



Original Article

Laparoscopic Ventral Hernia Repair: A Report of 200 Patients

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Abstract

Introduction: Laparoscopic ventral hernia (LVHR) has become a popular technique amongst minimal access surgeons with good results and fast post operative recovery. We are presenting our experience of 200 patients who underwent LVHR.

Method: A prospective study of 200 patients who underwent LVHR (Incisional/Umbilical/Paraumbilical Hernia) between October 2013 to October 2016. Records were analyzed in relation to hernia characteristics, operative time, complication

Result: 200 patients underwent LVHR. 56% were females, 44% were males, Mean age was 54 years. Incisional hernia accounts 48.5% followed by umbilical and paraumbilical hernia which constitute 43.5% of total patient. Mean operative time was 46 minutes and mean hospital stay was 1.6 days. Recurrence rate was 1%. There was no major post operative complication

Conclusion: LVHR is safe and feasible procedure with acceptable rate of complication. In comparison with open ventral hernia repair, it has low complication rate, less hospital stay, and low recurrence.

Keywords: Laparoscopic ventral hernia repair (LVHR), Incisional hernia, Ventral hernia.

INTRODUCTION

Ventral hernia is defined as primary anterior abdominal wall and incisional hernia not including the groin ^[1]. Primary ventral hernia occurs spontaneously due to fascial pathology and includes umbilical, epigastric, spigelian, lumbar and other hernia ^[2]. Ventral hernia was initially performed by open technique to restore the anatomical layers without mesh insertion. Recurrence rate after such repair was reported from 31 to 54 %. ^[3,4]. Later on ventral hernia was

repaired using different kinds of mesh, but it caused a new problem of mesh complication including infection.

Lap ventral hernia was first reported by Le Blance and Booth in 1993 ^[1]. Lap ventral hernia repair advantages includes reduced level of post operative pain, fewer wound complications, surgical site infection and shorter hospital stay ^[5]. Recurrence rate reported was as low as 0 to 3% ^[6,7]. Now a days LVHR being established as the

preferred method of ventral hernia repair in many centers^[8,9]

In general, open suture repair is adequate for defect of diameter less than 2 cm. Maximum defect size treatable by laparoscopic surgery remains undefined. Several investigators have recommended using LVHR as approach for defect less than 10 cm in diameter due to the high prevalence of recurrence^[10]. There has been several well received series that have reported comparatively lower infection and recurrence rate in the laparoscopic approach to ventral hernia repair^[11,12]. In this study we share our experience with laparoscopic ventral hernia repair.

METHOD

200 patients who underwent LVHR between the period of October 2013 to October 2016 in Max Super speciality Hospital, Gurgaon, India. The patient's age, sex, hernia type and co-existing medical illness were noted

SURGICAL TECHNIQUE

The patient were placed in supine position and one arm abducted. A single shot of Inj. Cefuroxime 1.5 gm was administered intravenously with induction of anesthesia. Access to the abdomen was accomplished through the Palmer's point by means of Veress needle. Another two 5 mm port for working were utilized depending on site and size of ventral hernia. Preoperatively, the margins of hernia defect were marked. Gentle reduction of content and adhesiolysis was done with harmonic scalpel or bipolar with a combination of blunt and sharp dissection. The margins and periphery of hernial defect was evaluated.

After complete reduction of hernial contents the abdomen was deflected and the margins were reconfirmed. Mesh dimension were marked externally after hernia reduction and subsequent deflation of the abdomen. The placement was such that the mesh was centralized on the center of the hernia defect. Mesh was tailored externally on the abdominal wall to cover the hernial defect

by a margin of at least 3 cm and introduced into abdominal cavity via 10 mm port. In all patients we used Parietex dual mesh (polyester with collagen polyethylene glycol-glycerol coating, manufactured by Covidien, Germany). After mesh was positioned intraperitoneally, it was spread to cover and overlap. Mesh was fixed by transfacial fixation and was tacked on to the peritoneum and posterior fascia at an interval of 1-2 cm.

Table 1: Patient Characteristics and Type of Hernias

Total patient	200
Female	112 (56%)
Male	88 (44%)
Mean age (Years)	54 (33-80)
Incisional hernia	97 (48.5%)
Umbilical and paraumbilical hernia	87 (43.95%)
Epigastric hernia	13 (6.5%)
Spigelian hernia	03 (1.5)

Table 2: Post Operative Complications

Omental bleeding	21 (10.5%)
Port site bleeding	6 (3%)
Sever port site pain	33 (16.5%)
Seroma	7 (3.5%)
Port site infection	6 (3%)
Recurrence	2 (1%)
Conversion	1 (0.5%)

RESULT

Two hundred patients underwent LVHR during the study period. 56% were female and 44% were male. Mean age was 54 years ranging from 33 to 80 years. Majority of patients (48%) had incisional hernia. Ninety Seven (48.5%) patient had umbilical and paraumbilical hernia. 12 (6%) patients had epigastric and 4 (2%) patient had Spigelian hernia.

