



A Prospective Study of Trans Inguinal Pre Peritoneal (TIPP) Hernioplasty: An Early Experience of 30 Consecutive Cases

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Abstract

Inguinal hernia still remains a significant clinical problem since the original description of hernia repair by Bassini in 1889. The Lichtenstein procedure is the current reference technique for inguinal hernia treatment. Chronic pain has become the main postoperative complication after inguinal hernia repair. The Lichtenstein procedure is the current reference technique for inguinal hernia treatment. In laparoscopic surgery this is performed in General anaesthesia and learning curve is long. In this prospective study of 30 patients of inguinal hernia were operated under spinal anesthesia and prolene mesh was placed in pre-peritoneal space posterior to inferior epigastric vessel through trans-inguinal approach. All patients were followed for at least three years. No recurrence and seroma formation was found in any patients. Most patients had only mild pain. Mean operative time was 65 minutes.

Key words: *Inguinal hernia, Posterior hernioplasty,*

Introduction

Inguinal hernia still remains a significant clinical problem since the original description of hernia repair by Bassini in 1889^[1]. Hernia repair using suture has paved the way to synthetic meshes to cover the myopectineal orifices. Lichtenstein tension-free mesh placement reduced recurrence rates to less than 1%^[2]. The Lichtenstein procedure is the current reference technique for inguinal hernia treatment. In this mesh is placed anterior to fascia transversalis (anterior hernioplasty). Chronic pain has become the main postoperative complication after surgical inguinal hernia repair, especially following Lichtenstein repair^[2]. Evolution of surgical innovations for inguinal hernia repair led to an open, direct approach with preperitoneal mesh position, such

as transinguinal preperitoneal placement (TIPP) of mesh, which is a type of posterior hernioplasty showed promising results considering the reduction of postoperative chronic pain, complication, recurrences. This study was designed to evaluate the outcome and benefit of open preperitoneal mesh repair. Objective of this study is to evaluate the result of open trans inguinal preperitoneal (TIPP) mesh repair technique regarding complications, recurrences, chronic pain, safety and benefit at a single institution.

Patients and Methods

Between October 2010 and October 2012, 30 male patients (mean age 42.6 years) with no significant co morbidity, underwent a unilateral inguinal hernia repair. Among 30 patients,

15 patients had indirect hernia defect, 10 patients had direct hernias and 5 patients had recurrent hernia (after anterior repair). Most patients emptied their bladder immediately before operation and thus urinary catheterization was not routinely performed.

All patients were operated under low dose spinal anesthesia with bupivacaine (75 mg) and 25 mcg fentanyl. Prophylactic antibiotics were given intravenously in all patients.

The repair technique was modified from Nyhus and Wantz, using an oblique incision starting below the level of the iliac crest ending towards pubic symphysis. Transversalis fascia was opened transversely just below to conjoint muscle after retracting cord downward. In case of indirect inguinal hernia, sac was dissected at internal ring from deferens duct and gonadal vessels. Parietalization was performed for 4-5 cm. If sac was long then it was divided at level of internal ring and proximal part of sac was closed. Preperitoneal space was created behind the inferior epigastric vessel. Polypropylene mesh of size varying from 10 x 10 cm to 12x 15 cm was shaped to fit properly in preperitoneal space posterior to inferior epigastric vessels in each patient (Figure 1). The mesh was anchored inferiorly to the iliopubic tract with nonabsorbable 3/0 polypropylene sutures at two sites only. The upper portion of the mesh was anchored with 2 or 3 bites to the inner surface of conjoint muscle. Then fascia transversalis was closed by few interrupted suture or continuous suture by vicryl 3-0.

Drain was not used in any patients. The wound was infiltrated with 10 cc bupivacaine 0.1% in all patients. Patients were discharged second days. Every patient were followed for at least one year in the out-patient department for recurrence, chronic pain, any other complication. The primary outcome measure was the number of patients with postoperative chronic pain, seroma formation, surgical site infection, recurrences. Postoperative chronic pain was assessed at 3, 6 and 12 months. Other outcome measures were hospital stay,

operative time, numbness and return to daily activities.

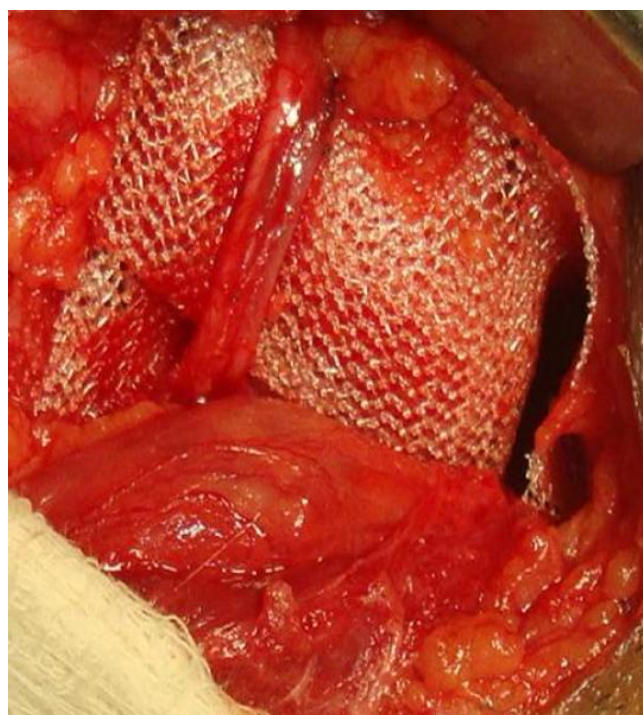


Fig 1: TIPP-Showing placement of prolene mesh in pre peritoneal space posterior to inferior epigastric vessel.

