

Vesicovaginal Fistula Coexisting With Bladder Stone among Previously Repaired Obstetric Fistula Patients

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Abstract

Background: Vesicovaginal fistula commonly caused by prolonged obstructed labour is one of the most debilitating complications of childbirth. The occurrence of bladder stones is uncommon among women with vesicovaginal fistula as a result of continuous leakage of urine. The aim of this study is to determine the prevalence of bladder stone coexisting with vesicovaginal fistula, the patient's characteristics and the repair outcome of vesicovaginal fistula at the National Obstetric fistula Centre, Babbar Ruga, Katsina. **Subjects and Methods:** This was a three-year retrospective review of all cases that were managed for vesicovaginal fistula coexisting with bladder stone at the National Obstetric Fistula Centre, Babbar Ruga, Katsina from 1st Jan, 2015 to 31st Dec, 2017. **Results:** The prevalence of vesicovaginal fistula coexisting with bladder stone was found to be 1.63%. The ages of the patients ranged from 25 years to 63 years with a mean age of 45.29 ± 9.64 years. The mean duration of leakage was 19.58 ± 8.18 years and the fistula was as a result of prolonged obstructed labour in all the patients. Most (82.4%) of the patients had 2 or more previous vesicovaginal fistula repair with two (11.8%) having 1 previous removal of bladder stone while one had 2 previous stone removal through the vaginal route. Diagnosis was clinical in all the patients using uterine sound to sound the bladder. The stone size ranged from 2cm to 10cm in its widest diameter. More than half (64.7%) of the patients were found to have severe vaginal scarring. Removal of the stone and repair of the fistula was done at the same sitting through the vaginal route in 82.4% of the patients. At discharge 10 (58.8%) of the patients were healed and continent of urine. **Conclusion:** The prevalence of vesicovaginal fistula was found to be 1.63% with the majority of the patients having two or more previous vesicovaginal fistula repair. There was no statistically significant difference ($p=0.735$) in outcome between the patients that had same sitting repair and those that had delayed repair of their fistula.

Keywords: Vesicovaginal fistula, Bladder stone, Patients characteristic and Outcome.

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Introduction

Obstetric fistula commonly caused by prolonged obstructed labour is one of the most debilitating complications of childbirth. Obstetric fistula is associated with enormous medical and psychological consequence.^[1] One of the uncommon complications of vesicovaginal fistula is the formation of bladder stones. In Nigeria bladder stones account for 44.4% of urinary tract calculi.^[2,3] Bladder stones are commoner in males than in female.^[4,5] Approximately 5% of all BS occur in women and are usually associated with foreign bodies (sutures, synthetic tapes, or meshes) or urinary stasis.^[6] Stones are uncommon among women with vesicovaginal fistula as a result of continuous leakage of urine. It is found in only 2% of new cases.^[7] Bladder stones may form in patients with vesicovaginal fistula as a result of foreign material pushed up the vagina into the bladder in an attempt to stop the leakage, use of non- absorbable sutures in bladder repair from caesarean sections or hysterectomy.^[7] Other factors that could lead to stone formation include supratrigonal fistula, reduced fluid intake and urinary tract infection.^[6,8]

Because vesicovaginal fistula associated with bladder stone

is rare, the diagnosis is often missed or delayed. The patients can be asymptomatic or may present with history of haematuria or recurrent urinary tract infection and when the stone is big enough it can fill the bladder and become incarcerated as a result the patient may present with enormous amount of discomfort and the urine is usually infected and foul smelling. A large stone can be felt on gentle bimanual examination, and by sounding inside the bladder with a metal probe.^[7] However, a small stone can be missed and as such other investigations like abdominopelvic ultrasonography or plain abdominal X-ray can be employed to confirm diagnosis.

In the management of vesicovaginal fistula associated with bladder stone, the removal of the stone is given priority and the fistula repair delayed as the presence of a stone will almost invariably result in failure of the repair.^[9] However, Sunday-Adeoye reported that Fistula repair could safely be undertaken at the same sitting with removal of the stone in well-selected cases suggesting a paradigm shift in the management of this combination,^[10] and in many respects, preferred to a staged approach, particularly among high or midvaginal fistulas.^[11] Removal of the stone can be performed endoscopically or via the open approach. The

open approach can either be performed through the suprapubic transvesical route or through the vaginal route.^[12] Dalela et al recommended removing the stone endoscopically in order to avoid enlargement of the fistula or injury to the ureters.

