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Case Report OBSTETRICS&GYNECOLOGY

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Transurethral excision and re-erosion of mesh material after transobturator tape surgery: A case report

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ABSTRACT

Bladder injury is a rare complication of transobturator tape (TOT) surgery. Herein, we present a female case in whom intravesical mesh was excised using transurethral endoscopic scissors, and another floating mesh material with calculi formation was seen in bladder and excised with endoscopic forceps two months later.

Keywords: Bladder injury; erosion; transobturator tape; vesical stone.

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Stress urinary incontinence is a serious health problem which can affect many women and quality of life of the patients. In recent years, minimally invasive surgical techniques have been used increasingly for the treatment of stress urinary incontinence. Although it is less frequent than retropubic incontinence surgery, TOT may also lead to bladder injury [1]. Mesh material may erode and can be seen as a vesical stone. Open surgery or endoscopic treatment modalities are possible treatment options for the excision of intravesical mesh.

Herein, we represent a female case in whom intravesical mesh was excised using transurethral endoscopic scissors, and another floating mesh material with calculi formation was seen in bladder and excised with endoscopic forceps two months later.

CASE REPORT

A 30-year-old, Gravida 3, Parity 3 woman was referred to our hospital with pelvic pain and dysuria. She had underwent TOT operation one month before in another hospital an external center for with an indication of stress urinary incontinence. Cystoscopy was performed under local anesthesia and a mesh material was seen on the right side between the 9 o'clock and 11 o'clock positions in the bladder. We planned mesh excision through the vaginal route; however, we were unable to reach the mesh material. Under the vision of a 30 degree cystoscopy, we cut the mesh material in 2 cm length with scissors from the deeper part of the near bladder mucosa. There was no leakage after filling the bladder with 250 ml methylene blue. An 18F Foley catheter was inserted and left in place for seven days.

After discharge, the patient suffered from dysuria, and we performed another cystoscopy procedure under local anesthesia two months after cystoscopic mesh excision and three months after the first TOT operation. Mucosal healing was achieved at the 9 o'clock and 11 o'clock positions in the bladder; however, a 3 x 1.5 cm floating vesical stone was seen in the bladder. This mass

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Figure 1. Calculi formation in the mesh material.

was removed using endoscopic forceps. Naked-eye visual and pathological examination showed calculi formation in the mesh material (Figure 1).

DISCUSSION

Although rare, urinary tract injury can be seen following TOT surgery [2–5]. Controversially, some authors report no urinary tract injury following TOT [6–9]. Roumeguere et al. [10] reported one bladder injury after 120 TOT operations. Abdel-Fattah et al. [11] compared outside-in and inside-out techniques among 389 women and found two urethra and two bladder injuries in the outside-in group. Concomitant gynecological operation was performed in three of four cases. In addition, Novara et al. [12] found both bladder and urinary tract injuries to be lower after TOT, compared to TVT in their meta-analysis of controlled randomized trails. Recently, Sun et al. [13] randomized 2.646 women to TOT, TVT-O, and TVT groups and found that bladder perforation risk was lower in the TOT (OR 0.17, 95% CI 0.06–0.49) and TVT-O groups (OR 0.18, 95% CI 0.08–0.38) than the TVT group. However, the authors reported that three bladder perforations were diagnosed in routine cystoscopy, and the true perforation rate could be higher than estimated. In a recent Cochrane meta-analysis, the authors found a significantly lower bladder injury risk in TOT group than retropubic group (RR 0.13,95% CI 0.08 to 0.20), although they were unable to find significant differences between TOT and TVT-O groups (RR 0.38, 95% CI 0.07 to 1.92) [1]. Furthermore, there was no significant difference between monoflament and multiflament mesh materials for bladder perforation [monofilament 4.49 %, multifilament 3.67% (RR 1.15, 95% CI 0.49 to 2.70)].

Excision of mesh materials from bladder can be done by cystoscopy or endoscopy. Johnson [14] used scissors from suprapubic route for cutting sling metarial after holmium laser lithotripsy in 6 patients who have vesical stone formation. Oh [15] performed transurethral resection (TUR) to excise mesh material in 14 patients, six of them had bladder stone formation and cystolithotripsy was performed before TUR. Jo et al. [16] also reported 20 intravesical and three intraurethral mesh excision procedures of which 16 were done by TUR with an electrode loop and seven by holmium laser. Concurrently, vesicovaginal fistulas developed in two patients, remnant mesh in five patients, and TUR-reoperation was performed in one patient. One patient with remnant mesh also developed recurrent stress urinary incontinence in the holmium group. Doumouchtsis et al. [17] used holmium laser for excision of mesh and reported recurrent erosion in four of six patients, which could be the result of a sharp incision of the mesh at the entrance and exit points. In our case, these sharp ends could be the main factor for re-erosion and protrusion of remnant mesh into the bladder. Frenkl et al. [18] described an algorithm for 22 patients and suggested cystography due to the challenges during endoscopic excision (calculi formation and inadequate tension of mesh). Baracatet et al. [19] and Jorion [20] also performed laparoscopic suprapubic trocar to immobilize mesh, while cutting it through the transurethral route.

In case of difficulty in separating the mesh from bladder, partial cystectomy may be an alternative. Deng et al. [21] reported one urethral diverticulum and three urethravaginal fistulas in 22 perforated bladders. McLennan [22] applied hysteroscopic scissors to avoid diathermy. Similarly, Irer et al. [23] used scissors and forceps for the mesh excision. In another study, Foley et al. [24] performed TUR in six patients, and one of them needed re-operation with TUR, while two patients required open surgery. The author used illuminated nasal speculum, while cutting three urethral meshes with scissors. Pneumatic lithotripsy can be used preoperatively, if the bladder stone is large [25].

Bladder perforation can be diagnosed based on the leakage of urine at the time of injury from trocar insertion site. Methylene blue is an alternative method which can be performed before cystoscopy. A 70-degree optic

should be used to assess the bladder neck and urethra during cystoscopy. There is no need to repair bladder injury which is intraoperatively diagnosed, since it does not cause long-term sequelae, and bladder catheterization for three to seven days is often sufficient. Hematuria, recurrent urinary tract infections, and peritonitis during the postoperative period are the major symptoms for perforation and need further evaluation.

The use of index finger to push the bladder neck medial can be also helpful to avoid bladder perforation during TOT surgery. Bladder should be empty during trocar placement. Cystoscopy can be used at the beginning of surgeon's learning curve. There is a limited number of evidence suggesting which patients need cystoscopy following TOT surgery; however, in some cases such as recurrent surgery, difficulties in the insertion of trocar are optimal indications for cystoscopy.

It is still controversial which technique should be used for the excision of mesh material from bladder. It often depends on the surgeon's experience and availability of technical equipment. If it is possible, removal of the whole mesh material by the transvaginal route may prevent these mesh complications. In our case following TOT surgery, we excised the mesh material from bladder mucosa with sharp scissors and, probably due to the sharp end, the mesh material at the outside of bladder was protruded into the bladder and formed the vesical stone. Since holmium laser can create sharp points like sharp scissors, electrode loop excision can be a safer method to avoid similar complications. Although pneumatic or laser lithotripsy could be used to break the vesical stone, we removed the mesh with cystoscopic forceps as one single part.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Conflict of Interest: No conflict of interest was declared by the authors.

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