

VESICO- UTERINE FISTULA

VUF

Youseff's Syndrome

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Constantly in pain, incontinent of urine, bearing a heavy burden of sadness in discovering their child stillborn, ashamed of a rank personal offensiveness, abandoned therefore by their husbands, outcasts of society, unemployable except in fields, they live, they exist without friends, without hope. Because their injuries are pudendal affecting those parts of the body which must be hidden from view and a woman may not in modesty easily speak, they endure their injuries in silent shame. No charitable organisation becomes aware of them. Their misery is utter, lonely and complete.

- *RHJ Hamlin and E. Catherine Nicholson 1966*

Aptly quoted by Hamlin and Nicholson in 1966 about obstetric fistulas, vesicouterine fistula constitute one of the important yet rare type of urogenital fistulas.

Vesicouterine fistulae are among the least common urogenital fistulae. With the incidence being 1-4% (Lenkovsky 1988)⁽¹⁾ and rare type of urogenital fistula, the first case of vesicouterine fistula was reported in 1908. In 1957, Youssef described a syndrome characterised by triad of cyclical hematuria (Menouria of Youssef), amenorrhea, without vaginal leakage of urine (urinary continence).⁽²⁾ Less than 100 cases were reported in the world literature between 1908 and 1986, after which the incidence has started rising which could be attributed to rising number of lower segment caesarean section done worldwide. Till date more than 800 cases have been reported in the literature.

Etiology

Way back in earlier decades, important causes for vesico uterine fistulae were difficult vaginal deliveries including neglected obstructed labour and instrumental delivery by high forceps.

Now, , lower segment caesarean section is by far the most common cause of this unusual fistula. (Tancer 1986)⁽³⁾ Caesarean delivery accounts for about 88% causes of vesico- uterine fistulae [4]. Most of them are associated with birth injury to or necrosis of the bladder wall

directly over the dehiscence of a lower segment cesarean section scar · Very rarely these fistulas occur due to instrumentation or malignancy. When there is inadequate mobilization of the bladder inferiorly or laterally the bladder may be injured with delivery of a large fetal head or it may be accidentally included in the suture used to close the uterine incision. Fistula forms when sutures are absorbed.

Other causes include –

- Induced abortion
- Dilatation and curettage
- Repeat caesarean section
- VBAC
- Foreign body like IUCD
- Uterine artery embolization
- Brachytherapy
- Traumatic bladder catheterization
- Sometimes spontaneous fistula may occur in case of uterine rupture during obstructed labour where the posterior bladder wall may tear along the ruptured uterine line creating potential for fistula.
- Bladder wall invasion by chorionic villi penetrating beyond the uterine serosa as in placenta percreta can also cause VUF.

Site of the fistula : Anatomically, the commonest location of the fistula is along the posterior bladder wall in the midline or from the genital side, just cephalad to the internal cervical os.

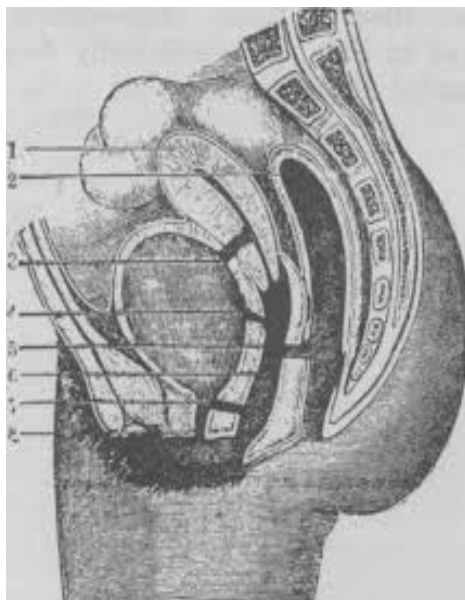


Fig 1 : Urogenital fistulas

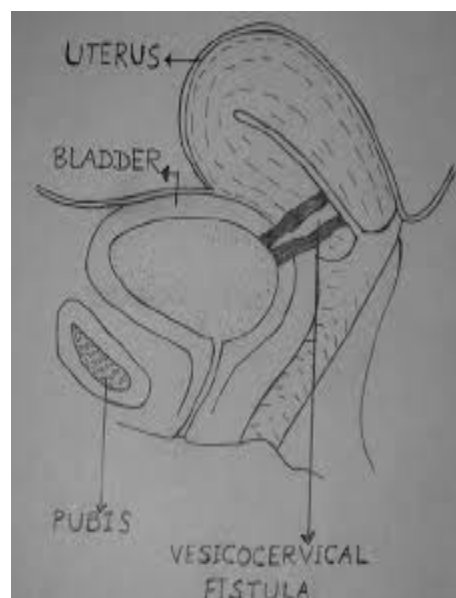


Fig 2 : Vesicouterine and Vesicocervi Fistula

Pathophysiology of fistula formation :

- Simultaneous injury to the bladder and the uterus is the inciting event in majority of the cases.
- An unrecognised and unrepaired(occult) injury to the bladder causes vesicouterine fistula.
- Incorporation of the portion of the bladder during uterine closure.
- Bladder may get injured during the delivery of the fetal head whenever there is inadequate mobilization of the bladder downwards and laterally.

