Bilateral Anterior Rectus Sheath Turnover Flap for Abdominal Closure

Yararlı Bir Cerrahi Teknik / A Useful Surgical Technique

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Özet

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İnsizyonel Herni; Kompleks Karnı Duvarı Fıtığı; Ön Rektus Kas Kılıfı; Turnover Flep

Abstract
The management of abdominal wall hernias with tissue loss is a difficult subject. Several surgical techniques have been used in the treatment. Sometimes closure of the abdomen with primary sutures may be impossible. Dual meshes, component separation technique, musculofascial flaps can be used for closure of the abdomen. In this case report a patient with complex abdominal wall hernia was presented. The abdomen was successfully closed with anterior rectus sheath turnover flap. We discussed this surgical technique with literature review.

Keywords
Incisinal Hernia; Complex Abdominal Wall Hernia; Anterior Rectus Sheath; Turnover Flap

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Introduction
Complex anterior abdominal wall defects are both challenging and technically demanding problems for many surgeons. Any abdominal defect that cannot be closed primarily without tension is accepted as a complex abdominal wall defect. They usually occur after trauma, infection, and oncological surgery. Different surgical methods have been used to manage these defects. Various muscle and myocutaneous flaps like tensor fascia lata [1], rectus femoris [2], rectus abdominis [3], and latissimus dorsi [4] have been reported in literature for the repair of abdominal wall defects. In this case report, we presented a patient with complex abdominal wall hernia and treated with bilateral anterior rectus sheath turnover flap and prolene mesh repair.

Case Report
A 42 years old male patient presented with abdominal bulging. There was an incisional hernia on upper midline part of the abdomen. The patient had been operated due to umbilical hernia 13 years ago. He had chronic obstructive pulmonary disease. There were incisional hernia which contains omental tissue in abdominal ultrasonography. The patient was decided to operated with the diagnosis of incisional hernia. The upper and lower midline incision about 15 cm in length was performed. The defect in abdominal wall was explored. The hernia sac and omentum was resected. After resection there was a defect about 9x6 cm in diameter. This defect could not be closed with primary sutures. Anterior rectus sheath was incised about 5-6 cm lateral to midline bilaterally (Figure 1, Figure 6A). Rectus sheath was dissected and freed from underlying rectus muscle (Figure 2-3). The hemorrhages from muscle were controlled with electrocautery. Free rectus sheath flaps were turned and sutured with 2/0 prolene sutures (Figure 4, Figure 6B-C). The abdomen was totally closed. The subcutaneous tissue was dissected for onlay repair with prolene mesh. Approximately 18x25 cm prolene mesh was lied above rectus muscles and sutured with 2/0 prolene (Figure 5). A hemovac dren was put in to surgical region. Subcutaneous tissue and skin was primarily sutured. There was no problem in postoperative period. The patient was sent to the home in 7 postoperative days.
Discussion
The anterior rectus sheath is one of the important structures that support the integrity of the abdominal wall. Repair of large abdominal defects with abdominal muscles or fascial components was first introduced by Farr in 1922 and Wagensteen in 1934 and they used entire anterior rectus sheath and part of the external oblique aponeurosis. Today, prolene and dual meshes are main surgical materials that are used in repair of abdominal wall hernias.

The usage of abdominal muscles or fascial structures for abdominal wall defects is not common in literature. Koshimoto S et al used anterior rectus sheath turnover flap for abdominal closure in patients with open abdomen[5]. They performed this technique after 10 to 14 days following first laparotomy and treated a total of 54 patients with this technique. Although there were no enterocutaneous fistula or wound dehiscence they state that about 50% of patients were suffered from abdominal bulging. But none of these patients were operated with incisional hernia. They also emphasise that early closure of abdomen with this technique was also useful for decreasing enteroatmospheric fistula formation. Being a very similar technique, Bae SK et al used the rectus myofascial splitting flap for the treatment of chronically infected abdominal wall after gynecological operations[6]. Anterior rectus sheath and underlying rectus muscle were mobilized and advanced medially for closure of the abdomen. The technique was successfully performed in 5 patients. The components separation technique (CST), first described by Ramirez et al [7]. This technique consists of advancement of the abdominal muscles including rectus abdominis, internal oblique and transversus abdominis toward the linea alba, with preservation of the neurovascular structures. Takahasi M was used anterior rectus sheath turnover flap in combination with component separation in patients with liver transplantation [8]. They used this technique in 3 patients during the early postoperative period and in one patient during the late postoperative period successfully.

In this present case, after hernia repair the abdominal wall could not be closed with primary sutures. There was a huge defect in midline. We made a longitudinal incision to anterior rectus sheath. Fascial turnover flap was prepared for closure of abdomen. The abdominal wall was closed without tension with this technique. The potential problems are hematoma formation and tension in anterior abdomen. Such cases may also be managed with dual meshes. When compare the anterior rectus sheath turnover flap with dual mesh, it is obvious that anterior rectus sheath turnover flap is more cost effective. It is also easy to perform. Our patient was treated with this technique without any complication. So anterior rectus sheath turnover flap can be used successfully in abdominal wall hernias with tissue defects.

Competing interests
The authors declare that they have no competing interests.

References