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## Laparoscopic versus open inguinal hernia repair in overweight patients (A prospective study)

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### ABSTRACT

**Background:** Inguinal hernia is a common problem, Obese patients are prone to developing abdominal wall hernias. This study aimed to compare the early outcomes after laparoscopic transabdominal preperitoneal (TAPP) repair and open (preperitoneal polypropylene mesh) inguinal hernia repair in overweight and obese patients. **Methods & Patients:** The study was conducted at Department of Surgery, King Fahad hospital ,Saudi Arabia from January 2010 to June 2013, and, 72 adult patients (overweight ) with primary inguinal hernia were included in this study. Obesity was defined as a body mass index (BMI) greater than 30, and patients higher than 25 were defined as overweight .The patients were randomly divided into two equal groups: Group A underwent laparoscopic TAPP polypropylene mesh repair (32 patients), and group B underwent open preperitoneal polypropylene mesh repair (40 patients).The clinical characteristics and surgical outcomes of the adult patients (>18 years old) who underwent laparoscopic or open repair were analyzed. **Results:** The mean operative time was 74.7 minutes in group A and 50.9 minutes in group B. There was statistically significant difference between the groups (  $p < 0.05$ ). The mean hospital stay was 47.18 hours in group A and 45.47 hours in group B. there was no statistically significant difference between the groups (  $p \geq 0.05$ ). Underlying diseases were present in (31.4%) of the group A and (29.4%) of the group B (  $P = 0.322$ ). The mean age was similar in both groups ( $32.2 \pm 12.3$  vs.  $32.4 \pm 14.9$ ,  $P = 0.048$ ). Cases were followed up for three months to one year , and The mean follow-up time was 13.9 months. There were no recurrences noted till date in any of the two groups under study. Postoperative complications developed in (11.7%) of the A group and in (16.7%) of the group B, respectively, and no major complications developed in either group. **Conclusion:** Adult inguinal hernias developed at a relatively younger age in overweight and obese patients than in normal weight patients. laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair in overweight and obese patients is a safe procedure as open technique .

**Keywords:** inguinal, obesity, laparoscope

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### Introduction

Hernias are a common health problem, and the inguinal Hernia is the most common type. Inguinal hernia repair is one of the most frequently performed operations worldwide. Obese patients are predisposed to developing abdominal wall hernias with potential complication, and obesity is a risk factor for wound and mesh related complications and recurrence after surgery.

In Saudi Arabia, obesity is important public health problems, and the prevalence of over-weight, and obesity

has been reported to be high both in Saudi males and females.

Studies concerning the effect of obesity on the outcomes after inguinal hernia repair have been reported rarely. The aim of this study is to describe the clinical characteristics and to compare early outcomes after laparoscopic and open inguinal hernia repair in overweight and obese patients[1-8].

### Patients and Methods

Between January 2010 and June 2013, 72 adult male patients overweight with primary, unilateral, and uncomplicated inguinal hernias were included in this study, at King Fahad hospital - Hofuf, Saudi Arabia. WHO classification was used for defining overweight (BMI 25-29.9 kg/m<sup>2</sup>) and obesity (BMI = 30 kg/m<sup>2</sup>) categories. The BMI of patients in group (A) was  $36.4 \pm 5.7$  that of patients in group (B) was  $37.2 \pm 3.6$ .

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Seventy two patients with primary inguinal hernias were randomly divided into two groups: (group A) underwent laparoscopic transabdominal preperitoneal (TAPP) polypropylene mesh repair (32 patients), and group B underwent open preperitoneal polypropylene mesh repair (40 patients).

Randomization was done according to the order of admission.

The diagnosis was based on detailed clinical history and physical examination. Base line and specific investigations for pre -anesthesia assessment were carried out.

The repair procedures were explained to all patients and duly signed, informed consent was obtained from them.

All patients received a single dose of intravenous injection of ceftriaxon (1000 mg) at onset of anesthesia, followed by two postoperative doses. The anesthesia was general.

The open repair consisted of isolation and reduction of the hernia, ligation of the hernia sac reconstruction of the inguinal floor with mesh prosthesis.

The laparoscopic technique was a transabdominal preperitoneal repair (TAPP), where the abdominal cavity is entered ,peritoneum over the posterior wall of inguinal canal is incised and dissection the preperitoneal spaces to fix a large mesh over the inguinal orifices, then the peritoneum stapled.

Detailed records were kept concerning the pain profile, return to normal activities and early postoperative complications in the form of superficial surgical site infections, scrotal indurations, testicular atrophy, neuralgia, mesh infection and recurrence.

Patients were followed up at (1,3, 6,12) months post operation and evaluated for any residual complications and recurrences.

