Original Research Article

A study to assess results of laparoscopic ventral hernia repair using mesh insertion

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Abstract

Background: Laparoscopic repair is superior to open repair in terms of less blood loss, fewer abdominal wall complications and shorter hospital stay. This prospective study was conducted to assess results of laparoscopic ventral hernia repair using mesh insertion. **Material and methods:** This prospective study was conducted to assess results of laparoscopic ventral hernia repair using mesh insertion. LVHR technique was used as Closure. They were followed up for 2 weeks. They were followed up at 1 week, 3 weeks, 3 months. Data were prospectively recorded in Microsoft Excel and analyzed at study. **Results:** In the present study 40 patients were operated by this technique. Mean operating time for was 72 mins. Lower abdomen hernia was the most common. Mean length of closed HD was 9.2cm. in maximum patients grade I complications was present. Pain was present in 40 patients on trocar site after postoperative 3rd day and in 5 patients after 1st week. Pain was present in 40 patients at suture site after postoperative 3rd day, in 9 patients after 1st week, in 8 patients after 3 week and in 1 patient after 3 months. Pain was present in 40 patients at suture site after postoperative 3rd day, in 3 patients after 1st week, in 1 patients after 3 week and in 0 patient after 3 months. Seroma was not occurred. **Conclusion:** The present study concluded that laparoscopic ventral hernia repair using mesh is an effective and safe procedure with very low postoperative pain.

Keywords: Laparoscopic repair, open repair, **ventral hernia repair**

Introduction

Ventral and incisional hernia repair is one of the most common operations performed in everyday clinical practice. Incisional hernia is a common long-term complication of abdominal surgery and is estimated to occur in 11–20% of laparotomy incisions[1,2]. Ventral hernia is an anterior abdominal wall hernia (excluding groin hernia).Ventral hernia repair has seen a progressive development. It was initially performed by the open technique to restore the anatomical layers without mesh insertion. Recurrence rate after such a repair ranges from 31% to 54%[3,4]. LeBlanc and Booth in 1993 first reported application of intra-peritoneal onlay mesh (IPOM) for ventral and incisional hernia[5]. The laparo endoscopic groin hernia repair using synthetic mesh in TEP or TAPP are acceptable surgical techniques today[6,7]. These techniques are rarely associated with mesh induced complications, the reason being extraperitoneal placement of synthetic mesh. It is apparent that despite great progress in mesh technology, nearly all types of meshes have been found to produce a varying level of adhesion or tissue reaction, regardless of the material and coating used. Preoperatively unpredictable, a mesh-induced visceral complication may occur in some patients to produce severe reaction or major mesh-related adverse events[8]. Modifications of the techniques and the use of different types of meshes were explored to reduce the incidence of complications associated with LVHR. Nevertheless, LVHR is being established as the preferred method of ventral hernia repair in many centers[9-11].

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Material and methods

This prospective study was conducted to assess results of laparoscopic ventral hernia repair using mesh insertion. . The Study was carried out in Sri Krishna Medical College and Hospital, Muzaffarapur, Umanagar, Bihar in department of general surgery during from feb 2019 to sep 2021 Before the commencement of the study ethical approval was taken from the Ethical committee of the institute and written informed consent was taken from the patient /guardian of the patient after explaining the study. Patients attending the outpatient department with uncomplicated ventral hernias were included without any exclusion criteria. Pain at the hernial site or in the abdomen at the time of presentation and any clinical evidence of acute abdomen were criteria for a ventral hernia being complicated. Preoperative evaluation included abdominal ultrasound, hematology, biochemistry, and pre-anesthesia check-up (PAC). Each patient's clinical data was recorded. Clavien classification[12] was followed for recording complications. All patients were operated under general anesthesia (GA) unless contraindicated. LVHR technique as advised by LeBlanc[13] used as Closure technique. A no. 18 spinal needle was used to introduce a no. 1 Prolene suture through its lumen into the abdominal cavity. Another spinal needle was used as a snare to catch the intra-abdominal suture and pull it out. This needle was threaded with no. 1 Prolene suture, which was tied back on its own end to form a loop, likened to a loose violin bow. Once the defect(s) was/were identified, the suturing was begun from one end of the HD. A no. 1 Prolene suture was passed through the threader needle. The tip of this threader needle was then introduced through a skin puncture overlying the centre of HD until it was visible intraperitoneally. The tip was then guided towards the caudal lip of the HD to puncture the

