

# Comparison between Lichtenstein Hernioplasty and Laparoscopic Transabdominal Preperitoneal Repair According to Quality of Life Score

Raouf Muhammad Abd-Elfattah, Ali Helmy El-Shewy, Amr Ahmed Ibrahim, Mohammed Ezzat Al-gazzar

General Surgery Department, Faculty of medicine, Zagazig University, Egypt.

Corresponding authors: Raouf Muhammad Abd-Elfattah, Email: [raoufayman006@gmail.com](mailto:raoufayman006@gmail.com)

## ABSTRACT

**Background:** Different approaches can be performed for repairing abdominal wall hernias as as laparoscopic transabdominal preperitoneal (TAPP) approach. This study aimed to compare quality of life after laparoscopic transabdominal preperitoneal repair (TAPP) and Lichtenstein hernioplasty according to EuraHS QOL SCORE. **Patients and Methods:** This is a prospective clinical comparative study upon 132 patients with inguinal hernia admitted to the surgical department of Zagazig University for inguinal hernia repair. The patients were allocated into two groups using closed envelope method of randomization. The patients were allocated into two groups: Laparoscopic group (n=66) and Open group (n=66). All patients involved in the study were subjected to full history and clinical examination and routine investigations and EuraHS QOL Score Evaluation. **Results:** There is statistically significant difference among both studied groups as regard intra-operative complications ( $p<0.05$ ). Operative time showed highly statistically significant difference among both studied groups ( $p<0.001$ ) with laparoscopic group longer than open group. Duration of stay showed highly statistically significant difference among both studied group as regard ( $p<0.001$ ). There is no statistically significant difference among both studied groups as regard preoperative pain felt during last week score ( $p>0.05$ ), but there is statistically significant difference among both studied groups as regard post-operative pain felt during last week score after 1 month and post-operative pain felt during last week score after 3 months ( $p<0.05$ ). **Conclusion:** Trans-abdominal pre-peritoneal repair (TAPP) is better than lichtenstein hernioplasty in terms of quality of life (QOL) according to EURAHS QOL SCORE.

**Keywords:** Lichtenstein Hernioplasty; TAPP, QOL SCORE

## INTRODUCTION:

Abdominal wall hernias are common, with a prevalence of 1.7% for all ages and 4% for those aged over 45 years. Inguinal hernias account for 75% of abdominal wall hernias, with a lifetime risk of 27% in men and 3% in women (1).

Inguinal hernia can be repaired using laparoscopic surgery. Different approaches can be performed such as laparoscopic transabdominal preperitoneal

(TAPP) approach; laparoscopic totally extraperitoneal (TEP) approach and intra-peritoneal on-lay mesh approach (2).

Although the recurrence rate is still an important outcome measure, many researchers consider patient recorded outcome measurement (PROM) of at least equal importance in evaluating the quality of an operation. By implantation of a permanent foreign body in the abdominal wall, with risk inducing chronic pain or reducing the patient's activities and thus impairing the patient's quality of life (QOL) (3).

Many guidelines refer to the Lichtenstein technique as a standard reference surgical method, which has the advantages of being a short operation time and the need for relatively low surgical skill. However Lichtenstein technique showed to be associated with more post operative chronic pain and more delay in returning to work compared to other hernial repair approaches as TAPP (4).

European Hernia Society (European Registry for Abdominal Wall Hernias [EuraHS]) developed an online platform for registration and outcome measurement in hernia operations. A hernia-specific QoL the EuraHS-QoL score was constructed and included in the online registry. The EuraHS-QoL instrument is a patient self-reported questionnaire that asks only 9 questions across 3 domains: pain, restriction of activities, and cosmetic discomfort (3).

The present study was aimed to compare quality of life after laparoscopic transabdominal preperitoneal repair (TAPP) and Lichtenstein hernioplasty. According to EuraHS QOL SCORE.

## **PATIENTS AND METHODS:**

This is a prospective clinical comparative study upon 132 patients with inguinal hernia admitted to the surgical department of zagazig university for inguinal hernia repair. The patients were allocated into two groups using closed envelope method of randomization. The study was done in the period between july 2020 and february 2021. Approval to this study was taken from Zagazig university Institutional Review Board (IRB).

### **Inclusion Criteria:**

All cases of Primary Inguinal hernia fit for laparoscopic and open hernioplasty in age of the patients 18-60 years old.

