

Vesicouterine Fistula

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5.1 Introduction

Genitourinary fistulas are one of the most devastating complications in the urogynecology setting. Vesicouterine fistula (VUF) is the rarest form of genitourinary fistulas, with an estimated prevalence of 1–4% for all genitourinary fistulas [1, 2]. In most cases, VUF is secondary to an iatrogenic injury during cesarean section (CS) or vaginal delivery after a previous CS [2, 3].

VUF was first described in the literature by Knipe [4] in 1908 but is known as Youssef's syndrome since its publication in 1957 [5]. Amenorrhea and menstrual bladder hemorrhage or menouria are the most common symptoms [1, 6].

Surgical treatment classically consists of an open surgical approach, with its associated significant morbidities in previously operated patients [1, 7]. Due to the advantages of laparoscopy, it has been proposed as a valid option for repairing VUF. However, there are few cases which report the feasibility of the laparoscopic repair of this entity [2].

5.2 Literature Review

VUFs are rare in modern gynecological practice, with an estimated prevalence of 1–4% for all genitourinary fistulas [2]. A study by Rao et al. [6], which reported 12 patients with VUF, showed that 50% of fistulas occur following CS which were performed urgently. Naouar et al. [2], Unger et al. [8], and Bonillo et al. [9] reported that 83–93% of VUF were diagnosed after a CS.

Conservative therapeutic options, not including surgery, are only effective in 5% of the cases [10, 11]. Therefore, surgery should be considered the mainstay of treatment in the majority of patients. To date, most of the published literature consists of case reports and a case series with a small number of patients and short-term follow-up [2, 8, 10, 12–15]. A laparoscopic approach may be beneficial in terms of less invasive technique, faster recovery, and few anti-analgesic requirements in the postoperative period [8, 12]. However, few surgical reports are available demonstrating laparoscopic techniques repair for VUF. In 1999, Miklos et al. [16] reported the first successful laparoscopic repair of a VUF. The largest series of laparoscopic VUF repair has been reported by Abdel Karim et al. [1]. In the aforementioned study that included 14 patients with VUF, 8 of them were repaired using conventional laparoscopy. In contrast, the remaining 6 cases were repaired by laparoendoscopic single-site surgery (LESS). No complications and no

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conversion to open approach were reported. Purkait et al. [17] conducted the second-largest retrospective series of eight patients with VUF managed with a laparoscopy approach. They concluded that laparoscopic repair is safe, feasible, and effective with successful pregnancy rates in long-term follow-up. Several studies showed that the advantages of a laparoscopy approach are quicker patient recovery and decreased morbidity, shorter hospital stay, and higher patient satisfaction with better cosmetic results with similar success rates to open surgery [8, 12, 18].

Fertility after VUF repair is still a subject of considerable concern. However, it should be noted that reported pregnancy rates after VUF surgical repair range between 25 and 37% [17, 19]. Lotocki et al. [20] reported that, after a VUF repair, the overall pregnancy rate was 31% with full-term delivery at 25%. Bonillo et al. [9] reported two patients who maintain fertility and got pregnant 24 months after the surgery.

5.3 Case Study: Laparoscopic Repair of a Vesicouterine Fistula

(a) Aim

We aim to review the management of a VUF (Youssef's syndrome) with a laparoscopic approach.

(b) Patient and Methods

We presented a surgical technique with a laparoscopic approach for repairing a VUF using primary closure of the fistula and TachoSil® interposition.

A 40-year-old woman was referred to our department with urinary incontinence associated with menouria, 2 months following a late abortion at 22 weeks of pregnancy. The woman, otherwise healthy, had previously had six pregnancies, and her first child was born by caesarean section. After the birth of the fourth child, she presented vesicovaginal fistula that was satisfactorily managed with a bladder catheter.

At the clinic, vaginal examination showed normal vulva, vagina, and urethral meatus.

Instillation of diluted methylene blue into bladder revealed vaginal leakage.

