



Simultaneous Treatment of Recurrent Inguinal Hernia and Mesh-Related Infection with Chronic Cutaneous Fistula

Kronik Cilde Fistülide Meş İlişkili Enfeksiyon ile Eş Zamanlı Tedavi Edilen Nüks Kasık Fıtığı

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ABSTRACT

One of the most important complications of hernia surgery is mesh-related infection (MRI). In this case report, it is aimed to present the diagnosis and treatment of chronic MRI in a patient with recurrent inguinal hernia. A 49 year-old-male was admitted with right inguinal pain, bulging, and purulent discharge from the skin for about one year. On physical examination, there was an external fistula orifice in the right groin and there was swelling evident with coughing. On CT scan, there was a fistula and inflamed area between upper side of the mesh and skin. During surgery, all infected areas and fistula tract including the mesh were removed with an incision made to include the scar tissue. Bassini repair was performed on the patient who had a direct hernia without an indirect hernia. The patient was discharged on the postoperative day 2 without complications.

Keywords: Inguinal herni, mesh fistula, mesh-related infection

ÖZ

Fıtık cerrahisinin en önemli komplikasyonlarından biri meş ilişkili enfeksiyondür (MİE). Bu olgu sunumunda tekrarlayan kasık fıtığı olan bir hastada kronik MİE tanı ve tedavisinin sunulması amaçlanmaktadır. 49 yaşında erkek hasta yaklaşık bir yıldır sağ kasık ağrısı, şişkinlik ve deriden pürülan akıntı şikayeti ile başvurdu. Fizik muayenede sağ kasıkta dış fistül ağzı ve öksürük ile belirgin şişlik mevcuttu. Bilgisayarlı tomografide meshin üst tarafı ile deri arasında fistül ve iltihaplı alan vardı. Ameliyat sırasında skar dokusunu da içine alacak şekilde yapılan bir kesi ile meş dahil tüm enfekte alanlar ve fistül traktı çıkarıldı. İndirekt fıtık olmaksızın direkt fıtığı olan hastaya Bassini onarımı yapıldı. Hasta postoperatif 2. günde komplikasyon olmadan taburcu edildi.

Anahtar Kelimeler: Kasık fıtığı, meş fistül, meş ilişkili enfeksiyon

INTRODUCTION

Inguinal hernia repair is a common operation performed by general surgeons. Approximately 1,000,000 hernia repairs are performed in the USA (1). In adults, tension-free repair with laparoscopic surgery or open surgery has become the gold standard surgical procedure. Serious complications may arise such as mesh displacement, mesh-related infection (MRI), and even enterocutaneous fistula. As the use of mesh increases, the incidence of MRI also increases (2).

Late onset deep MRIs account for <1% of infections in laparoscopic hernia repairs (3). However, MRIs can be more than 15% in open hernia repair techniques (4). Intraoperative mesh contamination is considered to be the primary etiological factor of MRI. The pores of the meshes are recesses where bacteria can adhere and

form colonies. The bacterial spectrum for MRI includes *Staphylococcus aureus*, *Streptococcus spp.*, as well as *E. coli*, *Enterococcus* and *Mycobacteria*.

The main therapeutic concept for MRI will be based on individual decisions. The treatment of MRIs needs to be tailored to the morphological findings and the treatment for uncomplicated phlegmon is broad spectrum antibiotic therapy. If there is encapsulated fluid collection, it is a good option to insert a drainage catheter under the guidance of ultrasonography or computed tomography and drainage of the collection, and daily infusion of antiseptic from the catheter. In the treatment of complications such as dermal necrosis, mesh fistula or enterocutaneous fistula, a computed tomography evaluation is required for differential

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diagnosis before operation. In recurrent chronic fistula cases, mesh removal is the main surgical intervention. In addition, vacuum assisted negative pressure therapy is an optional treatment method in selected cases.

In this case report, it is aimed to present the diagnosis and treatment of chronic MRI in a patient with recurrent inguinal hernia.

