Assessment of perioperative outcome in primary unilateral inguinal hernia: A comparative study

Dr. Harnam Singh Rekhi, Dr. Gagandeep Singh, Dr. Ekta Sharma and Dr. Alok Goyal

DOI: https://doi.org/10.33545/surgery.2020.v4.i2d.422

Abstract

Background: An inguinal hernia is a protrusion of abdominal-cavity contents through the inguinal canal. Various technique available to repair of inguinal Hernia: Open suture repair, Open mesh repair and Laparoscopic hernia repair (TEP/TAPP). In this study comparison was done between laparoscopic procedure Transabdominal pre-peritoneal repair (TAPP) and totally extraperitoneal repair (TEP).

Materials & methods: The study compared the result of two laproscopic hernioplasties in 50 cases divided in two groups. 25 cases in TEP group and 25 cases in TAPP group admitted in department of surgery. Govt. medical college and Rajindra hospital, Patiala. The evaluation and comparison was done in term of operative time, postoperative pain, Recurrence, cost effectiveness, and technical adaptation of surgery.

Results: Difference in duration of surgery, cost effectiveness and technical adaptation in TEP and TAPP was not statistically significant. On observation post operative complication was more associate with TAPP than TEP. In case of hospital stay and time to return to usual activity no statistical difference present between TEP and TAPP. Pain was analysed by vast scale when pain was compared at the end of one month, it was inferred that number of patients in TEP more than TAPP have pain and p value was 0.6836 which was not significant.

Conclusion: Higher incidence of postoperative complications is associated with TAPP in comparison to TEP. However; there was no difference in hospital stay, cost effectiveness, and technical adaptivity.

Keywords: Prolene mesh, Metallic tackers, extra peritoneal

Introduction

An inguinal hernia is a protrusion of abdominal-cavity contents through the inguinal canal. Various technique available to repair of inguinal Hernia: Open suture repair, Open mesh repair and Laparoscopic hernia repair (TEP/TAPP). Important anatomical landmarks associated are Triangle of doom, Myopectineal orifice and Corona Mortis/circle of death. Triangle of doom is an inverted ‘v’ shaped area with its apex at the deep (internal) inguinal ring. Is bound laterally by gonadal vessel and medially by vas deferens (Male) or round ligament of uterus (Female), contain external iliac vessels [1-3]. Myopectineal orifice is a u shaped structure, inguinal ligament divides the myopectineal orifice into two regions, the supragingual region, contain spermatic cord or the round ligament of the uterus and subinguinal region, contain femoral nerve and vessel and femoral canal [4]. Corona Mortis/circle of death is the pubic branch of inferior epigastric artery anastomosing with obturator artery. In 25 to 30% cases of individuals the pubic branch large and replace the obturator artery. This large branch (aberrant obturator artery) can partially in circle the neck of sac [5].

Laparoscopic Inguinal hernia repair:
1. Transabdominal pre-peritoneal repair (TAPP)
2. Totally extraperitoneal repair (TEP) [6, 7]

In this study comparison was done between laparoscopic procedure TAPP and TEP in respect to operative time, postoperative complication (pain, seroma formation, port side hernia, gut injury, vascular injury, mesh/deep infection), amount of analgesic used, Hospital stay, cost effectiveness and technical adaptivity.

Materials & Methods

The present study was conducted in the department of general surgery with the aim of...
comparing the postoperative outcome between laparoscopic procedure TAPP and TEP. Armamentarium included:
- Sutures: Nylon 2-0 C/N for skin closure, Prolene 2-0 R/B, Prolene no.1 R/B, Silk 1-0 C/N, Vicryl 2-0 R/B for peritoneal closure.
- Prolene mesh: 15x10cm, 12x10cm
- Metallic tackers.

Inclusion criteria
- Patient fit for general anesthesia.
- Above 18 yrs of age.

Exclusion criteria
- Obesity with BMI > 30
- Patient on anti-coagulant
- Pregnancy
- Unfit for General anaesthesia
- Patient below 18 years

The study compared the result of two laparoscopic hernioplasties in 50 cases divided in two groups. 25 cases in TEP group and 25 cases in TAPP group admitted in department of surgery, Govt. medical college and Rajindra hospital, Patiala. The evaluation and comparison was done in term of operative time, postoperative pain, Recurrence, cost effectiveness, and technical adaptation of surgery. Monthly follow-up examinations were done in first 6 month postoperatively.

