

LAPAROSCOPIC INGUINAL HERNIA REPAIR: CLINICAL AND POST-OPERATIVE OUTCOMES

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ABSTRACT

Background: Inguinal hernia, is the most frequent kind of hernia in both men and women, but more prevalent in men. There are two forms of inguinal hernias: direct and indirect, which differ in anatomy, cause, and complications. Laparoscopic inguinal hernia treatment is gaining popularity due to its therapeutic benefits, including less postoperative discomfort and quicker recovery time compared to open hernia repair. **Objectives:** Is to assess the clinical and post-operative outcome of laparoscopic surgical repair of the inguinal hernia. **Methods:** A cross-sectional study of recorded data from the department of general surgery at Hamdanyia General Hospital, from March 2021 to the end of May 2025. The study included 50 subjects initially diagnosed with inguinal hernia (either unilateral or bilateral). Patients with inguinal hernias that were strangulated, obstructed, incarcerated, or had bleeding tendencies were excluded from the study. The questionnaire form consisted from four parts. Part one for demographic information of the study participants. Part two for patients' preoperative information, while part three and part four for patients' operative and postoperative details respectively. **Results:** The mean age $\pm$ standard deviation of the study participants 32.27 ± 6.58 years. Moreover; female: male ratio was 1:15.6. Furthermore; only 17 (34%) patients were active smokers. The majority of patients (54%) reported history of lifting heavy objects, had right (60%) inguinal hernia, presented due to inguinal pain (74%) and had European Hernia Society (EHS) groin hernia classification of lateral 1 (78%). The operation last for 61.78 ± 15.35 minutes in average and the patients stayed in hospital for 36.04 ± 9.21 hours in average. Only two patients (4%) had hemorrhagic during operation. Lastly; mild and moderate pain were prevalent in 31 (62%) and 7 (14%) patients respectively. Early seroma was prevalent in 6 (12%) patients. Early and late hematoma was prevalent in 2 (4%) and 4 (8%) patients respectively. **Conclusion:** Transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair was found to improve both operational and postoperative outcomes. More studies are needed to compare the effectiveness of TAPP and TEP in managing inguinal hernias.

KEYWORDS: Inguinal, Iraq, Hernia, Laparoscopy, Nineveh.

1- INTRODUCTION

Inguinal hernia, sometimes referred to as a rupture by patients, is the most frequent kind of hernia in both men and women, but more prevalent in men.^[1] There are two forms of inguinal hernias: direct and indirect, which differ in anatomy, cause, and complications.^[2] Both are anatomically comparable and have similar surgical repair approaches, resulting in similar reinforcing of the defective anatomy.^[3] Inguinal hernias make up 75% of abdominal wall hernias, with a lifetime risk of 27% in males and 3% in women.^[1-4] Inguinal hernia repair is a frequent procedure in general surgery, with rates ranging

from 10 per 100,000 persons in the United Kingdom to 28 per 100,000 in the United States.^[5]

Surgical repair remains the primary therapy for hernias, making it the most often done procedure globally.^[6-7] Laparoscopic inguinal hernia treatment is gaining popularity due to its therapeutic benefits, including less postoperative discomfort and quicker recovery time compared to open hernia repair.^[8] Laparoscopic inguinal hernia repair involves two basic techniques: transabdominal pre-peritoneal mesh repair (TAPP) and totally extra-peritoneal (TEP) repair.^[9]

Several risk factors for inguinal hernia include lifting heavy things, obesity, persistent coughing, and chronic constipation.^[10] On the other hand; Laparoscopic hernia surgery might lead to numerous complications. The most dangerous complication is hernial sac strangulation or obstruction, which requires immediate surgery. Other problems may include seroma or hematoma development, urine retention, wound infection, and hernia recurrence.^[11-13]

The aim of this study is to assess the clinical and post-operative outcome of laparoscopic surgical repair of the inguinal hernia.

2-PATIENTS AND METHODS

After obtaining ethical approval from the ethical committee of Nineveh Health directorate. A cross-sectional prospective study of recorded data from the department of general surgery at Hamdanyia General Hospital in Nineveh/ Iraq, from March 2021 to the end of May 2025. Parents provided written consent for participating in this study.

The study included 50 subjects initially diagnosed with inguinal hernia (either unilateral or bilateral) depending on a comprehensive clinical examination. Patients with inguinal hernias that were strangulated, obstructed, incarcerated, or had bleeding tendencies were excluded from the study.

In all cases, broad-spectrum antibiotics (usually first-generation cephalosporins) were given as a prophylactic

before incision. A urinary catheter was inserted in certain patients prior to surgery, and all patients utilized general endotracheal anesthesia. Laparoscopy was used for all surgeries: Karl Storz An HD monitor in one hub. Under general anesthesia, all patients had transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair utilizing the Trendelenburg position and three ports: two 5 mm ports and one 10 mm port for the camera in the supraumbilical area. Karl Storz's trocar metallic type. Four tackers (absorbable from Covidien) secure the 10*12 cm and 11*13 cm polypropylene mesh of Turkish origin: one medial to the artery, two lateral to the inferior epigastric artery, and one to the Copper ligament. Vicryl 2/0 was used to stitch the peritoneal flap. Patients were surveyed for postoperative complications at several intervals: immediately after surgery, 3 weeks, 3 months, 12 months, and 24 months thereafter.

