

Comparative Study of Conventional Three Ports with Single Port Laparoscopic Inguinal Hernia Repair in a Tertiary Care Hospital

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ABSTRACT

Introduction: Inguinal hernia repair is the most frequently performed surgical procedure worldwide. Advances in laparoscopic techniques have ushered an opportunity to improve and improvise many surgical procedures. 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. Aim of the study was to assess the safety and feasibility of single port laparoscopic approach for inguinal hernia repair.

Material and methods: This study was conducted on 50 patients presenting to Acharya sri chander college of Medical Sciences and Hospital, Sidhra, Jammu ASCOMS over a period of one year from November 2011 to October 2012 with uncomplicated inguinal hernia in whom 25 patients underwent single port laparoscopic TAPP(SPL-TAPP) hernia repair and 25 underwent conventional three port transabdominal preperitoneal hernia repair.

Results: No significant differences were noted among patient demographics. The age group ranged from 20-60 years. The mean Age, weight and height in SPL-TAPP were 44.4, 59.46 and 157.2 cm respectively. Mean operative time, hospital stay in single port TAPP was significantly lower as compared to conventional surgery. Moreover postoperative complications were also lesser in SPL-TAPP with almost no recurrences.

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

Keywords: Laproscopic, Hernia, Reoccurrence

INTRODUCTION

Inguinal hernia repair is the most frequently performed surgical procedure worldwide.¹ 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 Advances in laparoscopic techniques have ushered an opportunity to improve and improvise many surgical procedures. 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.⁵⁻⁸ Aim of the study was to assess the safety and feasibility of single port laparoscopic approach for inguinal hernia repair.

MATERIAL AND 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).

This study was conducted on 50 patients presenting to ASCOMS with uncomplicated inguinal hernia in whom 25 patients underwent single port laparoscopic TAPP (SPL-TAPP) hernia repair and 25 underwent conventional three port transabdominal preperitoneal hernia repair.

Inclusion criteria

1. Patients with uncomplicated symptomatic inguinal hernia.
2. Unilateral inguinal hernias.
3. Primary hernia or first recurrences.

Exclusion criteria

1. Comorbid conditions making patient unfit for GA
2. Complicated hernias.
3. Uncorrected coagulopathy
4. Intrabdominal or pelvic malignancy.
5. Advanced pregnancy.
6. Morbid obesity
7. Ascites.

Assessment

Patients were assessed for: Operative time Intraoperative Complications Need for Conversion

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Post-operative pain

Post-operative hospital stay Reoccurrence.

Single Port Repair (SPL)

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

SILS from covidien (used in this study)

Hand held 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 land marks 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 centimeter 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 cm was employed for repair of both sides with the corners rounded off after being introduced through 10mm 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

No significant differences were noted among patient demographics. The age group ranged from 20-60 years. Pediatric patients were excluded from study. The mean Age, weight and height in SPL-TAPP were 44.4, 59.46 and 157.2 cm respectively (table-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 mins as compared to conventional (95.5 mins) (table-2).

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).

	Single port TAPP	Conventional TAPP	p value
Gender	24:1	23:2	-
Mean Age (years)	44.46	44.06	0.27
Mean wt(kg)	59.46	60.56	0.32
Mean Ht(cm)	157.23	159.46	0.12
BMI(kg/m ²)	24.48	23.69	0.11

Table-1: Demography

Group	No of patients	Time (mins)
Single port TAPP	25	81.5
Conventional	25	95.5

Table-2: Mean operative time

Group	No of patients	Complications	Reoccurrence	Conversion
Single port tapp	25	1 (4%)	0	1 (4%)
Conventional	25	5(20%)	0	2(%)

Table-3: Postoperative complication, conversion and reoccurrences.

Group	No of patients	Hospital stay (days)
Single port tapp	25	1.75
Conventional	25	3.5

Table 4: Mean hospital stay

Group	No of patients	Pain
Single port TAPP	25	3(12%)
Conventional	25	12(48%)

Table-5: Post-op follow for pain after 1 week

Group	No of patients	Pain
Single port tapp	25	1(4%)
Conventional	25	7(28%)

Table-6: Post-op follow for pain after 4 weeks

Mean hospital stay in single port TAPP was significantly lower (1.75 days) compared to conventional (3.5 days) and the difference was statistically significant ($p < 0.01$) (table-4). The incidence of pain following surgery after 1 week was significantly less in single port TAPP patients and the difference was statistically significant ($p < 0.01$) (table-5). The incidence of pain following surgery after 4 weeks was significantly less in single port TAPP patients and the difference was statistically significant ($p < 0.01$) (table-6).