Classification of vesicouterine fistula :

Józwik and Józwik (2002) classified vesicouterine fistula based on the location of fistula on the uterus with respect to the isthmus and the route of menstrual flow.⁽⁵⁾

1. Type I : In ***pre-isthmic fistula*** there will be only menouria with no regular menstrual flow and no urinary incontinence. Here because of the sphincter like activity of the cervix and increased intrauterine pressure compared to intravesical pressure, menstrual blood enters the bladder leading to menouria.
2. Type II : In ***fistulas located at isthmus*** there will be coexistence of menouria, menstrual flow and urinary incontinence(vaginal urinary leak).
3. Type III : In ***Postisthmic fistula*** there will be urinary incontinence, regular menstrual flow and no menouria.

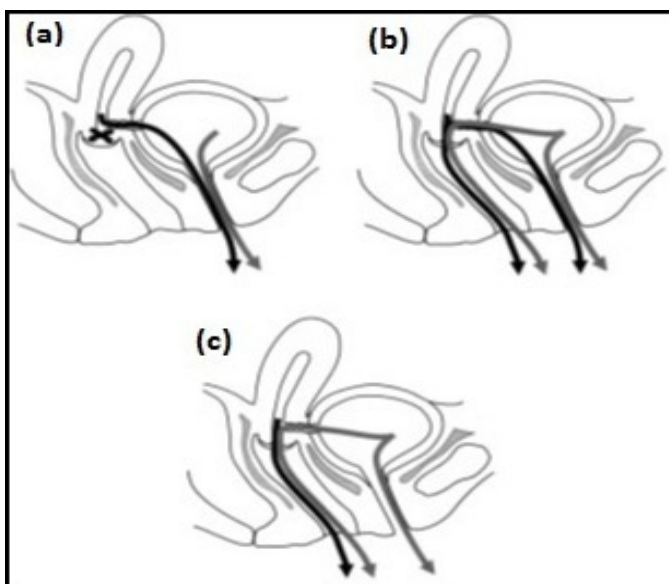


Fig 3 : Different types of Vesicouterine fistulas

- (a) Pre isthmic with amenorrhea, menouria with continent urine**
(b) Isthmic type with coexistence of menouria, normal menstruation and urinary incontinence.

(c) Post isthmic type with normal menstruation, urinary incontinence with no menouria.

Clinical classification of vesicouterine fistula. Type I is consistent with Youssef's syndrome, i.e. the menstrual blood is discharged transvesically as menouria . Type II is characterized by the dual flow of menstrual blood, i.e. menouria and vaginal route . In type III normal discharge of menstrual blood via the vagina occurs . Black arrows indicate the routes of menstrual blood passage, gray arrows indicate the routes of urine passage.

Noteworthy, types of vesicouterine fistulas with menouria, i.e. types I and II, seem to be particularly susceptible to develop sequelae of vesical endometriosis and recurrent cystitis as a result of the presence in the bladder of a desquamated ectopic biological material with tremendous implantational capacities.

Symptomatology and clinical examination :

Vesicouterine fistulas are relatively rare in the absence of operative intervention. So, there will be history of recent or past surgical intervention. They can present in different ways depending on the location, size and the degree of patency of the endocervical canal. The least troublesome VUF doesnot typically present with urinary incontinence, but it is characterised by the absence of vaginal menstruation in the presence of menouria wherein menstruation exists exclusively through the urinary tract.

The cause of amenorrhoea could be varied. The uterine synaechia prevented urine and menstrual blood flow through the vagina. The higher resting uterine pressure of 8-12 mmHg could also prevent urine from the urinary bladder (with less resting pressure of <7.4 mmHg) from flowing into uterus through the tract.

Various combination of altered menstruation with periodic or continuous urinary incontinence may be seen in other types of VUF. The most charayteristic finding of VUF is demonstrable loss of urine through the cervix which is also seen in vesicocervical fistula.

****Endometriosis of the bladder in which cyclical hematuria is present, must be differentiated from VUF.***

Diagnostic modalities :

Vesicouterine fistulas even though rare, are no longer a rare diagnosis because of various diagnostic methods facilitating prompt diagnosis.