myofascial tissue 1 cm from the edge of the HD. The suture was pushed further through the needle to hang free intraperitoneally. The snare needle was then introduced in a similar manner from the same skin puncture to the caudal lip of the HD. The myofascial tissue was similarly punctured 1 cm from the previous puncture site at the same distance from the edge of the HD. The suture from the threader needle was grasped loosely through the loop of snare needle with the help of dissector. Both the needles were now pulled out from the skin. This led both the free ends of the suture to come out of skin. Under laparoscopic vision both the free ends of Prolene suture were now pulled and drawn back into the peritoneal cavity. The snare needle was then guided to the cephalic lip of the HD through the same skin puncture in a manner similar to that used for the caudal lip. The free ends were then grasped and pulled through the myofascial tissue and skin, one at a time. It was ensured that the two bites in the cephalic lip were 1 cm from each other as well as from the edge of the HD. This process was repeated to place these double-breasting sutures at 1-cm interval from separate skin puncture wounds. An adequate number of these sutures were placed to ensure approximation of the caudal and cephalic lip of the HD. The HD length was measure by using spinal needle placed at corners[14]. The sutures were not tied to allow introduction of mesh through the open HD. A transcutaneous 10-mm trocar (T10) was placed through the HD for intraperitoneal insertion of an adequately size (to provide[4 cm overlap) rolled-up mesh in a traditional manner. The free ends of DBS sutures were now pulled up with simultaneous withdrawal of T10. This prevented loss of capnoperitoneum. The mesh was spread so as to lie on the underlying omentum. Capnoperitoneum was abolished to facilitate the tension-free tying of the DBS sutures. The DBS sutures were then tied to complete ''vest-over-pant'' (VOP) closure of the HD. The sutures were tied gently to achieve only approximation and not tight closure so as to avoid tension. The capnoperitoneum was reinflated and sutured HD observed for any evidence of bleeding or cutting through. This was done after raising the pressure to 20–25 mmHg for 1 min or more as permitted by the anesthetist. The knots were buried in the subcutaneous space. The mesh was then unrolled, positioned, centered over the defect, and secured in place by use of corner tackers. An adequate number of transmyofascial sutures (2-0 nylon) placed at 4–5 cm interval was used to transfix the mesh. These were applied using the spinal needles. Procedure was completed in usual manner. Skin incision of T10 was closed with skin stapler as were the skin site of 5-mm ports. After dressing, the abdomen was given a binder support. Patients were assessed for recovery from GA by the anesthetist. They were given sips of liquids thereafter. They were discharged once they could walk to toilets, take care of their garments, and pass urine. Paracetamol 650 mg six-hourly was prescribed. Need for additional analgesia, i.e., diclofenac (nonsteroidal anti-inflammatory drug, NSAID) was monitored by patient themselves if pain persisted and was more than 5 on visual analogue scale (VAS). This was recorded as an indicator of significant pain (SP). They were followed up for 2 days with instruction to progressively resume their diet from liquid to soft to normal in 2 days. They were advised to wear the binder only for significant pain on movements for up to 3 weeks. They were followed up at third postoperative day, 1 week, 3 weeks, 3 months. Data were prospectively recorded in Microsoft Excel and analyzed at study.

Results

In the present study 40 patients were operated by this technique. Mean operating time for LVHR was 72 mins. Lower abdomen hernia was the most common. Mean length of closed HD was 9.2cm. in maximum patients grade I complications was present. Pain was present in 40 patients on trocar site after postoperative 3rd day and in 5 patients after 1st week. Pain was present in 40 patients at suture site after postoperative 3rd day, in 9 patients after 1st week, in 8 patients after 3 week and in 1 patient after 3 months. Pain was present in 40 patients at suture site after postoperative 3rd day, in 3 patients after 1st week, in 1 patients after 3 week and in 0 patient after 3 months. Seroma was not occurred.

Table 1: Operative data

Variables	
Operating Mean time (min)	72 mins
Type of hernia	
Umbilical	10
Incisional	12
Lower abdomen	18
Upper abdomen	0
Mean Length of closed HD (cm)	
No. of defects	9.2cm
Complications	
Grade I	11
Grade II	4
Grade III/V	0

Table 2: Postoperative data

Postoperative data	3rd day	1st week	3rd week	3 months
Pain				
Trocar site	40	5	0	0
Suture site	40	9	8	1
HD site	40	3	1	0
Seroma	0	0	0	0

Discussion

Since the first report of Le Blanc K (1993)[5], laparoscopic ventral hernia repair has expanded worldwide in relation to benefits of the mininvasive approach: absence of intraparietal dissection, absence of postoperative immobilization, lower risk of broncho-pulmonary complications, lesser abdominal pain and lesser abdominal wall complications respect to open technique; these clinical benefits were identified unequivocally by many retrospective and prospective comparative studies between laparoscopy and laparotomy[14-16].

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Generally, the operative time of LVHR is longer than the OVHR[17,8], although some authors reported no difference in the operative time when comparing the two techniques[19].

Trocar-site hernias or recurrence can occur within 4 months[20] to over 10 years[21]. A follow-up of 3 years has been recommended by Le Blanc[13].

Pooled data analysis of LVHR vs. OVHR confirmed that injury to the bowel is more common in LVHR (2.9% vs. 1.2%)[22].

Conclusion

The present study concluded that laparoscopic ventral hernia repair using mesh is an effective and safe procedure with very low postoperative pain.

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