

A Study of 50 Cases of Shoelace Repair for Midline Incisional Hernia

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Abstract

Background: Abdominal incisional hernias are a common condition in surgical practice. Numerous surgical procedures have been used to repair them with different results. **Objective:** This study aims to find the place of shoelace darn in the repair of incisional hernias. **Method:** Fifty patients with abdominal incisional hernias have been managed by shoelace darn method in this prospective study. The details of operative technique has been described. **Results:** Shoelace darn was relatively easy procedure associated with fewer complications. There were no true recurrences noted. **Conclusion:** Shoelace darn repair still remains as an excellent technique in management of abdominal incisional hernias, despite advent of mesh.

Keywords: Incisional Hernia; Shoelace Repair; Diabetes Mellitus; Mesh; Modified Shoelace Technique.

Introduction

Midline ventral incisional hernias commonly follow median or paramedian incision for laparotomy. The incidence reported varies from 3.8-11.5%, 90% of them within 3 years after surgery [3]. They are second most common hernia after inguinal hernia. They may vary in size from 1-2 cm to huge, incorporating almost entire small bowel in hernia sac. Aetiology varies from technique used for closure of laparotomy incision, level of experience of surgeon (more common if closure done by resident surgeon), postoperative infection

(almost doubling risk) [4], postoperative cough, nutrition and immunity of the patient and age. Incisional hernia is a clinical diagnosis, which can be further confirmed by ultrasonography. Several studies in past have compared shoelace repair and prosthetic mesh repair. The aim of study was to confirm the efficacy of shoelace technique, and morbidity and mortality associated with them.

Materials and Methods

This prospective study was carried out over a period of 2.5 years at our institute, sumandeep vidhyapeeth, vadodara. 50 patients with midline incisional hernia were studied between September 2011 to march 2014. All the 50 patients had undergone shoelace repair.

Inclusion Criteria- all the patients with midline incisional hernia, irrespective of age and sex were included in study. Patients underwent preoperative fitness. investigations included complete blood count, RBS, RFT, LFT, coagulation profile, x-ray chest, ECG, Ultrasonography of abdomen and if needed, echocardiogram and TMT. All fit patients were included in the study. Patients were kept indoor until stitch removal and were followed up in OPD. During post-operative period patients were studied for wound infection, seroma formation, recurrence and other major complications including intestinal injury and fistula formation, myocardial infarction, deep vein thrombosis.

Technique-patients were given general or spinal anaesthesia, as suitable for individual patient. All the patients were given inj. Ceftriaxone 1 gm 12 hourly and inj. Amikacin 500 mg 12 hourly for 5 days, first dose at the time of incision. A Ryle's tube is introduced if patient is given general anaesthesia and Foley's catheter is introduced in all patients after induction of anaesthesia.

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Surgery begins with elliptical incision to include old scar, and scar is excised. With alternating blunt and sharp dissection, a plain is developed between skin and subcutaneous tissue and hernia sac. Dissection is deepened, so that hernia sac is freed from all sides from subcutaneous tissue and neck of the sac, seen as anterior rectus sheath surrounding sac, is reached. If during dissection peritoneum of the hernia sac is inadvertently opened we closed it with 2-0 vicryl suture. If hernial sac protrude from only a part of previous incision, still we include whole incision in repair. Anterior rectus sheath is freed in subcutaneous plane, throughout the length of incision, on both side. A significant width of anterior rectus sheath should be available all round the sac. Then we make a ribbon of anterior rectus sheath by incising it, about 1.5 cm lateral to the edge of sac, on both sides [2]. This makes two parts of anterior rectus sheath, one medial ribbon of 1.5 cm width and rest of the lateral part. Now this two ribbons are approximated in midline by ethilon 1 no. Loop suture. As they are approximated, hernial sac automatically gets inverted and disappears after completion of this layer. Next, shoelace layer is taken by ethilon 1 no. Loop suture to bridge the gap between two lateral parts of anterior rectus sheath. Starting from the top of incision, each suture is passed about 1 cm lateral to edge, taking about 1 to 1.5 cm of anterior rectus sheath with each bite. Then suture is passed through new midline, developed from medial

