

# Clinical and Post-operative Outcomes of Laparoscopic Inguinal Hernia repair

SADDAM ALI ABBAS<sup>1</sup>, SATTAR JABBAR KADHIM<sup>2</sup>, ABDALRAHMAN HAMMAD TURFA<sup>2</sup>

<sup>1</sup>Ibn Sina University of Medical and Pharmaceutical Sciences, Iraq, Baghdad

<sup>2</sup>Yarmouk Teaching Hospital, Iraq, Baghdad

Correspondence to Saddam Ali Abbas, E-mail: saddamabbas2020@gmail.com Mobile: +964-7722059779

## ABSTRACT

**Background:** Laparoscopic inguinal hernia repair is one of the most common surgical intervention in clinical practice nowadays. Laparoscopic intervention has a superior benefit over open surgical repair regarding postoperative recovery and complications.

**Aim:** To evaluate clinical and post-operative outcomes of laparoscopic inguinal hernia repair.

**Methods:** 52 patients were included in the current study. Patients were recruited from Yarmouk Teaching Hospital, Iraq, Baghdad. Transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair was performed to all included patients. Survey of postoperative complication was distributed to included patients immediately after surgery, 3 weeks, 3 months, 12 and 24 months post-surgery.

**Results:** Included patients were presented with right sided hernia (33 patients), left sided (17 hernia) and 2 patients with bilateral hernia. Main preoperative complains were pain and aesthetic discomfort. Minimal operative complications were encountered and 75% of patients were discharged during 24 hours postoperative. Early postoperative complications were mainly presented as mild pain in 27 patients while 6 patients reported moderate pain. Five patients reported seroma collection and 1 patient had complained of hematoma. Late and delayed postoperative complications were minimal.

**Conclusion:** Transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair is a gold standard surgical option in treatment of inguinal hernia with minimal operative and postoperative complications.

**Keywords:** Inguinal hernia, laparoscopy, complications

---

## INTRODUCTION

Hernia is one of the most common diseases worldwide. Inguinal hernia repair is the most common operation performed in the world and surgical repair continues to be the definitive treatment<sup>1</sup>. The increasing popularity of laparoscopic inguinal hernia repair is due to the clinical feasibility with less postoperative pain and a shorter duration of recovery compared with an open hernia repair<sup>(2)</sup>. Transabdominal pre-peritoneal mesh repair (TAPP) and totally extra-peritoneal (TEP) are the two main techniques performed laparoscopically for repair of inguinal hernia<sup>3</sup>.

Several risk factors are precipitating development of inguinal hernia. Male gender is a major risk factor due to penetrating spinal cord in the abdominal wall<sup>4</sup>. Lifting heavy objects, obesity, chronic cough or chronic constipation are also risk factors for inguinal hernia<sup>5</sup>.

Complications associated with laparoscopic hernia are various. The most hazardous complication is the strangulation or obstruction of hernial sac which are considered surgical emergency<sup>6</sup>. Other complications include; seroma or hematoma formation, urinary retention, wound infection and hernia recurrence<sup>7</sup>. The current study aimed to evaluate clinical and post-operative outcomes of laparoscopic inguinal hernia repair.

## PATIENTS AND METHODS

The current prospective study was conducted from January 2015 to November 2020. We included 52 patients recruited from surgery department, Yarmouk Teaching Hospital, Iraq, and Baghdad. Patients were diagnosed with inguinal hernia either unilateral or bilateral depending on thorough clinical

examination. Patients with bleeding tendencies, incarcerated, obstructed, or strangulated inguinal hernia were excluded.

Broad-spectrum antibiotics (most often a first-generation cephalosporin) were administered as a prophylaxis prior to incision in all cases. General endotracheal anesthetic was utilized for all patients and a urinary catheter was placed in some patients preoperative. All surgeries were conducted using laparoscopy: Karl Storz 1 hub with HD monitor. All patients underwent transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair under general anesthesia with Trendelenburg position using 3 ports: one 10 mm for camera in supra umbilical region and 2 other ports 5mm. Type of trocar metallic from Karl Storz. Polypropylene mesh 10\*12 cm and 11\*13 cm of Turkish origin fixed by 4 tackers (absorbable from Covidien) 1 to the Copper ligament, 2 lateral to inferior epigastric artery and one medial to the artery. The peritoneal flap was sutured by vicryl 2/0. Survey of postoperative complications were distributed to each patient immediately after surgery, 3 weeks, 3 months, 12 and 24 months post-surgery.