This study aims to determine the prevalence of bladder stone coexisting with vesicovaginal fistula, patient's characteristics and the outcome of fistula repair.

Subjects and Methods

This was a three-year retrospective review of all cases that were managed for vesicovaginal fistula coexisting with bladder stone at the National Obstetric Fistula Centre, Babbar Ruga, Katsina from 1st Jan, 2015 to 31st Dec, 2017. Data was obtained from the patient admission form that is filled for all patients on admission, intra-operatively, post operatively and at discharge. The diagnosis of bladder stone was made clinically for all patients. The data was entered and analysed using the Statistical Software for Social Sciences (SPSS) version 22 and presented in tabular form. Descriptive statistics was employed. The Fisher's exact test was used to compare categorical variables. A P-value of <0.005 was considered statistically significant.

Approval for the study was obtained from the Ethical Committee of the National Obstetric Fistula Centre, Babbar-Ruga, katsina.

Results

During the study period a total of 1163 repairs were carried out in the centre out of which 19 were for vesicovaginal fistula coexisting with bladder stone. Hence, giving the prevalence of vesicovaginal fistula coexisting with bladder stone to be 1.63%.

Table 1: Sociodemographic Characteristics

Variable	Frequency	%
Age(yrs)		
20-29	1	5.9
20-39	2	11.8
40-49	8	47.1
50-59	4	23.5
60-69	2	11.8
Parity		
0-1	6	35.3
2-3	5	29.4
4-5	4	23.5
6-7	1	5.9
8-9	1	5.9
Educational Status		
Not formally educated	16	94.1
Primary	1	5.9
Marital Status		
Married	9	52.9
Separated	2	11.8
Divorced	6	35.3

The ages of the patients ranged from 25 years to 63 years with a mean age of 45.29 ± 9.64 years. Majority (70/6%) of the patients were in the fourth and fifth decade of life with

the highest prevalence among 40 – 49 years age group. Age group 20 – 29 years had the least prevalence. Majority (35.3%) of the patients fell within the parity group of 0-1. This was closely followed by parity group of 2-3 and 4-5 with 29.4% and 23.5% respectively. Nearly all (94.1%) the patients were not formally educated. More than half (53.0%) of them were married, while 35.3%, and 11.8%, were divorced and separated respectively.

Table 2: Patients Characteristics

Variable	Frequency	%
Duration of leakage (yrs)		
5-9	2	11.8
10-14	3	17.6
15-19	1	5.9
20-24	6	35.3
25-29	3	17.6
30-34	1	5.9
35-39	1	5.9
Aetiology of Fistula		
Prolonged obstructed labour	17	100
Number of Previous Fistula repairs		
1	3	17.6
2	5	29.4
3	7	41.2
4	2	11.8
Number of previous Bladder Stone Removal		
0	14	82.3
1	2	11.8
2	1	5.9
Classification of Fistula (Kees classification)		
Type I	7	41.2
Type II Aa	6	35.3
Type II Ab	1	5.9
Type II Ba	1	5.9
Type II Bb	2	11.8
Degree of Vaginal Scarring		
Moderate	6	35.3
Severe	11	64.7
Stone size (cm) widest diameter		
2	5	29.4
3	6	35.3
4	3	17.6
5	1	5.9
8	1	5.9
10	1	5.9

The duration of leakage ranged from 5 years to 35 years with a mean duration of 19.58 ± 8.18 years. Majority (35.3%) of the patients leaked urine for 20-24 years followed by those that leaked for 25-29 years. The fistula was as a result of prolonged obstructed labour in all the patients. Majority (82,4%) of the patients had 2 or more previous vesicovaginal fistula repair with only 17.6% having one previous repair. Two (11.8%) of the patients had 1 previous removal of bladder stone while one had 2 previous stone removal through the vaginal route. Diagnosis was clinical in all the patients using uterine sound to sound the bladder. The stone size ranged from 2cm to 10cm in its widest diameter. Using Kees classification the fistula was Type I in 41.2%, Type II Aa in 35.3%, Type II Bb in 11.8% and 5.9% in Type II Ab and Type II Ba each. More than half (64.7%) of the patients were found to have severe vaginal

scarring while in 35.3% the scar tissue was moderate. Removal of the stone and repair of the fistula was done at the same sitting through the vaginal route in 82.4% of the patients. The remaining 17.6% had removal of their stone through the suprapubic route followed by repair of the fistula through the vaginal route after 3 months. This was to allow for the inflammation to subside and urinary tract infection to be cleared. At discharge 10 (58.8%) of the patients were healed and continent of urine while in 4 (23.5%) of the patients the fistula was closed but with residual incontinence of urine. The fistula was not closed in 3 (17.6%) of the patients. There was no statistically significant difference ($p=0.735$) in outcome between the patients that had same sitting repair and those that had delayed repair of their fistula.