Patients were evaluated in term of:
- Recurrence of hernia
- Time to return to usual activity

All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi-square test and student t test were used for assessment of level of significance.

Results
Difference in duration of surgery, cost effectiveness and technical adaptation in TEP and TAPP was not statistically significant. On observation post operative complication was more associate with TAPP than TEP. In more than 50 years age group, one case recurrence occurred in TAPP. In case of hospital stay and time to return to usual activity no statistical difference present between TEP and TAPP. Difference in duration of surgery, cost effectiveness and technical adaptation in TEP and TAPP was not statistically significant. On observation post operative complication was more associate with TAPP than TEP. In case of hospital stay and time to return to usual activity no statistical difference present between TEP and TAPP. Pain was analysed by vast scale when pain was compared at the end of one month, it was inferred that number of patients in TEP more than TAPP have pain and p value was 0.6836 which was not significant. It was seen that most of the patients were discharge 2 at to 3 days. P- value was observe to be 0.06810. Laproscopic repair helps with early return to daily activities and hence is an improvement in ergonomics.

### Graph 1: Post-operative complication in relation to age of patient

#### Table 1: Postoperative complication in relation to age of patient

| Parameter           | <50YR TAPP | >50YR TAPP | <50YR TEP | >50YR TEP |
|---------------------|------------|------------|-----------|-----------|
| Postoperative Pain  | 3          | 3          | 2         | 2         |
| Seroma Formation    | 2          | 2          | 1         | 1         |
| Visceral Injury     | 2          | 2          | 1         | 1         |
| Hematoma Formation  | 1          | 1          | 1         | 1         |
| Vascular Injuries   | 1          | 1          | 0         | 0         |
Discussion

A hernia is defined as an abnormal protrusion of an organ or tissue through a defect in its surrounding walls. A hernia can occur at various sites of the body, most commonly through the abdominal wall particularly the inguinal region. Surgery for inguinal hernia was first attributed to Erasistratus of Kos in the third century and probably described by Celsus in first century AD. Vascular injuries and deep/mesh infections were and there was no obvious difference between the two groups. However there was only one RCT1 (Randomized Control Trial) comparing TAPP and TEP which reported no statistically significant difference between the two when considering duration of operation, hematoma, length of stay, time to return to usual activities, and recurrences. There have been no literature on the learning effects and cost difference between the two techniques [7-10]. The purpose of this study was to compare the TAPP and TEP technique of laparoscopic inguinal hernia repair in terms of operative and post-operative complications and the final outcome.

This was a comparative study consisting of 50 patients, with 25 patients in laparoscopic TAPP group and 25 patients in laparoscopic TEP group. Two groups were comparable with respect to age majority of patient TEP & TAPP were of 45 to 75 years Mean age of TEP 52.68 and TAPP 55.16 year and p value is 0.6787 which is in significant. Rambhia SU et al., most of patient in TEP 61 to 70 years & TAPP 51 to 60 years with mean age in TEP 60.67 year and TAPP 61.28 [10]. All the patients in our study were males. This represents the low incidence of inguinal hernia in female in general population. While gone through literature incidence of inguinal hernia is very low among female.

In this study the mean operative time in TEP group was 46.44 minutes while it was 44.04 minutes in TAPP group. Hence the overall mean operative time was little bit less in laparoscopic TAPP repair than in laparoscopic TEP repair. Sinha R found that Mean operative time of TEP was 36.45 ± 1.898 age minutes TAPP was 26.7± 1.174 minutes [11]. Rambhia et al. compared the clinical effectiveness and relative efficiency of trans-abdominal pre-peritoneal (TEP) versus totally extra peritoneal (TAPP) repair of inguinal hernia. They concluded that TEP is comparatively superior to TAPP in terms of post-operative complications, duration of hospital stay and return to normal activities [12].

