

## INITIAL RESULTS OF LAPAROSCOPIC TRANSABDOMINAL PREPERITONEAL REPAIR TO TREAT INDIRECT INGUINAL HERNIA

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### SUMMARY

*Background: Laparoscopic transabdominal preperitoneal repair of indirect inguinal hernia has not been well studied in Vietnam. We conduct this study to assess the feasibility of the method. Subjects and methods: This is a descriptive study of 41 patients with indirect inguinal hernia who underwent laparoscopic transabdominal preperitoneal. Results: Of 41 patients, all were males. Age ranged from 18 to 75 years old with a mean age of  $41.98 \pm 17.13$  years. The average operative time was  $34.51 \pm 16.5$  minutes. 85.37% of these patients had mild pain on second postoperative day. Surgical incident was 2.44%, no complications. The average length of hospital stay after surgery was  $4.56 \pm 1.14$  days. There was no recurrence between four months to five years after surgery. Conclusions: Laparoscopic transabdominal preperitoneal is a feasible, effective and safe treatment for indirect inguinal hernia.*

*\* Keywords: Indirect inguinal hernia; Laparoscopic transabdominal preperitoneal repair.*

### INTRODUCTION

Currently, there are a number of methods to treat inguinal hernia: open surgery, laparoscopic surgery, using autologous tissue or synthetic materials. The advantages of laparoscopic surgery are less pain, faster recovery and aesthetics. However, there are still controversies. We research on the technique of laparoscopic transabdominal preperitoneal (TAPP) to treat indirect inguinal hernia. This method was first applied in Vietnam, based on the technical improvement by Ralph Ger (1982).

Objectives: *To evaluate the feasibility, efficacy and safety of the proposed method.*

### SUBJECTS AND METHODS

#### 1. Subjects.

41 patients with indirect inguinal hernia underwent laparoscopic TAPP at 103 Military Hospital from 08 - 2010 to 04 - 2015.

*\* Selection criteria:* Indirect inguinal hernia, standardized technique of surgery, availability of research data.

*\* Exclusion criteria:* Direct inguinal hernia, other technical procedures, lack of research data.

#### 2. Research methodology.

Descriptive cross-sectional, retrospective study of prospectively collected data.

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\* *Some clinical characteristics:* Age, gender, history, symptoms.

\* *Technique:*

- Indications and contraindications:

+ Indications: Indirect inguinal hernias, no contraindication to surgery, abdominal insufflations of CO<sub>2</sub> and endotracheal anesthesia.

+ Contraindications: Direct inguinal hernias, having any contraindication to surgery, unable to pump CO<sub>2</sub> into abdomen and endotracheal anesthesia.

- Preparation:

+ Patients: All patients underwent general anesthesia with endotracheal intubation and were positioned supine on the operating table with both arms stretched along the body.

+ The surgeon: Surgeon stands opposite to the side of the patient's hernia while the assistant hold the camera stands at the side of the hernia.

+ Tools and equipment: Surgical instruments and laparoscopic devices were prepared preoperatively.

- The technical steps:

+ A trocar is placed through an umbilical incision and pneumoperitoneum is established using CO<sub>2</sub> pump. Diagnostic laparoscopy is then performed via direct visualisation of the hernia. Two more trocars are introduced at the right and left flanks.

+ Open peritoneum at inguinal ring: Dissect around the inguinal ring and cut off the neck of hernia sac without removing the hernia sac. This exposes the internal oblique muscle, external oblique muscle and inguinal ligament.

+ Suturing deep inguinal ring: Using 2/0 safil thread, suture the internal oblique muscle with external oblique muscle and with inguinal ligament. Perform one to three sutures.

+ Recover peritoneum by a circle suture.

+ End the surgery by closing the trocars opening on the abdomen.

\* *The evaluation criteria of the early results of surgery:* Surgical time, postoperative pain, length of hospital stay, incidence rate and complications, the rate of recurrence.

\* *Data processing:* Using SPSS 18.0 software.

