Original Research Article

Outcomes of TAPP repair without fixation of mesh in tertiary care public hospitals

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Abstract

Background: Traditionally, fixation of mesh is the standard procedure in Transabdominal preperitoneal (TAPP) repair and is usually done with staples, clips or sutures. This may result in post hernioplasty pain syndrome. Placing the mesh in the proper place without fixation and covering it properly with peritoneum may be adequate and reduces post hernioplasty pain syndrome as well as the cost of the procedure. **Objective:** To demonstrate the efficacy of TAPP repair with standard polypropylene mesh (15/12 cm) without any fixation with no increase in recurrence rate. **Methods:** The study includes patients, who underwent TAPP repair at the department of General Surgery at R .G. Kar Medical College from November 2011 to February 2016 and Murshidabad Medical College from March 2016 to July 2018. Data was prospectively entered and analysed. **Results:** There were 58 patients of TAPP repair with a mean follow up of 26.52 months. No recurrence has been reported till date. **Conclusion:** TAPP repair without mesh fixation if done with proper technique, is not associated with any increase in recurrence rate.

Keywords: TAPP,Hernioplasty,Hernia, Mesh,Fixation

Introduction

Currently, the primary methods of inguinal hernia treatment used internationally include open tissue or mesh repair, a total extraperitoneal (TEP) approach, and a transabdominal preperitoneal (TAPP) approach[1]. Among these approaches, the TAPP approach is widely used for inguinal hernia repair[2]. The evaluation and preparation of patients and improvement of the surgical technique are important for preventing postoperative complications after TAPP surgery[3].Laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair is one of the most commonly used approaches in the treatment of hernia[4].TAPP surgery is generally carried out under general anesthesia[5].The laparoscopic trans-abdominal preperitoneal (TAPP) inguinal hernia repair is an evolving technique associated with the well-known advantages of a minimally invasive approach[5].Standard technique of TAPP includes fixation of mesh with staples, clips, tackers or sutures[6]. This fixation procedure needs some time and may be associated with post hernioplasty pain syndrome and undue bleeding due to vessel injury. Placing the mesh without fixation in proper preperitoneal space is a widely practiced in Total Extraperitoneal (TEP) repair[7]. In TAPP also, if the mesh is placed in proper place and covered properly with peritoneum, it may be adequate and reduce the operating time and complications like post hernioplasty pain[8].Non-fixation of the mesh is theoretically a predisposing factor for hernia recurrence due to the risk of mesh displacement. Some authors advocate the methodical fixation of the synthetic mesh as a valuable means to prevent hernia recurrence whereas others have reported no benefit of mesh fixation. The longstanding standard practice for TAPP repair has been to use mesh fixation with tackers to prevent recurrence[9].From the experiences of various surgeons it was derived that although mesh fixation comes with more post- operative pain due to use of tackers or sutures, but it reduces the chances of recurrence. Non fixation on the other hand reduces the operative time, decreases post-operative pain, but some studies showed increase in chances of recurrence due to mesh migration[10].Hence, we conducted our study in an attempt to resolve this controversy surrounding recurrence with mesh non fixation. The purpose of this study was to demonstrate the efficacy of TAPP repair with standard polypropylene mesh (15/12 cm) without any fixation with no increase in recurrence rate in a tertiary care public hospital.

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Material and Methods

This prospective non-randomised study was conducted in the Department of General Surgery, Dr. Radha Gobinda Kar Medical College and Hospital, Kolkata, West Bengal, India and Murshidabad Medical College and Hospital, Berhampore, Murshidabad district, West Bengal, India over a period of 28 months from March 2016 till July 2018. A sample of 58 patients suffering from bilateral inguinal hernia and recurrent inguinal hernia were selected in this study. Additionally, all the selected study subjects were below the age of 60 years and all of them provided their consent to participate in this study. Exclusion criteria for participants involved any patients above 60 years of age, suffering from gross Chronic Obstructive Pulmonary Disease (COPD)/prostatism and patients who declined their consent to participate in this study.All the study patients were treated under general anaesthesia. A 15/15 cm polypropylene, monofilament, nonabsorbable mesh trimmed into 12/15 that weighed 80 g/m2 and had a thickness of 0.50 mm and pore size of 0.5×0.7 mm was used for all patients. The Peritoneal closure was undertaken by 2-0 polypropylene mesh. Amoxyclav (1.2 gm) in injectable form was the prophylactic antibiotic used in this study.Surgical access to pneumoperitoneum was by supraumbilical 10 mm port an maintaining a pressure of 12-15 mm of Hg. Surgical risk has been

