Case report

Case series of vesicovaginal fistulae in Nizwa Hospital, trend, outcome and Review of literature

Abstract

Vesicovaginal fistula (VVF) a complication inflicted iatrogenically is a distressful condition for anyone. Accurate diagnosis and proper preoperative planning are essential for a successful outcome. We report few case series of vesicovaginal fistula occurring in different scenarios and management plan. Although the incidence of vesicovaginal fistula resulting from a hysterectomy is estimated to be less than 1%, we should still be cautious of the possibility of this occurrence, evaluate and treat as necessary when suspicion arises.

Keywords: vesicovaginal fistula, hysterectomy, post operative, Iatrogenic, Caesarean section

Introduction

Vesicovaginal fistula (VVF) is an abnormal communication between the urinary bladder and the vagina that results in the continuous involuntary leakage of urine into the vaginal vault. It is one of the worrisome and socially disturbing condition affecting the quality of life. It occurs most commonly as a result of obstetrical and gynecological injuries. D [1] The existence of VVF is believed to have been known to the physicians of ancient Egyptian mummies before 2000 years BC. [1] The actual incidence of VVF is unknown. [2] In developing countries, it is estimated 80% of cases resulted from neglected obstructed labour, with an annual worldwide incidence of up to 500,000 cases, most of them in Africa and southern Asia. [2] Estimates suggest that 30 000–130 000 new cases develop each year in Africa alone, in addition at least 3 million women in poor countries have unrepaired vesicovaginal fistulas . [3] Whereas in the UK and USA over 70% follow pelvic surgery. [4] The rate of VVF formation post hysterectomy varies

with the surgical approach. The highest is with laparoscopic procedures (2.2 in 1000), followed by transabdominal (1 in 1000), and the lowest is with the transvaginal approach (0.2 in 1000). [5]

The repair of VVF includes many routes and techniques, with a success rate reaching 100%. The spontaneous closure of vesicovaginal fistulae after bladder drainage alone for varying periods has been reported by many. [6] The factors favoring the success of conservative management have not been well examined.

Case series

Case 1: 51years, Para 7, postmenopausal, with previous caesarean section underwent Total abdominal hysterectomy with bilateral salpingo-ophorectomy, in view of large ovarian cyst with normal Cancer antigen-125. The cyst measured 71x56mm and was palpable abdominally up to 16 weeks gravid uterus size. Post operative period was uneventful. A month later, she developed continuous dribbling of urine and incontinence suggestive of VVF. Computed tomography urogram confirmed presence of VVF [Figure 1] which was repaired laparoscopically with successful outcome. This was a simple hysterectomy complicated with formation of vesicovaginal fistula.

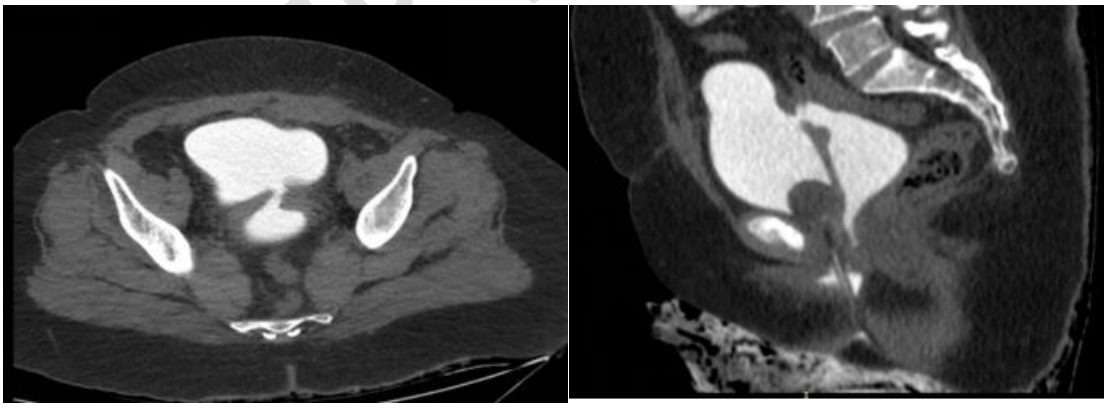

Figure 1: A: Axial CT cystogram image of the pelvis demonstrating the fistulous tract between the posterior urinary bladder and the vaginal vault with contrast both in the urinary bladder and vagina

B:Sagital CT cystogram image of the pelvis demonstrating the fistulous tract between the posterior urinary bladder and the vaginal vault with contrast both in the urinary bladder and vagina.