A study was conducted by Mohamed et al. for comparing mesh fixation versus nonfixation in laparoscopic totally extraperitoneal (TEP) inguinal hernia repair. 40 patients were randomized into two equal groups (20 cases): group A: with mesh fixation and group B: without mesh fixation. All patients of both groups were males. Group A had a longer operative time than group B (P=0.018). There was no significant difference in postoperative pain in both groups (P=0.6). One (5%) patient in each group had an accidental peritoneal tear. They recommend the technique without mesh fixation as there were no differences in the complications, hospital stay, or recurrence, but longer operative time and higher cost were seen in mesh fixation technique [13].

Conclusion

From the above results, the authors concluded that higher incidence of postoperative complications is associated with TAPP in comparison to TEP. However; there was no difference in hospital stay, cost effectiveness, and technical adaptively. The choice of technique could be according to the surgeon skill and preference. But there is no sufficient evidence to recommend the use of TAPP rather than TEP and it will remain the surgeon choice.

References

1. McClusky DA, Mirilas P, Zoras O, Skandalakis PN, Skandalakis JE. Groin hernia: anatomical and surgical history. Arch Surg. 2006; 141:1035-42.
2. Heikkinen T, Bringman S, Ohtonen P, et al. Five-year outcome of laparoscopic and Lichtenstein hernioplasties. Surg Endosc. 2004; 18:518-22.
3. Jenkins JT, O’Dwyer PJ. Inguinal hernias. Br Med J. 2008;
4. GBD 2013 Mortality and Causes of Death, Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2015; 385(9963):117-71.

5. Sajid MS, Ladwa N, Kalra L, McFall M, Baig MK, Sains P. A meta-analysis examining the use of tacker mesh fixation versus glue mesh fixation in laparoscopic inguinal hernia repair. Am J Surg. 2013; 206(1):103-11.

6. Meyer A, Louis J, Mahajna A. Laparoscopic hernia repair: non-fixation mesh is feasibly? Arq Bras Cir Dig. 2013; 26(1):27-30.

7. Hanif M, Ahmed A, Khan MM. Laparoscopic total extraperitoneal inguinal hernia repair: a study at Rawalpindi Medical College and allied teaching hospitals. J Postgrad Med Inst. 2014; 28(3):303-7.

8. The HerniaSurge Group. International guidelines for groin hernia management. Hernia 2018; 22(1):1-165.

9. Akhtar K, Parrot NR, Frcs M, Lecturer S, Laing I, Frcpath P. Metabolic and inflammatory responses after laparoscopic and open inguinal hernia repair. Ann R Coll Surg. 1998; 80:125-30.

10. Rambhia SU, Modi R. A comparative study between totally extraperitoneal and transabdominal preperitoneal laparoscopic inguinal hernia repair techniques. International Surgery Journal. 2017; 4(2):663-670.

11. Rajeev Sinha, Yasharth Sharma, Om Kumar Sharma, Albail Singh Yadev. A prospective study comparing laparoscopic transabdominal proportional (tapp) and totally Extraperitoneal (Tep) Inguinal Hernia Repair. Global Journal for Research Analysis. 2017; 7(5):21-25.

12. Sudarshan PB, Sundaravadanan BS, Prabu Shankar S. A comparative study of totally extraperitoneal versus transabdominal preperitoneal repair of inguinal hernias. Int Surg J. 2017; 4(4):1244-48.

13. Gallo KJG. Experiencia inicial en cirugía endoscópica de hernia inguinal con técnica total extraperitoneal de vista extendida eTEP. Rev Mex Cir Endoscop 2018; 19(2):59-62.

14. Gangopadhyay A, Ghosh BC. Is laparoscopic totally extra peritoneal repair of hernia (TEP) superior than trans-abdominal preperitoneal (TAAP) mesh repair of inguinal hernia-our experience from a tertiary care hospital, Kolkata. Asian Journal of Medical Sciences. 2018; 9(6):20-4.

15. Mohamed HED, ElSheikh M, Barakat H, Abdelhamid AF. A comparative study of mesh fixation versus nonfixation in laparoscopic totally extraperitoneal inguinal hernia repair. The Egyptian Journal of Surgery. 2019; 38(2):348-55.