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An Early Experience with Totally Extra-Peritoneal Inguinal Hernia Repair from a Teaching Institute from Kashmir Valley

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Authors' contributions

This work was carried out in collaboration between all authors. Author MC operated all cases, author MDW supervised the research work. Author ZMR drafted the manuscript and authors AMY, WR, SSA, ZGL and ARB performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors MDW and ZMR managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

Objective: To present the observations from an early experience with the TEP hernia repair with regard to feasibility, technical difficulties, operating time, conversion rate and early recurrence.
Methods: The study was conducted in the Post Graduate Department of General and Minimal and Access Surgery from June 2012 to June 2016. 70 patients, all men having inguinal hernias were operated using Totally Extra peritoneal mesh hernioplasty and various Aims and Objectives of the study observed. The outcome of 70 patients operated by TEP technique was collected 1 year after last patient was operated in the study group.
Results: All patients were men with a median age of 52 years ranging from 20 -80 years. The

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maximum operating was 90 minutes while minimum was 30 minutes. The conversion rate was 2.8% and recurrence rate was 2.8%. Complication noted was seroma formation

Conclusion: Since all the patients were operated by a single surgeon, skilled in laparoscopic surgery, the study revealed relatively reduced level of complications. We also feel that TEP is relatively a difficult procedure for the beginners and requires a steep learning curve.

Keywords: Inguinal hernia; laparoscopy; techniques.

1. INTRODUCTION

Hernia is a disease known to mankind since times immemorial. The surgeon handling hernia needs to be well versed with the anatomy of inguinal canal. There is battery of repairs mentioned in the literature for inguinal hernia. Laparoscopy is now considered a standard approach in the management of inguinal hernias. Though a good number of cases are performed by open technique, yet laparoscopic techniques are growing rapidly all across the globe. Currently there are three techniques used for the management of inguinal hernias, intra-peritoneal onlay mesh hernioplasty, Trans abdominal preperitoneal mesh hernioplasy and totally extra-peritoneal mesh hernioplasty [1]. The IPOM technique for inguinal hernias at its outset went in to disrepute as it doesn't dissect the hernial area and believes in putting the mesh in the inguinal region over the peritoneum. Subsequently there has been increased recurrence due to which technique has been given up .TAAP repair is considered relatively an easy by the beginners and is gaining popularity due to its added advantage of visiting the abdominal cavity and doing a diagnostic laparoscopy to evaluate the other side of inguinal region and correcting any other associated abdominal pathology if present. TEP is an excellent technique that may suit uncomplicated and bilateral inguinal hernias. It is an observation unanimously agreed that TEP is a difficult procedure to start with due to problems of space creation and ambiguous anatomy for a beginner. It needs a steep learning curve to grasp this procedure and master the technique [2,3]. A number of studies have been published that show superiority of laparoscopic technique over the open repairs for inguinal hernias in terms of postoperative pain, earlier return to normal activity and recurrence of hernia. It is the choice of laparoscopic surgeon to select the technique, TEP OR TAAP for the management of inguinal hernia except few of the absolute indications for the TEP like Bilateral inguinal hernia. Despite the fact that the literature reports the limitations and risks of TEP technique there is a general trend that more and more of laparoscopic surgeons are trying to learn this technique. It is strongly felt that laparoscopic surgeons need to acquire adequate experience and anatomical knowledge before embarking on this procedure.

1.1 Aims and Objectives

The theme of the study was to asses and observe the following parameters

1. Feasibility of the procedure (failure or success to complete the procedure laparoscopically).
2. Operative time
3. Conversion to either TAAP or Open
4. Intra OP and early post OP complications
5. Post operative pain
6. Length of hospital stay
7. Recurrence

2. MATERIALS AND METHODS

The study was conducted in the Post-Graduate Department of General Surgery and minimal access surgery Government Medical College Srinagar from June 2012 to June 2016. A total of 70 patients were included in the study. It was a prospective, observational study on the patients of uncomplicated inguinal hernias who underwent an elective laparoscopic inguinal hernia repair. The approval from the ethics committee and a signed informed consent were obtained from the patients. All patients, above 16 years of age with uncomplicated inguinal hernia were included in the study. Complicated hernias, patients unfit for general anesthesia and patients with previous lower abdominal or pelvic surgery were excluded. Operations were undertaken by a single surgeon of our team and all patients were followed up for a period of 1 year post operatively. The following data was collected prospectively: age, sex, duration of surgery, intra-operative complications, postoperative complications, hospital stay and recurrence. All the patients enrolled for the study were evaluated by detailed history, thorough general physical examination, and focused

systemic examination. Informed consent was taken before surgery in the language the patients understood. The patient was explained the various available modalities of treatment with their potential benefits and material risks and also explained about the possibility of conversion to open surgery if there are technical difficulties or in the interest of the patients' safety and well-being. The patient was kept fasting overnight. Operative area was shaved and prepared. All patients received a prophylactic dose of injection ceftriaxone 1 g one hour before and two doses after the surgery.

