

Early surgical results of totally preperitoneal endoscopic (TEP) repair for inguinal hernia

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ABSTRACT

Objective: To assess the initial outcomes of Laparoscopic Totally Extraperitoneal (TEP) surgery for inguinal hernia (IH).

Patients and Methods: This study included 58 patients diagnosed with IH who were treated with TEP at the Viet Tiep Hospital between September 2021 and September 2023.

Results: The mean age was 57.1 ± 11.7 years. Of these, 58.4% were aged < 60 years old. There were 37 (63.8%) had right-sided IH and 21 (36.2%) had left-sided IH. Most patients (79.3 %) had indirect inguinal hernias. The mean operation time was 60.3 ± 21.3 minutes; postoperative hospital stay was 5.1 ± 1.6 days. Intraoperative and postoperative complications were mild and infrequent. Regarding early surgical outcomes, most patients have excellent results, accounting for 91.4%. No poor results were observed. **Conclusion:** TEP for IH is a safe and effective method to minimize early complications and adverse events.

Keywords: Inguinal hernia, Totally Extraperitoneal (TEP), complication

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INTRODUCTION

Inguinal hernia (IH) is a common surgical condition caused by abdominal organs protruding through the inguinal canal or by weak spots in the abdominal wall near the groin. It affects individuals of all ages and both genders [1]. Currently, various surgical methods are recommended for IH patients. In 1993, J Barry McKernan and Henry L. Laws introduced the Totally Extraperitoneal (TEP) technique, which involves creating surgical space and placing the mesh entirely outside the peritoneal cavity [2]. The advantage of TEP repair lies in its non-intrusive nature in the peritoneal cavity, with the entire procedure performed in the preperitoneal space.

Several studies have shown that compared to transabdominal preperitoneal (TAPP) and open surgery, TEP repair offers numerous advantages, such as shorter operative time, shorter hospital stay, lower complication rates, reduced postoperative pain, lower rates of chronic pain, shorter recovery time, and earlier return to work [3],[4]. Additionally, TEP repair can be performed for bilateral hernias with only one incision.

In Vietnam, TEP surgery has gradually been implemented in many hospitals nationwide. At our hospital, TEP surgery has significantly contributed to the treatment of inguinal hernias. Therefore, we conducted this study to evaluate the outcomes of TEP for IH.

PATIENTS AND METHODS

We retrospectively recruited 58 patients with IH who underwent TEP at Viet Tiep Hospital between September 2021 and September 2023. The inclusion criteria were patients aged 18 years and older with simple IH and complete medical records. Patients with Incarcerated or strangulated IH, femoral IH, history of preperitoneal pelvic surgery, history of pelvic radiation therapy, infection in the pelvic area, or complex medical conditions such as heart failure, coronary artery disease, chronic obstructive pulmonary disease, liver cirrhosis, or hematological disorders were excluded from the study.

The study was conducted in accordance with the guidelines of the Declaration of Helsinki and was approved by the Institutional Review Board.

The study indicators were age, sex, side of hernia, hernia classification (direct,

indirect, or mixed), and early surgical outcomes, such as intra- and postoperative complications, operation time, duration of postoperative pain relief, length of hospital stay, and early outcomes.

Evaluation of early results: This is based on Sinha's criteria [5], which include four levels:

Excellent: No early postoperative complications.

Good: Complications arising but not requiring intervention, such as thigh numbness, hematoma, and self-absorbing seroma, are effectively managed with conservative treatment.

Fair: Complications necessitating intervention but not surgical revision, such as urinary retention requiring catheterization, hematoma or seroma requiring aspiration, and superficial wound infection necessitating wound debridement.

Poor: Requires surgical revision or death during the hospital stay.

RESULTS

The study included 58 male patients with a mean age of 57.1 ± 11.7 years. Right-sided hernia accounted for 37 patients (63.8 %), while left-sided hernia accounted for 21 patients (36.2 %). No cases of bilateral hernias were observed. The majority of patients with indirect inguinal hernia accounted for 79.3%, while direct inguinal hernia and mixed hernia accounted for smaller proportions (13.0% and 2.9 %, respectively) (Table 1). The mean operation time was 60.3 ± 21.3 minutes; the postoperative hospital stay was 5.1 ± 1.6 days (Table 2). Intraoperative and postoperative complications were mild and infrequent (Table 3). Regarding early surgical outcomes, most patients (91.4 %) showed excellent results. No poor results were observed.

