

Bladder Stones in Women with Vesico-Vaginal Fistula in Kwara State, Nigeria: Two Case Reports and Review of Literature.

¹B.S. Okesina, ²H.O. Raji, ³I.Sunday-Adeoye

1.Department of Obstetrics and Gynaecology, VVF/Uro-gyn Unit, Aishah Buhari Mother and Child Hospital, Eiyenkorin, Kwara State. 2.Department of Obstetrics and Gynaecology, University of Ilorin Teaching Hospital/University of Ilorin. 3.National Obstetrics Fistula Centre, Abakaliki, Ebonyi State.

Abstract.

Women who have vesico-vaginal fistula can develop bladder stones because of inadequate intake of water, stasis of urine, incomplete emptying of urine or infection. Bladder stones can also lead to vesico-vaginal fistula if the stone is large and embedded into the bladder wall. The irritating effect of the bladder stone is distressing, affects the social and mental wellbeing of women and it poses a challenge to repair options and outcome.

This case report featured two cases of women with vesico-vaginal fistula (VVF) co-existing with symptomatic bladder stones. The two cases had history of previous caesarean section following prolonged obstructed labour and macerated stillbirth. They presented with suprapubic pain, offensive urine and psychological distress. They had examination and dye test in theater which showed juxtacervical vvf and bladder sound with metal catheter suggested bladder stones confirmed by ultrasound. One patient had IVU to rule out ureteric injury. They both had transvaginal removal of the stone and concurrent VVF repair with good outcome. The stones were large and of varied sizes ranging 4cm by 2cm and 3cm by 2cm. Both patients were closed and dry 14 days after repair, confirmed by dye test before discharge.

Bladder stones can lead to urinary symptoms such as suprapubic pain and recurrent urinary tract infection in women with VVF. Stones can co-exist with VVF or could lead to VVF. Successful repair can be achieved when bladder stones are removed concurrently during VVF repair in well selected patients.

Keywords: bladder stones, VVF, bladder stone removal, VVF repair.

Introduction

Vesicovaginal fistula (VVF) is a socio-economic problem that could originate from obstetric complications such as prolonged obstructed labour, caesarean section and hysterectomy. Vesicovaginal fistula results in uncontrollable leakage of urine from the vagina, patients suffer from offensive odour, isolate themselves from social events and are often times ostracised.¹ Long term effects may include shame, depression, suicidal tendency, low self esteem, isolation or abandonment by husband, amenorrhea, gynaetresia, dermatosis, infertility, urinary tract infection and bladder calculi.²⁻⁴

Bladder stones comprise 5% of urinary tract stones.^{1,2} Generally, they occur in the presence of bladder neck obstruction, urinary stasis, urinary tract infections, dehydration, associated with neurogenic bladder and foreign objects.⁴⁻⁶ Bladder stones can co-exist with vesico-vaginal fistula due to incomplete emptying of urine and inadequate water intake because of fear of leakage of more urine per vagina. It could also lead to vesico-vaginal fistula if the stone is large and embedded into the bladder wall.⁷ The effect could be distressing and affects the social and mental wellbeing of women. Infectious stones comprise approximately 15% of urinary tract stones^{1,6}. Traditionally, management entails removal of the calculus and deferment of fistula repair.⁶⁻⁸ Studies have however shown that concurrent repair of fistula can be performed after removal of bladder stones, in well selected patients with excellent result in low resource setting.^{2,4} We report the three cases in accordance with the Surgical Case Report (SCARE) 2018 guidelines.⁹

CASE 1. A 60-year-old para 4, 2 alive Yoruba trader presented at the internal medicine unit of the General Hospital, Ilorin with 4-month history of dysuria, suprapubic pain, frequency of urination, nocturia and urgency. She had vesico-vaginal fistula (VVF) repair 20yrs ago following a prolonged obstructed labor during the last confinement and with eventual stillbirth outcome. She could void urine but had residual urinary incontinence after this first repair but did not seek help. At the medical clinic she was managed for recurrent urinary tract infection (UTI) with antibiotics and intravenous fluids. After 3-month treatment, symptoms did not resolve as she had persistent urinary symptoms as well as poor stream urine and leakage of urine per

Correspondence to:

Bolanle Shukrat Okesina

Consultant Obstetrician & Gynecologist
VVF/Uro-gynae unit,
Aishah Buhari Mother and Child Hospital,
Eiyenkorin, Kwara State.
E-mail: bolanleokesina2016@gmail.com.
Tel. +234 8033792869



Fig. 1. Case 1; bladder stones in a bowl post-op



Fig.2. Case 2. Intravenous Urogram showing pelvis with Bladder Stones



Fig. 3. Case 2. The bladder stones in a bowl post-op.

vagina. She was referred to O & G department where an ultrasound and clinical evaluation of the bladder using a metal catheter revealed bladder stones.