evaluated according to American Society of Anesthesiologists (ASA) and explained to the patient[11]. Patient has been examined on the 2nd post-operative day before discharge in ward, 7th post-operative day in Surgery Out Patient Department (SOPD), then again after 6 months ,1 year and 2 years at SOPD. Data was collected and evaluated focussing on post-operative pain and recurrence rate. Pain was evaluated using visual analogue scale (VAS). The rating tool was a VAS score with a range of 1 (best score) to 10 (worst score). The patients were asked to identify the facial expression that represented their subjective experience and the corresponding number was then recorded.

Surgical technique: Under general anaesthesia, we have done TAPP technique with direct telescopic dissection of the midline preperitoneal tunnel for all patients. Polypropylene mesh that measures 15/15 cm was used in every case to cover all potential inguinal defects. Procedure consisted surgery with 1 cm laterally above the anterior superior iliac spine taking care that no fixation was done in both triangles of pain and doom. The study mesh was inserted without any fixation in all cases. Written informed written consent was taken after informing the participants about the possible benefits, risks and implications of the study. Strict confidentiality of their personal details and information related to the study was maintained at all level. Data was entered in Microsoft Excel. Analysis of the data was undertaken by professional software (Statistical Package for Social Sciences, ver.16.0).

Results

This study has been carried out at Dr. Radha Gobinda Kar Medical College and Hospital, Kolkata and Murshidabad Medical College and Hospital, Berhampore for a period of 28 months from March 2016 till July 2018. In this study, initially a total of 70 patients were found eligible. But, 12 were excluded based on the inclusion criteria and those who didn't want to participate. So, a total of 58 patients of symptomatic inguinal hernia who had undergone laparoscopic TAPP repair were studied. The following data makes an attempt to summarize the details of observations noted during the study.

Table 1: Detailed descriptions of results in the study group

Study data point	Study group
Mean surgical time for umbilical hernia (in minutes)	50
Mean surgical time for recurrent hernia (in minutes)	60
Mean surgical time for Bilateral inguinal (in minutes) (B/L) hernia	70
Early complications	No
Late complications	No
Hernia recurrence	No recurrence detected
Mean post-operative pain score	2.5

An umbilical hernia repair is a relatively routine surgery that usually takes around 20 to 30 minutes. It can be performed as an open surgery or a minimally invasive laparoscopic surgery. An open surgery might require two to three days of hospitalization, but with a laparoscopic surgery a patient may be able to go home the same day or within 24 hours. In our study, we observed that the mean surgical time for umbilical hernia was 50 minutes.One of the risks associated with hernia repair surgery is that the hernia can return. If the hernia repair fails and the hernia reappears, this is referred to as a recurrent hernia. A recurrent hernia is recognized as a bulge, sometimes painful, that appears at or near the site of the original hernia. Repair of recurrent hernias is a highly complex abdominal surgery and therefore the success rates are generally lower for each re-operation. Repair of recurrent hernias pose substantially higher risk for complications or development of another recurrence, as the tissue tends to be weaker than at the time of primary repair. Hence, the surgical time required for repair of recurrent hernias is of longer duration. In our study, we observed that the mean surgical time for umbilical hernia was 60 minutes.A bilateral inguinal hernia involves in the presence of two inguinal hernias on both sides of the pubic bone. It is a common manifestation in males. The surgical time required for repair of bilateral inguinal hernia is of longer duration. In our study, we observed that the mean surgical time for umbilical hernia was 70 minutes.Early complications include seroma or hematoma formation, urinary retention, neuralgia and testicular pain and swelling. Late complications include mesh infection, wound infection and hernia recurrence. These are the common complications after hernia surgery. In our study, we observed no early complications and late complications for all the study participants.Evaluation of Pain through Visual Analogue Scale (VAS) uses various expressive faces to quantify pain and has been shown to be a reliable and linear tool for assessing mild-to-severe postoperative pain. VAS requires less reasoning and rationalizing than a numerical scale. Our study recorded the mean post-operative pain score as 2.5.Our study recorded 26.52 months as the mean follow-up.

