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INCIDENTAL FEMORAL HERNIAS DIAGNOSED BY LAPAROSCOPIC APPROACH: DOES GENDER REALLY MATTER?

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Abstract

Aim: Laparoscopic approach in hernia repair enables to visualize all hernia orifices in the groin bilaterally and it may reveal a hernia in the groin region which had not been diagnosed with preoperative physical examination. Therefore, we aim to show incidence of incidental femoral hernias which are diagnosed during laparoscopic inguinal hernia repair.

Methods: In this retrospective study 865 cases of inguinal hernia that underwent laparoscopic approach for inguinal hernia repair at the Ibni Sina Hospital, Ankara between September 2014 and August 2019 were included. The patients' demographic data, operative and postoperative course were studied.

Results: Between September 2014 and August 2019 865 cases of inguinal hernia underwent laparoscopic hernia repair in our institute. 822 of patients were male and 43 were female. 841 cases underwent totally extraperitoneal (TEP) and 24 cases had trans-abdominal preperitoneal (TAPP) repair. 3 of the operations had started with TEP approach, due to peritoneal injury finished with TAPP. Inferior epigastric artery injury occurred 6 of TEP and 1 of TAPP patients, there were managed by laparoscopic sealing of the damaged vessels. 58 (41 TEP and 17 TAPP) of patients were diagnosed femoral hernia incidentally thanks to posterior approach of laparoscopic hernia repair within 865 patients (6,7%). 3 of these patients was female and 55 were male. During the operation femoral hernia repair was also performed to them.

Conclusions: In conclusion femoral hernias, which had not been diagnosed preoperatively, can be incidentally diagnosed intraoperatively due to dissection of preperitoneal inguinal canal and hernias can be repaired at the same operation. Although ratio of femoral hernia for female patients is higher than the male patients in the literature, in this report ratio of femoral hernias diagnosed incidentally is similar between females and males.

Keywords: *Incidental rate of femoral hernia, inguinal hernia, laparoscopic hernia repair*

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Introduction

Hernia is a common problem and 75% of hernias are seen in the inguinal region. It is an important health problem due to the high incidence of inguinal hernias. Therefore, inguinal hernia repair has high surgical importance and is one of the most frequently performed procedures in general surgery. It is estimated that 20 million of inguinal hernia repairs are performed globally every year[1].

Approximately 75% of all abdominal wall hernias are seen in the groin; 2/3 of them are indirect and the rest are direct hernias. 3% of all groin hernias are femoral hernias. Indirect hernias are the most common type of abdominal wall hernias independent from gender[2].

Inguinal hernia is much more common in men than women. Although femoral and umbilical hernias are more common in female population, indirect inguinal hernia is the most common type in women[3]. The ratio of women/men for femoral hernias are 6:1[4]. Inguinal hernias come into existence in 10% of women and 50% of men which have femoral hernias. Laparoscopic approach in hernia repair enables to visualize all hernia orifices in the groin bilaterally and it may reveal a hernia in the groin region which had not been diagnosed with preoperative physical examination. Therefore, we aim to show incidence of incidental femoral hernias which are diagnosed during laparoscopic inguinal hernia repair.

Materials and Methods

In this retrospective study 865 cases of inguinal hernia that underwent laparoscopic approach for inguinal hernia repair at the Ibni Sina Hospital, Ankara between September 2014 and August 2019 were included. The inclusion criteria were diagnosed of inguinal hernia including recurrent hernia. Patients with urgent incarcerated hernias were excluded from the study.

Demographic data of patients such as age, gender, duration of surgery, intraoperative and postoperative complications and length of hospital stay were obtained by examining hospital records. Variables are presented as mean and standard deviation.

Approval was obtained from Ankara University Human Research Ethics Committee in order to collect and retrospectively evaluate the data. During the ethics committee application, the Declaration of Helsinki was approved by all authors.

Results

Between September 2014 and August 2019 865 cases of inguinal hernia underwent laparoscopic hernia repair in our institute. 822 of patients were male and 43 were female. Male patients age range was 18-79 years and female patients age range was 22-48 years. The demographic data of patients are shown in Table 1.

Table 1. Demographic, peroperative data of patients

Variable		No (%)
Age		44 ±8
Sex	Male	822(%58.03)
	Female	43(%4.98)
Site of hernias	Right inguinal	502(%58.03)
	Left inguinal	363(%41.97)
ASA		1.4±0.6
Surgery time(min)	TEP	18± 6
	TAPP	24± 5
Intraoperative complications(n)		10(1.1%)
Conversion to TAPP		3(0.3%)
Hospital stays(days)		1.5±0.4
Complications(bleeding)(n)		7(0.8%)

841 cases underwent totally extraperitoneal (TEP) and 24 cases had trans-abdominal preperitoneal (TAPP) repair. 3 of the operations had started with TEP approach, due to peritoneal injury finished with TAPP. 502 of the hernias were right sided and 363 were left

sided. Intraoperative data of the patients are shown in Table 1.
58(41 TEP and 17 TAPP) of patients were diagnosed femoral hernia incidentally thanks to posterior approach of laparoscopic hernia repair within 865 patients (6,7%). 3 of these patients was female and 55 were male (Table2).