DISCUSSION

The aim of development of SPL-TAPP has the aim of reducing the invasiveness of traditional laparoscopy and improving the cosmetic outcome. 50 patients who presented with chief complaints of groin swelling of one or more months were included in our study excluding the pediatric patients. In our study of 25 patients who underwent single port TAPP the mean age was

44.86 years which were similar to study done by Tai HC et al (46.5 years), Ertem M et al (53 years). In our study of 25 patients who underwent conventional TAPP has the mean age of 44.06 years. In a study by Sato H et al who treated 20 patients had mean age of 60.2 years. In our study of 25 patients for SPL-TAPP male to female ratio was 24:1, in accordance to study done by Tai HC et al which was 15:1.⁹⁻¹¹ In our 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 M et al, mean operative time was

96.48 mins. In a study by Sato H et al the mean operative time for conventional TAPP was 86.1 minutes.^{10,11}

In our study of 25 patients with SPL-TAPP we had one (4%) intraoperative complication (bleeding) due to large hernial sac which as treated by converting it to conventional TAPP, which was in accordance to study by Sato H et al. In a study by Kapisir SA et al there had been seven conversions (four due to irreducibility, two due to adhesions and one due to bleeding) In our 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 H et al in his study found 2 patients (12.5%) suffering from postoperative complications.

Hawasli A 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.^{9,12,15}

In our 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 Ji Hoon Kim et al and Lee YS et al with mean hospital stay of 2.15 days and 2 days respectively.^{13,14}

In our study of 25 patients with conventional TAPP, the

mean postoperative hospital stay was days, which was in accordance to study by Tattuli F, et al which had overall stay of 3.7 days.¹⁶

Thus single port TAPP has better hand over conventional TAPP with respect to:

1. Lesser duration of surgery and general anaesthesia
2. Lesser postoperative complications
3. Lesser post-operative pain
4. Lesser hospital stay and early recovery
5. Almost no reoccurrence.
6. Better cosmetic results.

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 reoccurrences and shorter hospital stay.

REFERENCES

1. Rutkow IM. Demographic and socioeconomic aspects of hernia repair in the United States in 2003. *Surg Clin North Am.* 2003;83:1045.
2. Takata MC, Duh QY. Laparoscopic inguinal hernia repair. *Surg Clin North Am.* 2008;88:157–78.
3. McCormack K, Scott N, Go PM, Ross SJ, Grant A. EU Hernia Trialists Collaboration. Laparoscopic techniques versus open techniques for inguinal hernia repair. *Cochrane Database Syst Rev.* 2003;CD001785.
4. Memon MA, Cooper NJ, Memon B, Memon MI, Abrams KR. Metaanalysis of randomized clinical trials comparing open and laparoscopic inguinal hernia repair. *Br J Surg.* 2003;90:1479–92.
5. Rosen MJ. Laparoscopic transabdominal preperitoneal inguinal hernia repair. *Operat Tech Gen Surg.* 2006;8:45–51.
6. Ishikawa N, Kawaguchi M, Shimizu S, Matsunoki A, Inaki N, Watanabe G. Single-incision laparoscopic hernioplasty with the assistance of the Radius Surgical System. *Surg Endosc.* 2010;24:730
7. Menenakos C, Kilian M, Hartmann J. Single-port access in laparoscopic bilateral inguinal hernia repair: First clinical report of a novel technique. *Hernia.* 2010;14:309–12.
8. Yilmaz H, Alptekin H. Single-incision laparoscopic transabdominal preperitoneal herniorrhaphy for bilateral inguinal hernias using conventional instruments. *Surg Laparosc Endosc Percutan Tech.* 2013;23:320–3
9. Tai HC, Ho CH, Tsai YC et al. Laproendoscopic single-site surgery: adult hernia mesh hernia with homemade single port. *Surgical laparoscopy, endoscopy & percutaneous techniques.* 2011;21:42
10. Ertem M, Aytac E, Gok Het al. Single port totally extraperitoneal (STEP) hernia repair: improving the benefits of one-day surgery setting. *Hernia.* 2012; DOI:10.1007/s10029-012-0968-4
11. Sato H, Shimada M, Kurita N et al. The safety and usefulness of single incision, Transabdominal preperitoneal (TAPP) laparoscopic technique of inguinal hernia. *J. Med. Invest.* 2012;59:235-40.

12. Hawaski A,Thao U, Chapital A et al. Laparoscopic transabdominal preperitoneal inguinal hernia repair for recurrent inguinal hernia. Am surg. 2002;68:303-07.
13. Kim JH,Park SM, Kim JJ et al.Initial experience of single port laparoscopic totally extraperitoneal hernia repair:nearly scarless inguinal hernia repair, Journal of Korean surgical society. 2011;81;339-43.
14. Lee YS, Kim JH, Hong TH et al. Transubilical single-portlaparoscopic transabdominal preperitoneal repair of inguinal hernia:initial experience of single institute, Surg LaproscEndosc Percutan Tech.2011;21:199-202.
15. Kapris SA, Brough WA,Royston CM et al. Laparoscopic transabdominal preperitoneal(TAPP) hernia repair. A 7 year two centre experience of 3017 patients. Surg Endosc.2001;15:972-5.
16. Tatulli F, Chetta G, Caputi A et al. Laparoscopic inguinal hernia repair:audit of our experience with laparoscopic transabdominal preperitoneal repair TAPP. Chir Ital. 2009;61:47-53.

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