Table 3: Time of repair, route of stone removal and outcome of fistula repair

Time of repair	Frequencu	%
Same sitting	14	82.4
Delayed	3	17.6
Route of stone removal		
Vaginal	14	82.4
Suprapubic	3	17.6
Outcome of fistula repair		
Closed and continent	10	58.8
Closed with residual incontinence	4	23.5
Fistula not closed	3	17.6

Discussion

Vesicovagina fistula co-existing with bladder stone is rare.^[9] This may be as a result of continuous leakage of urine that lead to continuous flushing out of urinary solutes out of the urinary tract, making the formation of primary bladder stone rare.⁸ The pooling of infected urine or a foreign body eg. Suture or foreign material pushed up into the vagina may be the probable aetiological factor. Another possibility is reduced fluid intake all in an attempt to reduce the flow of urine. As a result, precipitation around a nidus persists and an enlarged stone may form which may hinder the fistula, increasing the amount of stagnant urine in the bladder and further enhancing encrustation.

The prevalence of vesicovaginal fistula co-existing with bladder stone found in this study (1.63%) is similar to the 1.45% reported by Sunday-Adeoye in South – South of Nigeria. This is to confirm the rarity of the association. However, the prevalence is lower than 2% found in new cases reported by Hancock and 4.7% in Newabshah Pakistan.^[7,13] Prolonged obstructed labour was found to be the aetiological factor responsible for the development of the fistula in all the patients which is in agreement with previous findings in developing countries, Nigeria inclusive.^[1,14]

The mean duration of leakage was $19.58 \pm 8/18$ years, with the majority leaking for more than 20 years. This study showed that vesicovaginal fistula coexisting with bladder stone is commoner among women with a history of leaking urine for a long time, more than 5 years and the study

equally showed that majority had more than one previous repair of their fistula and the possibility of reduced fluid intake to reduce the amount of urine leak thereby making the urine more concentrated and increasing the possibility of stone formation. Therefore, increased fluid intake is a mainstay in the prevention of stone formation by preventing supersaturation through dilution of urine. Borghi et al conducted the first prospective randomized control trial of increase fluid intake in patients with a history of urolithiasis and he suggested that a large daily intake of water can be recommended for effective secondary prevention of urolithiasis (level 1b evidence).^[15] Physical exercise without increasing fluid intake to compensate for body water lost through sweating leads to reduced urine volume and urine acidification that promotes crystalluria and increased risk of stone formation.^[16] This could have been the possible reason for recurrence of bladder stone twice in one of the patients who is a blacksmith. The management of bladder calculi in women with VVF involves the removal of the calculi and the closure of the fistula. Before surgery all the patients were encouraged to increase their fluid intake to 5L per day and treated for urinary tract infection based on the sensitivity result. Removal of the stone and repair of the fistula was done at the same sitting through the vaginal route in 82.4% of the patients. Removal of the stone and repair of the fistula were undertaken at the same time because there was no evidence of infection at time of surgery. The remaining 17.6% had removal of their stone through the suprapubic route followed by repair of the fistula through the vaginal route after 3 months. All those that had removal through the abdominal route had giant and impacted stone. Bladder stone is said to be giant when it weighs 100gm or more and more than 4cm in its greatest diameter.^[17-20]

The success rate at discharge was 10 (58.8%), which is much lower than the 95% reported by Sunday-Adeoye in the South-South. This is however, not surprising as majority had more than 2 previous vesicovaginal fistula repairs with severe degree of vaginal scarring. There was no statistically significant difference ($p=0.735$) in outcome between the patients that had same sitting repair and those that had delayed repair of their fistula.

Conclusion

The prevalence of vesicovaginal fistula was found to be 1.63% with the majority of the patients having two or more previous vesicovaginal fistula repair. There was no statistically significant difference ($p=0.735$) in outcome between the patients that had same sitting repair and those that had delayed repair of their fistula.

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