Case 2: 47 years P8 underwent emergency laparotomy for rupture uterus, after vaginal delivery. Subsequently underwent subtotal hysterectomy along with repair of bladder tear by urologist following which she presented on postoperative day 7 with complaints of urinary leakage per vaginum. Initially she was treated conservatively with continuous catheterization for two months after which she improved. After five months her symptoms re-occurred, and cystogram confirmed VVF of 3mm in the trigone, for which she was operated but failed. She presented again in June 2022 after 12 years with persistent urinary symptoms of leakage, and was referred to teritiary urology center for expert management where CT cystogram revealed fistulous tract connecting the left posterior wall of urinary bladder to uterine stump.[Figure 2] Subsequently cystoscopy and laparoscopy was done, but the procedure was converted to laparotomy for successful repair of fistulous tract. Postoperatively she was completely asymptomatic.

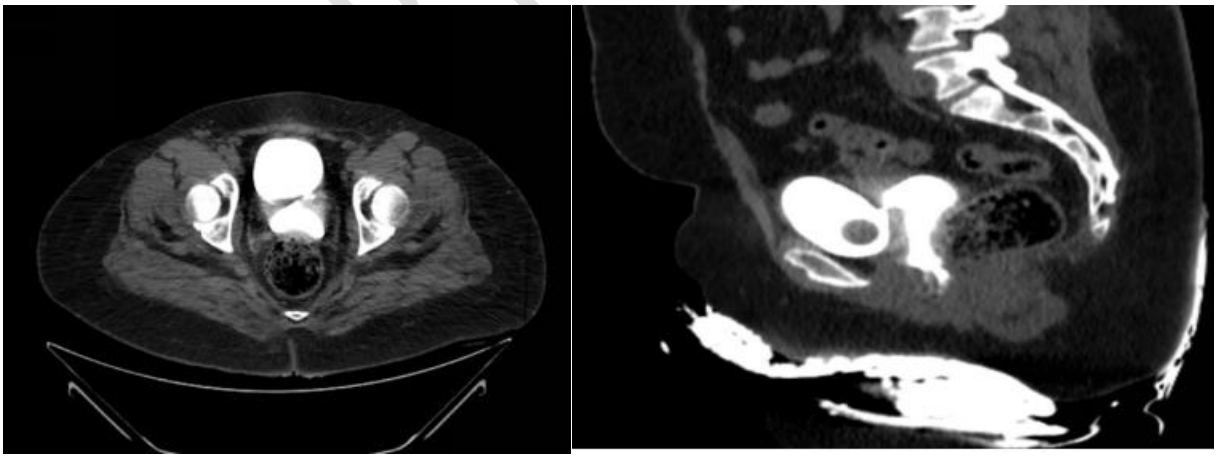

Figure 2: A: Axial CT cystogram image of the pelvis demonstrating the fistulous tract between the posterior urinary bladder and the vaginal vault with contrast both in the urinary bladder and vagina

B:Sagital CT cystogram image of the pelvis demonstrating the fistulous tract between the posterior urinary bladder and the vaginal vault with contrast both in the urinary bladder and vagina.

