

Early Diagnosis and Treatment of Vesicouterine Fistula Using Low-Tech Methods in Low Resource Setting of Northern Ghana. A Case Report.

Abraham Babatuiamu Titigah^{1*}, Ana Maria Simono Charadan^{1,2} and Anita Avonsige¹

¹Department of obstetrics and gynecology, Tamale Teaching Hospital

²Department of obstetrics and gynecology, School of medicine and health sciences, university for development studies, Ghana

*Corresponding author

Abraham Babatuiamu Titigah, Department of obstetrics and gynecology, Tamale Teaching Hospital, Ghana.

Submitted: 21 Sep 2021; Accepted: 27 Sept 2021; Published: 08 Oct 2021

Citation: Abraham Babatuiamu Titigah, Ana Maria Simono Charadan and Anita Avonsige (2021) Early Diagnosis and Treatment of Vesicouterine Fistula Using Low-Tech Methods in Low Resource Setting of Northern Ghana. A Case Report. *J Gynecol Reprod Med*, 5(2): 151-154.

Abstract

Vesicouterine fistula is a rare but increasing phenomenon in obstetric practice. Early diagnosis and treatment will go a long way to reduce the associated morbidity as well as improve the quality of life of its victims. Our case exemplifies how the use of simple techniques can diagnose and bring great relief to such patients.

Keywords: Vesicouterine, Tamale, Caesarean section, Low-tech

Introduction

Vesicouterine fistula is an abnormal communication between the epithelial surfaces of the bladder and the cervicouterine canal. It is rare (1 in 50000) accounting for 1-4% of genitourinary fistula with 83-98% as a complication of lower uterine segment caesarean section but may also occur as part of the obstructed labour complex, forceps delivery, manual removal of placenta, uterine rupture and its management, radiation injury, chronic granulomatous infection or malignant infiltration [1, 2]. Despite its rarity, the condition is now increasing in frequency largely related to the increase in caesarean section rate and potentially preventable by a meticulous surgical technique at operative obstetrics [2]. Preventing the complication and early treatment would go a long way to decrease the physical and psychosocial distress suffered by the victims [3].

We present the diagnostic and management process of a young woman who developed a vesicouterine fistula and had an early surgical repair before the resumption of menses using a high index of suspicion and simple low-tech diagnostic tools.

Case

Patient who was G2P1 with a set of twins in the index pregnancy at 39 weeks presented to the Tamale Teaching Hospital in second stage of labour. She delivered a live male 3.5kg, apgar score of 8/10 and 9/10 at 1 and 5 minutes respectively. She had caesarean section because of transverse lie and ruptured membranes for the 3.14Kg second twin with severe birth asphyxia. Surgery was uneventful with estimated blood loss of 300ml. Immediate post-operatively she had bloody urine which cleared after 48hrs with hy-

dration and catheterization. She started leaking urine per vaginam on the fourth day postpartum and was reassured. She continued leaking despite the catheter being in situ on the 14th postpartum day for which she presented. The leakage was continuous and not related to sneezing, laughing or straining. She had to use several adult diapers per day and drink less water, making her urine smell stronger with occasional passage of stones. Despite these attempts, she withdrew from social events because of the flooding and smell. She had recurrent symptoms of urinary tract infection for which she was treated. Her previous pregnancy, delivery and puerperium were uneventful. She is an Auditor and the condition would have adverse effects on her job. On examination we saw a young woman who looked depressed, not pale, anicteric, afebrile with no pedal swelling. She was well nourished. Her cardiovascular and respiratory systems were unremarkable. Her abdomen was full and moved with respiration with a healed Pfannenstiel scar and no organomegaly. The uterus was appropriately involuted. She was in adult diapers soaked with urine. A three-swab test done and it was found that there was no periurethral leakage with straining and the lower and middle swabs were dry while the upper swab was soaked with the blue stain. This indicated a high genitourinary fistula and because of fact that the baby was born alive through a caesarean section, the diagnosis of a vesicouterine fistula was espoused. She was counselled about the condition and asked to have bi-weekly change of catheter and return at 6 weeks for repair.

At the repair, the diagnosis of a vesicouterine fistula was made after the repeat dye test under anesthesia showing a normal anterior vaginal wall with the dye exuding from the cervix (Figures 1 and

2). A transperitoneal repair was decided and performed.



Figure 1: preoperative dye test; before dye instillation



Figure 2: dye test; after instillation

Intraoperatively, a flap splitting repair was done after dissecting between the posterior bladder wall and the cervicoisthmus region of the uterus. The ureters were below the fistula and were identified to be avoided. The bladder was closed in three layers using vicryl 3/0 on a 30 mm round body needle. A third dye test was done intraoperatively to confirm continence. The cervicoisthmus part of the uterus was closed over the foleys catheter to avoid obliteration of the canal during healing. The balloon of the foleys catheter was

inserted into the uterine cavity and inflated with 10ml of sterile water while its opposite end (urine drainage port and balloon inflation port) was passed through the defect in the lower segment of the uterus to the vagina (Figure 3 and 4). This method was used to pass the foleys so as to avoid the cephalad placement which was likely to be associated with translocation of vaginal bacteria into the operative field. Hemostasis was secured and abdomen closed in layers.

