



ORIGINAL RESEARCH PAPER

General Surgery

UTEROVESICAL FISTULA: A RETROSPECTIVE STUDY IN TERTIARY CARE HOSPITAL AND REVIEW OF THE LITERATURE

KEY WORDS: Fistula, Uterus, Cesarean.

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ABSTRACT

Background: Vesicouterine fistula represents a rare urogenital fistula, accounting for approximately 1-4% of genitourinary fistulas. Iatrogenic reasons are the most common cause. Surgical excision is the mainstay of treatment. Less than 5% of patients respond to conservative management. **Purpose:** The study aims to share our experience with Vesicouterine fistula in terms of presentation mode, diagnostic modality, and management, emphasizing the surgical approach and a parallel review of the available literature. **Methodology:** During five years from June 2015 to June 2020, Fifteen cases of vesicouterine fistula, who were admitted and treated in the department of urology of a tertiary care center, were retrospectively analyzed for age, parity, etiology, clinical presentation, diagnostic modalities, and management and repair outcomes. The literature was searched using the Medline database. **Results:** Fifteen patients were diagnosed with Vesicouterine fistula. The women's mean age was 36.5 ± 8.9 years, with 60 % between 30-39 years. Of the 15 women who had term pregnancies, 3 (20%) had no previous cesarean section, 4 (26.7%) had one previous cesarean section, and 8 (53.3%) cesarean sections twice, making previous cesarean section a predisposing factor in 80% of cases. Fistula occurred following cesarean section in 9 women (60%), vaginal delivery in 3 (20%), exploratory laparotomy due to uterine rupture in 1 (6.7%), and dilatation and curettage in 1 (6.7%). All three women whose fistula followed vaginal delivery had a previous cesarean section. All the 15 women presented with menouria. Five (33.3%) had menouria only, while 10 (66.7%) had menouria with urinary incontinence. Ultrasonography and cystoscopy was done, and Ct urogram was used as a confirmatory test in equivocal cases and to rule out concomitant upper tract injury. One patient was treated successfully conservatively. Fourteen women had surgical repair via the transvesical extraperitoneal approach. Hysterectomy was done in 4 patients. **Conclusion:** Vesicouterine fistula is rare and usually follows iatrogenic injury during cesarean section. Previous history of cesarean section is an important predisposing factor. It presents commonly as menouria and urinary incontinence. Conservative treatment trial can be given for small fistula cases who are presenting early. Outcomes of Surgical repair are excellent.

Introduction

Vesicouterine fistula is defined as a communication between the bladder's posterior wall and the uterus's anterior wall. It results mostly after the lower segment cesarean section. It accounts for 4% of all cases of urogenital fistula. In 1957 Youseff described the triad of cyclical haematuria (menouria), amenorrhoea, and urinary continence after lower segment cesarean section as features of vesicouterine fistula [1]. The incidence has increased due to the increasing use of lower segment cesarean section for delivery [3]. Other causes are- vaginal birth after a previous lower segment cesarean section or following instrumental vaginal deliveries [4,5]. Depending on the bladder injury level, Several women can present with involuntary urine leakage and normal menstruation [3,6-10].

Diagnosis can be made by ultrasonography, cystoscopy, intravenous urography, ct urogram, hysterosalpingography, sonohysterography, and magnetic resonance imaging [11-14]. Ultrasonography is now being increasingly advocated for all suspected cases of uterovesical fistula [12].

Treatment for uterovesical fistula can be - conservative, medical, or surgical [3]. In Conservative treatment, an indwelling catheter is kept for small fistulas after early diagnosis when the fistula tract is still immature. For small fistulas, medical treatment in the form of hormones to induce amenorrhea can be tried [3,15].

Surgery is the definitive treatment and is indicated when conservative, and medical therapy has failed or, in cases having a large fistula involves. Approach to fistula repair can be vaginal, abdominal (extra or trans-peritoneal), laparoscopic, and robotic approaches [3].

Methodology

The Retrospective study was done at Government General Hospital, Guntur.

The medical and theatre records of all patients managed for vesicouterine fistula from Dec 2015 to June 2020 were obtained. A data extraction proforma was designed and used to extract relevant information from these patients records - history, clinical examination, baseline investigation, cystoscopy, ultrasonography abdomen, and ct urogram, treatment given - conservative or surgical, and their outcomes.