## RESULTS AND DISCUSSION

### 1. Age and gender.

100% were male patients. Age ranged from 18 - 75 with an average age of 41.98 ± 17.13 years. The age group of 18 to 29 accounted for the highest percentage (29.3%). This is consistent with other studies which showed that indirect inguinal hernias are more common in the young [1].

### 2. Duration of disease (from onset till surgery).

The onset time ≤ 3 months accounted for the highest percentage (36.59%). It showed most of these patients were in early stage.

\* *The duration of disease (n = 41):*

≤ 3 months: 15 patients (36.6%);  
3 months - 1 years: 9 patients (21.9%);  
over 1 - 5 years: 8 patients (19.6%);  
> 5 years: 9 patients (21.9%)

**3. History of inguinal hernia surgery.**

3 cases had a history of inguinal hernia surgery (7.32%): 1 case was recurrence in 2 years after open surgery and 2 cases had reoperation.

**4. Symptoms.**

The majority of the patients had manifestations of painless and reducible inguinoscrotal swelling (92.68%). However, 3 cases had irreducible hernia due to inflammation (7.32%).

*Table 1: Symptoms.*

Characteristics		Number of patients	Frequency (%)
Location of hernia	Bilateral hernia	26	63.4
	Right-sided hernia	13	31.7
	Left-sided hernia	2	4.9
Level	Scrotal	20	48.8
	Non-scrotal	21	51.2

Bilateral indirect inguinal hernia was more common than unilateral indirect inguinal hernia (63.4%). Left indirect inguinal hernia was uncommon. Nearly half of all cases were non-scrotal hernia, even only was detected during laparoscopy.

**5. Surgical time.**

Surgical time was calculated from the establishment of pneumoperitoneum to skin closure of the trocar openings. The average operating time was 34.51 ± 16.50 minutes, with the shortest time 20 minutes and the longest 60 minutes (in this case due to injury to the inferior epigastric artery). By contrast, time taken for open surgery quoted by some authors was 55 minutes (Chengde W [3]) and 67.72 minutes (Cao Thu Hang [1]).

**6. Pain after surgery.**

5 levels of pain were assessed using the Verbal Rating Scale with 5 levels of pain: no pain, mild pain, moderate pain, severe pain, intolerable pain. The results

obtained were as follows: On the first day postoperation, there were 40 patients with moderate pain (97.56%), only 1 patient with serious pain (2.44%). On the second day postoperation, 35 patients had mild pain (85.37%), 6 patients had moderate pain (14.63%).

**7. Incidence of intraoperative and early postoperative complications.**

Common early complications of laparoscopic inguinal hernia repair were scrotal edema, hematoma formation, hydrocele, intra-abdominal bleeding, peritonitis, wound infection. The frequency of postoperative scrotal hematoma according to Nordin and Chengde was 2.7%, 2% and 1.8%, respectively [3, 5].

According to Lawrence (2005) [4], the complication rate of laparoscopic TAPP prosthetic mesh repair was 12%, while that of open surgery was 2% due to one case of inferior epigastric artery injury [6].

However, in our study, none of the 41 patients who underwent laparoscopic TAPP repair had any of the early complications listed above.

#### **8. Length of hospital stay.**

In this study, the average length of hospital stay after surgery was  $4.56 \pm 1.14$  days, with the earliest time 3 days and the longest 7 days. Compared to Nordin's [4] and Tran Phuong Ngo's study [2], the duration of hospital stay after opening surgery was reported to be 8.02 days and 7.76 days, respectively.

#### **9. Rate of recurrence.**

There was no recorded case of recurrence between 4 months to 5 years after surgery.

### **CONCLUSION**

Initial results of laparoscopic TAPP to treat indirect inguinal hernia in 41 patients showed positive results. It has a relatively simple technique, short operative time, no usage of synthetic materials, less pain after surgery, short hospital stay, less

complications and no recurrence during the follow-up four months to five years.

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