Original Article

Total extra-peritoneal inguinal hernia repair: experience in a tertiary care hospital of Bangladesh

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ABSTRACT

Background: *Open hernioplasty, a traditional procedure, is practiced for decades all over the world, for inguinal hernia repair and the newer procedure of total extraperitoneal (TEP) inguinal hernia repair is the current trend. Aim of this study was to share the experience of TEP inguinal hernia repair.*

Methods: *This retrospective observational study was done from April, 2012 to March, 2021 at BIRDEM General Hospital, Dhaka, Bangladesh. Patients with inguinal hernia reporting to BIRDEM outpatient department (OPD) were counseled for TEP repair. Those who consented were treated electively with a TEP repair for a unilateral or bilateral hernia defect, either direct or indirect. All procedures were completed with patients under general anaesthesia. Polypropylene mesh was placed in preperitoneal space. Followed up records were noted at one week, one month, one and two years after surgery. Patients' age, hernia types and locations, complications, length of stay in hospital, return to work and recurrence were noted.*

Results: *Total patients were 118 including one female. Patients were between 22 and 72 years. All of them had primary hernias and 72% of them underwent unilateral repairs. One of the cases required conversion to trans-abdominal preperitoneal procedure. In five patients (4.2%) intraoperative complication occurred and post-operative courses were complicated in 8 patients (6.7%). Patients were able to resume their daily activities after a mean period of 7 days (3 to 10 days). There was no mortality.*

Conclusion: *In patients with uncomplicated inguinal hernias, TEP is associated with a very low overall risk of serious complications and recurrence with a very good functional outcome. It is equally applicable with bilateral inguinal hernias without added risk.*

Key words: *inguinal hernia, total extraperitoneal repair, hernioplasty.*

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INTRODUCTION

Inguinal hernia repair is one of the most common surgery and over twenty million procedures are done every year across the globe.[1-3] The most common standard open technique of tissue based suture repair had few changes over a hundred years.[4] Use of a synthetic mesh for a tension free repair has revolutionized hernia surgery with a significantly lower recurrence rate[2,5] and lower chronic post-operative pain.[6] The development of laparoscopic technique to cover the myopectineal orifice with a mesh placed in preperitoneal space might be the next big change in hernia repair.[3,7] Since the first reported case in 1992,[8,3] endoscopic repair of inguinal hernia is becoming an increasingly popular method (16.8% to 41%) in USA[9,10] as an alternative to open hernioplasty. This minimally invasive technique has the benefits of lower wound infection, faster wound recovery, reduced post-operative stay, less pain, better cosmetic outcome and earlier return to physical activity and work[3,6,11-16] and less chronic pain.[16] Disadvantages of the technique include a higher risk of serious intraoperative complications, has to be performed under general

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anaesthesia and sizeable learning curve to master the technique.[6,11,17] Among the two alternative approaches, trans-abdominal preperitoneal (TAPP) and total extra-peritoneal (TEP), some author concluded that both are safe and effective[18,19], while others preferred TEP, since, it can avoid entry into the peritoneal cavity and consequently, possible intraperitoneal complications.[7] The present study describes the outcome of TEP inguinal hernia repair (IHR) at our center.

METHODS

A retrospective observational study was done in all cases of IHR, who underwent TEP repair, between April, 2012 and March, 2021. All data were collected from patients' personal files and hospital documents and records. A total of 118 patients were treated electively with TEP repair for a unilateral or bilateral hernia defect. They were either direct or indirect inguinal hernia cases. A total of 151 procedures were done, where bilateral repair was counted as two separate surgical procedures. All adults (over 18 years) were included in the study including patients who had concomitant procedures at the same time of inguinal hernia repair. Patients with incarcerated hernia and those deemed unsuitable for surgery under general anaesthesia (GA) were excluded from the study. All the patients were prepared in out-patient department and if they met the selection criteria, they were enlisted on next operation list. Patients were asked to void just before operation. All procedures were completed with patients under GA and supine Trendelenberg position with upper limbs tucked at the sides.

An infraumbilical vertical incision of 1.5 cm was made, blunt dissection of subcutaneous fat was done to expose the Linea Alba which was opened transversely and care was taken not to breach the parietal peritoneum. Blunt dissection was made with a hemostat in the extraperitoneal space aimed towards the pubis in the midline. A 10 mm trocar was placed, carbon dioxide inflation was done and a pressure of 10-12 mm was maintained. A zero degree 10 mm telescope was introduced and blunt dissection was done with the tip of the telescope keeping close to the peritoneum, first towards the pubis and then to the side of the hernia to the level of the anterior superior iliac spine. Indirect hernia sac was reduced high enough to hold down behind the mesh at the conclusion of the procedure. Medial dissection was extended across the midline to opposite side halfway to epigastric vessels. Polypropylene mesh (15x10 to 15x12 cm^2 sizes) was folded in halfway with 3 sutures. Then folded completely and introduced through the 10 mm cannula, then freed, half uncurled and laid flat to cover the space below the inguinal ligament. Spiral tacks were then used to fix the mesh. The sutures were then removed to uncurl the other half of the mesh to cover the space above the inguinal ligament, thus covering the hernia sites – inguinal, femoral and obturator. A similar technique was performed on the opposite side, if warranted. The hernia sac was placed behind the mesh, hemostasis secured, deflation and closure of the fascial and skin incision were performed. Haemodynamic status of the patients were monitored overnight and if stable, they were discharged on the next day. All patients were followed up in outpatient department in one week, one month, one and two years after surgery. Data analysis was done in following outcome items: patients' age, hernia types and locations, complications, length of stay in hospital, return to work and recurrence.