**Ethical consideration:** Purpose of the study was thoroughly explained to each participant and informed consent was obtained. Confidentiality of data was maintained.

## RESULTS

The current study included 52 patients (50 males and two females), mean age of included patients was 35 ± 7 years. Mean of body mass index (BMI) was 27 ± 3. Half of the

patients reported history of lifting heavy objects, while 18 (35 %) of patients were smokers (Table 1).

**Preoperative assessment:** Included patients were represented with right sided hernia (33 – 63.5%), left sided (17 – 32.7%) and bilateral (2 – 3.8%). Preoperative symptoms were present in most patients (48 – 92.3%), that include pain in 38 (73%) patients and aesthetic discomfort in 37 (71%). The European Hernia Society (EHS) groin hernia classification of included patients was L1 in 38 (73 %) patients and M1 in 14 (27%) patients.

**Operative assessment:** Mean time of duration was 66 ± 11 minutes. Intraoperative complications were minimal as only one patient had intraoperative hemorrhage, none of included patients had bladder perforation or needed conversion to open surgery. Thirty-nine patients (75%) stayed at hospital after surgery for 1 night while 13 patients (25%) required hospital admission for more than 24 hours. Mild pain was reported by 45 patients immediately post-surgery.

**Postoperative complications:** Early postoperative complications (three weeks): Minimal complications were reported by included patients three weeks after surgery. Mild pain was reported by 27 patients (52%) while 6 patients (11.5%) reported moderate pain. Five patients reported seroma collection and 1 patient had complained of

hematoma. No operative site infection or recurrence was reported. Mean duration of return to work was 9.5±1.5 days.

Late postoperative complications (three months): Only three patients reported occurrence of hematoma. No other complications (seroma, wound infection or recurrence) were reported.

Delayed postoperative complications (12 - 24 months): Neither of common surgical complications (seroma, hematoma, wound infection, recurrence or urine retention) were reported by included patients. (Table 2)

Table 1: Summary of demographic data of included patients

Age (years)	Mean±SD	35±7
BMI	Mean±SD	27±3
Gender	Male	50(96%)
	Female	2(4%)
Smoking status	Smoker	18(35%)
	Non-smoker	34(65%)
History of lifting heavy objects	Present	26(50%)
	Absent	26(50%)

Table 2: Summary of preoperative, operative and postoperative assessment

Assessment		Number	Percent	
Preoperative assessment	Side of hernia	Right	33	63.5
		Left	17	32.8
		Bilateral	2	3.8
	Symptoms	Pain	38	73
		Aesthetic discomfort	37	71
	EHS classification	L1	38	73
	M1	14	27	
Intraoperative assessment	Operative time (minutes)	Mean ± SD		66 ± 11
	Complications	Hemorrhage	1	2
	Hospital stay	24 hours	39	75
		> 24 hours	13	25
Postoperative complications	Pain	Mild	27	52
		Moderate	6	11.5
	Seroma	Early	5	10
		Late	0	0
	Hematoma	Early	1	2
		Late	3	6

**DISCUSSION**

The current study was conducted to evaluate clinical and post-operative outcomes of laparoscopic inguinal hernia repair. We conducted our study using transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair. Fifty-two patients (50 males and two females) presented with inguinal hernia were included. Included patients were represented with right sided hernia (33 patients), left sided (17 patients) and bilateral (2 patients). Preoperative symptoms were present in most patients (48 patients), that include pain in 38 patients and aesthetic discomfort in 37 patients. Mean time of operative duration was 66±11 minutes. Intraoperative complications were minimal. Thirty-nine patients (75%) stayed at hospital after surgery for 1 night while 13 patients (25%) required hospital admission for more than 24 hours. Early postoperative complications were mainly presented as mild pain in 27 patients while 6

patients reported moderate pain. Five patients reported seroma collection and 1 patient had complained of hematoma. Late and delayed postoperative complications were minimal.

Tolver, 2013<sup>8</sup> conducted an analysis of the early postoperative pain after TAPP. He included 46 patients who underwent TAPP. He reported that pain was most intense 3 h after TAPP on postoperative day 0 and normalized to preoperative levels on postoperative day 3. These results were similar to results presented in our study<sup>8</sup>.