Results

During the study period 15 patients were diagnosed with vesicouterine fistula. Mean age of the women was 36.5 + 8.9 years. About 60 % of them were between the age group 30-39 years. Thirteen of the women (86.7%) were married while 2(13.3%) was widowed. Majority of them 10 (66.7%) were homemakers (Table 1).

Table 1- Socioeconomic chart

Characteristics	frequency
Age group (yrs)	
20-29	3 (20%)
30-39	9 (60%)
40-49	2 (13.3%)
50 and above	1 (6.7%)
Marital Status	
Married	13 (86.7%)
Widow	2 (13.3%)
Occupation	
Homemaker	10 (66.7%)
labourer	3 (20%)
Govt job	2 (13.3%)

Of the 15 women who had term pregnancies, 3 (20%) had no previous caesarean section, 4 (26.7%) had 1 previous

caesarean section and 8 (53.3%) had caesarean sections twice making previous caesarean section a predisposing factor in 80% of cases (Table 2).

Table 2- History of caesarean section

History of cesarean section	frequency
None	3(20%)
1previous CS	4(26.7%)
2previous CS	8(53.3%)
Total	15(100%)

CS-Caesarean section

Vesicouterine fistula occurred following caesarean section in 9 (60%) of the women, spontaneous vaginal delivery in 3 (20%), uterine rupture in 1 (6.7%) and dilatation and curettage in 1 (6.7%) (Table 3). Fistula therefore followed an iatrogenic event in 10 (66.7%) of the women studied. All 3 women whose fistula followed vaginal delivery had previous caesarean section.

Table 3- Aetiology of vesicouterine fistula

Aetiology	Frequency
Cesarean section	9 (60%)
Spontaneous vaginal delivery	3 (20%)
Uterine rupture	1 (6.7%)
Dilatation and curettage	1 6.7%)

All the 15 women presented with cyclical haematuria (menouria). Five women (33.3%) had menouria only while 10 (66.7%) had menouria with continuous involuntary leakage of urine (Table 4).

Table 4- Presenting complaints.

Complaints	frequency
Menouria only	5 (33.3%)
Menouria and leak of urine	10 (66.7%)
Total	15 (100%)

In all patients ultrasonography was employed to aid diagnosis. Cystoscopy was done to know the location, size and number of fistula, and relation to ureteric orifice, the condition of surrounding mucosa. Ct urogram was done in equivocal cases as confirmatory test and to rule out upper tract injury. One patient was treated successfully conservatively. Fourteen women had surgical repair via the transvesical extraperitoneal approach. Hysterectomy was done in 4 patients.



Figure 1: Ultrasound picture showing communication between uterus and urinary bladder.

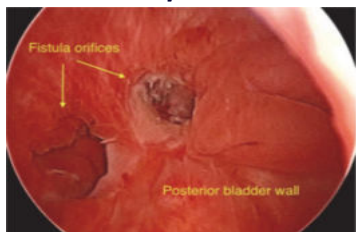


Figure 2: Cystoscopic view of two vesicouterine fistula (VUF) orifices in the posterior bladder wall

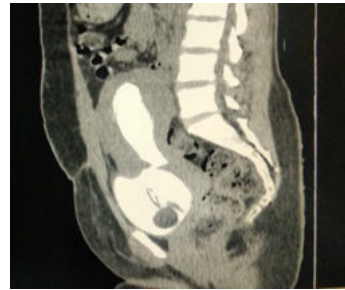


Figure 3: CT Urogram demonstrating Uterovesical Fistula on Saggital cut.

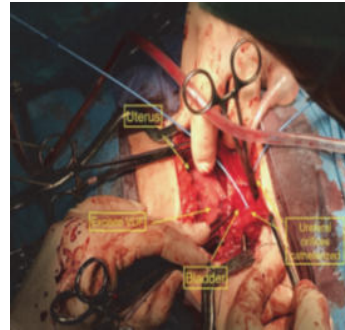


Figure 4: Intraoperative view of uterus, bladder, excised VUF tract, and catheterized ureteral orifices with ureteral stents.

Discussion

Vesicouterine fistula is the rarest type of urogenital fistula. Vesicouterine fistula resulted from cesarean section in 80% of the women studied. Although a rare occurrence, it is a definite complication of cesarean section especially if concomitant urinary bladder injury is present. Youssef's syndrome was described in women following lower segment caesarean section [2]. Other authors have consistently discussed the caesarean section's role in the causation of this condition [3,6,8,12,13,16], which implies that the incidence of fistula may rise parallel to the lscs. So separation of the urinary bladder from the lower uterine segment during the procedure should be done with caution and meticulousness. In developing world, most of the caesarian sections are done by junior surgeons which tells the need to improve the quality of obstetricians' training in performing caesarean section to prevent further complications.

