Original Research Article

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Single port laparoscopic transabdomional preperitoneal inguinal hernia repair: prospective cohort study

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ABSTRACT

Background: Laparoscopic inguinal hernia repair offers variety of advantages than the conventional repair. Therefore, laparoscopic transabdominal preperitoneal (TAPP) and totally extraperitoneal (TEP) techniques are frequently preferred. Single-incision laparoscopic surgery (SILS) was developed with the aim of reducing the invasiveness of conventional laparoscopy and has been successfully performed by many surgeons.

Methods: This study was conducted on 25 patients over a period of one year from November 2011 to October 2012 in Department of General Surgery, Acharya Sri Chander College of Medical Sciences and Hospital, Sidhra, Jammu (ASCOMS), India with uncomplicated inguinal hernia which underwent single port laparoscopic TAPP (SPL-TAPP). **Results:** In this study, all the patients (100%) had unilateral inguinal hernia, among them 16 (64%) had direct and 9 (36%) had indirect inguinal hernia. Pediatric patients were excluded from study. The mean age, weight and height were 44.4, 59.46 and 157.2 cm respectively. Intraoperative data for SPL-TAPP had complications in 1 case (seroma formation) and need for conversion to conventional surgery was also seen in 1 case.

Conclusions: Single port TAPP offers to be safe and efficacious with minimum re-occurrences and shorter hospital stay.

Keywords: Laparoscopic inguinal hernia repair, Transabdominal preperitoneal repair, Totally extraperitoneal repair

INTRODUCTION

Inguinal hernia repair is the most frequently performed surgical procedure worldwide. Laparoscopic inguinal hernia repair offers variety of advantages than the conventional repair. Therefore, laparoscopic transabdominal preperitoneal (TAPP) and totally extraperitoneal (TEP) techniques are frequently preferred.²⁻⁴ While comparing the two techniques, TAPP is easier to learn and may be associated with a shorter learning curve.⁵ Recent focus been to minimize the invasiveness of laparoscopy by reducing the number of incisions and the port size. Single-incision laparoscopic surgery (SILS) was developed with the aim of reducing the invasiveness of conventional laparoscopy and has been successfully performed by many surgeons. ⁶⁻⁸

METHODS

This study was conducted over a period of one year from November 2011 to October 2012 in Department of General Surgery, Acharya Sri Chander College of Medical Sciences and Hospital, Sidhra, Jammu (ASCOMS), India.

This study was conducted on 25 patients presenting to ASCOMS with uncomplicated inguinal hernia which underwent single port laparoscopic TAPP (SPL-TAPP).

Inclusion criteria

- Patients with uncomplicated symptomatic inguinal hernia,
- Unilateral inguinal hernias,
- Primary hernia or first reoccurrences.

Exclusion criteria

- Comorbid conditions making patient unfit for GA,
- Complicated hernias,
- Intrabdominal or pelvic malignancy,
- Advanced pregnancy,
- Morbid obesity or ascites.

Single port repair (SPL)

Specialized equipment for SPL falls under two categories that is access port and hand instruments. There are a number of different access ports.

- GelPOINT from applied medical,
- SILS from Coviden (used in this study).

Handheld instruments come in two configurations standard or articulating. Laparoscopic SPA was done through one trochar with one instrument that has optical lens and channel for grasper. After inserting trochar at umbilicus using semi open technique, intraperitoneal anatomical landmarks of inguinal hernia were identified.