2.1 Operative Technique

All cases were performed under general anesthesia. An 11 mm infra-umblical transverse incision is made 1.5 cm below the umbilicus. The anterior rectus sheath is exposed and transverse incision is made on the anterior rectus sheath to one side of the midline to avoid inadvertent of opening of the peritoneum, the margins of incised rectus sheath are held in stay sutures using vicryl 1-0, the rectus muscle is retracted laterally from midline and by obturator space is created between the rectus muscle and posterior rectus sheath. The space was created by using balloon, obturator or by telescope. A 10 mm cannula (Hassans Cannula) was introduced through this port and the space was insufflated by using gas fixed to the trocar. A 10mm telescope was then introduced (as shown in fig.1) and under vision a 5 mm trocar was introduced 2-3cm above pubic symphysis in midline and the third 5 mm trocar introduced between the two placed ports (supra-pubic and the infra-umbilical port). Further dissection continued to visualize the hernia defects and the sac along with the cord structures (Fig. 2). Lateral space created by way of traction and counter traction. The cord structures were very gently separated from the sac after reduction of the sac (Fig. 3). The sac was tried to detach from the pseudo sac in majority of cases and sac was ligated by an either a free tie or endoloop the redundant sac was excised and removed. A polypropylene mesh of sizes 12×15 cm was then rolled onto a grasper and introduced through 10 mm port after ensuring that sufficient space is already created to lay the mesh. Once in the extra peritoneal space, mesh is unrolled with the help of graspers (Fig. 3) and then spreading it horizontally from midline to lateral side of the deep inguinal ring covered the hernia defect optimally and then it was fixed at various points by means of the tracker or vicryl sutures to keep it safe from displacing (Fig. 4.). After removal of the 10 mm trocar from the sub umbilical port, the two stay sutures on the anterior rectus sheath are tied to each other, ensuring complete sheath closure. The skin of all 3 ports is closed. Port sites are covered with cosmopore dressing.

2.2 Postoperative Care

Orals were started as soon as the patients started to tolerate them. A second dose of intravenous antibiotics (Ceftriaxone 1 g IV) was given 12 hours after surgery. Analgesics were given on demand only. Monitoring of the patient for Pulse, Blood pressure, Temperature, Respiratory rate, urine output (color and quantity), and appearance of bowel sounds and passage of flatus was done. The patients were typically discharged home on 1st or 2nd postoperative day. The patients were instructed to avoid heavy lifting for 3 months postoperatively. Patients were followed in the OPD at 1 week; 4 weeks and 6 months and 1 year to check the relapse or recurrence. The aims and objectives of study were observed during the follow up period and details were entered in to a pro-forma.

3. RESULTS

The study of Laparoscopic (TEP) management of inguinal hernia was carried out at tertiary care hospital in the Post-Graduate Department of General and minimal access surgery, Government Medical College Srinagar from June 2012 to June 2016. In all 70 patients were included in the study, in which total 82 TEP procedures were performed (out of 70 patients 12 patients were undergone bilateral TEP). The age of the patients ranged from 20 to 80 years with a mean age 52 years. Majority of patients were 50 to 59years (Table-1). In the study group all patients were males. Majority of hernias i.e. 39 (55.71%) were on the right side, 19(27.14%) on the left and remaining 12 (17.14%) were bilateral. Majority of patients 53(75.71) were indirect inguinal hernia and 17(24.29%) were direct inguinal hernias the patients who present with bilateral hernias coincidentally had indirect inguinal hernias.

The operative time ranged from 30 to 90 minutes. Mean operating time for unilateral hernias in TEP procedure was 45 minutes (range: 30–60 min). For bilateral hernias the duration was longer; mean 80 minutes with a range of 60-90 minutes). It was observed that

with experience, the learning curve for the TEP repair shortened that is from the first case which took 90 minutes the duration decreased to 30 minutes in a few later cases of laparoscopic repair. There was no major life threatening complication in any TEP surgery. The amount of bleeding during the procedure was minimal and didn't require any blood transfusion. The main intra-operative and postoperative complications are shown in table 3 and table 4. The overall Rate of intra-operative complications was 2.8 % which was an accidental creation of pneumo-peritoniumin in 2patients due to accidental perforation of the sac while dissection. The post-operative complications occurred in 21.42% (15 patients) the complication included seroma 5.7%, urinary retention 8.5%, Neuralgias 1.4%, port site infection 1.4%, Mesh infection 1.4% and recurrence in 2.8% of patients.