CASE REPORT

A 49 year-old-male was admitted to General Surgery Clinic of Erzurum Regional Education and Training Hospital, Erzurum, Turkey in October 2021. He had right inguinal pain, bulging, and purulent discharge from the skin for about one year. His complaints had increased significantly in the last month. The patient, who did not have any comorbidities, had no history of abdominal surgery, except for 2 inguinal hernia operations (5 years ago, right side inguinal hernia repair with Bassini technique and 15 months ago, right side repair with Lichtenstein technique).

On preoperative evaluation, vital findings of the patient were as follows: blood pressure: 114/70 mm Hg, pulse rate: 74 beats per minute, oxygen saturation on room air: 95-97%, and body temperature: 36.8° Celsius. On abdominal physical examination, there was no pathology. However, there was an external fistula orifice in the right groin (**Figure 1**) and there was swelling evident with coughing. Other system examinations, including digital rectal examination, were normal.



Figure 1. An external fistula orifice in the right groin (Black arrow).

In laboratory, basic hematological and biochemical parameters were unremarkable. Contrast-enhanced abdominal computed tomography (CT) was performed to examine the depth of the fistula and to evaluate the structures to which the fistula is associated. On CT scan, there was a fistula and inflamed area between upper side of the mesh and skin with hernia defect (**Figure 2** and **Figure 3**).

After preparations for elective surgery, open surgery was planned. All infected areas and fistula tract including the mesh were removed with an incision made to include the scar tissue (**Figure 4, 5** and **6**). Bassini repair was performed on the patient who had a direct hernia without an indirect hernia. The patient was discharged on the postoperative day 2 without complications.

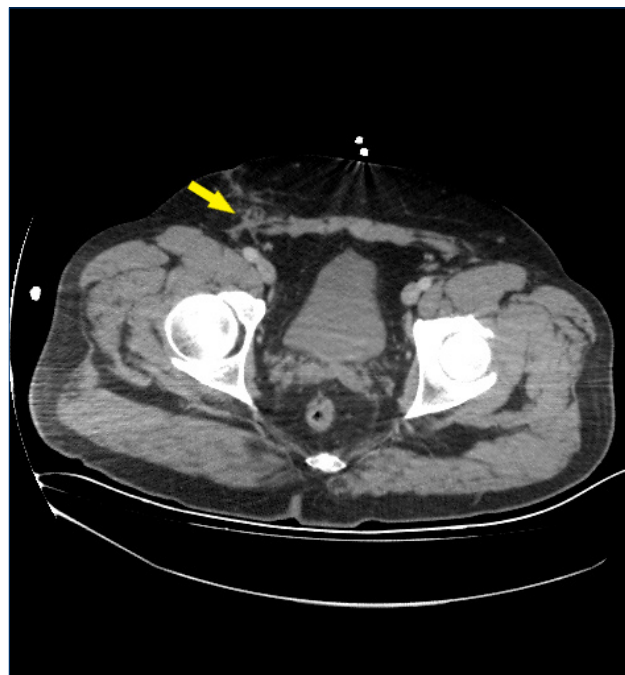


Figure 2. Hernia defect (yellow arrow).

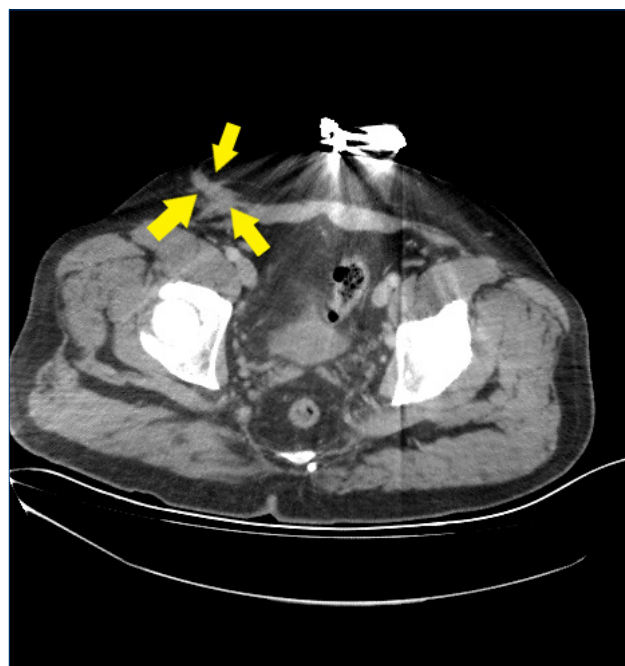


Figure 3. Inflamed area and fistula between upper side of the mesh and skin (yellow arrows).

