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Urogenital fistulas in the Niger Delta Region of Southern Nigeria: A single center experience

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Abstract

Objectives: To determine the factors that are associated with good prognosis in the management of patients with urogenital fistulas in our tertiary hospital in Port Harcourt, Nigeria.

Materials and Methods: We retrospectively identified all patients managed fully for urogenital fistula at the University of Port Harcourt Teaching hospital from January 2018 to December 2022. From the case files, we collected data on age, parity, etiology and type of fistula, investigation findings, management, including perioperative findings and use of drugs, and outcome of treatment.

Results: Of the six patients with urogenital fistulas managed, four had vesicovaginal fistulas. Obstetric fistulas were the most common, accounting for five fistulas. Four had surgical repairs, and two were resolved entirely following bladder catheterization. Of those who had a surgical repair, multidisciplinary management involving urologists and gynecologists via the abdominal approach was done in two patients. Two patients had transvaginal fistula repairs performed by only gynecologists (with no urologists). All primary fistula repairs were successful.

Conclusion: Most of the urogenital fistulas in this study had obstetric origins. The patients had delayed presentation for treatment. Good patient selection with individualization of patient treatment, adequate history-taking, basic evaluation under anesthesia with three swab testing, experience, and good surgical skills as well as optimal post-treatment care were vital for a good prognosis of fistula repairs

Keywords: Urogenital fistulas; Niger Delta Region of Nigeria; Factors associated with good prognosis; Management and outcome

1 Introduction

Urogenital fistulas constitute global health problems. They are associated with different levels of physical, mental, social, and psychological morbidity[1]. They may also be the risk factors for fatal infective complications, as they form tracts for the migration of pathogens between the genital tract and the urinary tract. Our center (University of Port Harcourt Teaching Hospital, UPTH) is a referral center for patients with urogenital fistulas from all parts of the Niger Delta Region of Southern Nigeria.

Over the past five years, we received patients with urogenital fistulas from different parts of the Niger Delta Region. The patients presented with different socio-demographic features, etiological factors, and risk factors for their fistulas. They presented with different types of fistulas [2,3]. In managing patients with these lesions, we used different diagnostic

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modalities, many perioperative conservative supportive treatments, different intraoperative approaches, and postoperative treatment modalities. We encouraged (as much as possible) joint management with urologists and other relevant specialists. The aim of this study is to determine which aspects of our management of these cases have been associated with good prognoses. It is believed that the current multiple procedures are most likely too expensive for majority of the patients. The objective of this study is to minimize the cost of treatment for patients that present with urogenital fistulas.

2 Material and methods

This is a retrospective cohort study of patients with urogenital fistulae admitted over a five-year period, from 01/01/2018 to 31/12/2022, at the University of Port Harcourt Teaching Hospital, a tertiary hospital located at Rivers state in the Niger Delta Region of Nigeria. Ethical approval was obtained from the UPTH Ethics Committee for research.

All female patients with urogenital fistulas were included, while patients with other types of fistulas, such as rectovaginal and enterocutaneous fistulas, were excluded. Admission and discharge registers of the Gynecology, Post-natal, and Female Urology wards of the hospital were studied. Personal records of all and consecutive patients with diagnoses of different types of urogenital fistulas were retrieved from the registers. These records were used to trace and retrieve their case files from the Health Records Department of the hospital. Each patient's records were gleaned for relevant information. Where necessary, additional information was collected from theater records and the Computerized Patients Database of the hospital.

Data collected from the case notes included socio-demographic details such as age, parity, occupation and level of education, detailed history, and physical examination. All patients underwent clinical evaluation, methylene blue test, urine microscopy, culture, and sensitivity tests, intravenous urography, and examination under anesthesia. Treatment options were either conservative or surgical. Surgical approaches were either transabdominal or transvaginal, depending on fistula location. Transabdominal repairs were done jointly by a team of gynecologists and urologists. Transvaginal repairs were done by only gynecologists. During the evaluation of patients' records, the duration of symptoms, the cause, duration of urethral catheterization, duration of hospitalization, and postoperative complications were also recorded. Perioperative antibiotics prophylaxis was administered to all patients and continued postoperatively.

The outcome of each patient's treatment was deemed successful if there was the complete absence of urine leakage for 3 months postoperatively, and reliable clinical and laboratory evidence of complete fistula closure. Only patients with records of the complete course of treatment and follow-up for at least three (3) months were included in this final analysis. Data obtained were analyzed with simple statistics. The results were expressed in prose and tables. The odds ratio test was used to test for the association between some treatment procedures and the main infective complication.