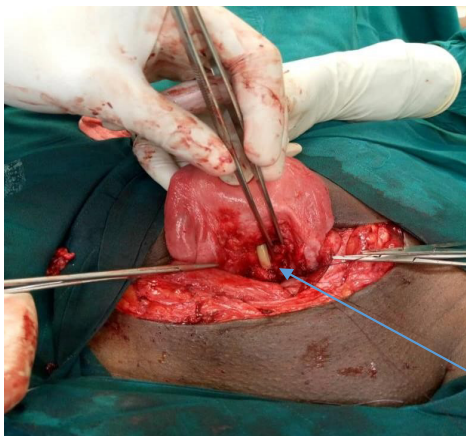


Figure 3: placement of uterocervical foleys catheter

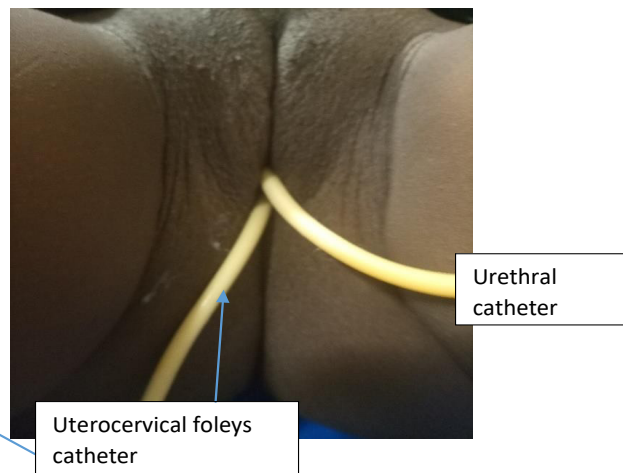


Figure 4: immediate postoperative

Postoperative instructions included open drainage of the bladder for 14 days with daily fluid intake of at least 4 litres of water and incentive polydipsia to ensure crystal clear urine in the urine bag at all times. She remained dry for the 7 days of admission. She was discharged on combined oral contraceptive pills for 21 days to ensure healing of the cervicoisthmus defect around the foleys

catheter. The patient was very satisfied with the outcome of the procedure and was motivated to follow the instructions. She had a last negative methylene blue test and test of micturition before both catheters were finally removed and patient discharged on postoperative day 21. She resumed normal menses six months after delivery.

Discussion

Vesicouterine fistula is the abnormal communication between the epithelial surfaces of the bladder and the cervicouterine canal with the potential of urinary leakage and reproductive challenges [3].

It was first reported in 1908 but Youssef described it in 1957 as a syndrome in a patient with menuria (cyclical passage of menses via the urine), amenorrhea, and absence of urinary incontinence from a continent sphincteric mechanism at the uterine isthmus [4]. Jozwicks and colleagues proposed a classification based on the routes of urinary and menstrual passages [3].

- Type 1 is the classical syndrome described by Youssef and is characterized by the flow of menses and urine through the urethra with a sphincteric uterine isthmus [4].
- Type 2 is dual flow characterized by menuria, normal menses and urinary incontinence. There is bidirectional flow of both urine and menses.
- Type 3 is characterized by normal only urinary incontinence. This type is due to redirection of urine through the fistula.

This classification is very simple and clinically relevant when the patient has resumed menses. In the setting of immediate postpartum lochia, lochiauria may not be as obvious as menuria hence the challenge in distinguishing between types 2 and 3 [5]. That notwithstanding, the presence of urinary incontinence in these two types would simplify their early diagnosis and treatment.

The effect of a genitourinary fistula is immense on the life of the parturient as it is associated with physical and psychological distress added upon the stress of lactating worse so in the case of the mother of twins [6]. Of all genitourinary fistulae, vesicouterine fistula is very rare accounting for 1-4% [6]. Its incidence may be rising parallel to that of caesarean section since the majority are due to complications of this intervention [6].

It is mostly iatrogenic and may follow other interventions such forceps delivery, subtotal hysterectomy, morbidly adherent placenta and uterine rupture extending to the bladder [7-9]. Radiation injury with endarteritis obliterans may contribute to the problem while advanced pelvic malignancy may also lead to fistula formation. Pelvic trauma and congenital anomalies are also implicated [10].