The cystoscopy (Fig. 5.1) confirmed the findings of a well-granulated fistulous tract at the posterior wall of the bladder. The computerized tomography (CT) showed the presence of VUF that connected the base of the bladder and the anterior uterine wall (Fig. 5.2).

A surgical management of the VUF was planned with a laparoscopic approach. The procedure was performed with general anesthesia, and the patient was placed in the lithotomy position. First of all, a cystoscopy

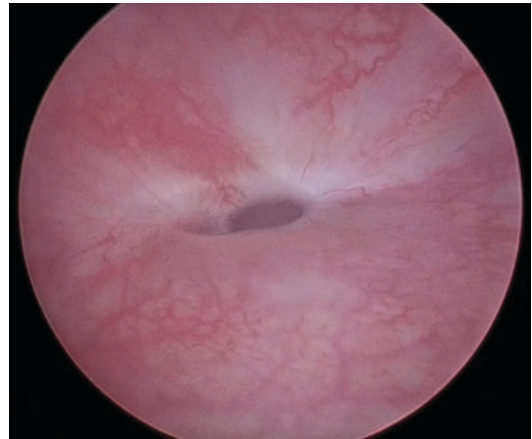


Fig. 5.1 Cystoscopy showed a hole smaller than 1 cm in the posterior bladder wall

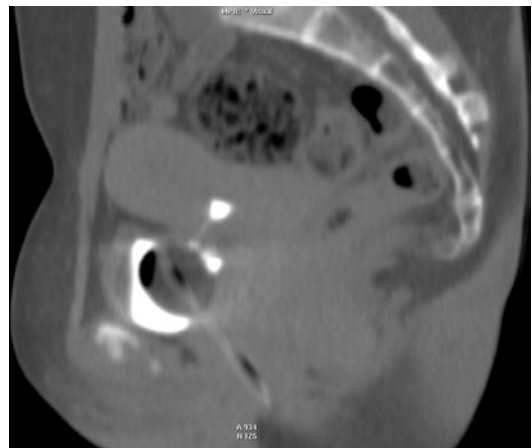


Fig. 5.2 CT showed the presence of VUF with a 1 cm filiform fistulous tract to the uterine cervix

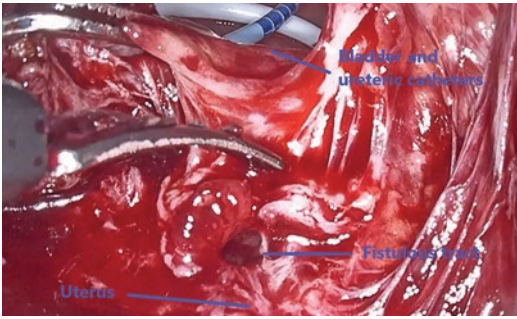


Fig. 5.3 Fistulous tract was excised

was performed with bilateral ureteric catheterization to help identify and protect the ureters. A catheter was also passed through the fistula to aid her identification, and then a urethral Foley catheter was inserted into the bladder. Thereafter, the patient was placed in a supine position with Trendelenburg. Pneumoperitoneum was created using open Hasson technique. One 10 mm and two 5 mm secondary ports were created in both right and left iliac fossae, under laparoscopic vision. As a surgical technique, in dissecting the plane between the uterus and the bladder, a malleable retractor was placed in the vagina to elevate the cervical stump and facilitate dissection of the bladder from the lower uterus. The dissection of the posterior bladder wall, near the fistula, was difficult due to the dense fibrous tissue. The fistulous tract was excised (Fig. 5.3), and the edges were removed by the endoscopic scissors in order to get better healing. The posterior wall of the bladder was completely mobilized. Bilateral ureteric catheters were removed before closing the bladder. The bladder was repaired with two V-locTM® running sutures, and the uterus defect was closed with three “figure eight” sutures of 2-0 polyglactin. Bladder integrity was checked with 250 mL of saline, with no leaks demonstrated. A fibrin sealant patch (TachoSil®) was interposed between the uterus and the bladder, over the sutures. Blood loss was minimal. The patient was discharged on day 2 with indwelling catheter drainage for 4 weeks.

