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GENERAL GYNECOLOGY

Introital ultrasound in the diagnosis of occult abscesses following a tape procedure: a case report

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Abstract We report a case of a 59-year-old woman who suffered for 3 years with vaginal discharge and severe lower abdominal pain. The patient underwent numerous clinical examinations and a wide array of complex medical procedures without receiving a conclusive diagnosis. Although a diverse amount of tests and exams had been carried out, no abnormalities were detected until introital ultrasound (GE Voluson 730 Expert, vaginal probe 5-9-MHz, beam angle of 160°) identified two tiny abscesses with sinus tract at the vaginal sulci. The infected tape (TOT) was surgically removed and the patient healed uneventfully.

Keywords Occult abscess with sinus tract · Introital ultrasound · Surgical tape placement · TOT complication

Introduction

Insertion of a vaginal tape is the most commonly practiced surgical intervention to treat women with stress urinary incontinence (SUI), and the incidence of postoperative complications is low. Nevertheless, poorly located tapes can lead to functional or inflammatory early- to late-developing complications. Complications include early (occurring mainly intraoperatively) sulcus perforation, tape exposure/extrusion into the vagina, and tape infection with abscess formation or abscess with sinus tract [1, 2]. The cause of complications can remain clinically obscure for a multitude of factors including unsuspecting anatomical characteristics such as high vaginal sulci. The following case report illustrates the use of introital ultrasound to identify the cause of late-developing, painful complications in a woman with occult abscess with sinus tract formation.

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Case report

A 59-year-old woman (para 2) with a history of abdominal hysterectomy began experiencing vaginal discharge and lower abdominal pain in August 2008, 3 years after a vaginal tape procedure. The patient underwent repeated clinical examinations by gynecologists, proctologists, and urologists, as well as a series of complex diagnostic procedures such as proctoscopy, CT scan, IV pyelogram and cystoscopy with methylene blue. Although an abscess with sinus tract was suspected to be the cause of her complaints, no abnormalities were detected. Her complaints persisted after removal of a small granulation polyp from the vaginal sulcus, application of antiseptic and estriol-based vaginal creams, use of local and systemic treatments with antiphlogistics, antirheumatics, analgesics, antibiotics, antimycotics, and repeated attempts at restoration of the vaginal flora with lactobacilli. After insistence by her gynecologist, she underwent 3 weeks (September 2009) of psychosomatic therapy.

The patient was eventually referred to our center in October 2009 for further diagnostic examination. Her primary complaints included dyspareunia, intense chronic pain in the vagina, and a foul odor from persistent vaginal discharge causing sexual problems (abstinence). The speculum exam revealed high vaginal sulci (level III).

Palpation showed severe tenderness in the entire vaginal area. Under these difficult examination conditions, no tape erosion was clinically visible (or palpable) and no abscesses with sinus tract or polyps were able to be detected.

Introital ultrasound (GE Voluson 730 Expert) was done with the patient in the semi-sitting position and a standardized bladder-filling volume of 300 mL, the probe (vaginal probe 5–9 MHz, beam angle of 160°) was placed in the area of the vaginal introitus at the level of the external urethral orifice, exerting minimal pressure and aligning the axis of the probe with the patient's body axis. The sagittal plane showed the tape position within the desired range. However, the tape edges were curled upwards and had a strand-like appearance rather than the expected flat shaped appearance [3]. To evaluate the symmetry of the tape and vaginal sulci, we used a paramedian axial plane. The tape appeared symmetrical with a flat, almost horizontal course which is typical for transobturator tape (TOT) rather than a retropubic tape. We confirmed high vaginal sulci and found the tape was in close contact to the vaginal skin, raising suspicion of vaginal mesh erosion. The echogenic tape and the surrounding tissue showed sonographic signs of infiltration (Fig. 1a). By exerting pressure with the vaginal ultrasound probe, multiple hyperechogenic particles floated along the entire course of the tape (Fig. 1b). Since pus is a natural contrasting agent, detection of these moving particles suggested the presence of abscesses with sinus tract.

Only under anesthesia were two tiny abscesses with sinus tract found at the top of each high vaginal sulcus (sinus tract formation, classification 1CeT4S2). The entire infected tape was surgically removed, a single shot antibiotic with sultamicillin (1.5 g i.v.) was administered and the wound was rinsed with an antiseptic solution (Octenisept®). No intraoperative complications were experienced and postoperative care included a 1-week course of two hip baths with chamomile extracts daily. Vaginal discharge, local tenderness and lower abdominal pain disappeared quickly. The patient was discharged from the hospital on the third postoperative day. The removed tape proved to be an Obtape® (Mentor-Porges, Le Plessis Robinson, France). Histological tests revealed a microporous multifilament polyester mesh with extensive infection by cocci and foci of *Actinomyces israelii*.

At the 6-month follow-up visit, the patient complained of involuntary loss of small amounts of urine only during exercise and strong coughs, but no additional complaints. The urogynecological examination was normal, both formerly eroded sulci were healed and the vagina (sulcus) was not tender on palpation. Introital ultrasound showed normal paraurethral tissues in both sagittal and axial views. A Valsalva maneuver confirmed vertical urethral descent with visible loss of urine (urethral funnelling).

