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Abdominal Wall Repair After Incisional Hernia Repair: A Case Report

Arda Özdemir[1]* and Burak Kutlu[2]

[1]*Department of Plastic Reconstructive and Aesthetic Surgery, Ankara University School of Medicine, Turkey*

[2]*Department of General Surgery, Ankara University School of Medicine, Turkey*

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***Corresponding author**: Arda Özdemir, Department of Plastic Reconstructive and Aesthetic Surgery, Ankara University School of Medicine, Turkey. Email: arda.ozd@hotmail.com

Summary

Incisional hernia is a common complication after intra-abdominal surgeries, and its repair can be challenging in complicated cases. Patient-related factors such as obesity, tobacco use, chronic constipation, and diabetes mellitus increase the frequency of incisional hernia in the postoperative period. After incisional hernia, especially in complicated and large abdominal wall defects, reconstructive surgery by plastic and reconstructive surgery teams may be required. In this case report, we present a patient who consulted us with a very large abdominal wall defect and underwent abdominal wall reconstruction.

Keywords: Abdomen; Hernia; Flap; Reconstruction

Abbreviations: MSSA: Methicillin-sensitive Staphylococcus aureus; NPWT: Negative pressure wound therapy; BMI: Body mass index; TFL: Tensor Fascia Lata

Introduction

An incisional hernia is defined as a visible and palpable bulge when the patient is standing and is a common complication following intra-abdominal surgeries. Hernia repair can be performed using open suture, open mesh, or laparoscopic mesh techniques. Hernias can occur in midline vertical incisions, in genetically impaired collagen synthesis disorders, in diseases that impair wound healing, in non-healing laparotomy incisions, and due to repeated incisional hernia repair treatments [1,2].

When looking at the literature, incisional hernia occurs in 11% of patients following intra-abdominal surgery and in 23% of patients who develop postoperative wound infections. Given its frequency, it becomes a significant source of morbidity [3]. The treatment of incisional hernia generally requires a more extensive surgical intervention, with recurrence rates reported to be as high as 49% [3].

Abdominal wall defects generally occur due to trauma, tumor resection, infection, radionecrosis, or congenital causes [4]. In the treatment of these defects, techniques such as primary repair, the application of polypropylene mesh over the defect, skin grafts, and fascial release are used. In cases where these techniques are insufficient, muscle or musculocutaneous flaps can be preferred as pedicled or free flaps [4].

Case Report

A 58-year-old female patient was consulted to our plastic reconstructive and aesthetic surgery clinic with a tissue defect on the anterior abdominal wall, measuring approximately 30cm x 20cm in size and extending down to the rectus muscles. From the patient's medical history, it was learned that she had known hypertension and type 2 diabetes mellitus and was receiving oral medication treatment. It was also noted that the patient had undergone surgery by our hospital's general surgery team about a month ago for an incisional hernia and had been followed up for a progressively enlarging tissue defect on the anterior abdominal wall thereafter. A tissue culture taken from the patient revealed the growth of methicillin-sensitive Staphylococcus aureus (MSSA), after which the patient was consulted by the infectious diseases department and appropriate antibiotic therapy was initiated. Subsequently, the patient underwent negative pressure wound therapy (NPWT-VAC) for two weeks, and the wound site was prepared for repair. The patient's preoperative appearance is shown in (Figure 1).

Figure 1: Preoperative appearance of the patient.

The patient was taken into surgery under general anaesthesia for debridement and abdominal wall repair using local flaps. The tissue defect was widely debrided, and the wound edges were refreshed. All necrotic tissues, including the rectus fascia at the base of the defect, were cleaned down to healthy, bleeding tissue. Then, local flaps were designed to cover the tissue defect without tension. The flaps were adapted to each other in a way that obliterated all dead spaces. One active drain was placed in the surgical area. The wound edges were repaired in three layers using appropriate sutures that matched the anatomical planes. The patient's early postoperative appearance is shown in (Figure 2).

Figure 2

During the postoperative period, the patient was monitored for the drain, which was removed on the 3rd postoperative day. Due to the absence of growth in the intraoperative tissue culture and the lack of additional complications during the patient's follow-up, the patient was discharged with a prescription for oral antibiotics and anti-inflammatory medications. It was noted that the patient had no additional complaints related to the wound site during long-term follow-up.

Discussion

The primary goal in the repair of abdominal defects is to provide sufficient soft tissue coverage that will protect the intra-

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abdominal organs while ensuring maximal functional stability [5]. In the repair of full-thickness abdominal defects, the simplest method is to place a synthetic mesh over the wound and wait for granulation to occur, followed by the application of a split-thickness skin graft [5]. In this case, the integrity of the patient's rectus fascia was the most critical factor from a plastic surgery perspective. Due to the intact fascia, there was no need to place synthetic mesh in the patient.

Obese patients are at high risk for wound dehiscence. It has been shown that subcutaneous adipose tissue in the abdominal area has a lower perfusion rate, which predisposes it to fat necrosis after abdominal surgeries. Obesity not only increases surgical site complications such as seroma, skin necrosis, or dehiscence but also increases the risk of hernia recurrence, particularly when the body mass index (BMI) exceeds 31.9 kg/m^2 [6]. In patients with a BMI between 30-39 kg/m^2, the 2-year recurrence risk is approximately 8%; between 40-49 kg/m^2, it is 25%; and above 50 kg/m^2, it is 45% [6]. The increased risk of hernia recurrence associated with high BMI has been confirmed by numerous studies, with a 10% increase in the risk of hernia recurrence for each unit increase in BMI [6]. The patient in this case report is also at high risk for the development of an incisional hernia and abdominal wall defects due to potential fat necrosis following surgical repair of the hernia, given her obesity and the presence of extensive and heavy pannus tissue.