## Results

Out of 364 patients with an abdominal hernia were operated on during the study period, 174 male patients underwent inguinal hernia repair. Seventy two patients were overweight.

The mean age was  $37.2 \pm 9.6$  years in (Group A) and  $36.7 \pm 13.9$  years in (Group B), and there was no difference between groups in terms of the American Society of Anesthesiologists (ASA) score.

Of 174 cases, overweight and obese patient group (Group A) was 102 (58.6%) and normal weight patient group (Group B) was 72 (41.4%).

Obesity was most common in the age group between 20 and 40 years compared with the groups over 40 years.

regarding the location of hernia in (Group A), the right side was (51.3%), the left side was (46.6%) and bilateral was (2.1%), and in (Group B), the right side was (49.1%), the left side was (41.6%), and bilateral was (9.3%) ( $P = 0.156$ ).

The mean symptomatic period of (Group A) was  $1.6 \pm 3.1$  years and the (Group B) was  $2.3 \pm 2.4$  years.

Diabetes mellitus and hypertension were present in (15.3%, and 5.8) of (Group A) compare to (19.5%, and 5.3.7%) in (Group B).

The mean operative time was significantly higher ( $97 \pm 11.7$  min) in the obese group compared with the non-obese group (72 min).

The mean length of hospital stay was 3.8 days (range 1–9) in the obese group, compared to 2.2 days (range 1–4) in group B.

Pain scores experienced during surgery were significantly higher in obese patients ( $3.6 \pm 1.2$ ) than non-obese group ( $2.4 \pm 1.1$ ). There was no significant difference in the amount of analgesia required postoperatively between the two groups

The mean follow-up time was 13.3 months (range 9–34). Follow-up comprised a physical examination at the outpatient clinic after 1 week, followed by monthly check-ups up to the end of the study.

No major complications were developed in both groups. There was no mortality, no deep vein thrombosis and no respiratory insufficiency in any group.

Postoperative complications were developed in 7 (21.8%) of the group (A), seroma 4 (12.5%), hematoma 1 (3%), wound infection 1 (3%), scrotal swelling 1 (3%) and no recurrence 2. In group B, complications were developed in 6 (15%), seroma 3 (7.5%), hematoma 1 (2.5%), wound infection 1 patients (2.5%), scrotal swelling 1(2.5%), and no recurrence. All these cases were treated conservatively.

## Discussion

In Saudi Arabia, as in the rest of the world, a high percentage of the adult population is obese [1,9,10]. The prevalence of obesity in Saudi Arabia, ranges from 14% in children to about 83% in adult[11,12]. The surgery on obese patients is longer in time, reflect technical difficulties, the operation field is deeper due the fatty infiltration of tissues, and need a larger skin incision. The complications occur during surgery in obese patients are related to the percentage of the overweight, and usually involves the respiratory, cardiovascular, and metabolic systems [13].

The most common hernias repair in a general surgery are performed for inguinal hernias. Although the mesh repair described by Lichtenstein is now the standard operation for open inguinal hernioplasty [14], laparoscopic herniorrhaphy, give results comparable to those of open repair [15]. The risk of developing inguinal hernia in overweight and obese patients in most reports are controversies [16-18].The ratio of overweight and obesity in adult inguinal hernia patients varies on different reports. Reid *et al.* [19], report that the median value of BMI was 27, 28% of cases were normal weight, and 72% of cases were overweight or obese patients. In Chan Yong Park, *et al* [20] study, the mean value of BMI was 23.6, 44.4% cases were normal weight, and 55.6% was overweight or obese patients.

In our study the mean value of BMI was 32, 41.4% was normal weight, and 58.6% was overweight and obese patient. The mean operative time in this study was longer for TAPP. This observation reported by others [21]. In the present study, no statistically differences between the two groups regards postoperative hospital stay, and This prolonged average hospital stay in both groups, was because of the fact that most the patients received general anesthesia. In this study, the role is to discharge on 1st postoperative day after inguinal hernia repair, and the rate of patients discharged on the 1st postoperative day was 89% in laparoscopic patients, 81% in open repair patients. The incidence of inguinal pain (the mean pain severity score) was less among those who underwent laparoscopic repair (3.4) compare to open (4.2). These results are in accordance with those reported by Bignell *et al* [22]. In the present study, seroma was more frequently observed with TAPP and was managed conservatively, and no major complication or recurrence within The mean follow-up time (13.3 months). However Choban *et al* [23] report significantly higher rate of postoperative infections in obese patients. We conclude that obesity does not represent a risk factor for hernia surgery. For unilateral first-time hernias, either

laparoscopic or open repair with a mesh can offer excellent results in overweight and obese patients.

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**Source of Support: Nil**

**Conflict of Interest: None**