Operative steps

After inserting the telescope all the anatomical landmarks normally seen before peritoneal reflections are identified. Peritoneal incision was begun at a point midway between the groin crease and the umbilicus. Incision of the peritoneum is made from lateral to medial on right side and medial to lateral on left side. The peritoneal flap was raised both by sharp and blunt dissection through the avascular plane from cephalic to caudal direction. Dissection is continued medially to pubic symphysis to visualize the cave of retzius. The medial dissection was going across the midline to opposite side for few centimeters for particularly direct hernia so that mesh could be put over the defect. Following the medial dissection, flap was raised lateral to internal ring till anterior superior iliac spine and was carried posteriorly into the psoas muscle taking care of the nerves overlying the psoas muscle particularly lateral cutaneous nerve of thigh laterally and femoral branch of genitofemoral nerve medially. Dissection of the indirect inguinal sac close to the peritoneum using grasper in left hand, sac was pulled to left and cord structures are dissected away from the sac. No dissection is done deep towards cord structures in the triangle of doom to avoid injury to great vessels.

Haemostasis should be achieved before mesh placement using a polypropylene mesh 15×12 cms was employed for repair of both sides with the corners rounded off after

being introduced through 10 mm umbilical port taking out the telescope. Following keeping the mesh, peritoneal flap was closed to avoid bowel and omental adhesions using staples or sutures.

RESULTS

The age group ranged from 20 to 60 years. Pediatric patients were excluded from study. The mean age, weight and height were 44.4, 59.46 and 157.2 cm respectively.

Table 1: Demography.

Variables	Single port TAPP
Mean age (years)	44.46
Mean wt (kg)	59.46
Mean Ht (cm)	157.23
Gender (M:F)	24:1

In this study, all the patients (100%) had unilateral inguinal hernia, among them 16 (64%) had direct and 9 (36%) had indirect inguinal hernia.

Mean operative time of single port TAPP was significantly less i.e. 81.5 minutes.

Table 2: Mean operative time.

Group	No. of patients	Time (mins)
Single port TAPP	25	81.5

Intraoperative data for SPL TAPP had complications in 1 case (seroma formation) and need for conversion to conventional surgery was also seen in 1 case.

Table 3: Postoperative complication and recurrences.

Group	No. of patients	Compli- cations	Re- occurance	Conversion
Single port TAPP	25	1 (4%)	0	1 (4%)

Mean hospital stay in single port TAPP was significantly lower (1.75 days).

Table 4: Mean hospital stay.

Group	No. of patients	Hospital stay (days)
Single port TAPP	25	1.75

DISCUSSION

About 25 patients who presented with chief complaints of groin swelling of one or more months were included in this study excluding the pediatric patients. In this study of 25 patients who underwent single port TAPP the mean

age was 44.86 years which were similar to study done by Tai et al (46.5 years), Ertem et al (53 years). In this study of 25 patient's male to female ratio was 24:1, in accordance to study done by Tai HC et al, which was 15:1.9,10

In this study, the mean time for single port TAPP was 81.5 min which was significantly similar as in study by Tai HC et al, who successfully operated on 24 patients with mean operative time of 83.5 mins. Similarly, in a study by Sato et al, who successfully treated 35 patients with mean operative time of 91.2 mins. In a study of 47 patients by Etem et al, mean operative time was 96.48 mins. 11

In this study of 25 patients with single port TAPP, postoperative complications were reported in 1 (4%) patient who developed seroma which was treated with repeated aspiration. Similarly Tai et al, in his study found 2 patients (12.5%) suffering from postoperative complications. Hawasli et al performed conventional TAPP for recurrent inguinal hernia developed postoperative complications in 18 patients (13%) which include 15 hematomas, two seromas and one urinary retention. Reoccurrence occurred in one patient (0.7%) in whom staples were not used. 12

In this study of 25 patients with single port TAPP, the mean postoperative hospital stay was 1.75 days which was significantly lesser, which was in accordance to study done by Kim et al, and Lee et al, with mean hospital stay of 2.15 days and 2 days respectively. 13,14

Thus, single port TAPP offers lesser duration of surgery and general anaesthesia, lesser postoperative complications, lesser hospital stays and early recovery, and almost no recurrence will be seen.

Main disadvantage of single port TAPP include limited range of movement due to proximity of working ports, limited triangulation.

CONCLUSION

Single port TAPP offers to be safe and efficacious with minimum recurrences and shorter hospital stay.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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