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Review

Effective, simple, easy procedure for laparoscopic port closure in difficult cases

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HIGHLIGHTS

- The complete fascial closure of port site is essential for good outcome of laparoscopic surgery.
- Port site herniation is serious complication leading to loss all mini-invasive surgery advantages.
- Our technique is done under direct visualization and trocar sheath in its position.
- Our procedure is effective, easy to produce complete fascial closure at any port site type and in any case.

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ABSTRACT

Background: Laparoscopic and rebotic surgery is widely practiced in modern medicine. The operative procedure is not complete until the port sites are closed with a fascial closure. Good fascial closure still represents problem, especially in difficult obese patients. This study reported simple technique is suitable in such cases.

Material and methods: We herein describe a simple technique for fascial closure after Laparoscopic surgery using percutaneous transabdominal approach by using two looped needles in 87 obese patients. This technique was done while the trocar sheath in its position.

Results: The procedure was used in 87 patients (69 females and 18 males) after laparoscopic cholecystectomy with mean body mass index 35.5 kg/m2 and mean age 47.1 years from May 2013 through June 2015. No intra-operative incidents and no port sites hernias were reported during a mean follow up of 18 months.

Conclusion: The procedure is easy to perform, safe, and effective for fascial port site closure in difficult obese (thick abdominal wall and oblique port wound) cases.

Contents

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1. Introduction

New technical challenges have emerged since the introduction of the laparoscopic approach in surgery. One of these is fascial closure at port sites, which is necessary especially when large trocars are used or after dilatation of port site for organ extraction. New development, such as single port laparoscopic surgery, and the need for small esthetic incisions render fascial closure is a current issue [1,2]. Closure of these wounds generally is quite difficult, especially in obese patients (thick abdominal wall and oblique port wound). Complete fascial closure was difficult to achieved in such cases [3]. An incisional hernia at the site of trocar entry is a serious complication of laparoscopic surgery because all advantages of mini-invase surgery will be lost and most trocar site herniation requires further surgery [4]. Herniation associated with laparoscopic trocar sites can occur with incisions as small as 3 mm [5]. It is recommended that all 10 mm or more trocar sites in adults and 5 mm or more port sites in children must be closed, incorporating the peritoneum into the fascial closure [6]. Complete closure of fascia at the port site can be tricky and frustrating, often requiring blind suturing of the fascial defect (with the risks of incomplete closure and injury to the intraperitoneal organs) or larger skin incisions [7]. In this study, a new method is proposed for safe, complete, easy closure of the abdominal fascia in port site especially in difficult obese patients.

2. Patients and methods

Eighty seven (69 females and 18 males) with chronic calcular cholecystitis in obese patients were selected for this study, from May 2013 through June 2015. All information about this technique was discussed with all patients and all patients gave writing consent for inclusion of their data in this study. The age of the patients ranged from 21 to 63 years (mean = was 47.1 years). The instruments used in this technique were 2 looped needles, which prepared by corresponding author for this study. The looped needle is formed of two pieces. First piece, outer sheath which formed of long needle about 20 cm long, has sharp proximal end and allows to metal stent with its loop to go inside. Second piece, is formed of metal stent about 25 cm and has large loop of fine plastic wire at proximal end. This stent can be pushed and withdraw through the needle to put the loop outside or inside the proximal needle end during the procedure Fig. 1. After finishing of laparoscopic procedure and with trocar sheath in its position, the trocar site of 10 mm or larger was closed by this technique. First looped needle and slowly absorbable suture No. 0 (braided coated glycolide homopolymer violet)inside it passes through the skin about 2 cm from one side of the trocar site and appears from the abdominal cavity. Second looped needle passes through the skin about 2 cm from other side of trocar site to appear from abdominal cavity. Then, the thread end from first needle is put inside the loop of the second needle and the stent withdraw to hold the thread end inside the needle. The stent of the first needle is pushed to make the thread free through the loop. Then, both needles with thread are withdrawn until the needles tips become at the subcutaneous plane. The trocar sheath is removed, and both needles are redirected and pushed through the subcutaneous plane to bring the two ends of thread at the port wound. The both thread ends are detached from the looped needles and hold by tissue forceps. At this point, one suture is complete, where one strand of suture passes from port wound through the subcutaneous plane, through abdominal fascia, abdominal cavity, pierces the peritoneum on other side of the port site, abdominal fascia, and subcutaneous plane from other side of port site to come out from the wound Fig. 2A–E and Fig. 3a–c. Then, the suture strands are tied through the port site to produce good closure of fascial defect. This procedure is done under direct visualization. Follow up period ranged from 2 to 24 months (mean = 18 months) for any complications at a port site which was closed using this technique by clinical examination, ultrasound, and CT scan if needed.

3. Results

This technique was used in 87 obese patients with no intra-

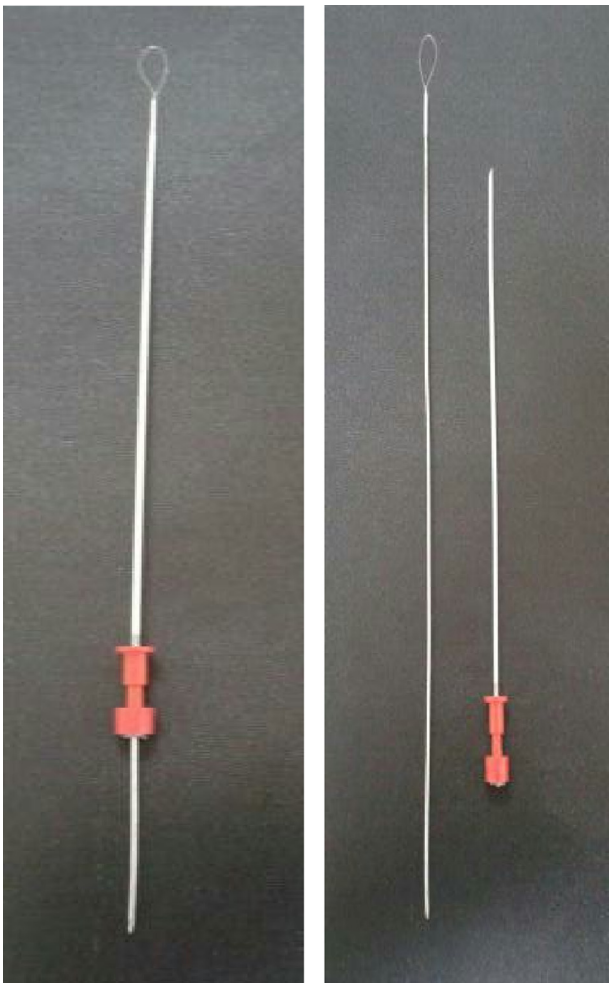

Fig. 1. Looped needle formed of Long needle (20 cm outer sheath) and metal stent (25 cm put inside the outer sheath needle) has large loop (plastic wire). The metal stent can be pushed or withdraw through the outer sheath needle to put the loop outside or inside the needle tip. On right, the metal stent removed from outer sheath needle. On left, the metal stent put inside the outer sheath needle.