RESULTS

Total patients were 118, mostly male (117). They were between 22 and 72 years of age (Table I). Thirty two percent having an American Society of Anesthesiologists (ASA) score of 1, 62% of 2 and remaining 6% an ASA score 3. Mean duration of complaints was 2 years (3 months to 12 years). All of them had primary hernias and 72% of them underwent unilateral repairs. One of the cases required conversion to TAPP. The mean operation time for unilateral and bilateral cases was 55 (45 to 65) minutes and 85 (70 to 100) minutes respectively.

In five (4.2%) patients, intraoperative complication occurred and post-operative courses were complicated in 8 patients (6.8%) (Table II). Excessive bleeding during operation occurred in 4 patients, one while the peritoneum was peeling off from obturator area and another 3 due to injury to a branch of the epigastric vessels during retraction of the peritoneum off the triangle of doom. All were managed endoscopically by gauze pressure and limited cautery. None required blood transfusion, none of the complications was associated with GA. Five patients developed seromas, at 14 days to one month follow up and were managed expectantly. In two patients, recurrence was observed in one and two years follow up that was subsequently treated with a Lichtenstein procedure. One patient developed mesh

infection. He presented one month after operation with fever and was eventually managed by open mesh removal. Post-operative pain was mild in all case. Six patients complained of persistent pain at one month which was treated by reassurance and analgesics. Patients were able to resume their daily activities after a mean of 7 (3 to 10) days. There was no mortality.

Table I. Age distribution of the patients (N=118)

Age(yrs)	21-30	31-40	41-50	51-60	>60	Total
No. of pts	12	28	35	25	18	118

Table II. Patient and hernia characteristics

Variables	Data
ASA	
1	38(32%)
2	73(62%)
3	7(6%)
Location of Hernia	
Unilateral	85(72%)
Bilateral	33(28%)
Duration of complaints	2 years(3months- 12years)
Number of procedures	151
Duration of operation	
Unilateral	55(45 to 65) minutes
Bilateral	85(70 to 100) minutes

Table III. Complications of patients

Variables	Data
Mortality	0(0%)
Intraoperative Complications	
Bleeding	4(3.4%)
Conversion	1(0.8%)
Postoperative Complications	
Seroma	5(4.2%)
Recurrence	2(2%)
Mesh Infection	1(0.8%)

DISCUSSION

In the present series, males were predominant. In literature, male: female ratio is 45:1.[3,20,21] The reason behind very low incidence of female patients in our set up may be due to under diagnosis, socioeconomic and religious bias. The incidence of bilateral inguinal hernia has been variably reported in literature based on clinical examination alone (6%)[20], routine contralateral exploration[21] and with laparoscopy.[22,23] In our series, 28% were bilateral. We offered and did bilateral TEP IHR in those presented with bilateral inguinal hernias and those with a unilateral direct inguinal hernia as the incidence of future development of a direct hernia on the other side is more.

In line with different literature,[6,9] all of our cases were done under GA irrespective of ASA score and we did not face any anaesthesia related hazards. In the post-operative period, ketorolac trimethamine was our analgesic of choice unless contraindicated when tramadol hydrochloride was the alternative. None required pethedine or morphine.

The mean operation time for unilateral case was about an hour, those for bilateral cases 85 minutes. Literatures suggested that operation time depends on the experience of the surgeon and it drops below an hour only after a century of procedures were performed.[24] TEP repair has a long learning curve compared to TAPP hernioplasty procedure.[25-28] Bleeding occurred intraoperatively twice during very early cases, certainly related to inception with the new procedure, though not severe, not eventful, this never happened once surgeon became familiar with the relatively avascular preperitoneal space and dissecting closer to peritoneum.

In this study, we did not encounter bladder or bowel injury, though some publications reported TEP procedures to have higher incidence of serious perioperative complications than open procedures.[26,29,30] Some studies reported that bilateral TEP repair was associated with significantly higher reoperation and urinary bladder injury[27,31] while other studies[24,32] suggested that bilateral repair does not have notably higher risks or mortality than an unilateral repair.[32] Seroma in the inguinal area were encountered in 5 patients and none required intervention. One study also reported that many patients had some degree of seroma that did not require drainage.[3] Several studies concluded that old age, large hernia defects, scrotal hernias and

left behind residual distal sac were associated with seroma formation.[26,29,33]

The strength of the study is inclusion of all uncomplicated cases who were willing to undergo TEP IHR. Limitation of the study was its modest number of cases and potential selection bias as a substantial number of patients were excluded as they were operated by an open approach during study period due to financial constraints.

Conclusion

In patients with uncomplicated unilateral or bilateral inguinal hernias, TEP repair is considered as the preferred technique with many advantages including not disturbing the peritoneal cavity.

Authors contribution: MEHR and HA conceived the idea. HA drafted manuscript. Both authors agreed to submit the manuscript for publication.

Conflict of Interest: Nothing to declare

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