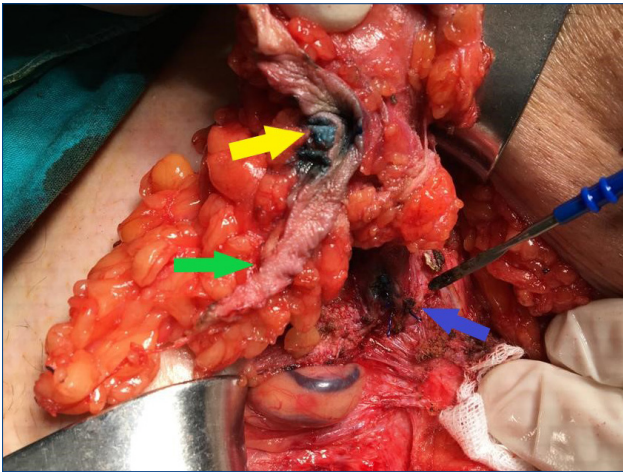


Figure 4. Intraoperative image of mesh fistula (yellow arrow shows external orifice of the fistula, green arrow shows resected skin, and blue arrow shows the mesh and its fixation sutures).

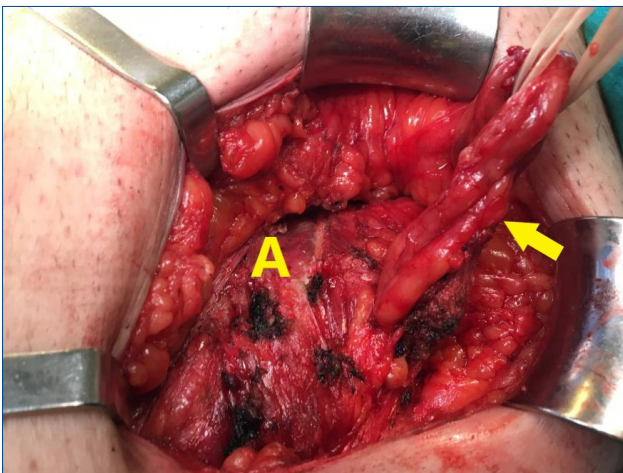


Figure 5. Image of the operation area after mesh removal (A), and yellow arrow shows the spermatic structures.

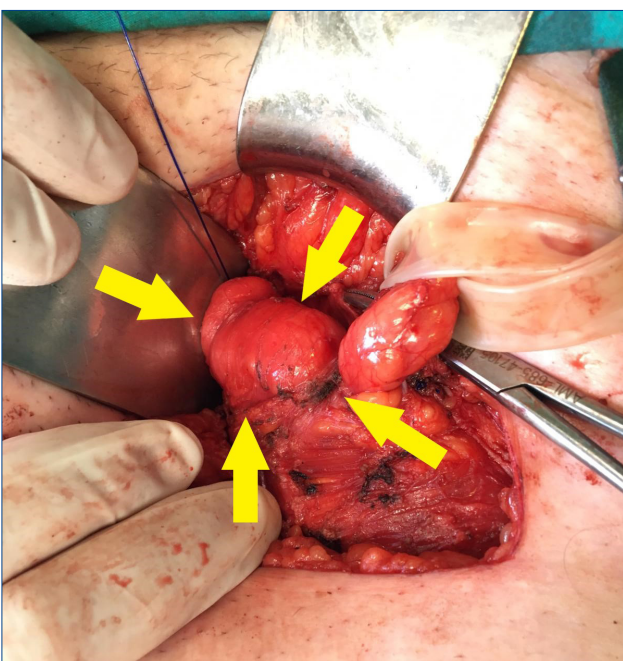


Figure 6. Yellow arrows show the direct inguinal hernia defect.