No complications during surgery and postoperative period were reported.

(c) Results of the Study

The patients remained asymptomatic with the resumption of normal menses and no clinical evidence of fistula recurrence at 3 months follow-up (Fig. 5.4).

Despite the recommendations, 4 months after surgery, the patient got pregnant again. Due to the risk of fistula recurrence after VUF repair, delivery was performed by CS. At 37 weeks of pregnancy, a planned CS was undertaken with no fistula recurrence at 22 months follow-up.

5.4 Discussion

VUF is an anomalous communication developing between the bladder and the uterus or cervix [2], a rare type of genitourinary fistula that accounts for 1–4% of all reported urogenital fistulas [1, 2, 21]. In development countries, VUF can occur following prolonged and obstructed labor. The most common etiology in developed countries is iatrogenic following gynecological surgery or CS [10, 15]. As lower uterine segment cesarean deliveries have increased in popularity, they have become the more common cause of VUF formation [8, 22], and the management of this entity becomes even more important. Other causes of VUF include uterine rupture (often in the context of a previous cesarean section), instrumental delivery, abnormal implantation of the placenta (previa or percreta), manual removal of the placenta, an intra-uterine device, inflammatory bowel disease, malignancy or radiotherapy [10, 15]. Congenital forms of ureterovesical fistula have also been described, but they are sporadic cases [23].

VUF can present with clinical symptoms varying from cyclic hematuria (menouria), amenorrhea, vaginal leakage, or urine infertility of first-trimester abortion [8, 10, 24, 25]. A classification of VUF based on the routes of menstrual flow has been proposed by Jozwik who divides VUF into three types. Type I (of menouria) is characterized by the triad of amenorrhea,

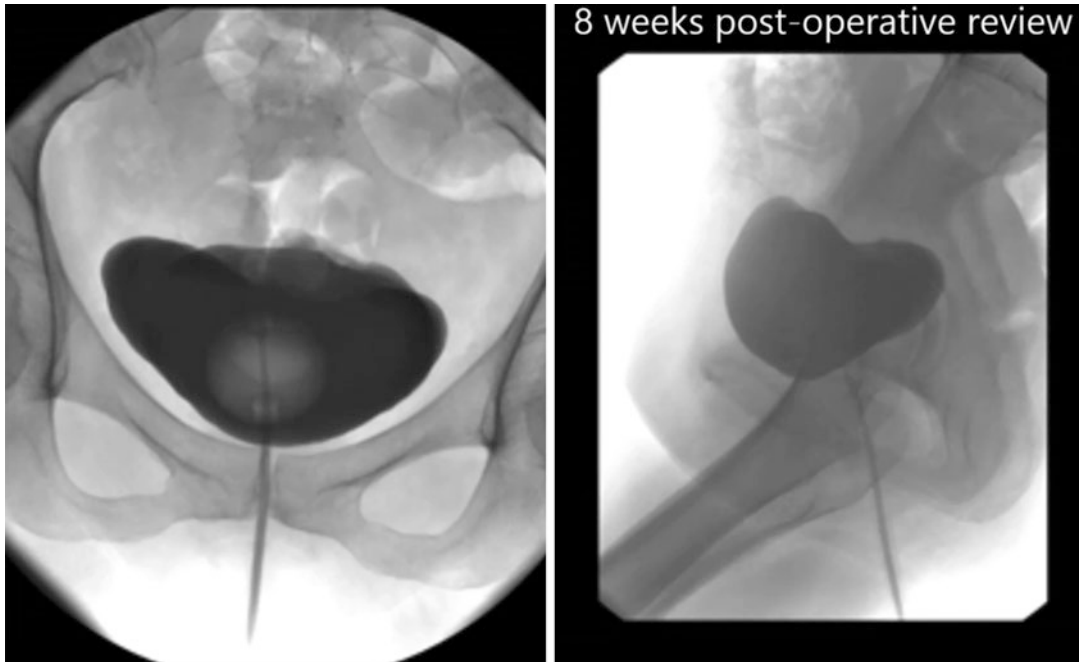


Fig. 5.4 Control cystography

menouria, and complete continence of urine. This triad has been known as Youssef's syndrome. Type II (double flow) is associated with the coexistence of menouria, vaginal menstruation, and constant or periodic urinary incontinence. Type III (vaginal menstruation) is characterized by lack of menouria, normal vaginal menstruation, and constant or periodic urinary incontinence [2, 3, 5].