There were 2conversions (2.8%), converted to TAAP. Reason for conversion was loss of space due pneum-operitonium. The length of hospital stay ranged from 1 to 3 days with mean stay was 1.48 days. 42 patients discharged within 24 hours of surgery, and 22 patients within 48 hours of surgery.6 patients on day 3.

Table 1. Age distribution (n = 70)

Age in years	Number of patients	Percentage
≤ 20	2	2.85
20-29	15	21.4
30-39	8	11.4
40-49	15	21.42
50-59	20	28.57
60-70	8	11.4
70 and above	2	2.85

4. DISCUSSION

Ever since the laparoscopic cholecystectomy gained momentum and became gold standard technique, laparoscopic surgeons got impetus to move further in the domain of surgery for other disorders. Hernia is a disease of antiquity and countless procedures have been devised over period of time in search of the ideal one. Shouldice repair enjoyed a good reputation for a good amount of time. Lichentenstein repair is still a gold standard technique globally agreed upon even now. Early nineties saw a new revolution in the field of hernia surgery. Laparoscopists tried

Table 2. Type of hernia

S. no	Type of hernia	Right side (n=39)	Left side (n=19)	Bilateral (n=12)	Total (n=70)
1	Indirect	2738.5%	1420%	1217.14%	5375.71%
2	Direct	1217.1%	5 7.14%	0.0	1724.29%

Table 3. Intra-operative complications

S. no	Complication	Number of cases (n=70)	Percentage
1	Bleeding	0	-
2	Conversion to TAAP	2	2.8
3	Bowel injury	0	-
4	Bladder injury	0	-
5	Nil	68	97.14

Table 4. Post-operative complications

S. no	Complications	Number of cases (n=70)	Percentage
1	Seroma	4	5.7
2	Urinary retention	6	8.5
3	Post operative inguinal pain	1	1.4
4	Mesh infection	1	1.4
5	Port site infection	1	1.4
6	Recurrence	2	2.8
7	Nil	55	78.57

Fig. 1. The space for TEP

Fig. 2. The inferior epigastric artery And spermatic cord with sac

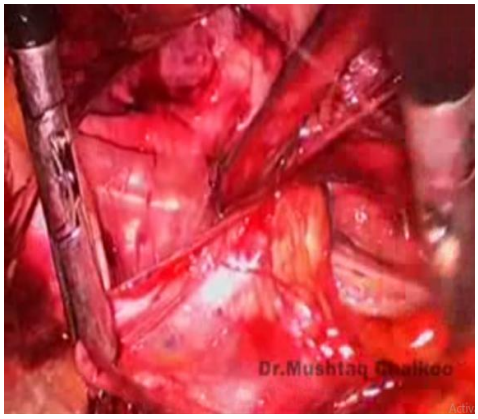

Fig. 3. The dissection of sac from cord

Fig. 4. The cord structures only

Fig. 5. The display of prolene mesh

Fig. 6. The mesh being fixed

to conquer this area of the body. Arregui was the first person to perform Laparoscopic mesh hernioplasty in 1991. Ever since then, many techniques grew with time. Intraperitonealonlay mesh hernioplasty enjoyed a temporary practice owing to the high recurrence. Trans abdominal pre peritoneal mesh hernioplasty was next to follow. Many Laparoscopic surgeons started crawling with this technique and felt it easy to practice. Next to that totally extra peritoneal