DISCUSSION

Abdominal wall hernia is an important problem in general surgery. Hernias formed in the anterior abdominal wall constitute approximately 90% of all hernias, and approximately 75% of them are inguinal, 10% ventral and 3% umbilical. Inguinal hernia repairs are the most common procedures performed in surgical clinics in adults. Various approaches and modifications can be applied in hernia repair, depending on the location and size of the lesion. After the use of mesh was shown to reduce hernia recurrence, the use of mesh in hernia repair has increased all over the world (5). When surgical meshes are placed in the human body, they may cause foreign body reaction, causing responses such as inflammation, fibrosis, calcification, thrombosis and infection. As a result of these inflammatory reactions, complications related to the use of meshes may occur. These complications are mainly seroma, adhesion, mesh-related infections (MRIs), mesh migration, mesh rejection and chronic pain (6, 7).

The rate of mesh infection after hernia repair can be up to 10% (8). The time between hernia repair and the appearance of signs of mesh infection ranges from 2 weeks to 39 weeks (9). Symptoms are local signs of acute inflammation such as pain, erythema, tenderness, and swelling. In addition, there may be systemic findings such as fever. Biochemically, an increase in white blood cell count and C-reactive protein can be observed. On the other hand, initial symptoms may not be symptomatic, especially in deep infections. MRI should be suspected in patients with fever of unknown origin, signs of inflammation in the abdominal wall in the mesh area, and extracutaneous fistula or abdominal abscess. Imaging tests such as ultrasonography, computed tomography or magnetic resonance imaging can be used. These examinations show an area of inflammation with different echogenicity and density characteristics in the subcutaneous tissue around the mesh (10). In the present case, the patient was admitted with pain, erythema, tenderness, and purulent discharge. No pathology was observed in the laboratory values of the patient due to the localized inflammatory reaction. In addition, computed tomography was used in the diagnosis, and signs of inflammation were detected between the infected mesh and the skin.

Treatment plan should be made according to the type of MRI. In localized infections that do not affect the mesh is usually treated with incision, drainage, and systemic antibiotics, while in infections affecting the mesh require intravenous antibiotic use and active surgical treatment with wound irrigation (8). In the surgical treatment, first of all, the hernia sac and the mesh should be reached with an incision made to include the scar tissue (11). Since serious adhesions can be seen secondary to previous surgery and due to mesh reaction in male patients, the probability of damage to the spermatic cord



and testicular vascular structures is higher than primary repair. Therefore, careful dissection should be done. The mesh causing the fistula should be resected completely if it can be removed, or partially if it cannot be removed completely. If there is a hernia defect after the mesh is removed, the defect can be repaired with an anterior approach or a laparoscopy-assisted posterior approach. In the present case, the mesh causing the fistula was removed and the recurrent hernia was repaired with non-mesh technique.

The best approach in surgical field infections is their prevention. The surgical team, especially the operating surgeon, is responsible for the prevention of infection (8). The skin should be shaved before the operation, the surgical team should be very careful while dressing and wearing gloves. In addition, substances that may be nutritional for bacteria such as blood, serum, devitalized tissue, prosthetic foreign material should not be left in the wound as much as possible. The use of cautery should be used carefully, as it will leave devitalized burned tissue that can create a suitable culture environment. In addition, spontaneous resolution should be expected in patients who develop seroma and percutaneous interventions should not be used unless necessary.

Asepsis rules should be observed for mesh preparation and implantation. Re-sterilization or use of pre-opened mesh sets the stage for bacterial contamination. The size of the mesh used in MRI is important. For this reason, it is recommended that the mesh area should be minimized during the hernia operation, the mesh should be spread out in accordance with surgical procedures, and the necessity of mesh use should be questioned because the foreign material placed is a suitable environment for bacterial colonization (12).

CONCLUSION

Mesh-related infection (MRI) after inguinal hernia surgery is a serious problem. While antibiotic treatment can be sufficient in localized infections, the extent of infection should be evaluated with imaging tools in wide infections. Therefore, MRI treatment should be individualized according to the degree of infection.

ETHICAL DECLARATIONS

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