Following delivery the women who developed vesicouterine fistula, 80% had at least a previous caesarean section. Other 20% of women didn't have any identifiable predisposing factor, indicating a fresh iatrogenic injury to the bladder resulting in fistula. This implies that the presence of a uterine scar from a previous lower segment caesarean section as well as direct injury to the bladder during caesarean section, are strong predisposing factors to the development of vesicouterine fistula. This can be described by the fact that due to adhesions between the bladder and uterus following a previous lower segment caesarean section, iatrogenic injury to the bladder is more likely during sharp dissection to separate it from uterus. During vaginal births after a caesarean section (VBAC), the risk is still there as a rent in the uterus or scar dehiscence may involve the bladder. In our study, all 3 women whose fistula followed vaginal delivery had previous caesarean section. Vesicouterine fistulas have been reported from both spontaneous and assisted vaginal deliveries following a previous caesarean section [4,11]. In a review of 24 women treated in a tertiary referral center, bladder injury occurred two times more often after repeat operations than after the primary. The authors concluded that caesarean section was the single major risk factor associated with the occurrence of vesicouterine fistulas with repeat

procedures increasing the risk of bladder injury and resultant fistulas [8,10].

All the women studied presented with cyclical haematuria (menouria). Five women had menouria only while 10 had menouria with continuous involuntary leakage of urine. Although the complaint of menouria is consistent in our study, the presentation of vesicouterine syndrome has showed some variation from the triad described by Youssef as some patients present with involuntary leakage of urine and even normal menstruation depending on the level of the injury to the bladder [3,6-10]. The cause of the urinary incontinence is the communication between the bladder and the uterine cavity allowing leaking of urine through the cervix into the vagina. If the bladder rent is high, urinary incontinence is less likely as this allows normal filling and emptying of the bladder. Leakage of urine is however more likely when the injury is lower down because there is less room for bladder filling. Continuous involuntary leakage of urine may be confused with vesicovaginal fistula. Hence thorough evaluation is necessary for diagnosis [8]. Some authors have indeed suggested that vesicouterine fistula should be suspected in any woman presenting with urinary incontinence even years after caesarean section [7].

In all the patients, the diagnosis of vesicouterine fistula was made clinically using symptoms and signs and ultrasonography. In suspicious cases CT urogram was used as confirmatory test and to rule out upper tract injury. We found that cyclical haematuria (menouria) was a constant feature as all the patients reported this symptom. Ultrasound scan is used in all cases because it is more easily available, cheaper and safer than CT urogram. Also, in a low-resource, free treatment centre like ours, physicians tend to depend more on the most cost effective technology available in addition to clinical features for diagnosis. Studies have demonstrated the efficacy of ultrasonography for the diagnosis of vesicouterine fistula [11,12]. In a study, ultrasonography showed double echogenic lines between the endometrium on the anterior wall of the uterus and the mucosa on the posterior wall of the bladder, suggesting a fistulous tract [17]. When available, magnetic resonance imaging has been suggested as the investigation of choice for vesicouterine fistula [14].

Conservative and Medical treatment involving the use of hormones to induce amenorrhoea especially for small fistulas has been advocated in the literature - Spontaneous healing is reported in five percent of women. [3,15].

In our study, One patient was treated successfully conservatively. Surgery however is the definitive treatment of vesicouterine fistula [3]. Fourteen women had surgical repair via the transvesical extraperitoneal approach and the outcomes were excellent. Hysterectomy was done in 4 patients. The mode of management and route of surgery in this study had to do with familiarity on the part of the surgeons. Although other management options are available, the surgeons usually adopt the modality they are most familiar with in order to give each patient the greatest chance of cure.

Conclusion -

Vesicouterine fistula is rare complication of caesarean section. Previous CS is a strong predisposing factor. Presentation as menouria with or without urinary incontinence is consistent. CT urogram is an effective diagnostic tool in equivocal cases. Conservative treatment can be successful in carefully selected cases. Outcomes of surgical repair are excellent. Careful and meticulous surgical techniques are advocated to prevent this problem.

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