Discussion

The ideal method for repair of umbilical hernia, recurrent hernia and Bilateral inguinal would cause minimal discomfort to the patient, both during the surgical procedure and in the postoperative course. It would be technically simple to perform and easy to learn, would have a low rate of complications and recurrence, and would require only a short period of convalescence. However, the most effective method in any given patient is not clearly defined and consequently surgery for umbilical hernia, recurrent hernia and Bilateral inguinal after mesh repair is usually a difficult operation due to the disadvantage of re-operating through dense fibrotic scar tissue around the mesh with the risk of testicular damage and a large number of local hematoma.In the present study, we found that the surgical time for umbilical hernia, surgical time for recurrent hernia and surgical time for Bilateral inguinal (B/L) hernia all were reduced in patients. Many studies of same interest reported less hospital stay and rapid return to physical activity[12-14].Chronic postoperative pain is strongly related to two main patient-related factors; age and body mass index. Surgery related factors like the experience of the surgeon and operations performed in specialist hernia centers are other critical factors. The VAS score is superior because of its documented reliability and validity. It has been proven to be a linear scale for quantifying pain and to be accurate for serial measurements[15]. Additionally, the absolute values of VAS measurements are clinically relevant. Rauh found that the posttreatment pain score was more accurate in assessing interventional success than calculated reduction in scores for an individual patient[16]. Also, several authors have found clinical relevance in grouping VAS scores. Most agree that VAS scores from 0 to 3 correspond to mild pain, for which patients do not seek analgesia. Scores from 4 to 6 represent moderate pain and 7 to 10

severe pain. When analyzing data in these broad categories, it is possible to identify clinically significant differences between treatment groups[17-19].The total laparoscopic preperitoneal (TAPP) approach in the present study significantly reduced the final chronic pain score per patient in comparison with the anterior transinguinal approach and our data came in concordance with studies of same interest[20,21].The postoperative complications of hernia repair were estimated regarding the rate and traced regarding the type in similar previous studies as early and delayed forms[22]. Early complication, defined as that occurring within 1 month of surgery, are wound seroma, sepsis, scrotal edema and hematoma formation while the long-term complications, assessed at 3 months are testicular atrophy and recurrence[22-24].In our study, the overall complication rate was 0%.Bilateral inguinal hernia is an ideal indication for endoscopic transabdominal repair. Compared to unilateral repair, bilateral simultaneous laparoscopic hernia repair (TAPP) is safe, comfortable for patients, and cost-effective, without increased morbidity or recurrence risk[25].Long term complications include testicular atrophy and recurrence. Our study observed 0% incidence for recurrence of hernia. Many researchers who reported 0% incidence for testicular atrophy and 0% or very low incidence (1.5%) for recurrence in their studies[26,27]. Recurrence after hernia repair is poorly understood. Recurrence can occur at any stage following hernia surgery. Patients' risk factors such as higher BMI, smoking, diabetes and postoperative surgical site infections increase the risk of recurrence and can be modified[28,29]. Amongst the surgical factors, surgeon's experience, larger mesh with better tissue overlap and careful surgical techniques to reduce the incidence of seroma or hematoma help reduce the recurrence rate. Other factors including type of mesh and fixation of mesh have not shown any difference in the incidence of recurrence[30].

Conclusion

TAPP repair without mesh fixation if done with proper technique, is not associated with any increase in recurrence rate. This procedure can be utilised as a safe and effective approach.

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