Uncontrolled diabetes mellitus is another risk factor for surgical site complications such as hernia and dehiscence. Even temporary hyperglycaemia can reduce tissue perfusion and impair immune function. Elective surgeries should be postponed until the Hemoglobin A1c level drops to 7.5% or lower [6]. During the perioperative period, glucose levels should be maintained below 160 mg/dL. It has been shown that a rise in glucose above 200 mg/dL in the preoperative or postoperative period doubles the risk of infection and triples the risk of dehiscence [6].

Malnutrition is also an important risk factor for the development of abdominal wall defects. The presence of protein malnutrition in the patient, particularly a deficiency in the amino acid's arginine and methionine, negatively affects wound healing. The patient's preoperative albumin levels should be assessed and raised above 3.25 g/dL [6]. In the case presented, the patient's albumin levels were measured at 2.86 g/dL prior to the first operation, and albumin support was provided to ensure they reached the normal range before the repair surgery. NPWT (Negative Pressure Wound Therapy) provides a sterile and isolated environment, reducing the risk of contamination [7]. Additionally, it has been shown that there is increased blood flow at the edges of the wounds, reduced tissue edema, and decreased tension along the suture line. For these reasons, NPWT-VAC therapy was applied to enhance the success of the surgical repair [8]. The growth in the patient's preoperative wound culture is a significant disadvantage for wound repair, as it may necessitate the removal of the previously placed synthetic mesh material due to infection. To prevent this situation and promote granulation tissue at the wound site, NPWT was applied to the patient.

Historically, the use of flaps in the repair of abdominal defects was first recorded by Wangensteen in 1934 with the transfer of the Tensor Fascia Lata (TFL) muscle to the anterior abdominal wall [9]. In addition to the TFL, muscle flaps from the rectus abdominis, external oblique, latissimus dorsi, rectus femoris, and gracilis are also used in abdominal wall reconstruction [5]. Additionally, mobilizing the anatomical layers of the abdominal wall by dissecting them separately provides an alternative to the use of local flaps in defects as wide as 10cm [5].

However, when the defect is larger, involves the upper quadrants of the abdomen, or is accompanied by conditions such as prior trauma, scarring, or radiotherapy that prevent the use of surrounding tissues, local flaps are insufficient. In such indications, microvascular reconstruction options using free flaps are utilized [5]. In the case mentioned, the defect in the skin and subcutaneous adipose tissue of the anterior abdominal wall allowed for repair using local advancement or rotation flaps.

Conclusion

This case demonstrates the significant role of plastic surgery in the repair of large and complex abdominal wall defects. Surgical repair carried out with a multidisciplinary approach is crucial for achieving aesthetic and functional outcomes. Careful surgical planning should be conducted, taking into account factors such as the patient's overall condition, the size, and the location of the defect, with appropriate reconstructive techniques being preferred. This case emphasizes the importance of a multidisciplinary approach in the treatment of incisional hernias and the role of surgical techniques in the evolving field of reconstructive surgery [10].

References

1. Butler CE, Baumann DP, Janis JE, Rosen MJ (2013) Abdominal wall reconstruction. Current problems in surgery 50(12): 557-586.
2. Nho RLH, Mege D, Ouaïssi M, Sielezneff I, Sastre B (2012) Incidence and prevention of ventral incisional hernia. Journal of visceral surgery 149(5): e3-e14.
3. Cassar K, Munro A (2002) Surgical treatment of incisional hernia. British journal of surgery 89(5): 534-545.
4. Ertaş NM, Yüce S, Özpolat B, Çelebioğlu S (2005) Göğüs Ve Karin Ön Duvari Rekonstrüksiyonlarinda Torakoepigastrik Flep Deneyimlerimiz. Türk Plastik Rekonstrüktif Ve Estetik Cerrahi Dergisi 13(3): 170-174.
5. Demirkan F, Çolak T, Ünal Ş, Arslan E, Aydin S (2015) Geniş Karin Ön Duvari Defektinde Anterolateral Uyluk Serbest Flebi İle Rekonstrüksiyon: Bir Olgu Sunumu.
6. Khansa I, Janis JE (2019) The 4 principles of complex abdominal wall reconstruction. Plastic and Reconstructive Surgery–Global Open 7(12): e2549.
7. Aker Sş, Özdemir A, Ortaç F (2020) How to Reconstruct an Open Abdominal Wall After Necrotizing Fasciitis: Surgical Management in Difficult Cases. J Clin Obstet Gynecol 30(3): 113-117.

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8. Ozkan B, Ertas NM, Bali U, Uysal CA (2020) Clinical experiences with closed incisional negative pressure wound treatment on various anatomic locations. Cureus 12(6): e8849.

9. Wangensteen OH (1934) Repair of recurrent and difficult hernias and other large defects of the abdominal wall employing the iliotibial tract of fascia lata as a pedicle flap. Surg Gynec & Obst 57: 766-780.

10. Patel NG, Ratanshi I, Buchel EW (2018) The best of abdominal wall reconstruction. Plastic and Reconstructive Surgery 141(1): 113e-136e.

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