Various mechanisms have been proposed for the development of post caesarean vesicouterine fistula. Prominent among them is the one in which the bladder wall is incorporated in the closure of the hysterotomy. In this mechanism, pressure necrosis from the suture leads to sloughing of the bladder wall and subsequent fistulation. Same may result when there is an unidentified bladder injury with closure of the superior flaps of the lower uterine segment and the bladder [10]. The odds of both situations are worse in the second stage caesarean section where the lower segment is stretched and indistinguishable from the bladder, which may equally be distended.

In patients with twin in labour, appropriate management of the second stage by an experienced Accoucheur is known to reduce the need for a caesarean section. This would have required the appropriate determination of the lie and presentation of the second

twin and use of external cephalic version or internal podalic version before rupture of membranes or complete drainage of liquor respectively [10]. Since these were not carried out, second stage caesarean section was inevitable and where the precautions of adequate separation of the bladder from the lower segment as well as meticulous closure of the defects are not done, the vesicouterine fistula had a high probability. Intraoperative diagnosis and immediate repair would have further improved the odds but this was another missed opportunity [10]. Postoperatively prolonged catheterisation is shown to help closure of the small fistulae but this was not the case in our patient due to the large size of the fistula. In the cases described by Youseff and Jozwick, the diagnoses were made following the resumption of menses hence the classifications included presence or absence of menuria. The case described by Symeonidis Evangelos and his colleagues is similar to ours in that menses had not resumed after the caesarean section [11]. While these and others indicated the diagnostic difficulty and often requiring cystoscopy, hysteroscopy, hysterosalpingography and other more complex investigations, the high index of suspicion stimulated by the triad of hematuria, urinary incontinence and a recent caesarean section enhanced the sensitivity of our diagnostic processes using very simple methods [12, 13].

Based on Jozwick's classification, we are unable to indicate the particular type (2 or 3) that our patient belonged because of the non-resumption of menstruation [3]. The use of lochiauria as a surrogate for the direction of flow of the uterine content may be problematic in the environment of hematuria post operatively [5]. Immediate postpartum, the lochia rubra bears similarity to the gross hematuria from the iatrogenic bladder injury which may initiate the vesicouterine fistula. With passing days, the progression of lochia rubra through serosa to alba may also bear similarity to the clearing of the urine with healing of the injury [14]. It takes great examination to distinguish between hematuria and lochiauria and hence with only the urinary incontinence it may be difficult to categorise as type 2 or 3.3 The more definite classification can be determined after resumption of menses since menuria will be noted and cyclical. However irrespective of the group, the management principle is same.

There have been reports of successful conservative management of vesicouterine fistula if the fistula is small. Patients with Jozwick type 1 fistula may tolerate the menuria and thus may not seek medical care until they have difficulties with childbearing [3]. Patients with incontinence in types 2 and 3 usually cannot tolerate the symptoms and therefore seek early care which may be surgical if the fistula is large or conservative management has failed [3].

The timing of repair has traditionally been to delay by 3-6 months for the fistula to mature with minimal inflammation in order to have healthy tissues for closure and reduced failure. Sung and his colleague enumerated the factors determining the timing of repair of vesicovaginal fistula to include: no evidence of infection (local or systemic), no induration or inflammation; mature fistula tract; good tissue quality; good nutritional status [15]. However, Waaldijk and his colleagues realized the enormous psychosocial effect of the continued presence of the fistula and how that affected the physical health and nutritional status hence performed early repair of vesicovaginal fistulae aged 3-75 days with a success rate of

91.8% [16, 17]. In the case of vesicouterine fistula where the aetiology is more likely iatrogenic with less likelihood of extensive pressure necrosis, it is even more favorable to have an early repair since the other factors proposed by Sung cannot be easily assessed except infection and nutritional status [15]. This underpinned the timing of our repair.

The appropriate route of repair is based on the size, topography, pliability and aetiology of the fistula. The routes of repair include transabdominal (transperitoneal or transvesical), transvaginal, laparoscopic, cystoscopic or hysteroscopic [18]. We chose the transperitoneal route because we could not determine the proximal extent of the fistula preoperatively hence were uncertain of our ability to close it transvaginally. While Evangelos and coworkers believe that the lack of experience with the transvaginal route may play a major role in the decision of the route of surgery, Ruthman was more permissive on the route of repair when the fistula is Juxtacervical as in our case [11]. Furthermore, the lack of cystoscopy/hysteroscopy affected our ability to determine the extent of tissue damage making our choice of the route of surgery the safest and most appropriate [18]. Laparoscopic and hysteroscopic equipment and expertise are not available in our Centre.