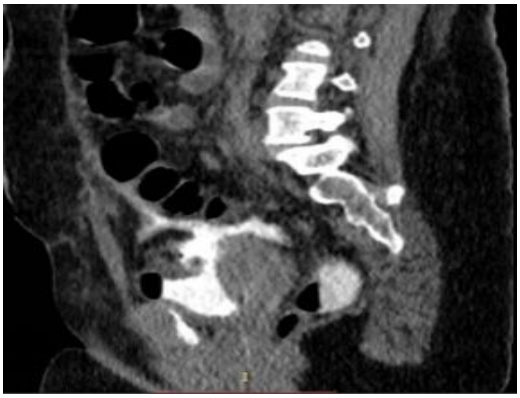

Figure 3: A: Axial CT cystogram image showing the extravasated contrast around the bowel loops indicated intraperitoneal rupture, B:Sagital CT cystogram image showing intraperitoneal contrast extravasation from a small defect on the urinary bladder dome with tip of foleys catheter passing through the defect.

Case 3: 22 weeks gravida 8 para 5 mother with previous one lower segment caesarean section and cervical cerclage for previous mid-trimester miscarriage, presented with non-specific symptoms of pain abdomen, gastritis and vomiting. Exploratory laparotomy was done as CT abdomen reported hemoperitoneum being the cause of symptoms. Intraoperative findings showed scar pregnancy with placenta accreta which was profusely bleeding partly invading the bladder. Scar pregnancy was not detected in her antenatal visits. She underwent a procedure of total abdominal hysterectomy with preservation of the tubes and ovaries as a life-saving measure. On postoperative day five she complained of continuous urinary leak. CT cystogram and IVU revealed a bladder dome tear, which was repaired by the surgeons. However the bladder repair surgery was complicated with complex vesico-cervical fistula which was successfully managed with continuous indwelling catheterization for two months. She was completely free of her symptoms thereafter.

Discussion

Holistic approach with involvement of psycho-analyst and multidisciplinary team for proper care of fistula victim is needed for complete recovery, according to WHO reports (2006) and quot. [7] Although fistulae were seen in patients undergoing all types of pelvic surgery, overall almost half of this series were associated with hysterectomy, as its correlating in our cases two out of three were iatrogenic that accounts to 66% and one in three that is 33% was with obstetric cause (scar pregnancy rupture with placenta percreta).

In the past most of cases of fistula in developing countries were related to labor, however in recent years data showed that iatrogenic causes are on the rise. Data in 2015 reported rate of iatrogenic fistula in different countries, Africa around 13%, Ethipia-24%, India was 39% increased to 65% in 2011-2015, Pakistan was before 75% by obstructed labour 28%-iatrogenic but increased to 53% obstructed versus 39% iatrogenic.[8]

Classification of fistula can be in different ways. Simple fistulas are single, small in size (<0.5 cm), and in non-radiated patients with no malignancy involvement. A fistula sized 0.5–2.5 cm is considered as intermediate. The third group are Complex fistulas which are large sized (≥2.5 cm), failed previous fistula repair, or are associated with chronic disease or post-irradiated. [11]

The diagnosis has been traditionally based on clinical evaluation, dye testing, cystoscopic examination and contrast studies. Fistulae were usually detected between day 7 and day 12 post obstetric and gynecologic surgery, [4] as correlating in our case series as well. The fistulae were diagnosed by advanced and invasive techniques including vaginoscopy-cystoscopy, subtraction magnetic resonance fistulography and endocavitary ultrasound through transrectal or more properly through transvaginal route with or without doppler or contrast agents. An intravenous pyeloureterogram is also recommended to rule out concomitant ureteric fistulas before proceeding with surgical repair. [4] The imaging we used in our series are, CT cystogram and IUV.

A successful repair of VVF requires an accurate diagnosis and timely surgical intervention using techniques that are based on basic surgical principles with or without the use of inter-positional flaps. The method of repair depends on the type and location of the fistula, and the surgeon's training and expertise. [11] As in our first case patient had simple hysterectomy. Considering previous surgery was a risk factor, despite all precaution were taken and done by experienced hand, still she had fistula which was identified and treated laparoscopically in a tertiary center and had a good outcome. This patient did not need flap for repair.