### **Exclusion Criteria:**

Patients with complicated hernia (incarcerated or strangulated hernia), Recurrent inguinal hernia. Patient with cardiovascular and pulmonary comorbidities and patients refuse participating in the study

The patients were allocated into two groups: Laparoscopic group (n=66) and Open group (n=66). All patients involved in the study were subjected to full history and clinical examination and routine investigations. EuraHS QOL Score Evaluation:

pre-operative assessment of the patients according to EURAHS QOL score is done in the surgical outpatient clinics of Zagazig university hospitals.

### **Operative technique:**

The patients of both groups were placed in a supine position on the operating table, urinary catheter is applied. The patient is draped with the entire abdomen, groin, penis and scrotum scrubbed. The surgeon stands on the contra-lateral side of the hernia being repaired with the assistant standing on the ipsilateral side of the hernia. Laparoscopic trans-abdominal preperitoneal repair (TAPP) is done using exploratory laparoscopy to identify the inguinal area and the important anatomical landmarks like epigastric vessels and median umbilical ligament. A 10 x 15 cm sheet of polypropylene mesh is rolled into a tubular shape and introduced through the 10 mm umbilical trocar. The mesh is used to cover the direct space, the indirect space, and the femoral ring area. Fixation by Tacker in the cooper's ligament and in the anterior abdominal wall on both sides of the inferior epigastric vessels to avoid haemorrhage. In Lichtenstein Hernioplasty technique, After the mesh is secured, the external oblique aponeurosis is reapproximated with absorbable suture from lateral to medial. During closure of the external oblique aponeurosis, the external inguinal ring is recreated.

### **Follow-up:**

All patients were followed one month and three months post-operatively in the out-patient clinic. Assessment is done according to EuraHS Quality Of Life scale.

### **Statistical analysis:**

Data collected and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) (Statistical Package for the Social Sciences) software for analysis. According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean  $\pm$  SD, the following tests were used to test differences for significance; difference and association of qualitative variable by Chi square test ( $X^2$ ). Differences between quantitative independent groups by t test. Chi-Square test ( $X^2$ ) or Fisher exact test was used to test the association variables for categorical data. P-value of  $< 0.05$  was considered statistically significant &  $< 0.001$  for high significant result.

### **RESULTS:**

This study included 132 patients with inguinal hernia admitted to the surgical department of Zagazig University for inguinal hernia repair. The patients were allocated into two groups: Laparoscopic group (n=66) and Open group (n=66). The present study showed no statistically significant difference among both studied group as regard age and sex ( $p > 0.05$ ) (**Table 1**).

There is statistically significant difference among both studied groups as regard intra-operative complications ( $p < 0.05$ ) (**Table 2**).

There is highly statistically significant difference among both studied groups as regard operative time ( $p < 0.001$ ) with laparoscopic group longer than open group (**Table 3**).

There is highly statistically significant difference among both studied group as regard duration of stay ( $p < 0.001$ ) (**Figure 1**).

There is no statistically significant difference among both studied groups as regard preoperative pain felt during last week score ( $p > 0.05$ ), but there is statistically significant difference among both studied groups as regard post-operative pain felt during last week score after 1 month and post-operative pain felt during last week score after 3 months ( $p < 0.05$ ) (**Table 4**).

There was no statistically significant difference among both studied groups as regard preoperative restriction outside the house score ( $p > 0.05$ ), but there is statistically significant difference among both studied groups as regard post-operative restriction outside the house after 1 month and post- restriction outside the house after 3 months. ( $p < 0.001$ ) (**Figure 2**).

**Table (1): demographic data among studied groups:**

Variable	Laparoscopic group (n=66)		Open group (n=66)		t-test	p-value
<b>Age (yrs):</b>						
Mean $\pm$ SD:	30.7 $\pm$ 8.1		33.5 $\pm$ 11.7		-1.1	0.274 (NS)
Range:	18-47		18-55			
<b>Sex:</b>	N	%	N	%	$\chi^2$	0.68 (NS)
Male	62	93.9	64	97	0.69	
Female	4	6.1	2	3	(Fisher)	

t-test & Chi square ( $\chi^2$ ) were used. NS: Non-Significant

**Table (2): Intra-operative complications among the studied group:**

Variable	Laparoscopic group (n=66)		Open group (n=66)		$\chi^2$	p-value
<b>Intra-operative complications:</b>	N	%	N	%	8	<b>0.018*</b> (S)
• No complications						
• Inferior epi-gastric vessels injury	62	93.9	62	93.9		
• Ilio-inguinal nerve injury	4	6.1	0	0		