Examination in Theatre and Dye test revealed bladder stones plugging two fistulous opening in the vagina. There was a central band in between the fistulae, located juxta-cervical and mid-vaginal and each fistula measured 2cm in size. There was minimal scarring around the fistulae. She was planned for removal of bladder stones and possible VVF repair at same time as a combined procedures depending on the findings during removal of stone. She had transvaginal cystolithotomy and four bladder stones were removed easily as they laid free within the bladder cavity, largest measured 4cm by 2cm and others 2cm by 1cm (fig.1).

Thereafter copious bladder lavage was done with over 500ml of normal saline and bladder mucosa was observed not to be oedematous. Repair of the fistula was done. Post-op recovery was uneventful, catheter was kept for 14 days and after bladder training it was removed. She was counseled on adequate fluid intake to prevent further stone formation and was discharged on the 14 days post-op. Examination and dye test had confirmed closure of fistula and patient was dry with resolution of symptoms. She was followed up regularly for a year and remained dry.

CASE 2. A 27 year old woman, para 2 non-alive tailor presented to the gynecologic clinic of General Hospital Ilorin with history of involuntary leakage of urine per vagina of 6 years duration. She had lower abdominal pain, could not walk erect and had experienced low-grade fever for the preceding 2 weeks. There was history of prolonged labour in both previous pregnancies. In her first confinement, she delivered a

stillborn infant vaginally after 2 days in labour and in the second confinement, she had an emergency C/S performed after 2 days of prolonged labour, also resulting in a stillborn infant and VVF. She spent 3 months in the hospital post-operatively due to poor wound healing but the repair of the VVF could not be done at the Teaching Hospital due to financial constraint. The patient lived with her parents having been abandoned by husband and felt unhappy. There was associated amenorrhea since last delivery.

On examination, she looked sick, bent over due to suprapubic pain, and had odor of urine around her. She had a wide mid-line infra-umbilical scar with a discharging sinus at upper end and severe suprapubic tenderness. She was investigated and treated with antibiotics, analgesics antimalarial and given follow up visit of two weeks. Intravenous urography was done because of suspected ureteric injury but it revealed 3 large stones in the bladder and poor bladder filling (fig. 2). Examination and Dye test was positive and bladder sound confirmed bladder stones. Findings included, a large juxta-urethral fistula, 4-5cm in size, urethral length of 3cm but occluded proximally with wide external urethral orifice. Bladder capacity was 7cm and there was moderate vaginal scarring. The cervix was occluded at the external orifice and anterior lip was bifid. It could not be cannulated using a uterine sound.

She was planned for vaginal repair under spinal anesthesia. She had bladder stone removal and VVF repair at one operation. Three bladder stones were removed easily as they laid free within the bladder cavity, largest measured 4.5cm by 4cm and the two others 2.5cm by 2.5cm (fig.3). Thereafter bladder lavage was done using over 500ml of normal saline, and bladder mucosa was observed not to be

oedematous but the fistula size had extended to 6cm. The ureters at the edges of the fistula were catheterised, the occluded proximal urethral opened with metal catheter and repair of the fistula done. Post-op recovery was uneventful, ureteric catheters were kept for 10 days while urethral catheter was kept for 14 days and after bladder training it was removed. Examination and dye test confirmed closure of fistula and patient was dry with resolution of symptoms. She was counseled on adequate fluid intake to prevent further stone formation and was discharged on the 14 days post-op. She was followed up regularly, after six months she complained of occasional leakage of urine only when walking but not when sitting or lying down (probably stress incontinence). She was counselled on regular pelvic floor exercise (Kegel's exercise).