3 Results

3.1 Overview, risk factors and etiological factors

Over the five-year study period, sixteen women with urogenital fistulas were admitted into the gynecological ward. Two (2) patients had transabdominal repairs, two (2) transvaginal repairs, and the last two (2) had spontaneous closure with complete resolution of symptoms during prolonged urethral catheterization and conservative management. Ten (10) patients are yet to be repaired. After examination under anesthesia (EUA), they have not kept treatment schedules for various reasons, notably financial constraints. All transabdominal fistula repairs were done by teams of urologists and gynecologists that operated in joint sessions.

The ages of the six (6) patients (in years) who were fully managed, were 24, 25, 28, 31, 35, and 36. Their median age was 29.5 years. Of the six patients with urogenital fistulas, four were multiparous. Five (5) fistulas were obstetric, and one (1) fistula was iatrogenic, secondary to gynecological surgery, as depicted in Table 1. Four patients with obstetric fistulas were not registered at UPTH for antenatal care but were referred from peripheral hospitals. The fifth had antenatal care at UPTH but had a problematic instrumental vaginal delivery of a macrosomic, fresh stillborn baby. Four (4) patients with obstetric fistulas had prolonged obstructed labor, while one (1) had prolonged, difficult vaginal delivery. The patients had a mean delay of 25.2 months in reporting to UPTH for treatment (median 27.5 months, range 0.03 to 48 months), and the mean duration of postoperative catheterization was 17 days (median 23 days). Treatment was complicated by urinary tract infections in half of the patients. All fistula managements were successful at the first attempt as all patients remained continent at their 3-month follow-up visit.

Figures 1 to 4 show some sociodemographic characteristics of the patients, and etiologies of urogenital fistulas.

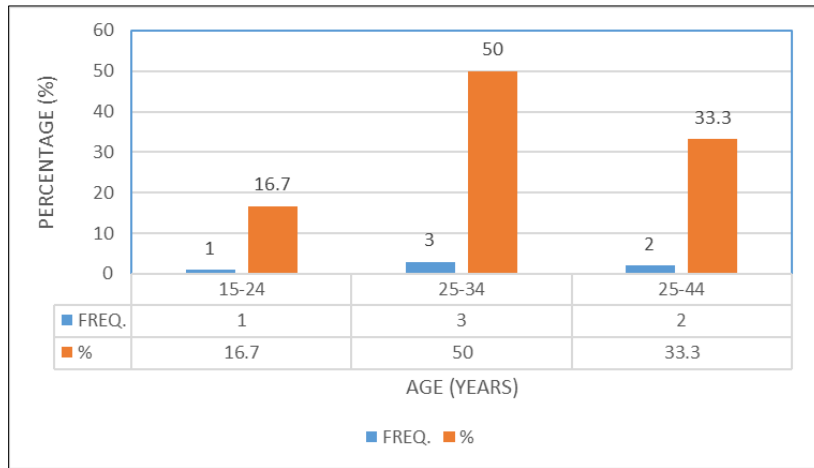


Figure 1 Ages (in years) of the patients with urogenital fistulas, frequency and percentages

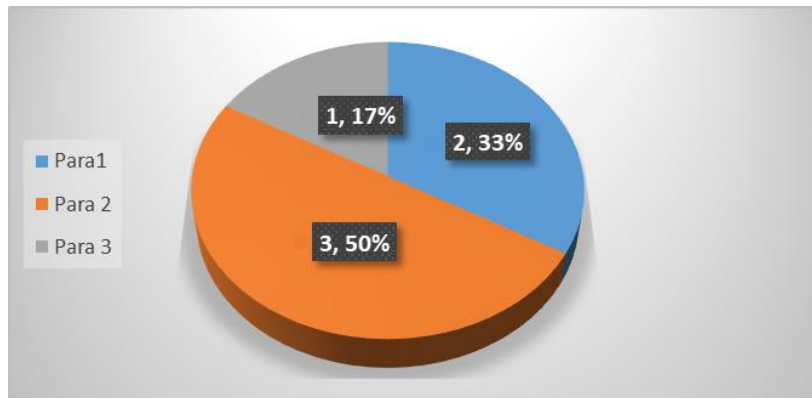


Figure 2 Parity of the patients with urogenital fistulas, frequency and percentages