Ujiki et al 2019<sup>9</sup>, conducted a study to describe short- and long-term quality of life outcomes in patients undergoing laparoscopic inguinal hernia repair. They included 301 patients who underwent totally extraperitoneal laparoscopic inguinal hernia repair (TEP). Questionnaire of encountered complications was distributed to included

patients preoperatively, or 3 weeks, 6 months, and 1 year postoperatively. Similar to our study 78% presented with pain, the majority of which were described as mild. Hernias were unilateral right-sided in 43 %, left sided in 28%, and bilateral in 29%. Average operative time was  $43.5 \pm 17.9$  min and there were no intraoperative complications. Increased incidence of postoperative complication was recorded compared to our study. Urinary retention occurred in 6%, recurrence occurred in 2.1% and wound infection occurred in 2.6% of patients<sup>9</sup>. Further studies are recommended to evaluate postoperative outcome of TAPP versus TEP.

Faisal et al 2019<sup>10</sup>, compare the outcome following inguinal hernia repair, performed by TAPP laparoscopic technique and open mesh Lichtenstein (tension-free) repair. Similar to our study, mean time for unilateral inguinal hernias were 76 ( $\pm 13$ ) minutes. Minimal operative and postoperative complications were recorded (3 patients had intraoperative hemorrhage and 4 patients had postoperative seroma). Fewer patients complained of postoperative pain compared to our study due to use of strong narcotics. Contradicting to our study, Faisal et al., reported longer postoperative hospital stay for 2 days, older patients included in their study ( $38 \pm 9$  years) and difference in the quality of postoperative care can be the explanation to this discrepancy<sup>10</sup>.

## CONCLUSION

Transabdominal preperitoneal (TAPP) laparoscopic inguinal hernia repair proved to be beneficial in treatment of inguinal hernia as regards operative and postoperative outcomes. Further studies are recommended to evaluate better techniques between TAPP and TEP in management of inguinal hernia.

**Funding:** No external funding was received.

**Conflict of interest:** The authors declare that they have no conflict of interest.

## REFERENCES

1. Abdulhai, S., Glenn, I. C., & Ponsky, T. A. (2017). Inguinal hernia. *Clinics in Perinatology*, *44*(4), 865-877.
2. Bittner, R., Montgomery, M. A., Arregui, E., Bansal, V., Bingener, J., Bisgaard, T., & Fortelny, R. H. (2015). Update of guidelines on laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal hernia (International Endohernia Society). *Surgical Endoscopy*, *29*(2), 289-321.
3. Trevisonno, M., Kaneva, P., Watanabe, Y., Fried, G. M., Feldman, L. S., Andalib, A., & Vassiliou, M. C. (2015). Current practices of laparoscopic inguinal hernia repair: a population-based analysis. *Hernia*, *19*(5), 725-733.
4. Köckerling, F., & Simons, M. P. (2018). Current concepts of inguinal hernia repair. *Visceral medicine*, *34*(2), 145-150.
5. Öberg, S., Andresen, K., & Rosenberg, J. (2017). Etiology of inguinal hernias: a comprehensive review. *Frontiers in surgery*, *4*, 52.
6. Huerta, S., Timmerman, C., Argo, M., Favela, J., Pham, T., Kukreja, S., & Zhu, H. (2019). Open, laparoscopic, and robotic inguinal hernia repair: outcomes and predictors of complications. *Journal of Surgical Research*, *241*, 119-127.
7. Gossetti, F., D'Amore, L., Annesi, E., Bruzzone, P., Bambi, L., Grimaldi, M. R., & Negro, P. (2019). Mesh-related visceral complications following inguinal hernia repair: an emerging topic. *Hernia*, 1-10.
8. Tolver, M. A. (2013). Early clinical outcomes following laparoscopic inguinal hernia repair. *Dan Med J*, *60*(7), B4672.
9. Ujiki, M. B., Gitelis, M. E., Carbray, J., Lapin, B., Linn, J., Haggerty, S., & Denham, W. (2015). Patient-centered outcomes following laparoscopic inguinal hernia repair. *Surgical endoscopy*, *29*(9), 2512-2519.
10. Faisal, M. F. H., Islam, K. S., Khan, M. M. H., Biswas, A. K., Azad, M. A. K., & Reza, M. N. (2019). Early Clinical Outcomes Following Laparoscopic Vs. Open Mesh Repair of Inguinal Hernia 85. *KYAMC Journal*, *10*(2), 85-89.