In the Flap splitting method, the two epithelial surfaces are separated along the natural cleavage and respectively reconstructed anatomically and extramucosally after excising the fibrous tissue. We made three layered closure of the bladder defect and tested its integrity. While other surgeons interpose omentum between the bladder and uterine repair, we did not deem this necessary given the integrity of our repair [11]. Due to the loss of tissue of the lower segment, there were fears of obliteration of the cervical canal for which the catheter was placed and postoperative estrogens were prescribed [19]. The method used to place the catheter was so as to minimize wound infection. Assessment prior to discharge did not indicate obliteration but patient needs to be assessed for caesarean niche complications.

In conclusion, vesicouterine fistula is an established entity and even though it is rare, its incidence is increasing parallel to that of caesarean sections. Particularly in Resource poor settings, reducing unnecessary caesarean sections, appropriate technique at the procedure as well as early detection of genitourinary injury would go a long way to reduce the physical and psychological burden associated with this condition.

Low cost three swab test can be very rewarding in low resource settings and should be employed along a high index of suspicion when the triad of hematuria, urinary incontinence and a caesarean section with a live fetus is encountered. Meticulous anatomic repair of both bladder and uterocervical canal will reduce: failure of primary repair.

Acknowledgement

We are grateful to staff of obstetrics and gynecology department, Tamale Teaching Hospital and our patient

References

1. Yip SK, Leung TY (1998) Vesicouterine fistula: an updated review. *Int Urogynecol J Pelvic Floor Dysfunct* 9: 252-256.

2. Jozwik M, Jozwik M, Lotocki W (1997) Vesicouterine fistula-an analysis of 24 cases from Poland. *Int J Gynecol Obstet* 57: 169-172.
3. Jozwik M (2000) Clinical classification of vesicouterine fistula. *Int J Gynaecol Obstet* 70: 353-357.
4. Youssef AF (1957) Menouria following lower segment cesarean section; a syndrome. *Am J Obstet Gynecol* 73: 759-767.
5. Parulekar S V (1989) Lochiauria: a new entity--(a case report). *J Postgrad Med* 35: 228-229.
6. Bettez M, Breault G, Carr L, Tu LM (2011) Case report Early versus delayed repair of vesicouterine fistula. *Can Urol Assoc Journal* 5: 52-55.
7. Eisenkop SM, Richman R, Platt LD, Paul RH (1982) Urinary tract injury during cesarean section. *Obstet Gynecol* 60: 591-596.
8. Buchholz NP, Daly-Grandeau E, Huber-Buchholz MM (1994) Urological complications associated with caesarean section. *Eur J Obstet Gynecol Reprod Biol* 56: 161-163.
9. Yossepowitch O, Baniel J, Livne PM (2004) Urological injuries during cesarean section: intraoperative diagnosis and management. *J Urol* 172: 196-199.
10. DC Dutta. DC Duttas textbook of gynaecology. Enlarged a. Hiralal Konar, editor. New Dehli: Jaypee Brothers Medical Publishers (P) Ltd 2013: 433-445.
11. Symeonidis EN, Sdralis E, Symeonidis A, Georgiadis C, Kalyvas V, et al. (2018) Case Report Vesicouterine Fistula (VUF) as a Rare Urogenital Complication Managed with Delayed Surgical Repair: A Case Report and Review of the Literature 2018: 1-4.
12. Evans J, Iii REG, Keppke A, Pagur P, Tharp K, et al. (2020) Vesicouterine Fistula. *Applied Radiology* 2020: 56A-56B.
13. Talla P, Ekotomati M, Brünisholz Y, Joliniere JB de la, Fagan B, et al. (2017) Consider the Risk of Vesicouterine Fistula in the event of Intermittent Fluid Vaginal Discharge after a Caesarean section 4: 2-5.
14. Oppenheimer LW, Sherriff EA, Goodman JDS, Shah D, James CE (1986) The duration of lochia. *BJOG An Int J Obstet Gynaecol* 93: 754-757.
15. Sung VW, Wohlrab KJ (2007) Chapter 26 - Urinary Tract Injury and Genital Tract Fistulas. In: Sokol AI, Sokol ERBT-GG, editors. Philadelphia: Mosby 2007: 639-661.
16. Waaldijk K (1994) The immediate surgical management of fresh obstetric fistulas with catheter and/or early closure. *Int J Gynaecol Obstet Off organ Int Fed Gynaecol Obstet* 45: 11-16.
17. Waaldijk K (2004) The immediate management of fresh obstetric fistulas. *Am J Obstet Gynecol* 191: 795-799.
18. Rutman MP, Rodríguez L V, Raz S (2008) Chapter 81 – Vesicovaginal fistula: vaginal approach. In: Raz S, Rodríguez LVBT-FU (Third E, editors. Philadelphia: W.B. Saunders; 2008: 794-801.
19. Tan Y, Bennett M (2007) Urinary catheter stent placement for treatment of cervical stenosis. *Aust N Z J Obstet Gynaecol* 47: 406-409.

Copyright: ©2021 Abraham Babatuamu Titigah, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.