Results

There were no major difficulties during the operation. Patients were hospitalized for one day following the procedure. Mean operative time was 40 minutes. The most that patients experienced was only mild pain that was evaluated by visual analogue score. One patient developed urinary retention following spinal anesthesia. Every patient was discharged second day. Stitches were removed on seventh day. No seroma or recurrence was observed in this study. Only one patient had superficial surgical site infection detected 72 hours after operation and was managed conservatively. Inguinoscrotal numbness was not found in any patient. Every patient returned to daily activities after 10 days.

Discussion

Inguinal hernia repair is considered to be the most common surgical procedure performed worldwide [3]. Recurrence of inguinal hernia was initially a

significant problem; however, with the advent of the tension-free mesh repair, as described as Lichtenstein repair (LR), recurrence rate has consistently been reported as low as 1–4% a drop from up to 50–60%^[4–6]. However, the anterior approach still has the disadvantages with the risk of damages to the testicular blood supply and sensory nerves especially in the reoperative cases^[7]. Concomitant with drop in the hernia recurrence rate, investigators and surgeons are facing other challenges, such as an increased incidence of chronic pain following LR.

Nyhus and Stoppa developed the method of preperitoneal repair of inguinal hernia for reduction of the high recurrence rates of the anterior repairs^[8]. The Stoppa operation was developed by placing a large piece of prosthetic mesh in the preperitoneal space through infraumbilical midline incision^[9]. Wantz adopted this operation for the repair of unilateral hernia giving a longitudinal incision on fascia transversalis just lateral to lateral border of rectus muscle, but this method is not popular among general surgeons^[10]. However, postoperative chronic pain after inguinal hernia repair is the main complication, especially following Lichtenstein procedure^[11–13]. Chronic pain is defined

by the International Association for the Study of Pain as any visual analogue scale (VAS) score above zero that lasts for more than 3 months postoperatively^[14]. Muhammad S et al in his systematic review demonstrates that TIPP repair was associated with a reduced risk of developing chronic groin pain and similar risk of inguinal hernia recurrence, compared to LR.

Risk of developing postoperative complications and moderate to severe postoperative pain was similar following TIPP repair and LR. In addition, duration of operation was statistically similar in both groups^[15]. Findings of this analysis are in concordance with the two previously published systematic reviews^[16–17]. Willaert et al. reported a meta-analysis of two published and one unpublished, randomized, controlled trials and failed to provide substantial evidence in favour of TIPP

repair regarding recurrence^[16]. Post surgical chronic pain represents a major, largely unrecognized clinical problem after LR. Consequently in TIP, there is a need to not only decrease an extensive dissection in the inguinal canal with less manipulation of the inguinal nerves, but also to minimize the interaction between the mesh and major surrounding structures. As a result, placing the mesh in the preperitoneal space is a valuable option^[16]. In addition, Li et al. reported a systematic review of 12 studies (10 randomized, controlled trials and two comparative studies) which quoted the potential benefits of TIPP interms of reduced risk of developing chronic groin pain with equivocal postoperative complications and risk of hernia recurrence^[17]. Arlt G, Schumpelick V have experience with nearly 100 transinguinal preperitoneal mesh prosthesis (TIPP) repairs for recurrent inguinal hernia, apart from an increased number of seromas (12%) in the early postoperative period, the results of the TIPP was comparable with those obtained after Shouldice repair for recurrent hernia. In our study no seroma was found. The rate of hematomas, infections, and testicular complications range between 1% and 3%. Considering the negative case selection of only large recurrent hernias, the TIPP repair reveals a favorably low 1-year recurrence rate of 1%^[18]. No testis related complication was occurred in our study.

The major drawback of laparoscopic hernia repair over the open approach is the added cost, particularly when disposable instruments are used^[19]. The other disadvantage of laparoscopy compared with open hernia repair is that a general anesthetic is almost always necessary. Finally and this may be the most serious problem associated with laparoscopic hernia repair, the learning curve is long^[20]. The principal reasons for the long learning curve are the surgeon's lack of familiarity with the preperitoneal anatomy and the time it takes to develop the skills to operate in a confined space.

Conclusion

Anterior hernioplasty like Lichtenstein hernioplasty is gold standard treatment for inguinal hernia repair. In this approach dissection of sac is in inguinal canal and so more chances to injure inguinal nerves and other cord structures. Pain is other concern for lichtenstein repair. In TIPP (posterior hernioplasty) dissection is in preperitoneal and mesh is placed in preperitoneal space so complication is minimum. This is feasible and more benefitted especially recurrent inguinal hernia after anterior hernioplasty.

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