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Case Report

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Necrotizing Fasciitis Complicating Transobturator Tape Operation

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Keywords
Midurethral slings · Infection · Transobturator tape · Necrotizing fasciitis

Abstract
Midurethral slings (MUSs) have been used successfully for the last 20 years in the treatment of stress urinary incontinence and accepted as the gold standard surgical procedure. High success rates and minimal invasiveness of surgery are among the most important advantages, but sometimes serious complications can occur during or after surgery. Although serious complications are rare after widely performed transobturator tape (TOT) operation, awareness, early diagnosis, and aggressive management are essential as they can progress with serious morbidity and mortality. In order to reduce the infectious complications after MUS procedures, in addition to sterility of the operating theater and the operating equipment, the type of mesh used and the preparation of the surgical site are crucial. We aimed to present the successful management of a case of necrotizing fasciitis in a TOT patient.

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Introduction

Midurethral sling (MUS) operations are popularly adopted in the surgical management of stress urinary incontinence because of their minimal invasiveness, high success rate, and long-lasting effects [1]. Common complications after MUS operations include urinary tract infections, pain, de novo urgency, bladder outlet obstruction, and vaginal, urethral, or bladder mesh exposure [2]. Although true rate of MUS-related complications is underreported, complications such as abscess, myositis, cutaneous necrosis, fistulas, sinuses, and necrotizing fasciitis after transobturator tape (TOT) operations may cause serious morbidity and mortality [3–6]. Necrotizing fasciitis is characterized by rapid bacterial spread and generalized necrosis of the subcutaneous adipose tissue, fascia, or muscle [7]. Early cutaneous signs (erythema, edema, and occasionally crepitus) are nonspecific, but because the infection spreads rapidly, prompt diagnosis and early treatment are of paramount importance. Here, we present a case of TOT procedure complicated by necrotizing fasciitis that was resolved with extensive surgical drainage, vacuum-assisted closure, hyperbaric oxygen therapy, and antibiotic treatment.

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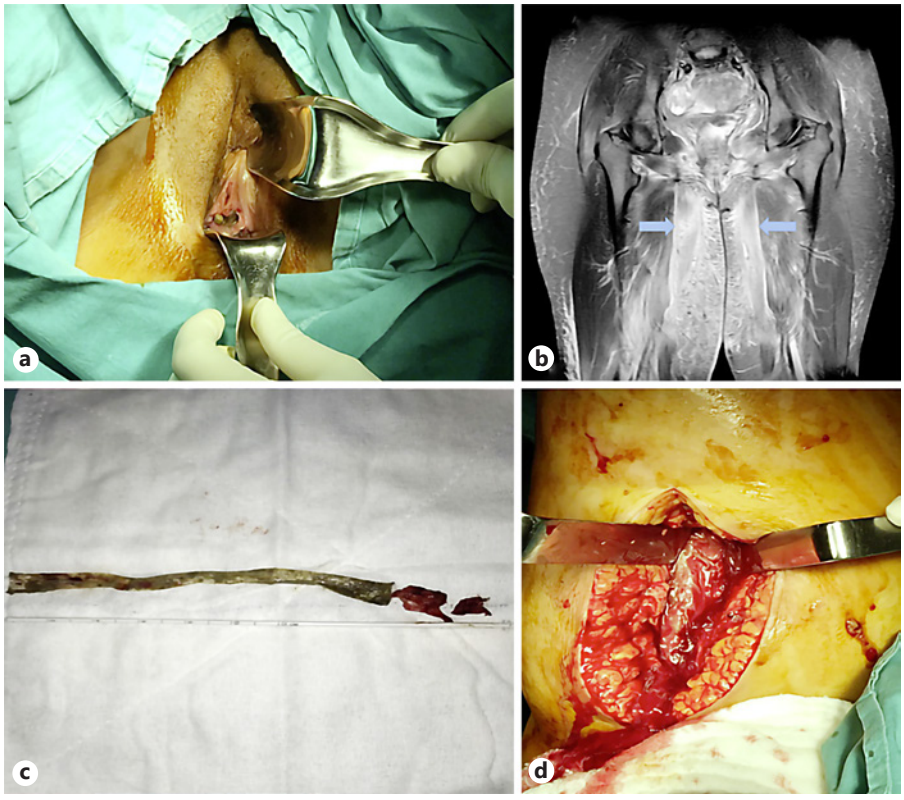

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Fig. 1. a Inspection of vagina shows dehiscence of periurethral incision and exposed mesh material. **b** Magnetic resonance imaging shows bilateral fasciitis originating from the obturator fossa and extending to the popliteal area (blue arrows). **c**, **d** Mesh was removed, and the obturator and thigh abscesses were incised and drained.

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Fig. 2. The process of wound repair was completed in about 55 days.