Confirming the diagnosis of a VUF may be challenging. On pelvic examination, a fistula is usually not palpable. Hysteroscopy, cystoscopy, and cystography remain the “gold standard” in the diagnosis [2, 8]. The diagnosis can be confirmed by methylene blue instilled into the bladder. Additional modalities include CT and magnetic resonance imaging (MRI). MRI can delineate the fistula tract and its relation to the bladder and uterus [2, 10].

Treatment options depend upon fistula size, time of presentation, and symptoms. Conservative therapeutic options that have been proposed are bladder catheterization, hormonal therapy, and cystoscopic fulguration of the VUF. At least 3-week bladder catheterization is an option for

patients who are in the early postpartum phase with a small fistula. Hormonal therapy consists of induction of artificial amenorrhea to prevent blood drainage through the fistula tract [2, 10, 21, 22]. However, conservative therapeutic options only show successful response in 5% of the cases [2, 10, 11]. In this way, surgery should be considered the mainstay of treatment in the majority of patients. Open surgical repair has been the traditional treatment with good results. As surgeons are becoming more proficient with minimally invasive techniques, it is now achievable to repair these fistulae laparoscopically. The basic surgical principles are release of the fistulous communication with a wide exposure and excision of scar tissues around the fistula, tension-free closure of the wound, and interposition of tissue to obliterate dead space and prevent hematoma formation. Absorbable sutures should be used to avoid necrosis. The repaired region must have a good blood supply [2, 17, 22]. All the steps of fistula repair that are usually performed in open surgery could be performed in laparoscopy surgery. We argue that this approach to surgery may be the most favorable by surgeons who are experienced in

laparoscopy. Laparoscopic approach offer improvement in visualization resulting in excellent exposure to the vesicouterine pouch and retrovesical space, but intracorporeal suturing is the difficult part of the surgery [2, 21]. In our case, bilateral ureteric catheterization helps us to identify and protect the ureters during the surgery. The introduction of a malleable retractor into the vagina to elevate the cervical stump and the catheterization of the fistula were beneficial to localize the fistula tract, allowing meticulous dissection in the retrovesical space between the bladder and the uterus and resection of the fistula tract with minimal manipulation of the bladder. The interposition of a peritoneal or omental flap obliterates the dead space and prevents the formation of hematomas, avoiding the recurrence of the fistula. The first surgeon to introduce the concept of flap interposition was Martius in 1928 [26], who used a flap of adipose tissue obtained from the labia majora. In our case, rather than interpose a tissue flap, we used an absorbable fibrin sealant patch (TachoSil®), a collagen-rich spongy material covered with clotting factors, fibrinogen, and thrombin. Giusti et al. [27] reported successful laparoscopic repair of vesicovaginal fistulas in 16 patients with TachoSil® application as interposition tissue. They conclude that the use of TachoSil® can be considered a simple, quick, and atraumatic alternative that allows to simplify the procedure without impact on outcomes. Laparoscopy has proved advantages in terms of low morbidity, quicker convalescence, shorter hospital stay, and better cosmetic results while preserving the same success rates of the open surgical approaches [1, 2, 18]. Difficulties in the learning curve are the main obstacles in the practice of this minimally invasive approach [1, 12].

5.5 Conclusion

VUFs are a rare case in modern gynecological practice; most of these are the result of a previous cesarean section. Surgical repair is the standard treatment in most of the cases, and minimally invasive techniques started gaining ground as an alternative approach to traditional open surgical

repair. Laparoscopic repair of a VUF is an effective and safe technique with successful outcome and low morbidity, but the procedure is a technically challenging procedure that requires good laparoscopic skills.

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