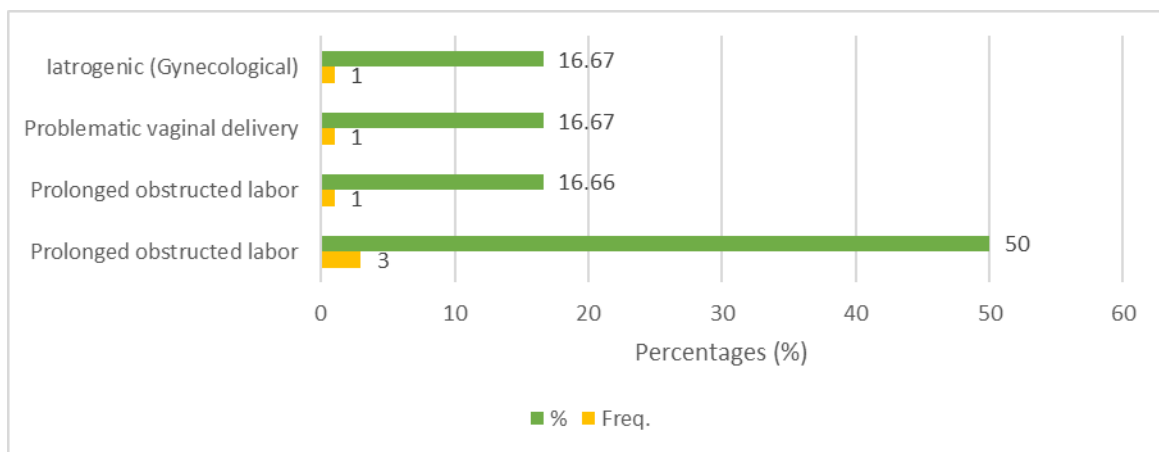


Figure 3 Etiological factors in patients with urogenital fistulas, frequencies and percentages

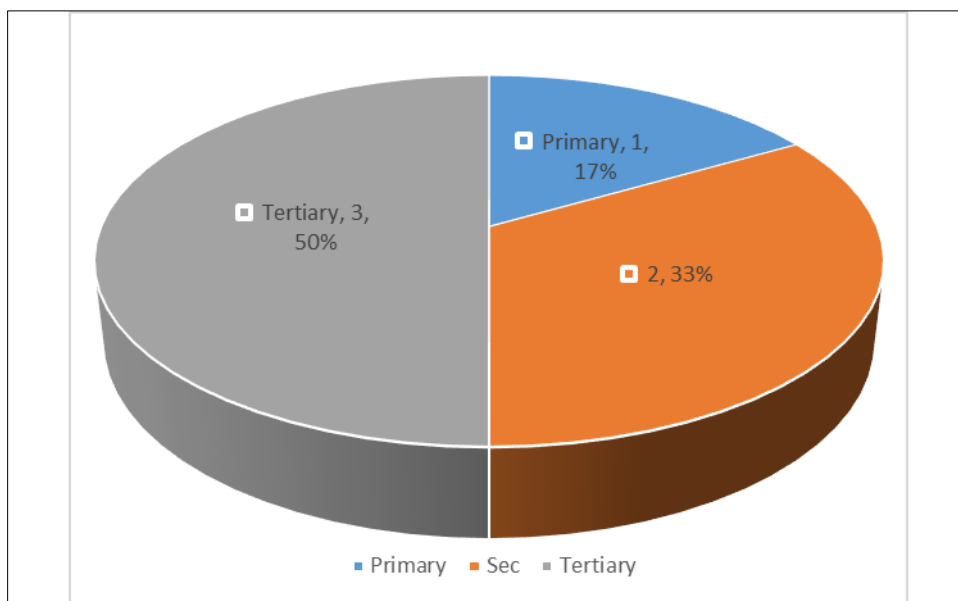


Figure 4 Level of education in patients with urogenital fistulas, frequency with percentages

Table 1 Association between prolonged continuous urinary bladder drainage, different fistula repairs, and VVF repairs

Types of Patients	Had UTI	Had No UTI	TOTAL
Patients who had CBD for 21 to 30 days after the repair of different types of urogenital fistulas	4	1	5
Patients with the duration of CBD of 21 to 30 days after repair of vesicovaginal fistulas	3	1	4
Total	7	2	9