ribbons of anterior rectus sheath and then on opposite side. Similar type of bite is taken on anterior rectus sheath and suture is again reverted back to opposite side, taking the bite of new midline. Sutures should be approximately 0.5 cm apart and fairly tense to narrow the gap considerably between cut edges of anterior rectus sheath [6]. This way the missing anterior rectus sheath is replaced by ethilon loop suture. Negative suction drain is put in subcutaneous plane, after achieving hemostasis. Subcutaneous tissue is closed by intermittent vicryl 2-0 suture. Skin is closed by ethilon 2-0 vertical mattress suture. We also have operated a case with modified shoelace technique, where after reconstructing new midline by shoelace method, a prolene mesh is fixed for missing anterior rectus sheath, with good result. Here mesh is fixed with continuous 1 no. ethilon loop suture, incorporating new midline and middle of mesh, as shown in figure by midline red suture. Periphery of mesh is sutured to cut edge of anterior rectus sheath by running 1 no. Prolene suture as well as 10-12 intermittent fixing stitches [5].

Observations

Fifty patients had undergone shoelace repair for midline ventral hernia. All the patients were kept hospitalized postoperatively until stitch removal.

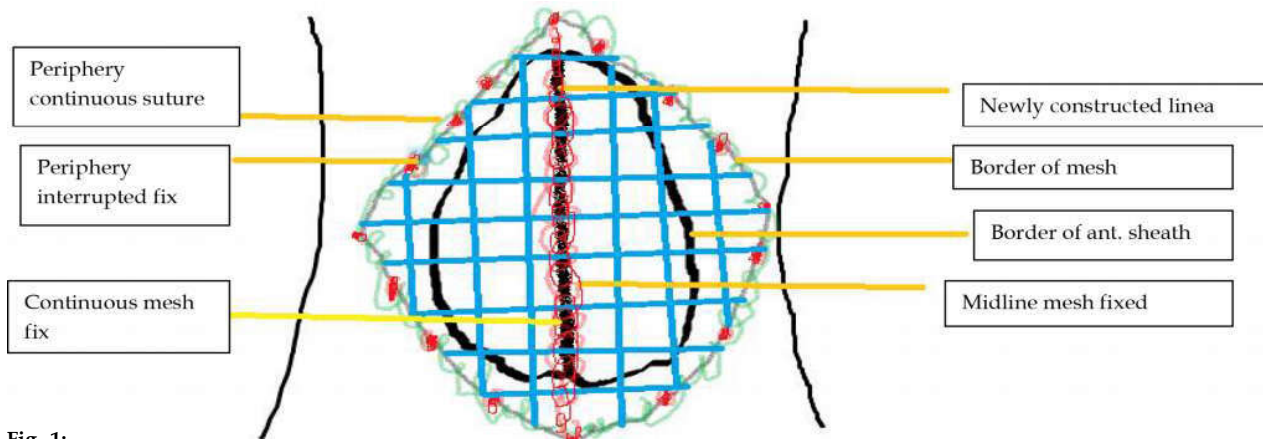


Fig. 1:

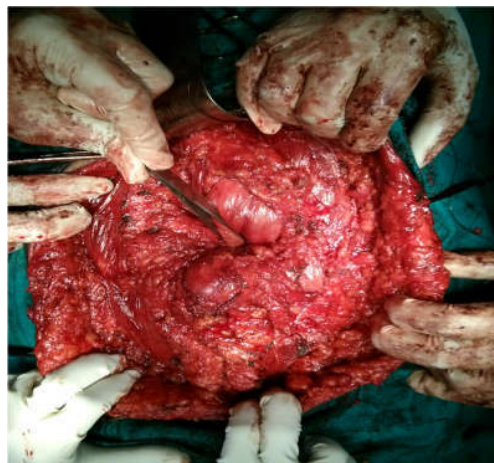


Fig. 2: Operative photograph of completed dissection of hernia sac of an midline incisional hernia