- Cystoscopy – to diagnose and visualise the location, size of the fistula in relation to the trigone and ureteric orifice.
- Urine cytology – may reveal endothelial cells
- intravesical instillation of methylene blue,
- intrauterine insufflation of air,
- transperitoneal and transvesical fistulography
- Intravenous urography

- Cystogram – instillation of contrast material into the bladder outlines the uterine cavity through the fistulous tract.
- Hysterosalpingogram - instillation of contrast material into the uterine cavity outlines the bladder
- Hysteroscopy – to visualize the fistula from uterine side.
- USG, CT scan and MRI have been used in the diagnosis and evaluation of vesicouterine fistula.
- IVU or contrast enhanced CT scan can be used to exclude concomitant ureteral injury.

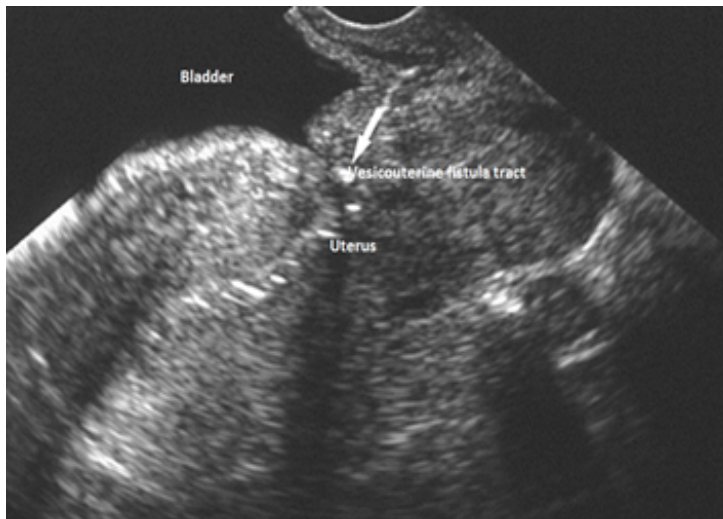


Fig 4: Transvaginal sonogram shows bladder invaginated into uterine isthmus. Bladder wall is disrupted, with hypoechoic line (arrow) joining bladder and uterus lumina.



Fig 5: Hysterosalpingography showing Vesico Uterine Fistula

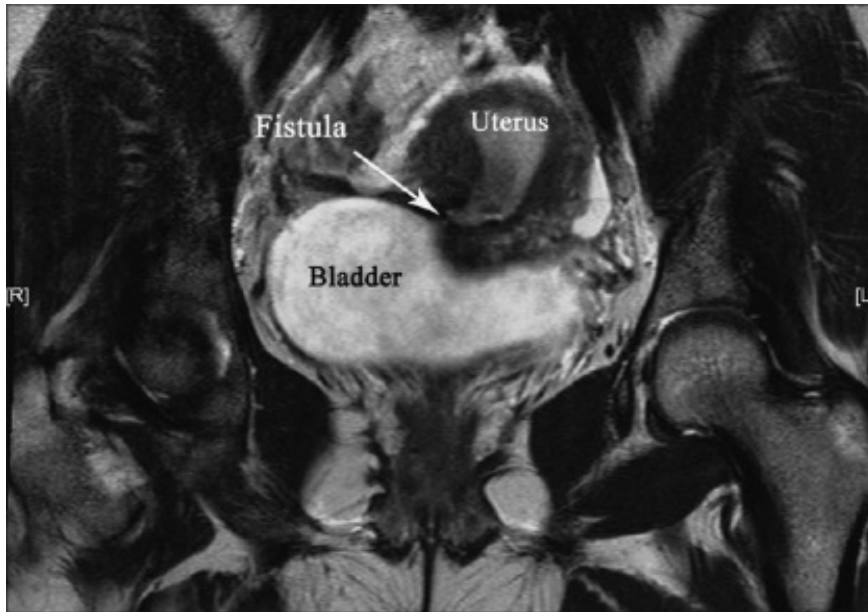


figure 6: Coronal T2-weighted HR/SENSE MR image depicting the abnormal hypointense outpouching and fistulous tract (*arrow*) from posterior wall of bladder to anterolateral wall of uterus above the isthmus. Endometrial cavity is being opacified (hyperintense)