UTI, urinary tract infection; CBD, continuous urinary bladder drainage; VVF, vesicovaginal fistula

- Odds of exposure in patients who had continuous urinary bladder drainage for 21 to 30 days after repair of different types of urogenital fistulas, and who had urinary tract infection (UTI) is $(4/7) / (3/7) = 1.33$
- Odds of exposure in patients who had continuous urinary bladder drainage for 21 to 30 days after repair of the vesicovaginal fistula (VVF), and who had no urinary tract infection is $(1/2) / (1/2) = 1.00$. The odds ratio is $1.33 / 1.00 = 1.33$

There is a strong association between UTI in patients who had continuous urinary bladder drainage for 21 to 30 days after the repair of different types of urogenital fistulas and those who had CBD for the same period after VVF repair. The association appears stronger when CBD is done following conservative fistula treatment and transabdominal fistula repair respectively (Figures 1-4). Continuous urinary bladder drainage is an essential aspect of the post-operative management of patients. It makes the bladder continuously empty of urine and reduces the pressure on the repair which urinary distension of the bladder would have caused. We used silastic catheters for CBD. Appropriate use of antibiotics is advocated.

The association between prolonged CBD and UTI in patients with transabdominal repair of different types of urogenital fistulas was also tested.

- Odds of exposure in patients who had continuous urinary bladder drainage for 21 to 30 days after repair of fistulas through different approaches, and the conservative method, and who developed urinary tract infection in $(4/6) / (3/3) = 2$
- Odds of exposure in patients who had continuous urinary bladder drainage for 21 to 30 days after transabdominal repair of different urogenital fistulas, and who had no urinary tract infection are $(1/2) / (1/2) = 1$ Odds ratio = 2/1 or (2)

Table 2 Association between prolonged continuous urinary bladder drainage, conservative and surgical treatments of urogenital fistulas, and transabdominal repair of fistula, and urinary tract infection

Type of patient	Had UTI	Had No UTI	Total
Patients who had CBD for 21 to 30 days after repair of fistula through different approaches and the conservative method	4	1	5
Patients who had continuous urinary bladder drainage (CBD) for 21 to 30 days after having repair of different urogenital fistulas through the transabdominal approach	2	1	3
TOTAL	6	2	8

CBD, continuous urinary bladder drainage UTI = urinary tract infection.

Table 3 Association between prolonged urinary bladder drainage, surgical and conservative treatment of urogenital fistulas

Type of patients	Had UTI	Had No UTI	Total
Patients who had CBD for 21 to 30 days after surgical repair of different types of urogenital fistula	4	1	5
Patients who had CBD for 21 to 30 days with conservative treatment of urogenital fistulas	1	1	2
TOTAL	5	2	7

- Odds of exposure in patients who had CBD for 21 to 30 days after surgical repair of different types of urogenital fistula, and who had urinary tract infection (UTI) is $(4/5) / (1/5) = 4$
- Odds of exposure in patients who had CBD for 21 to 30 days after conservative treatment of urogenital fistulas and who had No UTI is $(1/2) / (1/2) = 1$

Odds ratio = 4/1 or 4

Table 4 Type of fistula and management of patients with urogenital fistula

Type of fistula	N (%)	Approach			Surgical Repair by		
		Vaginal	Abdominal	Conservative	Gynecologist	Urologist	Gynecologist
Vesicovaginal fistula	4 (66.7)	1	1	2	1	-	1
Vesicouterine fistula	1 (16.7)		1				1
Other	1 (16.7)		1				1

3.2 Presentation of Case Series

3.2.1 Patient 1

Patient 1 was a 36-year-old businesswoman (Para2) with a tertiary level of education. She complained of the passage of urine through the vagina for 3.5 years following an emergency Cesarean section for obstructed labor. She had Cesarean delivery of a live male baby with a birth weight of 3.5kg at a peripheral clinic. Her urethral catheter was kept in situ for 48 hours, and urine leakage was noticed immediately following catheter removal. She, however, maintained voiding. On examination at presentation, there was urine spurting from the upper vagina on the Valsalva maneuver.

A provisional diagnosis of vesicovaginal fistula (VVF) was made to rule out uterovesical fistula. Her packed cell volume was 33%; white blood cell total count was $4.6 \times 10^9/L$; neutrophils 41%; lymphocytes count 53%; monocytes 4%; and, eosinophil 2%. Serum electrolytes, urea, and creatinine were within normal limits. Urine culture was negative. Hysterosalpingography (HSG) confirmed uterovesical fistula with fistulous connections at the cervix. Intravenous urography (IVU) had normal findings. Three swab tests excluded VVF.