In our case series we reported a complex fistula which was managed conservatively with success. Based on experiments carried out on slaves in Montgomery, USA, James Marrion Sims established the foundations of VVF repair in 1852, which involved the position of proper exposure, sutures used, tension-free closure of the defect and proper drainage of bladder postoperatively. These factors along with timing of surgery based on the surrounding tissue condition all influences the successful outcome of the surgery. Delayed approach of surgery after 2-3months allowing for recovery from inflammation, oedema , infection or necrosis would give a successful outcome, while early repair would be advisable for healthy tissue.[11] Likewise in our second case scenario as fistula did not heal spontaneously, she required multiple surgery of no benefit. Eventually she had to be referred to tertiary urology center for expertise in fistula management and was successful.

It is questionable that a single procedure will emerge as optimal for all patients with VVF given the unpredictability in the nature of the condition, the patient on whom it occurs, and the expertise of the individual surgeon. [4] In 30 % of cases, failure of VVF repair and recurrence of fistula occurs, [11] likewise in our third case, it is well known that VVF is one of the complication of placenta percreta and repair had failed. Recurrent cases should be dealt with a gap of atleast three months from the previous attempt of repair. Interposition of flaps is considered to be protective for recurrent cases. [11] In our third case although the injury was identified and repaired, there was persistent fistula which failed to heal after repeated surgery in an expert hand in tertiary care center, which healed spontaneously after prolonged catheterization.

Review of literature showed that once the conservative trial fails, surgical correction of the fistula becomes necessary. There is no consensus about the timing or the surgical technique of the fistula repair .[10]

It is well known that VVF is one of complication of placenta percreta . [9] In some literature they recommended to fill the bladder during hysterectomy to separate the bladder wall more easily as previously. [9] Study in Saudi Arabia performed in 2018 , found that fistulas of almost two-thirds(68.8%) resulted from iatrogenic obstetric causes, mainly as complications of repeat cesarean delivery, and none were due to obstructed labor.[8] This relationship is a direct result of the growing rate of cesarean delivery worldwide. The rate of bladder injury rises proportionally with the number of cesarean operations (first: 0.13%; second: 0.09%; third: 0.28%; fourth: 1.17%; fifth: 1.94%; and sixth: 4.49%) because of technical difficulties caused by adhesions.[8]

Obstetricians should be aware of pelvic anatomy, identify patients at risk of urinary tract injury through the use of tests such as cystoscopy, dye tests, and retrograde pyelography, and consult a urologist when necessary. [8] Repeated cesarean delivery is a significant risk factor for bladder injury, and women should be counseled regarding this fact before the operation. [8]

In another literature showing robotic repair of supratrigonal VVF with sigmoid epiploica interposition is efficient and well tolerated, which might increase the number of patients eligible for tissue interposition. Although the outcome has been successful but there is limited perioperative data associated with this technique, and further research is needed to elucidate the potential benefits of epiploica interposition compared to interposition of other tissues. This study included the case series obtained retrospectively from June 2015 to September 2016. In this they used the tissue interposition at time of primary repair and found to decrease the risk of recurrence. The hallmark of surgical technique were, firstly cystoscopic ureteral catheterization, then cannulation of the fistula, mobilization of the bladder from the vagina, next the removal of the epithelialized edges of the fistulous tract, and lastly the single-layer closure of the vagina, and tension-free layered closure of the bladder. After the repair with interposition of sigmoid

epiploica appendage(s), retrograde fill of the bladder to ensure water-tight repair, and prolonged bladder drainage with indwelling transurethral catheter.[12]

Adjuvant hysterectomy for cervical cancer patients treated with chemoradiation, increases the fistula risk 5–10 times. Although this radiation-induced recurrent vesicovaginal fistulas require most demanding treatment and are less successful, the closure of a fistula with a small intestine graft had a good outcome. [13]

Laparoscopic extravesical VVF repair is a safe, effective, minimally invasive technique with excellent cure rates similar to those of the conventional transvesical approach in experienced surgeons' hands, this was seen over a period of 20 years. [14]

Conclusion

Genitourinary fistula is a frustrating entity with potentially devastating psychosocial consequence. Its management poses a tricky challenge to the surgeon. Accurate and timely diagnosis, adhering on basic surgical principle, and repair by an experienced surgeon provide the optimum chance of cure.

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