mesh hernioplasty starts appearing in the menu of surgical methodology for inguinal hernia. TEP is considered an excellent procedure as of now and enjoys an absolute indication for bilateral hernias. However it is difficult to practice and entails a very long learning curve [2,3]. We started our learning experience with TAPP and as we grew ahead shifted to TEP technique. The laparoscopic repair whether TEP or TAPP is gaining world wide popularity due to the favorable results of low recurrence rate, less post operative pain, early recovery and return to work. There is a general trend of surgeons towards TAPP due to its less learning curve and many surgeons show a general reluctance to learn a technically demanding technique with a steep learning curve i.e. TEP [4,5]. We took a study with 70 patients diagnosed clinically as inguinal hernias and subjected all of them to the technique of TEP. Out of 70 patients 12 patients were operated on both sides in the same sitting (bilateral TEP repair). Interestingly we didn't have any female patient enrolled in the study and all of them were men in the age group of 20 to 80 years, with the mean age of 52 years [6]. Our study reports a majority of inguinal hernias noticed on the right side (55.71 %) and 27.14 on left side and rest were bilateral [7].The majority of patients to the tune of 75.71% presented with indirect inguinal hernia. It was an interesting observation that the patients with that presented with bilateral inguinal hernias were having indirect inguinal hernias. This is unison with the study conducted by Dr Krishna Kumar, V Kesan et al. The mean operative time was more in earlier cases and decreased gradually as we mastered the technique. A look at our study reveals an operative time ranging from 30 to 90 minutes. Mean operative for unilateral hernias In TEP procedures was 45 minutes(range=30 to 60 minutes). For bilateral hernias the duration was longer; mean 80minutes with a range of 60 to 90 minutes [8,9,10]. In our study there was no major life threating complication, the overall rate of intra-operative complication was 2.8% which included difficulty to proceed with TEP technique. Due to accidental creation of pneumoperitonium, we lost the space probably due to perforation of the sac or peritoneum and we were forced to convert the procedure to TAPP technique. Literature reports many intra operative complications like vascular injury, cord injury, bladder injury and bleeding. Luckily we didn't encounter any one of them in our study sample of 70 patients. Post operative complications as reported in the literature were also encountered in our study; however we observed post operative complications to the tune of 21.42% which included seroma formation 5.7%, urinary retention 8.5%, post operative inguinal pain 1.4%, Mesh infection 1.4%, port site infection 1.4% and recurrence in 2.8%. Our study shows lower complication rate in comparison to Langeveld et al. [11] (5.9%), Subwongcharoen et al. [12] (12.7%). This complication rate in our study with a lower tune is explained that all the procedures were done by a single skilled laparoscopic surgeon who has been performing advanced laparoscopic surgeries for more than a decade. The hospital stay in our patients was between 1 to 3 days post operatively [13].

5. CONCLUSION

Laparoscopic hernia surgery is gaining global acceptance and it is mandatory for the surgeons to get acquainted with this technique. We believe that TEP is a suitable technique especially for bilateral inguinal hernias. However it is difficult to learn and needs a steep learning curve. We also believe beginners should start with TAPP technique and gradually switch over to TEP technique.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Geis WP, Crafton WB, Novak MJ, et al. Laparosc pic herniorrhaphy: Results and technical aspects in 450 consecutive procedures. Surgery. 1993;114:765-774.
2. Kuhry E, vaVeen RN, Langeveld HR, Steyerberg EW, Jeekel J, Bonjer HJ. Open or endoscopic total extra peritoneal inguinal hernia repair? A systematic review. Surg Endosc. 2007;21(2):161-66.

3. Khoury N. A randomized prospective controlled trial of laparoscopic extraperitoneal hernia repair and mesh-plug hernioplasty: A study of 315 cases. J Laparoendosc Adv Surg Tech A. 1998;8: 367-372.
4. Genc V, Ensari C, Kulacoglu H, Ersoy E, Ergul Z. A questionnaire study on the surgeons' preferences for inguinal hernia repair after a decade. J Coll Physicians Surg Pak. 2009;19:744-746.
5. CheahWK, So JB, Lomanto D. Endoscopic extraperitoneal inguinal hernia repair: A series of 182 repairs. Singapore Med J. 2004;45:267-270.
6. Malik AM, Hussain Talpur KA, Soomro AG, Qureshi JN. A walk along the learning curve of totally extra-peritoneal (TEP) Repair of Inguinal Hernia. Surgery Curr Res. 2012;2:116. DOI:10.4172/2161-1076.1000116.
7. Krushna KV, Kesan, Arvind K Ade, Raj Gajbhiya, Drpravin Shekar. Total extraperitoneal repair for inguinal hernias: Our initial experience. Sch. J. App. Med. Sci. 2016;4(10B):3681-3692.
8. National Institute for Health and Clinical Excellence. NICE guidelines for laparoscopic surgery for inguinal hernia repair [Online]. 2004 [cited 2008 Sep 4). Available:http://www.nice.org.uk/nicemedia/pdf/TA083guidance.pdf
9. Laparoscopic versus open repair of groin hernia: A randomized comparison. The MRC Laparoscopic Groini Hernia Trial Group. Lancet. 1999;354:185-90.
10. Crawford DL, Phillips EH. Laparoscopic repair and groin hernia surgery. SurgClin North Am. 1998;78:1047-62.
11. Neumayer L, Giobbie-Hurder A, Jonasson O, Fitzgibbons R Jr, Dunlop D, Gibbs J, et al. Open mesh versus laparoscopic mesh repair of inguinal hernia. N Engl J Med. 2004;350:1819-27.
12. Subwongcharoen S. Outcome of inguinal hernia repair total extraperitoneal laparoscopic hernia repair versus open tension free repair (Lichtenstein technique). J Med Assoc Thai. 2002;85:1100-4.
13. Cheah WK, So JB, Lomanto D. Endoscopic extraperitoneal inguinal hernia repair: A series of 182 repairs. Singapore Med J. 2004;45: 267-270.

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