She had a transabdominal repair of uterovesical fistula by a combined team of urogynecologists and urologists.

Operative findings were adhesions between the bladder and uterus, a bulky uterus, and collapsed urinary bladder. A retropubic drain was left in situ. Estimated blood loss 600 milliliters.

Postoperatively, she received 3 liters of parenteral fluids daily for 48 hours, which were then converted to oral fluids. She also had broad-spectrum antibiotics and anticholinergics. Continuous bladder drainage was carried out for 24 days. The postoperative period was complicated by urinary tract infections (UTIs) which were managed with antibiotics. She was hospitalized for 24 days and was then managed as an outpatient. At follow-up 3 months later, fistula surgery was successful as the patient had remained continent.

3.2.2 Patient 2

A 35-year-old farmer with a secondary level of education, (Para3) presented to the Gynecology Clinic with complaints of leakage of urine through the vagina of 4 years duration. This followed prolonged obstructed labor and delivery of a stillborn male baby. Her physical examination revealed a urinary bladder mucosal protrusion at the anterior vaginal wall, ejecting urine on coughing. A diagnosis of a juxta cervical vesicovaginal fistula was made.

Her full blood count was within normal limits. The results of renal function tests were normal. The culture of her urine yielded heavy growth of *Pseudomonas aeruginosa* which was treated with antibiotics. Her triple swab test was positive.

She had transvaginal repair of the fistula. Findings at surgery were a 3cm fistula on the anterior vaginal wall with the cervix slightly fused with the vaginal wall. There was prolapse of the urinary bladder mucosa through the fistulous opening. The estimated blood loss at surgery was 1500ml.

Postoperatively she had blood transfusion in addition to an adequate infusion of crystalloids. She then received parenteral broad-spectrum antibiotics, analgesics, anticholinergics, and a liberal fluid oral intake of 3.5 liters daily for 10 days. The bladder was drained continuously for 21 days after which she remained continent. She was discharged on the 24th-day post-surgery. She had no post-operative complications. Three months later at the follow-up outpatient clinic, she had clinical and radiological evidence of healing of the fistula. Her surgery was deemed successful.

3.2.3 Patient 3

A 25-year-old trader with a secondary level of education, (Para 2), who presented to the UPTH Gynecology Clinic with complaints of vaginal leakage of urine of 14 months duration. This was after a Cesarean section for prolonged obstructed labor with delivery of a fresh still born baby at a private clinic. Clinical examination showed that she had a vesicovaginal fistula (VVF).

Her PCV was 35%. Renal function test was normal. Urine microscopy revealed a *Pseudomonas* specie. This was treated with appropriate antibiotics. Intravenous urography (IVU) revealed a contrast-opacified urinary bladder which had a double density shadow, giving the "cup and saucer" appearance. This finding confirmed a vesicovaginal fistula. The three swabs were fully soaked during 3 swab test with methylene blue dye.

A diagnosis of large juxtacervical, mid-vaginal VVF was made. She had repair of high vesicovaginal fistula via the abdominal approach. Surgery was done by a combined team of urologists and gynecologists. Findings at surgery were a mildly contracted bladder, fistulous connection between upper vagina and the trigone just below and lateral to the right ureteric orifice. Estimated blood loss was 450ml.

Post-operatively, parenteral broad-spectrum antibiotics and analgesics were administered. Oral anticholinergics for 3 weeks were also to prevent excessive vesical contractions. She had adequate fluid intake, over 3liters daily. Urinary urethral was catheter with the drainage bag was left in place for 21 days for continuous bladder drainage. Post-operative period was complicated by UTI for which broad spectrum antibiotics were given. She however, remained continent after catheter removal. She was hospitalized for 25 days. Fistula repair was assessed to be successful as she maintained continence at her 3-month follow up visit.

3.2.4 Patient 4

A 31-year-old G2, Para1 woman with a tertiary level of education presented 4 years after she had an abdominal myomectomy. She had complaints of bloody discharge at the operation site. Results of renal function tests were normal, HSG revealed bilateral tubal patency. CT urography was unremarkable. A diagnosis of uterocutaneous fistula secondary to endometriosis was made. Subsequently, she had an exploratory laparotomy, excision of the endometriotic masses with repair of the uterocutaneous fistula. Findings at surgery included endometriotic nodules in subcutaneous tissues of the previous wound site. There were extensive adhesions between the cutaneous endometriotic masses and the rectus sheath up to the uterine fundus. The uterocutaneous fistula, which extended to the uterine fundus, and the endometriotic cutaneous and subcutaneous lesions were excised.

