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Case report

Mesh-like incisions are a simple and effective modification of the traditional components separation technique: A case report

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ABSTRACT

The components separation technique (CST) was first described in 1990 and involves elevating the external oblique muscle and medially advancing the muscle complex to close abdominal wall defects. Because this procedure is straightforward and does not require prosthetic materials to repair the defect, many surgeons have adopted it. However, some patients who undergo this technique develop Spigelian herniation or “lateral bulging”, which is a projection deformity of the lateral abdominal wall. These patients may require prosthetic reinforcement to strengthen the abdominal wall due to the relaxing incision that is made during the CST. In this report, we describe a simple modification to improve the relaxing incision by substituting several short incisions for the traditional single, long incision in the external oblique fascia. These short incisions create a mesh-like pattern in the fascia, which preserves the strength of the lateral abdominal wall and may help prevent Spigelian herniation or lateral bulging. Although the separation of the external oblique muscle from the internal oblique muscle is slightly cumbersome compared to the traditional CST, the plane is avascular and sparsely connected, which allows separation using a finger or tools in our modified technique. Further studies are needed to confirm whether this technique is effective for large defects, although this simple modification may preserve

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the strength of the lateral abdominal wall without the need for prosthetic materials.

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Background

The components separation technique (CST)¹ is an effective technique for repairing abdominal wall hernias via a single, long incision in the external oblique fascia and does not require the use of prosthetic materials. However, lateral abdominal bulging is often observed in patients who have undergone hernia repair via CST. This bulging occurs in the lateral abdominal wall, because the vertical incision reduces the ability of the abdominal wall complex to counteract increased intra-abdominal pressure. Unfortunately, abdominal wall hernia repair must close the hernia and also preserve the cosmetic appearance. Therefore, we describe a new modification of the traditional CST, which uses several mesh-like incisions to strengthen the external oblique fascia and help prevent lateral bulging. Our report adheres to the STROBE guidelines.

Surgical technique

In traditional CST, the anterior rectus sheath is dissected to the external oblique fascia layer, and a single, vertical relaxing incision is made in the external oblique fascia to advance the muscle layer. In our modification, we make several short incisions (1–1.5 cm) in the fascia and advance the mesh-like fascia, which does not create a large defect in the fascia tissue of the lateral abdominal wall. By changing the size or number of the incisions, we can easily control the degree of medial advancement. In some cases, the lateral incisions provide sufficient advancement to repair the abdominal defect, and the mesh-like characteristic of the relaxing incisions help preserve the strength of the lateral abdominal wall. Although separation of the internal and external oblique muscles is slightly cumbersome compared to the traditional CST, the plane is avascular and sparsely connected, which allows us to separate the layers through the short incisions using a finger or tools. This simple modification can prevent lateral abdominal wall weakness, which leads to lateral bulging or Spigelian hernia.

Case report

A 44-year-old woman had an abdominal mass below a scar from a previous Caesarean section and reported periodic tenderness at the mass that corresponded with her menstrual cycle (catamenial pain). Pelvic computed tomography (CT) revealed the mass with heterogeneity within the rectus abdominis muscle (Figure 1). The mass was diagnosed as abdominal wall endometriosis via biopsy and resection was planned, as the CT had indicated that the mass could not be completely dissected from the surrounding tissues because it involved the linea alba, anterior rectus sheath, and part of the rectus muscle. During the procedure, we observed that the abdominal defect (6.5 × 7 cm) was located caudally to the arcuate line. Because primary closure could increase the risk of abdominal wall hernia, we decided to use our modified CST to attempt tension-free abdominal wall repair. Because the defect was right-leaning, a dissection was made only on the right side, and several 1–1.5-cm incisions were then made in the external oblique fascia, while monitoring the degree of medial advancement. Additional incisions were created until the degree of advancement was sufficient to repair the defect (Figure 2). In this case, the right side incisions were sufficient to achieve tension-free repair of the defect. A suction drain was placed at the dissected layer, and we advised the patient to use an abdominal bandage for 2 months to support the abdominal wall. The two-year follow-up revealed no signs of an abdominal hernia or lateral bulging (Figure 3).

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