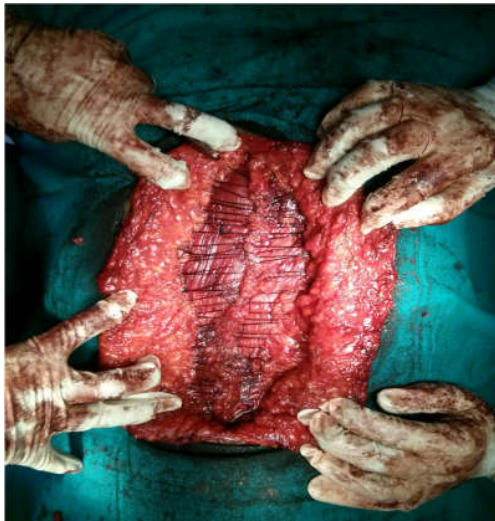


Fig. 3: Operative photograph of completed shoelace repair of midline incisional hernia

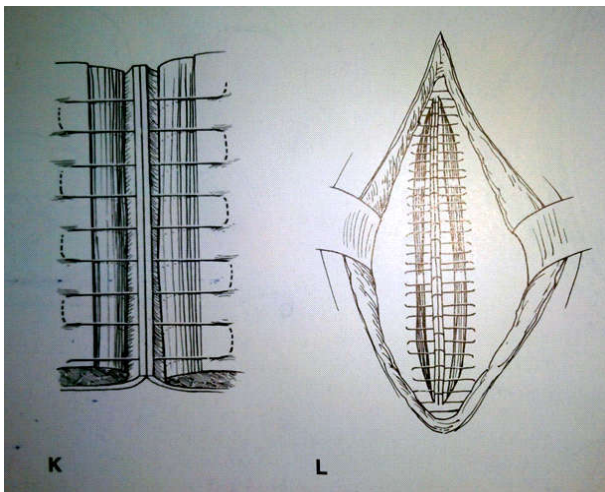


Fig. 4: Diagramtic presentation of shoelace repair

6. Average operative time remained 3 hours.

Discussion

Midline incisional hernias are quite common. They can be surgically cured by insertion of prosthetic mesh via onlay, inlay or combined insertion method or laparoscopically, by direct tissue repair or by shoelace repair. We have performed shoe-lace repair over the years and have found excellent in preventing recurrence. Insertion of foreign body is a significant risk factor, predisposing to infection, in immunocompromised patients (diabetes mellitus, HIV, transplant patients etc.). we routinely avoid mesh insertion in diabetic patients and do shoe-lace repair. we have noted only minor incidences of wound infection with this method, which easily respond to oral antibiotics. Most significant advantage is peritoneum is not opened, hence incidence of intestinal injury and fistulisation becomes nil.

Technique is quite simple and can be performed with relatively ease. No major expense is involved as 4 to 5 ehlion 1 number loop sutures and suction drain only are required. Postoperative recovery is smooth and rapid. As soon as patient is fully awake Ryle's tube is removed. Ambulation is begun in the evening of operation. The intravenous infusion is stopped the next morning and the patient is encouraged to walk, eat and drink normally. Complications are few and minor. The most serious complication is wound infection. Strict asepsis, gentle dissection and meticulous hemostasis are necessary to reduce wound infection. Vacuum drains are removed usually after 2 days.

Conclusion

We conclude that shoelace repair of ventral hernia is a significant armamentarium in the hands of a surgeon and still it remains operation of choice for many patients, especially diabetic and immunocompromised patients.

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1. Total hospitalization period was average 11 days, two days preoperative and 9 days postoperatively.
2. 2 patients (4%) had minor wound infection [1], which responded to oral antibiotics.
3. 3 patients (6%) had serous discharge or seroma formation [1], after removing negative suction drain, which responded to dressings within average 7 days.
4. There were no life threatening complications or no instances of deep vein thrombosis, hypostatic pneumonia or myocardial infarction [7].
5. There was no recurrence noted. One patient had bilateral spigelian hernia after 6 months and had generalized decreased abdominal muscle tone. She was operated and spigelian hernias were repaired by prolene 1 no. Continuous suture after invaginating peritoneal sac. A 30*30 cm mesh was fixed subcutaneously covering whole anterior abdominal wall.

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