Discussion

Bladder stones are a pathologic calcification disease, and its formation are mainly caused by stagnant urine and infections.^{10,11} Dehydration in fistula patients also play a role from insufficient intake of fluid in order to reduce leakage of urine. Stagnant urine inside the vagina facilitates urease-producing bacterial infections (such as *Klebsiella* or *Escherichia coli*), so that the acidic environment of the vagina becomes alkaline, which contributes to the formation of triphosphate crystal stones, and triphosphate is the most common bladder stone component known to date.¹¹ The formation of bladder stones is a slow process, and most cases are only discovered when the stones are large enough to cause obvious clinical symptoms. Bladder stones can be accompanied by dysuria, vaginal pain, dyspareunia, partner complaint of pain during sex, etc.¹²

Both animal and clinical investigations have revealed that intravesical foreign bodies, including all suture materials and even olive oil, might become a focus for stone formation and vesical stones can even erode through the endopelvic fascia into the vagina and form a vesico-vaginal fistula.¹⁴ The patients in these report had history of previous caesarean section and bladder stones. The first case had a previous fistula repair, urinary tract infection and bladder stones leading to dual fistula opening. It is important to sound the bladder for stones, using a uterine sound or metal catheter before starting any fistula operation. Ultrasound is also useful in the diagnosis of bladder stones and it is safest to remove the stones before any repair. Stone management depends on the size, can be treated through cystolitholapaxy when it is less than 3 cm whereas open cystolithotomy is recommended when it is more than 3 cm.⁶ Transvaginal approach was used for the bladder stone removal in the cases presented.

In the case of vesico-vaginal fistula, repair

should be undertaken after resolving stone-induced edema and friability of the vesical wall.^{2,4} Existing literature suggest that the management of bladder stones with VVF should follow a two-stage operation (Delayed Repair).⁷⁻¹⁰ The first stage is the removal of the stone with an endoscopic technique or open cystolithotomy, followed by VVF management three months postoperative.^{7,8} The rationale for the two-stage surgery is that the urine may contain infections or stones that can lead to inflammatory reactions in the bladder mucosa (edema) that will inhibit fistula healing.^{1,5} It has been advocated by some researchers that repair should only be attempted at least one week and preferably 2-4 weeks after the stone is removed.¹⁰

There is a more recent trend to remove stones and repair the VVF at the same time.² Steps to avoid infection or failure of repair should however be taken.⁴ These steps include use of antibiotics, liberal fluid intake before surgery and bladder lavage with normal saline after stone removal intra-operatively. If the stone is small, it can be removed through the fistula. If necessary, it can be crushed with an ovum forceps and removed in pieces. The alternative is to pass a finger into the fistula and with the other hand suprapubic, squeeze the stone out through the fistula and check the bladder is empty.¹⁰ The bladder should be irrigated with saline to remove the stones, inspect the bladder mucosa for oedema and do a repair if no oedema is observed. The advantage of this method is that it avoids an abdominal wound and may sort out the stone and fistula in one operation.¹²

Studies in Jos, Katsina and Ebonyi State, Nigeria have shown that concurrent closure of VVF at time of stone extraction is possible, in well selected cases and preferable to a staged approach in high and mid-vaginal fistulae.^{2,4} This approach was adopted in the two cases. If the bladder is healthy, the tissues will hold the sutures. In the presence of infection, the anterior vaginal wall could be adapted with a couple of sutures and catheter is left in at least 18 days.¹⁰

In developed countries, patients with successfully repaired bladder and ureteral fistulas usually have no residual problems and the timely control of urinary tract infections can avoid the occurrence of the disease.^{11,12} In developing countries, however, incontinence often persists due to bladder neck and urethral sphincter injury, abnormal detrusor activity, vaginal strictures, and fibrosis of the bladder.^{13,14} The patient in case 2 probably had residual problems from the aforementioned. The prevalence of obstetric vesicovaginal fistula is directly related to the prevalence of obstructed labor and the accessibility to emergency obstetric care, including facilities capable of performing cesarean delivery. Obstetric fistula remains a disease of poverty and some classified it as one of the "neglected tropical diseases".¹⁵

Conclusion

Bladder stones can lead to urinary symptoms such as suprapubic pain and recurrent urinary tract infection in women with VVF. Stones can co-exist with VVF or could lead to VVF. Successful repair can be achieved when bladder stones are removed concurrently during VVF repair in well selected patients. Necessary skill and training are also needed by health workers to achieve a good outcome.