She had no post-operative complications. She was discharged after 10 days of hospitalization, and was seen at the follow-up clinic 3 months later. There was no history of bloody discharge at the operation site. Surgery was successful.

3.2.5 Patient 5

This was a 28-year-old G2, Para1 woman who presented to the Labor Ward with complaints of inability to feel fetal kicks of 10 hours duration, and labor pains of 9 hours duration. She was in the 2nd stage of labor at presentation. Obstetric ultrasonography at presentation revealed a live baby of estimated weight 2.6kg. She had a problematic forceps delivery of a fresh still born baby of birth weight of 4.5kg. A large episiotomy was given which involved the ischioanal fossa at delivery. She was noticed to have urinary incontinence following removal of her urinary catheter 48 hours later. Vaginal examination revealed a 1cm defect at the anterior vaginal wall with continuous egress of urine. A diagnosis of vesicovaginal fistula was made. The urinary bladder was then catheterized for 24 days after which urinary incontinence subsided. Her puerperium was complicated by urinary tract infection. She was discharged after 25 days of 27 days of hospitalization. Three months post-delivery, conservative management was successful as the patient remained continent of urine.

3.2.6 Patient 6

A 24-year old Para 2, trader with primary level of education who presented with complaints of leakage of urine of 3 days duration following prolonged labor, and the delivery of a live big baby at a maternity home. Examination revealed a 2cm defect at the anterior vaginal wall, and leakage of urine from the same site on Valsalva maneuver. The 3-swab test had the middle swab stained with methylene dye. A pelvic ultrasound was not remarkable, HSG was not remarkable and Intravenous urogram was normal.

A diagnosis of vesicovaginal fistula was made. She was managed conservatively with an indwelling urethral catheter with urine drainage bag connected for 30 days, for continuous bladder drainage. She remained continent after 30 days of hospitalization and continuous bladder drainage. There were no post treatment complications. At her 3 months follow-up visit, conservative management was considered successful as she maintained urinary continence.

4 Discussion

Urogenital fistulas are global health problems and are associated with significant physical, social, and psychological morbidity[1]. Having a urogenital fistula is a distressing condition for the woman, her family and the physician [2]. Prolonged labor, or prolonged obstructed labor are commonly implicated while iatrogenic injury from gynecological and other surgeries may predominate as etiological factors of these fistulas in some communities. Other possible causes of urogenital fistulas include pelvic malignancies, irradiation and accidental trauma.

Common fistulas usually seen in the Niger Delta Region of Nigeria are vesicovaginal (VVF), vesicouterine (VUF), urethrovaginal, and ureterovaginal (UVF). Vesicovaginal fistulas (VVF) are the most common [2,3]. The prevalence of urogenital *fistulas* in our setting is generally unknown. High levels of prevalence have been reported in sub-Saharan Africa where an estimated incidence of 3-4 per 1000 deliveries has been reported[1,4]. According to the World Health Organization (WHO), there are about 2 million new cases of urogenital fistula each year, with most in Sub-Saharan Africa[4]. Numerous factors might have contributed to the persistence of this grave, preventable condition in our region. These may include lack of appropriate health education, poverty, poor access to health care and stigma[5,6]. Despite poor infrastructure and technology in some parts of Sub-Saharan Africa, huge successes can be made in the repair of these lesions in this region. This is exemplified by successes recorded in primary repairs of the fistulas in this study.

In our study, of the 16 patients who were admitted with urogenital fistulas, 10 did not complete their treatment due to lack of funds, and were lost to follow up. That only 6 out of 16 patients who presented with these fistulas had full treatment, and that 10 absconded for lack of funds in addition to other reasons, justifies the objectives of this study. It also justifies other studies to determine the actual cost, complexity and the levels of user-friendliness, or patient-friendliness of our healthcare service procedures. There is the necessity for an improved level of health education of women, and the empowerment of females of child-bearing age [7]. Low levels of health education, poor attitude to health and low health-seeking behavior may explain why most women in this study had no antenatal care. These as well as economic poverty may also explain the delay in seeking for care for as long as 25 months after onset of first symptoms of urogenital fistulas.