The hernia defect size of umbilical and paraumbilical hernia were small ranging from 2-6 cm. The incisional hernia defect ranged from 4 to 11 cm. Mean operative time was 46 minutes ranging from 30 to 90 minutes. Omentum was the most common hernia content in umbilical and paraumbilical hernia.

In our series complication rate was low. There was no mortality. Six patients had port site

bleeding which was controlled with ligature. 21(10.5%) patients had omental bleeding which was controlled with diathermy. Severe pain was reported by 33 (16.5%) patient they were managed with multiple analgesic injection. Port site infection was reported in 6 (3%) patients managed by daily dressing. Seven (3.5%) patients developed seroma that subsided with conservative management within 21 days. In our series 2 (1%) patients needed conversion to open due to dense adhesions. Two patients develop recurrence - one at 4 month and other at 6 month.

DISCUSSION

Following laparotomy the incidence of incisional hernia reported is 3 to 13% [13,14,15]. LVHR is gaining popularity due to reduced complication rate, established as a cost effective procedure with total cost for the laparoscopic repair being significantly lower than that for open repair [16,17]. Use of smaller incision laparoscopic adhesiolysis to uncover small unpalpable defect that may go unnoticed with open repair, intra abdominal placement of large mesh with wide overlap of defect and use of strong mesh fixation could account for greater success of LVHR [18,19,20]

Appropriate mesh in LVHR is still a debatable issue. An ideal mesh should be strong, pliable, non-allergenic, non-biodegradable, non-carcinogenic and should stimulate adequate fibroblastic activity. Both Polypropylene and Polyester meshes have been observed to cause severe bowel adhesions, with subsequent intestinal erosion and fistulisation [18,25,24,26]. Composite meshes have been found to be well suited. The final choice of mesh for LVHR should be based on surgeon's preference and cost [27,28,22,29]

Defect size remains a contentious issue in laparoscopic hernia repair, with some centers recommending open repair above a certain cut-off point [28,31] and other centers imposing no limit. Some studies have reported no relationship between defect size and recurrence of hernia [32,33] whereas others have reported an increased risk of

recurrence with increasing defect size [28,21]. It has, therefore, been suggested that hernias >10cm in diameter are not suitable for laparoscopic repair. Seroma (7 - 3.5%) was noted in our series. In LVHR potential space for seroma formation exists, this is one of the inherent complications of LVHR [35,12,25]. Most seromas resolve within 8 -12 weeks [37,38,39,35]. The use of abdominal binders have been advocated as it causes compression of abdominal wall and occludes the potential dead space to reduce the chance of seroma [40,12]. In one of the Indian study the incidence of seroma reported was 18% [41]. Heniford et al recommended aspiration of seroma in patients who are symptomatic and allowing the others to resolve spontaneously [21,22]. After LVHR, the procedure may lead to residual pain in almost 26% of patient. In our experience we have reported severe port site pain in 16% patient. One explanation for post LVHR chronic pain is that nerve entrapment in tacksers [48,49]. The suture site pain experienced may have originated from tissue or nerve entrapment during placement of sutures or tacks through the full thickness of the anterior abdominal wall. It could also have resulted from traction of the transabdominal sutures fixing the mesh to the anterior abdominal wall. All patient with suture site pain were managed conservatively and they responded well. TAP (Transversus Abdominis Plane) block was given to all patients in which 15 cc of 0.25% bupivacain was injected bilaterally at the fascial space between the internal oblique and the transverses abdominis muscle, under direct laparoscopic vision. Most important outcome measurement of hernia surgery is recurrence. The recurrence rate reported in the literature after LVHR is not greater than 7% [44,45]. Other series reported recurrences following LVHR ranging from 0 to 11% [23,18,46,47]. The recurrence rate in our series was 1%. Transfacial suture for mesh orientation and fixation has been shown to reduce the recurrence [42,12,43]. It has been reported that 66% to 90% of recurrences occur within 2 year [13,14,24].

Bowel injury during adhesiolysis is most common fear during laparoscopic incisional hernia repair [30,31]. We have no bowel injury reported in our series. Several areas of contention surround laparoscopic ventral hernia repair. Patient selection, mesh technology, fixation, use of transfascial sutures, defect closure, and optimum mesh overlap have yet to be defined. Iatrogenic enterotomy is a serious complication during LVHR with an incidence from 0 to 14% [34].

Intraperitoneal bleeding may occur during the port insertion from branches of the inferior epigastric vessels, in our series it was 6%. During adhesiolysis bleeding may occur from the cut omentum or adhesive bands, omental bleeding in our series was 10.5%.

Wound infection /trocar site cellulitis is lower in laparoscopic hernia repair compared to open, as there is decreased extent of tissue dissection in LVHR [12,36].

CONCLUSION

LVHR is a safe procedure with acceptable operative time, fewer complications, short hospital stay, better patient satisfaction, and importantly a low recurrence rate as compared to open ventral hernia repair. LVHR can be performed as short stay surgery, and should be considered as procedure of choice for ventral hernia repair.

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