Table2. Incidental femoral hernia during TEP or TAPP

	Female	Male
TEP	2/43(4.6%)	39/822(4.7%)
TAPP	1/43(2.3%)	16/822(1.9%)

During the operation femoral hernia repair was also performed to them. Postoperative hospital stay was approximately 1.1 days for both groups. Mean age of patients undergoing femoral hernia repair was 42.

Discussion

Minimal invasive surgery has lots of advantages to traditional open surgery. The duration of hospital stay, return to normal activity and pain sensation were observed less in laparoscopic cases. Thanks to its advantages, laparoscopic hernia repair has become the first choice[5,6]. Two techniques are used in the repair of inguinal hernia. These techniques are TAPP and TEP repair. In both methods, after reaching the preperitoneal fascia and reducing the hernia sac, the mesh is placed under the transverse muscle fascia and over the peritoneum[7].
TEP and TAPP provide posterior approach to the operation area and enables the vision of femoral and obturator canals. So, femoral and obturator hernias can be diagnosed incidentally and be repaired at the same operation, like in our study which 16 of 865 patients (1,8%) were diagnosed to have femoral hernias intraoperatively.
Some femoral hernias cannot be diagnosed by physical examination. Untreated femoral hernias may incarcerate and result in emergency surgery which might cause mortality[8]. Considering the difficulties in diagnosis and complications, the advantage is incidental detection laparoscopically.
There are few studies on the incidence of incidental femoral hernia in patients who were operated for inguinal hernia[4]. Old et al reported the prevalence of incidental femoral hernias diagnosed during TEP repair as 2.3% in 1,404 groin hernia repairs[9]. Dulucq et al reported 7.2% incidental femoral hernias in a total of 337 laparoscopic hernia repairs performed in 263 patients.[7] Henriksen et al reported the incidence of femoral hernias diagnosed during laparoscopy for bilateral primary inguinal hernia and recurrent inguinal hernia in 461 patients. They reported the incidence of incidental femoral hernia as 9.2% in the primary group and as 3.8% in the recurrent group. Among the operated patients, 38.1% female patients and 6.6% male patients were admitted to the hospital again with recurrent femoral hernia. As a result of this situation, it was concluded that when inguinal hernia surgery is performed, especially in female patients, femoral hernia should be evaluated during the operation[10]. According to a large study by Mikkelsen et al. using data from the Danish Hernia Database, femoral hernia repair accounted for 7.9% of inguinal re-operations. When the patients who were operated for recurrence were examined, 42% of women and 5% of men had femoral hernias[11].
Femoral hernia is more common in women than men, with a 6:1 ratio in elective cases[4]. When hernias in the inguinal region requiring emergency surgery were examined, femoral hernias were found in 50% of women and 6% of men. In the literature, the prevalence of femoral hernia was higher in female patients who underwent TEP, and this was attributed to the higher incidence of femoral hernia in women. The higher rate of femoral hernia in women was thought to be due to the difference in pelvic floor anatomy[9].
Crawford et al reported the incidence of femoral hernias diagnosed during laparoscopic repair of groin hernias as %12 in a male-only population.[10] We did not observe a female predominance in our study, the incidence of femoral hernia was similar in men and

women both diagnosed during TAPP and TEP approaches.
Femoral hernias are likely to be overlooked in open surgeries. Therefore, unrepaired femoral hernias should be considered before inguinal hernias in recurrences detected in patients who have undergone surgery[11,12]. As a result of all these, laparoscopic repair is recommended especially in female patients[4,13].
As a result, laparoscopic hernia repair is the most reliable surgical technique for inguinal and femoral hernias.

Conclusion

In conclusion femoral hernias, which had not been diagnosed preoperatively, can be incidentally diagnosed intraoperatively due to dissection of preperitoneal inguinal canal and hernias can be repaired at the same operation. Although ratio of femoral hernia for female patients is higher than the male patients in the literature, in this report ratio of femoral hernias diagnosed incidentally is similar between females and males. Choosing the appropriate patient for laparoscopic approach is important to diagnose and repair non inguinal hernias. We suggest that the region should be examined for the presence of incidental femoral hernia during preperitoneal dissection.

Conflict of Interest Statement
The authors have no conflicts of interest to declare.

Ethical Approval
Approval was obtained from Ankara University Human Research Ethics Committee (Approval number: İ08-515-22) to collect and retrospectively evaluate the data. During the ethics committee application, the Declaration of Helsinki was approved by all authors.

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Availability of Data and Materials
Data available on request from the authors.

Authors Contributions
ŞE: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Validation; Visualization; Writing-original draft.
YK: Formal analysis; Investigation; Methodology; Project administration; Resources; Supervision; Validation; Writing-review.
DK: Formal analysis; Investigation; Methodology; Project administration; Resources; Supervision; Validation; Writing-review.
AFK: Resources; Supervision; Writing-review & editing.
MTI: Writing-review & editing.
AÇ: Resources; Supervision; Writing-review & editing.

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