between surgeons and also vary considerably between centers, in this study the mean operative time was 94.08 minutes for group 1 and 43.55 minutes for group 2. The overall mean operative time was significantly more in laparoscopic hernia repair than open. It is less important to the patient than a successful operation. Post-operative pain scores were obtained using visual analogue scale (VAS). In this study post-operative pain is significantly less in group 1 when compared to group 2. A 2003 Cochrane database systematic review demonstrated less persisting pain, and less persisting numbness in the laparoscopic groups. Similarly, another meta-analysis study from the EU Hernia Trialists Collaboration reported decreased post-operative pain with the employment of laparoscopic methods [10]. Therefore, there is ample evidence that laparoscopic hernia repair produces less postoperative pain and is associated with similar or less risk of persisting pain than open hernia repair. In the present study, the mean post-operative hospital stay was 2.95 days for laparoscopic hernia repair group, whereas it was 4.03 days for Open Lichtenstein's repair. Hence the mean post-operative hospital stay was significantly less in laparoscopic repair than open hernia repair with  $p < 0.0001$  which was extremely

significant. So, from this study it can be concluded that laparoscopic hernia repair is associated with less postoperative hospital stay and better comfort than open hernia repair. One of the major criticisms of laparoscopic hernia repair is that it is more expensive to perform than open hernia repair [11]. So there have been speculations whether this surgery, thought to be advanced laparoscopic surgery, should be done in developing countries as ours [12]. But other studies have confirmed that laparoscopic repair of inguinal hernias could be contemplated safely both via totally extra peritoneal as well as transperitoneal route [13].

### Conclusion

Inguinal hernia is a common surgical problem which can be easily treated with surgery. This study compares between the laparoscopic hernia repair and open hernia repair. Laparoscopic hernia repair is associated with less post-operative morbidity with faster recovery and Satisfaction as documented by less post-operative pain, early discharge from the hospital and return to work. The present study supports the view that laparoscopic mesh repair of inguinal hernia offers definitive advantages over open mesh repair and should be available option for all patients requiring elective hernioplasty.

### References

- [1] Simons MP, Aufenacker ET, Bay-Nielsen M. European Hernia Society guidelines on the Treatment of inguinal hernia in adult patients. *Hernia*.13 (2009) 343-403.
- [2] Horeysek G, Roland F, Rolfes N. 'Tension-free' repair of inguinal hernia: laparoscopic (TAPP) versus open (lichtenstein) repair, *Chirurg*.67:10 (1996) 1036-40.
- [3] Patino JF. A history of the treatment of hernia. In: Nyhus LM, Condon RE, editors. *Hernia*. 4th ed. Philadelphia: Lippincott. (1995) 3-15.
- [4] S Jain, C Norbu. Is Laparoscopic Groin Hernia Repair Better Than Open Mesh Repair?.*The Internet Journal of Surgery*. 8:2 (2005).
- [5] Bittner R, Arregui ME, Bisgaard T. Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal Hernia.*SurgEndosc*. 25 (2011) 2773-843.
- [6] Treadwell J, Tipton K, Oyesanmi. Surgical options for inguinal hernia: comparative effectiveness review. *Comparative effectiveness review*. Available at: [www.effectivehealthcare.ahrq.gov/reports/finalecfm](http://www.effectivehealthcare.ahrq.gov/reports/finalecfm). Accessed August. (2015).
- [7] McNally MP, Byrd KA, Duncan JE, Shepps CD. Laparoscopic versus open inguinal hernia repair: expeditionary medical facility Kuwait experience. *Military medicine*. 1:174 (2009) 1320-3.
- [8] Mahesh GS.Laparoscopic Versus Open Mesh Repair for Inguinal Hernia. *Indian Journal of Research*. 11 (2015) 104-6.
- [9] Murthy PK, Ravalia D. Assessment and comparison of laparoscopic hernia repair versus open hernia: a non-randomized study. *IntSurg J*. 5 (2018) 1021-5.
- [10] McCormack K, Scott NW, Go PM, Ross S, Grant AM. EU Hernia Trialists Collaboration. Laparoscopic techniques versus open techniques for inguinal hernia repair. *Cochrane Database Syst Rev*. 1 (2003) CD001785.
- [11] McIntosh E. Cost-utility analysis of open versus laparoscopic groin hernia repair: results from a multicentre randomized clinical trial. *Br J Surg*. 1:88 (2001) 653-61.
- [12] BerthierNsadi, Olivier Detry, Willy Arung. Inguinal hernia surgery in developing countries: should laparoscopic repairs be performed ? *Pan Afr Med J*. 27:5 (2017).
- [13] Vikal Chandra Shakya, ShasankSood, Bal Krishna Bhattarai, Chandra ShekharAgrawal, Shailesh Adhikary. Laparoscopic inguinal hernia repair: a prospective evaluation at Eastern Nepal. *Pan Afr Med J*. 17:241 (2014).