**Table (3): Operative time among the studied group:**

Variable	Laparoscopic group (n=66)	Open group (n=66)	t-test	p-value
<b>Operative time (mints):</b>				
• Mean $\pm$ SD:	89.6 $\pm$ 9.1	52.5 $\pm$ 5.2	15.6	<b>0.000*</b> (HS)
• Range:	75-105	45-62		

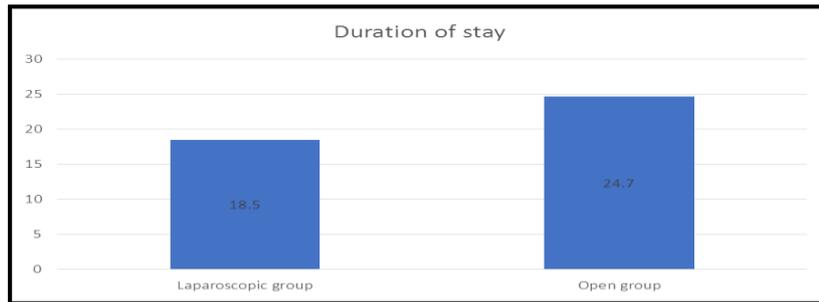
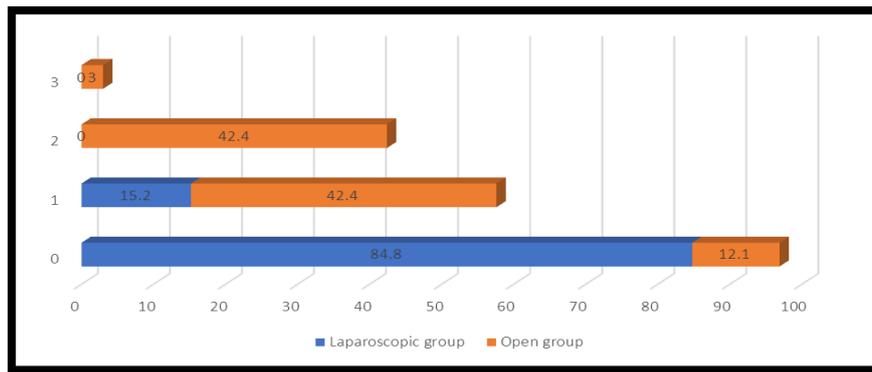


Figure (1): Duration of stay among both groups.

Table (4): Score of Pain felt during last week among studied groups:

Variable	Laparoscopic group (n=66)		Open group (n=66)		$\chi^2$	p-value
	N	%	N	%		
<b>Pre-operative:</b>					4.3	0.7489 (NS)
• 0	4	6.1	10	15.2		
• 1	2	3	2	3		
• 2	2	3	3	4.5		
• 3	20	30.3	20	30.3		
• 4	10	15.2	10	15.2		
• 5	20	30.3	13	19.7		
• 6	4	6.1	4	6.1		
• 7	4	6.1	4	6.1		
<b>Post-operative after 1 month:</b>					12.3	<b>0.031*</b> (S)
• 0	6	9.1	2	3		
• 1	16	24.2	2	3		
• 2	28	42.4	22	33.3		
• 3	12	18.2	28	42.4		
• 4	4	6.1	10	15.2		
• 5	0	0	2	3		
<b>Post-operative after 3 months:</b>					40	<b>0.000*</b> (HS)
• 0	40	60.6	2	3		
• 1	20	30.3	8	12.1		
• 2	4	6.2	36	54.5		
• 3	2	3	16	24.2		
• 4	0	0	4	6.1		



**Fig. (2): Score of restriction outside the house post-operative after 3 months among studied groups.**

## DISCUSSION:

The most important aspect of a Quality-of-Life (QoL) instrument is the ability to detect treatment-related changes. These changes are determined by a combination of treatment success or failure and the extent of the pathology but can also be influenced by other variables, such as age, sex and comorbidity (5).

In this study, we had the privilege to be among the first to assess the quality of life (QOL) of inguinal hernia patients using EURAHS QOL Score either pre and post operatively.

This study includes 132 cases of inguinal hernia of which 66 patients were treated with Laparoscopic trans-abdominal pre-peritoneal repair and 66 patients were treated with Lichtenstein's open inguinal hernia mesh repair.

In our study the operative time range was calculated for each patient at the time of surgery, the time range of laparoscopic group was mean  $\pm$ SD:  $89.6 \pm 9.1$ . And the operative time range for the open lichtenstein group was (45-62) minutes with mean  $\pm$ SD:  $52.5 \pm 5.2$ .