Table 1. Hernia classification

Hernia classification	Number	Percentage
Direct	11	19,0
Indirect	46	79,3
Mixed	1	1,7
Total	58	100

Table 2. Early result

Variable	Results
Mean operation time \pm SD (min-max)	60,3 \pm 21,3 (30-150) min
Mean hospital stays \pm SD (min-max)	5,1 \pm 1,6 (3 - 10) days
Postoperative pain relief usage \pm SD (min-max)	3,1 \pm 0,5 days (2-7)

SD: Standard deviation

Table 3. Complication

Complications	Number	Percentage
Peritoneal perforation	2	3,4
Inferior epigastric artery injury	1	1,7
Scrotal seroma	1	1,7
Thigh numbness	3	5,2
Urinary retention	2	3,4

Table 4. Early results

Result evaluation	Number	Percentage
Excellent	53	91,4
Good	3	5,2
Fair	2	3,4
Poor	0	0

DISCUSSIONS

In our study, the mean age was 57.1 ± 11.7 years old. Right-sided hernias accounted for 63.8% (37 patients), whereas left-sided hernias accounted for 36.2% (21 patients). This finding is consistent with the following studies: Phan Đình Tuấn Dũng, with a mean age of 62.2 ± 13.3 years and 100% male patients [6], and Lê Huy Cường, with a mean

age of 61.8 ± 12.2 years and 98.6% male patients [7].

We observed that right-sided hernias accounted for 63.8% (37 patients) of cases, which was more prevalent than left-sided hernias, accounting for 36.2% (21 patients). Other research findings also showed a high prevalence of right-sided hernias, such as Xue-Lu Zhou (60.2 %) [8]. Indirect inguinal hernias accounted for 79.3% of all cases.

Other studies have also reported a predominance of indirect inguinal hernias, such as Lê Quốc Phong with 54.9% [9], Đỗ Mạnh Toàn with 57.7% [10]. Therefore, right-sided hernias and indirect hernias are the most commonly encountered clinical scenarios.

In our study, the mean operation time was 60.3 ± 21.3 (ranging, from 30–150 min). The mean postoperative hospital stay was 5.1 ± 1.6 (ranging, from 3–10 days). The mean duration of postoperative pain relief usage was 3.1 ± 0.5 days (ranging from 2 to 7). These results are consistent with findings from other studies: Phan Đình Tuấn Dũng reported an average surgical duration of 60.8 ± 19.8 minutes [6], and Trần Thanh Tuấn reported 60.91 ± 13.37 minutes [11]. According to Đỗ Văn Chiếu, the mean postoperative hospital stay was 5.7 ± 1.8 days (ranging from 3 to 8 days), and the return-to-work time was 18.6 ± 8.3 days [12]. Our results align with those of other authors because TEP surgery is typically less painful and leads to faster recovery than open surgery or TAPP, resulting in most patients resuming their daily activities within 24 hours and having a relatively short hospital stay.

Peritoneal perforation is a complication that poses significant challenges for surgeons and is the primary reason for converting TEP to TAPP or open surgery. The incidence of peritoneal perforation during surgery ranges

from 4.3% to 47% in different reports [13]. In our study, the rate of peritoneal perforation was 3.4%, with the main cause being manipulation during indirect hernia sac dissection from the spermatic cord and vas deferens. We managed this complication by closing the perforation site using sutures. The incidence of bleeding during surgery in our study was 1.7% (1 of 58 patients), all of which were injuries to the inferior epigastric artery (Table 3). This occurred during the dissection of a large indirect hernia sac. All patients were promptly managed by cauterization to control bleeding.

The most common early postoperative complication in our study was thigh numbness, accounting for 5.2% of cases. This symptom disappeared in patients within one month after surgery. Two of the 58 patients experienced urinary retention after catheter removal, mainly in elderly patients with benign prostatic hyperplasia. All patients resumed normal urination within three days of discharge.

In our study, one patient developed a scrotal seroma, likely resulting from the dissection of a large hernia sac. All intraoperative findings were normal but swelling persisted postoperatively. Ultrasound examination revealed a 10 mm fluid collection in the groin area, which responded well to conservative management with anti-inflammatory and diuretic

medications. The incidence of scrotal seroma after TEP surgery ranges from 5-7% and is more common after extensive dissection in both indirect and direct hernias [14]. Scrotal seroma typically resolves over time and does not require drainage, unless signs of infection or discomfort are present.

In our study, 91.4% of patients achieved excellent postoperative outcomes. These results are consistent with those of Lê Minh Hùng [15], in which most patients achieved good outcomes (93.4%). Two patients had good outcomes, and only one patient had a fair outcome. These patients experienced early postoperative complications but responded well to conservative management without the need for further intervention

CONCLUSIONS

TEP for IH is a safe and effective method to minimize early complications and adverse events.

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CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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None.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the

written consent is available for review by the Editor-in-Chief of this journal on request

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