Vesico-Uterine Fistula: a Case Report and Review of the Literature

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Abstract

Introduction and Objectives. Vesico-uterine fistula (VUF) represents a rare type of urogenital fistula (around 4%) and it is defined as a pathological communication between bladder and uterus. The etiology of urogenital fistulas includes surgical, obstetric, radiation necrosis or related to tumour pathologies. The main cause of VUF are low segment Caesarean sections (LSCS), which represent 83-93% of all cases. The symptoms may occur immediately after a cesarean section later after surgery or in months or even years, manifesting in the late puerperium or after repeated procedures. Based on menstrual flow routes, three types was described: type I — with amenorrhea and menouria; type II — with bidirectional flow through the vagina and urinary bladder (fistula located at isthmus) and type III — with normal vaginal menses and urinary leakage, when the fistulous tract is below the isthmus, being in fact a vesico-cervical fistula. In this paper we present a rare case of a type III VUF.

Materials and Methods. A 38-year-old woman complained of periodic vaginal urinary leakage for five months, but only at the end and few days after menses. From her medical history, we mention two LSCS as risk factors, the last one correlating with the symptom's debut. A set of investigations was performed (methylene blue test, contrast CT and MRI), but failed to reveal the fistula. We proceeded for urethrocystoscopy, that highlighted a small defect in the postero-inferior wall of the urinary bladder with lack of extravasation of the irrigating fluid through vagina. We concluded that the diagnosis was VUF type III. We used a transabdominal approach, with an infraumbilical incision. The cystotomy revealed a VUF between the postero-inferior urinary bladder wall and the lower segment of the anterior uterus wall. The fistula tract was dissected and excised, as a result of a properly dissection between bladder wall and uterus. The fistula openings in the urinary bladder and uterus were closed separately in two perpendicular layers. A Foley catheter and ureteral stents were left in situ for proper urinary diversion, in order to protect the bladder sutures.

Results. The postoperative course was uneventful. The Foley catheter was maintained for three weeks, while the ureteral stents were removed earlier, after two weeks. At the one year postoperative clinical evaluation, the patient was asymptomatic, with no signs of vaginal urinary leakage after menses, voiding difficulty or other irritative symptoms, all these confirmed by a post-op MRI.

Conclusions. The LSCS represents the most important etiological factor for the VUF. In a VUF type III, the diagnosis can be difficult, the query should be represented by the intermittent vaginal urinary leakage related to the menses. Surgery is the definitive treatment for the VUF's management.

Key-words: vesico-uterine fistula, VUF

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Introduction and Objectives

Vesico-uterine fistula (VUF) was first reported by Knipe in 1908 and represents a rare type of urogenital fistula (around 4% according to Tancer 1986), defined by a pathological communication between uterus and bladder. The etiology of urogenital fistulas includes surgical, obstetric, radiation necrosis or related to tumor pathologies. The main cause of VUF is iatrogenic injury during low segment Caesarean sections (LSCS), in 83-93% of all cases. In other rare cases, VUFs are a consequence of obstetric injuries (such as uterine rupture during vaginal birth or in forceps delivery), use of intrauterine device, placenta percreta, uterine artery embolization, inflammatory bowel disease, manual removal of the placenta or endometritis (1). The symptoms may occur immediately after a cesarean section later after surgery or in months or even years, manifesting in the late puerperium or after repetead procedures (2). The classic triad of symptoms is formed by: urine leakage from vagina, amenorrhea and menouria, with possible association of urinary tract infection or secondary infertility. The most common clinical presentation is represented by urinary leakage, in the form of continuos or intermittent (3).

It is described a particular form of presentation, with association of cyclic amenorrhea and hematuria without urinary leakage. This entity is called Youssef’s syndrome (4,6). The symptoms depend on the level of the fistula, with three described types by Jóźwik and Jóźwik, based on menstrual flow routes: type I — with amenorrhea and menouria (fistula above the isthmus always leak uterine contents into the bladder, resulting in Youssef’s syndrome); type II — with bidirectional flow through the vagina and urinary bladder (fistula located at isthmus) and type III — with normal vaginal menses and urinary leakage, when the fistulous tract is below the isthmus, being in fact a vesico-cervical fistula (5).

The diagnosis is based on clinical, radiological and endoscopical aspects, especially in menouria forms. In order to reveal a fistulous tract, we need to proceed with vaginal examination, cystoscopy, methylene blue test and imaging studies, such as cystography, hysteroscopy, urography, contrast-enhanced CT, MRI or transvaginal ultrasonography (11). Of the above, in a small retrospective study, the pelvic MRI (a non-invasive method) was reliable, with a diagnosis sensitivity of 100% (16).

The treatment for this pathology include conservative procedures, as well as surgical repair. Conservative treatment, consisting in long-term bladder catheterization and medical treatment – antibiotics for 14-48 days, is feasible in case of small fistulas or when the fistula is diagnosed just after the delivery, having a good chance for spontaneous closure of the fistulous tract (2,7,14). In order to aid fistula closure, progestational agents, oral contraceptives and gonadotropin releasing hormone analogs are used for the induction of amenorrhea (9,10).

Surgical management is the definite treatment for all wide fistulas and in failure of conservative approach for small fistulas (8). The manners to get a successful surgical closure of VUF are different, including transvesical, vaginal, transperitoneal, robotic or laparoscopic approaches (13,15).

Materials and Methods

A 38-year-old woman complained of periodic vaginal urinary leakage for five months, but only at the end and few days after menses. From her medical history, we mention two LSCS as risk factors, the last one correlating with the symptom’s debut. The patient was first addressed to gynecologist. In order to establish the diagnostic, a set of investigations was performed (methylene blue test, contrast CT and MRI), but failed to reveal a fistula. We proceeded for urethrocystoscopy, that highlighted a small defect in the postero-inferior wall of the urinary bladder with lack of extravasation of the irrigating fluid through vagina.

Considering the cystoscopic aspects corroborated with the vaginal urinary leakage after menses, with closure of the fistula upon endometrial thickening, we concluded for a VUF type III. We used a transabdominal approach, with an infraumbilical incision (Fig. 1).
First, the bladder was deperitonealized and then, a cystotomy revealed a vesicouterine fistula between the postero-inferior urinary bladder wall and the lower segment of the anterior uterus wall (Fig. 2).

The fistula tract was dissected (Fig. 3,4) and excised, as a result of a properly dissection between bladder wall and uterus (Fig. 5).

The fistula openings in the urinary bladder and uterus were closed separately with polyglycolic sutures in two perpendicular layers (Fig. 6,7).

A Foley catheter and ureteral stents were left in situ for proper urinary diversion, in order to protect the bladder sutures (Fig. 8).
Results

The postoperative course was uneventful. The Foley catheter was maintained for three weeks, while the ureteral stents were removed earlier, after two weeks. The postoperative clinical evaluation was made at 3, 6 and 12 months and the patient was asymptomatic, with no signs of vaginal urinary leakage after menses, voiding difficulty or other irritative symptoms, all these confirmed by a post-op MRI.

Conclusions

The low segment Cesarean section represents the most important etiological factor for the vesico-uterine fistulas. The diagnosis has to be supported on clinical and radiological criteria. The “gold-standard” investigations in order to diagnose a VUF are cystoscopy and urinary tract imaging. In a VUF type III, the diagnosis can be difficult, the query should be represented by the intermittent vaginal urinary leakage related to the menses. Treatment options are various, from conservative or medical to surgical approaches. Surgery is the definitive treatment for the VUF’s management.

References