Case Report

A 34-year-old female applied to our tertiary center with vaginal discharge and increasing pain in her thighs after TOT operation. Her bilateral thighs were tender and swollen; inspection of the vagina showed dehiscence of periurethral incision, purulent discharge, and exposed mesh material that had been inserted 5 days before for stress urinary incontinence in another clinic (Fig. 1a). The patient's surgery note did not have information on whether she had received prophylactic antibiotics and which mesh material had been used. On admission, the patient had a fever of 38.4°C, and pulse rate and blood pressure were 110 beats per minute and 110/70 mm Hg, respectively. Laboratory studies included a WBC count of 21.500/mL with 78% neutrophils, a hemoglobin level of 11.5 g/dL, and a platelet count of 292.000/mL. C-reactive protein was 371 mg/dL.

Magnetic resonance imaging with contrast revealed bilateral fasciitis originating from the obturator fossae and extending to the popliteal area, and myositis in both internal and external obturator muscles and both adductor muscles (long and short) (Fig. 1b).

The patient was admitted, and intravenous broad-spectrum empirical antibiotic treatment was initiated with vancomycin and meropenem. Under general anesthesia, the TOT mesh was removed in total from the vaginal dehiscence (Fig. 1c). The obturator and thigh abscesses were incised and drained with the assistance of an orthopedic surgeon (Fig. 1d). The patient was admitted to intensive care unit, and she underwent further debridement after 48 h of admission. Following radical debridement, vacuum-assisted closure and hyperbaric oxygen therapy was applied for 10 days. Cultures obtained during the procedure were positive for B-hemolytic streptococci sensitive to meropenem. Antibiotic treatment was continued for 21 days. The wound healing was good, which made further surgery unnecessary, and secondary wound healing was undertaken. The process of wound repair was completed in 55 days (Fig. 2).

Conclusion

TOT is one of the MUSs and is the preferred standard surgical procedure for the surgical treatment of stress urinary incontinence due to its effectiveness, minimally invasiveness, and low complication rates. In TOT operation, sling placement may be associated with infectious complications. Mesh-related complications due to infection have been reported to occur less than 1% in transvaginal mesh implantations for treatment of SUI [8]. It is widely accepted today that implantations through the vaginal route increase the risk of contamination and that the best material is monofilament macroporous polypropylene meshes for this application. To reduce mesh infections, use of antibiotic prophylaxis, cleaning with an antiseptic foam solution followed by disinfection of the surgical site, use of double gloves and change of gloves at each stage of the operation, removing the package of the mesh at the very last moment, and manipulation of the mesh with a clean pair of gloves are all recommended [9]. It should be stated in all surgical reports whether prophylactic antibiotics are used and which type of mesh is used.

Necrotizing fasciitis is difficult to diagnose early; it is a rapidly progressive infection with high mortality and disability rate. Necrotizing fasciitis could be developed immediately after sling procedure due to insertion process or unnoticed bladder injury as well as delayed necrotizing fasciitis could appear many years after the procedure because of mesh erosion or retained sling segment [10, 11]. The majority of patients experience fever, severe pain, swelling, erythema, and vaginal discharge. Computerized tomography or magnetic resonance imaging is often used to determine the spread of inflammation. This clinical entity can occur in completely healthy individuals, as well as in comorbidities such as older age, obesity, hypertension, immune suppression, and diabetes [12]. The mainstays of management are immediate tape removal, aggressive but tissue saving debridement, intensive care, intravenous broad-spectrum antibiotics due to poly-microbial cultures, vacuum-assisted closure for facilitating wound healing and preventing further inflammation and hyperbaric oxygen therapy to oxygenate infected hypoxic tissues, reduce inflammatory response, and achieve infection control and healing [10–13]. Depending on the amount of inflammation, the number of debridement varies, and the number of wound care can vary depending on the amount of debridement. During long hospitalization, patient completes antibiotic treatments; while some wounds are left to secondary wound healing, some wounds require secondary closure. Knowledge of this unusual complication after this surgery could direct surgeons to early diagnosis and prompt treatment.

Statement of Ethics

Written informed consent was obtained from the patient for publication of this article and any accompanying images.

Disclosure Statement

The authors declare that they have no conflict of interest.

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Authors Contribution

C.Y. made substantial contributions to the conception and design, analyzed and interpreted data, performed literature search, and wrote the manuscript. O.D. made substantial contributions to the conception and design, analyzed and interpreted data, and performed literature search. I.U. made substantial contributions to analysis and interpretation of data and performed literature search. E.C. made substantial contributions to the conception and design. A.S. made substantial contributions to analysis and interpretation of data and performed literature search. F.G.U. made substantial contributions to the conception and design, analyzed and interpreted data, performed literature search, wrote the manuscript, and revised the draft. All authors read and approved the final manuscript.

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