Statistical analysis: the demographic, clinical findings, and surgical outcomes were recorded and analyzed in Microsoft Excel. Data were entered into SPSS version 30.0, a statistical analysis tool for social sciences. Scale variables were reported as mean and standard deviation and compared using parametric testing.

3. RESULTS

The study includes 50 patients with the mean age $\pm$ standard deviation of the study participants was 32.27 ± 6.58 years. Moreover; female: male ratio was 1:15.6. Furthermore; only 17 (34%) patients were active smokers. The majority of patients (54%) reported history of lifting heavy objects. As shown in table 3.1.

Table 3.1: Patients' basic information (Number = 50 patients).

Variable	Number = 50	Percent
Sex:		
- Male	47	94%
- Female	3	6%
Smoking state:		
- Active smoking	17	34%
- Non smoker	33	66%
History of lifting heavy object:		
-Present	27	54%
-Absent	23	46%

Table 3.2 shows preoperative information of the study participants. The majority of patients had right (60%) inguinal hernia, presented due to inguinal pain (74%) and

had European Hernia Society (EHS) groin hernia classification of lateral 1 (78%).

Table 3.2: Patients' preoperative assessment. (Number = 50 patients).

Preoperative assessment:	Number = 50	Percent
Side of Hernia:		
- Right	30	60%
-Left	17	34%
-Bilateral	3	6%
Patient Complaint:		
-Pain	37	74%
-Aesthetic discomfort	31	62%
European Hernia Society (EHS) groin hernia classification:		
- Lateral 1	39	78%
- Medial 1	11	22%

Table 3.3 shows operative information of the study patients. The mean $\pm$ standard deviation of the patient's operation was 61.78 ± 15.35 minutes. Moreover; the

mean $\pm$ standard deviation of patients stay was 36.04 ± 9.21 hours. Only two patients (4%) had hemorrhagic during operation.

Table 3.3: Patients' operative information (Number = 50 patients).

Variable	Number = 50	Percent
Operative time (minutes):		
- Mean $\pm$ standard deviation	61.78 ± 15.35	
Hospital stay (hours):		
- Mean $\pm$ standard deviation	36.04 ± 9.21	
Complication:		
- hemorrhage	2	4%

Table 3.4 shows postoperative information of the study patients. It's evident that mild and moderate pain were prevalent in 31 (62%) and 7 (14%) patients respectively. Early seroma was prevalent in 6 (12%) patients. Early and late hematoma was prevalent in 2 (4%) and 4 (8%) patients respectively.

Table 3.4: Patients' postoperative information (Number = 50 patients).

Variable	Number = 50	Percent
Pain:		
-Mild	31	62%
-Moderate	7	14%
Seroma:		
-Early	6	12%
-Late	0	0%
Hematoma:		
-Early	2	4%
-Late	4	8%

4. DISCUSSION

The study that the mean age of patients with inguinal hernia was around 32 years, which is closed to what was found by Ahmed Ziarra Khalaf who found it around 31 years.^[14] Moreover; The majority of patients (94%) were males which meant that males were affected by inguinal hernia 16 times more than females, this is in the same way of Imamuddin Baloch et al.^[15]

The study showed that about one third of the patient with inguinal hernia exhibit smoking. While smoking is a known risk factor for inguinal hernias and recurrence, studies show varying percentages. The relationship is complex and may vary based on other factors like age, gender, and the specific type of hernia. P. Marcolin et al was reported in his meta-analysis that smoking associated with inguinal hernia three time more in smoker than non-smokers.^[16] On the other hand; more than half of the study patients reported lifting of heavy objects which similar to anjeevkumar Munoli and Ajay Patwari^[17] study findings.

The current study found that the right side is more common on the right side. This is often attributed to a developmental delay in the closure of the processus vaginalis on the right side during fetal development, potentially related to the slower descent of the right

testicle. Which is consistent with Puneet K Agarwal et al^[18] and Ahmed Ziarra Khalafstudy^[19] studies' results. In addition to that; most of the study patients had groin pain and aesthetic discomfort. This pain can range from mild and aching to more severe and sharp, and it may worsen with physical activity, coughing, or straining. Many studies had comparable results.^[20-23] Furthermore; the most common type of inguinal hernia found in this study, based on the European Hernia Society (EHS) classification, was L1, which signifies a lateral hernia of equal or less than one finger width. This indicates a primary inguinal hernia located on the lateral side of the groin and is relatively small in size. F. Köckerling et al had comparable findings.^[6]

Regarding operative details; the current study found that laparoscopic hernial repair last in average two hours and most of patients stay in hospital for about one and half day after operation, however, this can vary based on the complexity of the repair and individual patient factors. Some patients may be discharged the same day, while others may require a longer stay. Moreover; only 8% of the study patients developed intra-operative hemorrhage. This is similar to Umme Salma et al study findings.^[24] From the other hand; the majority of patients exhibit mild post-operative pain, only 12% of patients had post-operative seroma and 4% patients had early postoperative hematoma versus 8% of patients were suffered from postoperative hematoma collection. This is in agreement with Saddam Ali Abbas study findings.^[25]

5-CONCLUSION

Transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair was found to improve both operational and postoperative outcomes. More studies are needed to compare the effectiveness of TAPP and TEP in managing inguinal hernias.

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Conflict of Interest

About this study, the authors disclose no conflicts of interest.

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