Discussion

Diagnosing the cause of complications in women treated for SUI with a tape insertion procedure can be a challenge given the increased number of interventions, the wide range of approaches that exist [4], and, in rare cases, delayed onset of symptoms. Ultrasound, a relatively new urogynecological technique, has the potential to improve

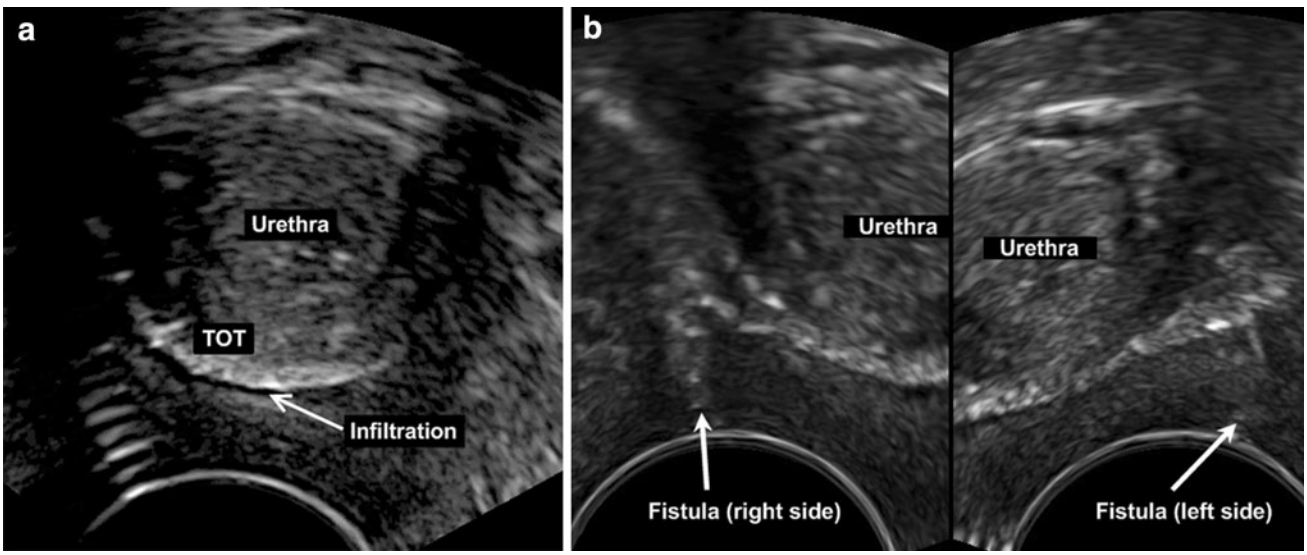

Fig. 1 Introital ultrasound in axial view: the echogenic tape and the encompassed tissue show sonographic signs of infiltration. At rest, an anechoic fluid layer is surrounding the tape (**a**). By exerting pressure with a vaginal ultrasound probe, bright floating foci (pus) became apparent along the entire course of the tape. At the level of each high vaginal sulcus, pus cascaded toward the probe (**b**)

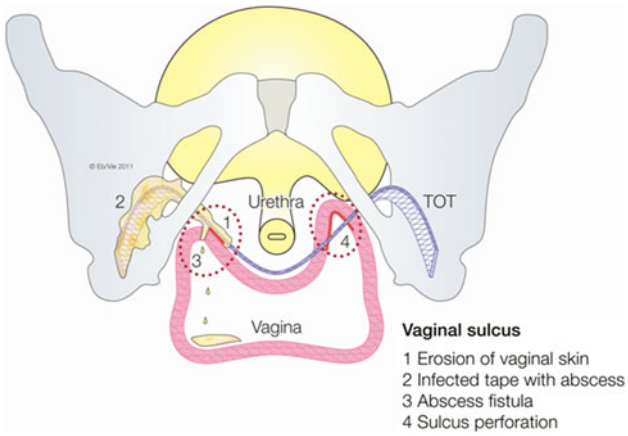

Fig. 2 TOT complications at the level of the vaginal sulcus. Schematic course of TOT in the horizontal plane in relation to the urethra and the paraurethral sulcus. *Red* indicates the area of the vaginal sulcus most at risk for the occurrence of vaginal tape erosion, perforation or development of tape infections, abscess and sinus tracts over time

our ability to effectively and reliably identify complications [5–7].

Ultrasound can determine the exact topographic relationship of the tape to the urethra, bladder, vaginal wall, periosteum, and other pelvic structures in all three spatial dimensions, as well as evaluate tape movement during straining. This flexibility in making multi-dimensional assessments provides unique insights into the relationship between tape position and tape functionality [4, 8]. Three important characteristics to consider when choosing a surgical approach to treat incontinence can be readily assessed with ultrasound: (1) urethral length, (2) urethral mobility, and (3) height of the paraurethral sulci. Pre-interventional sulcus evaluations are particularly critical since a retropubic tape (TVT) with a vertical course is preferable to a transobturator approach (TOT) with a more horizontal course (Fig. 2) in cases of high sulci at level III.

The usefulness and discernible capacity of ultrasound to detect complex, late-developing complications following a tape procedure were demonstrated in this case report. Although MRI technology has the ability to achieve similar results, ultrasound has the advantage of being directly available during a gynecological examination, quick to perform, inexpensive, and well accepted by patients. With the aid of ultrasound, complications could be detected early before they become clinically symptomatic.

Conflict of interest None.

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