These case reports aim to remind medical practitioners that although bladder stones are rare, attention should be paid to this disease in patients with vesicovaginal fistulas. Women with VVF must be advised liberal fluid intake and regular follow-up. The iatrogenic type of fistula must be prevented, only skilled health workers should perform caesarean sections to avoid bladder injury. Patients with fistulas should be referred to appropriate VVF centers for prompt repair.

References:

- Cardoso A, Paes A, Teixeira T. Giant bladder stone in a patient with vesicovaginal fistula caused by bladder wall ischemia due to unassisted prolonged labor in the amazon jungle. *Int. J. Med. Rev. Case Rep.* 2018;2:82. doi: 10.5455/IJMRCR.giant-bladder-stone-vesicovaginal-fistula. [CrossRef] [Google Scholar]
- Sunday-Adeoye I, Daniyan B, Ekwedigwe K, Dantani D, Uguru S. A Review of the Management of Vesico-Vaginal Fistula With Co-Existing Bladder Calculi in South-East Nigeria. *Gynecol Obstet (Sunnyvale)* 6: 381. doi:10.4172/2161-0932.1000381
- Wei-Hsin C, Ching-Chung L. Iatrogenic bladder stone and associated vesicovaginal fistula after hysterectomy. *Gynecol Surg* (2006) 3: 134–135 DOI 10.1007/s10397-006-0176-2
- Shephard SN, Lengmang SJ, Kirschner CV. Bladder stones in vesicovaginal fistula: is concurrent repair an option? Experience with 87 patients. *Int. Urogynecol. J.* 2017;28:569–574. doi: 10.1007/s00192-016-3142-1. [PubMed] [CrossRef] [Google Scholar]
- İbrahim NT, Turgay K. Giant bladder stone: A case report and review of the literature. *Turkish Journal of Urology* 2014; 40(3): 189-91. Available Online at www.turkishjournalofurology.com
- Francisca KK, Palinrungi MA, Syahrir S, Syarif FM. Bladder stones associated with vesicovaginal fistula: A case report. *Int J Surg Case Rep.* 2020;75:122-125. doi: 10.1016/j.ijscr.2020.09.028. Epub 2020 Sep 11. PMID: 32950941; PMCID: PMC7508701.
- Agil A, Kurniawana AD. Vesicovaginal fistula with bladder and vaginal stone. *Int J Surg Case Rep.* 2022 Jun 14;96:107311. doi: 10.1016/j.ijscr.2022.107311. Epub ahead of print. PMID: 35803097; PMCID: PMC9283988.
- Sonawane P, Sathish V, Nadeem M. Bladder stone causing vesicovaginal fistula and migration into the vagina. *BMJ Case Reports CP* 2022;15:e249463.
- Agha RA, Borrelli MR, Farwana R, Koshy K, Fowler AJ, Orgill DP, et al. The SCARE 2018 statement: updating consensus Surgical Case Report (SCARE) guidelines. *Int. J. Surg.* 2018;60:132–136. doi: 10.1016/j.ijssu.2018.10.028. [PubMed] [CrossRef] [Google Scholar]
- Michael B. In: Manual of Obstetric Fistula Surgery. The Global Library of Women's Medicine (GLOWM) (Pub) 2019;57-58. Available on-line (http://www.glowm.com/recommended_textbooks).
- Wei D, Xie Y, Niu X. Vaginal stones caused by urethrovaginal fistula: A case report. *Medicine* 2019;98(47):e18003. | DOI: 10.1097/MD.00000000000018003
- Tavakkoli M, Ghoreifi A. Large vaginal and bladder calculi in a woman with previous operation of bladder exstrophy: a case report. *Nephrourol Mon* 2014;6:e13637
- Wall LL. Obstetric vesicovaginal fistula as an international public-health problem. *Lancet.* 2006;368(9542):1201.
- Alan D.G, William J.M. Urogenital tract fistulas in Females. <https://www.uptodate.com>
- Wall LL. Obstetric fistula is a "neglected tropical disease". *PLoS Negl Trop Dis.* 2012;6(8):e1769. Epub 2012; 28.