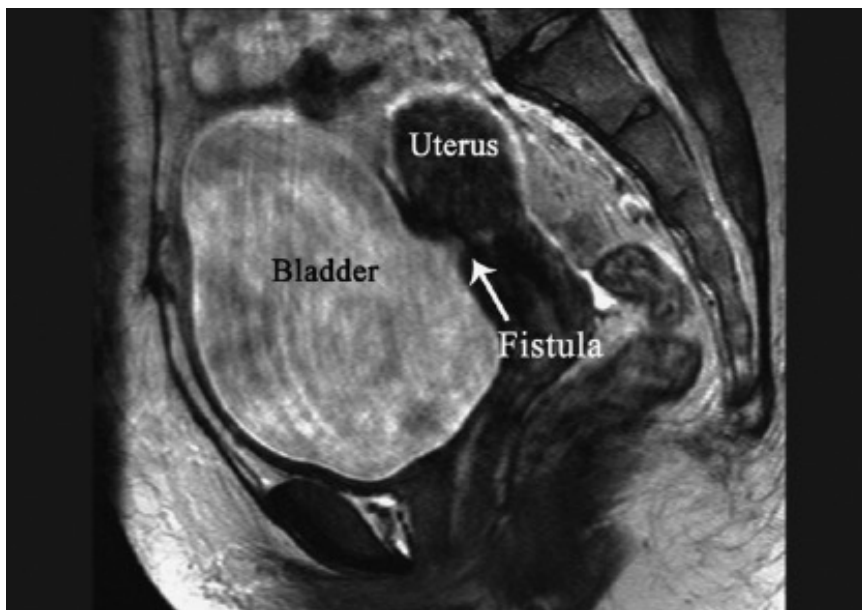


figure 7 Sagittal T2-weighted HR/SENSE MR image (TR/TE, 4774/90) shows abnormal hypointense area (*arrow*) in the posterior wall of bladder communicating with uterus above the isthmus



Fig 8: Cystoscopy showing fistulous opening
in the posterior bladder wall



Fig 9 : Hysteroscopic view of VUF

Management:

Conservative management – In small fresh fistulas, precocious surgical repair is unnecessary, as spontaneous resolution may occur without surgery. But if healing has not taken place within few weeks surgical repair is required.

Prolonged indwelling bladder catheterisation or fulguration of the fistula tract followed by bladder drainage is successful in small immature fistulae.

Hormonal induction of menopause will induce involution of the puerperal uterus, and some success in treating this condition has been appreciated using this principle.

Surgical management – Pre-requisite for successful fistula repair as in any other surgery is meticulous attention to the details of tissue anatomy, skillful handling and patience.

*“There must be no attempt to operate on these cases
with one eye on the clock and the other on the tea wagon”*

- *Abbott*

Decision regarding the surgical therapy depends on the reproductive desire of the patient, menstrual function as well as other surgical factors.

- When fertility sparing surgery is not required, transabdominal hysterectomy and bladder closure is the mainstay of management, wherein hysterectomy is performed first followed by the excision of fistula tract on the posterior bladder wall and primary closure of the bladder. An omental flap is placed in the deep pelvis buttressing the bladder closure to separate the bladder closure from the vaginal closure which helps in preventing postoperative vesicovaginal fistula.
- When patient desires preservation of fertility, uterine sparing surgery similar to O’Conor transabdominal VVF repair is done. Here the bladder is opened and bivalved

down to the fistula tract. Separate the bladder from the uterus beyond the fistula tract by meticulous and careful dissection. Excision of the fistula tract is done from both the structures, bladder and uterus are closed individually. An omental flap is secured between the two organs.

Successful pregnancies have been reported after repair of the vesicouterine fistula.

Minimally invasive laparoscopic and robotic surgical approaches have been in use for the treatment of VUF. Among the surgical approaches, transvesical transperitoneal approach has the lowest relapse rate (Porcaro et al 2002).⁽⁶⁾

J Obstet Gynecol India Vol. 56, No. 2 : March/April 2006 Pg 166-167



CASE REPORT

The Journal of
Obstetrics and Gynecology
of India

Laparoscopic repair of uterovesical fistula

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Key words : Youssef's syndrome, uterovesical fistula

Suyajna D. Joshi et al reported the first successful repair of utero vesical fistula in a post repeat cesarean section case by Laparocopy. ((2006)

Preventive measures :

Though the occurrence of vesicouterine fistulas are rare and infrequent, prevention of such fistulas is always better rather than the social embarrassment it causes to the patient because of urinary incontinence. Hence, careful practice of surgical principles during caesarean section like inferior and laterally mobilization the bladder, proper identification of anatomical landmarks, appropriate suturing of uterine incision site without involving the bladder wall and prompt identification of the intraoperative hematuria helps in preventing VUF.

Key Points :

- Vesicouterine fistula are least common urogenital fistulae.
- Lower segment caesarean section is the most common cause of Vesicouterine fistula.
- VUF patients do not always present with urinary incontinence as it depends on the type of the fistula based on its location.
- Youssef's syndrome is characterised by the presenting symptom complex of vesicouterine fistula : menouria, cyclic hematuria with associated apparent amenorrhoea, infertility and urinary continence in a patient who has undergone prior low segment caesarean section.
- Nonsurgical management of small fistulas is possible by prolonged bladder catheterization and hormonal induction of involution of uterus.
- Fertility sparing surgeries or hysterectomy with primary bladder closure is done depending on the reproductive wishes of the patient.

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