**In study of Eklund et al., (6)** showed that the operative time range for TAPP varies from 45 to 109 minutes and 45 to 87 minutes for the Lichtenstein repair which is consistent with our results.

Regarding the complications in our study, there were few intra-operative complications in our patients in both groups only 4 patients with inferior epi-gastric vessels injury in the laparoscopic group group and 4 patients with ilio-inguinal nerve injury in the open group, nevertheless, post operative complications were 4 patients with surgical site infection in lichtenstein open group and 1 patient also with surgical site infection in laparoscopic group. Among 132 patients of inguinal hernia included in this study, the average hospital stay following surgery was 18.5 hours for laparoscopic transabdominal pre peritoneal group (TAPP) and 24.7 hours for lichtenstein repair group.

**Ahmed (7)** revealed that there's no significant statistical difference regarding postoperative hospital stay in either open or laparoscopic hernia repair considering that the patients of the lichtenstein group were operated using local anaesthesia and

general anaesthesia for TAPP group in contrast to our hospital policy, as open surgery is done under spinal anaesthesia.

Regarding pain, trans-abdominal pre-peritoneal approach (TAPP) was found to cause less post-operative pain compared to lichtenstein open approach. In this study, the highest score for pre-operative pain at rest among patients of the two groups were (6) which was the score of 6 patients in the open lichtenstein group and 2 patients in laparoscopic group. One month Post-operatively, the highest score was (2) in 22 patients of laparoscopic group on the other hand, the highest score was (4) in 6 patients of the lichtenstein open group.

In this very particular aspect, our results were consistent with **Jamil et al.,(8)** described that 9/32 (28.12%) of open hernioplasty group suffered chronic post operative pain while only 2/18 (11.11%) of TAPP group experienced chronic pain. Also, **Scheuermann et al.,(9)** showed a chronic pain in 19/299 (6.35%) in TAPP vs. 37/284 (13.02%) in open group respectively. It was attributed to direct handling the nerves in inguinal canal.

#### **CONCLUSION:**

Trans-abdominal pre-peritoneal repair (TAPP) is better than lichtenstein hernioplasty in terms of quality of life (QOL) according to EURAHS QOL SCORE.

**No conflict of interest.**

#### **References:**

- 1- **Jenkins T and O'Dwyer P (2008): "Inguinal Hernias": BMJ, 336 : 269–272.**
- 2- **McCormack K, Wake B and Fraser C (2005): "Transabdominal pre peritoneal (TAPP) versus totally extraperitoneal (TEP) laparoscopic techniques for inguinal hernia repair: a systematic review." Hernia, (9): 109-114.**
- 3- **Muysoms F, Campanelli G, Champault GG et al., (2012): "EuraHS: The development of an international online platform for registration and outcome measurement of ventral abdominal wall hernia repair". Hernia, (16):239-50.**
- 4- **Anadol ZA, Ersoy E and Taneri F (2016): "Outcome and cost comparison of laparoscopic transabdominal preperitoneal hernia repair versus open Lichtenstein technique". Laparoendosc Adv Surg Tech Part A, (14):159–63.**
- 5- **Catarinella F, Nieman F and Wittens C (2016): "The relation between clinical scores and quality-of-life in long-term follow-up". Phlebology, (31):99-105.**
- 6- **Eklund A, Rudberg, C, Leijonmarck C et al., (2007): "Recurrent inguinal hernia: randomized multicenter trial comparing laparoscopic and Lichtenstein repair". Surgical Endoscopy, 21 (4): 634–640.**
- 7- **Ahmed I. (2015): "A comparison of post operative pain and hospital stay between Lichtenstein's repair and Laparoscopic Transabdominal Preperitoneal (TAPP) repair of Inguinal hernia: A randomized controlled trial". Pakistan Journal of Medical Sciences, 31(5): 1062–1066.**

- 8- **Jamil M, Niaz K, Tahir F and Sobia H. (2019):** “Laparoscopic trans-abdominal preperitoneal versus lichtenstein repair of inguinal hernia: a comparative study”. Professional Med J, 26 (7):1151-1155.
- 9- **Scheuermann U, Niebisch S, Lyros O, Jansen-Winkeln B and Gockel I (2017):** “Transabdominal Preperitoneal (TAPP) versus Lichtenstein operation for primary inguinal hernia repair – A systematic review and meta-analysis of randomized controlled trials”. BMC Surgery, 17(1):55.