The etiology of urogenital fistulas as observed in our study was mainly from prolonged obstructed labor (80%). This agrees with the observations of others on urogenital fistulas in Nigeria. Such studies have associated high incidence of fistulas with parity [7–9]. Nigeria is a multiparous society[10]. This reflects in this study as most of the urogenital fistulas were of obstetric origin. This may be related to the mean age of the parturients of 29.3 years. Many women at this age in Nigeria have a minimum of 3 children[11]. We observed that the modal parity in this study was Para 3 reflecting a possible association of these fistulas with parity of the subjects and their ages. However, the effects of high parity may be mitigated by availability and adequate access to high quality of antenatal care.

Different urogenital fistulas were encountered in this study but vesicovaginal fistula of obstetric origin was, however, the most common. More recently, a growing incidence of iatrogenic urogenital fistulas are being reported in developing countries[12]. However, it is unclear if these fistulas are iatrogenic or from ischemic necrosis of prolonged obstructed labor. For example, the patient with vesicouterine fistula in this study had prolonged obstructed labor with subsequent caesarean section making it quite difficult to ascertain the cause of the fistula.

Although surgery is considered the definitive treatment for urogenital fistulas, conservative approach was also employed in the management of urogenital fistulas. In this study, for small fistulas ≤ 3 centimeters, transurethral catheter drainage of the bladder for 4 weeks led to spontaneous closure of fistula. This management was instituted for two patients in this study. One who presented early (3 days after spontaneous vaginal delivery following prolonged labor), and another, an in-patient, in whom leakage of urine was noticed immediately after removal of urinary catheter after 48 hours of catheterization post-delivery. However, this measure was not taken for women who presented late because spontaneous closure was unlikely. Chronic fistulas that have undergone epithelialization would probably not close.

For those who had surgery, there is no consensus on the optimal timing of surgical repair or technique of repair[13,14]. For those who had surgical management, repair was done either through transabdominal or the transvaginal route. The surgical approach and technique were based on the type of fistula, ease of access, experience, and preference of the surgeon. It may be surmised that the transvaginal approach was preferred by the gynecologists probably due to their familiarity with the anatomy of the vagina, and that the transabdominal route was preferred by the urologists probably because of their unfamiliarity with the vagina. However, the transabdominal route has the additional benefit of access for ureteric re-implantation should that be necessary. This findings were similar to those of Al-Hammwouri et al in Jordan[15]. The route of repair, however, did not influence duration of hospitalization. Factors compromising success of repair of urogenital fistula include tissue ischemia, recurrence and irradiation. None of our patients had previous radiation therapy or a previous fistula repair. There was high success rate in the management of fistula in this facility despite some limitations. Aside adherence to the principles of fistula surgery, that is optimum tissue condition, adequate exposure and tension-free water-tight closure[4]. The high success rate may be attributed to patient management being individualized, multidisciplinary management of the patients, experience and skill of the surgeons, and adequate postoperative care. Some veritable and reliable instruments in diagnosing urogenital fistulas were the case histories, examination under anesthesia, and the three-swab test. These are easily available instruments which can be employed even in the rural areas where, usually there are lack of technology and experienced, skilled surgeons

[16,17]. Serious post treatment complications were not encountered in this study, urinary tract infections being the only complications observed. This outcome was similar to those of other reports[18]. This is a preliminary report of our experiences. We shall reexamine the success rate of our repair techniques and management strategies when the sample size improves in subsequent reports.

5 Conclusion and Recommendations

Urogenital fistulas, despite being preventable and devastating lesions, continue to be encountered in our society due to multiple factors. However, there is hope for every woman living with these fistulas. Our study showed that most of the fistulas managed in our center are of obstetric etiology, similar to observations in some countries. However, irrespective of the duration of fistula, repair was successful in all our patients at first repair. Good patient selection, evaluation under anesthesia, and the three-swab testing, appropriate diagnosis, multidisciplinary management, experience of surgeons, good surgical skill, and adequate post-treatment care are invaluable for successful repair of urogenital fistulas.

Urogenital fistulas are conditions for which the appropriateness of the dictum ‘prevention is better than cure’ cannot be overemphasized. Prevention strategies need to be employed to avert the morbidity, mortality, social and psychological ill-health associated with these lesions. Health education, economic empowerment of women of childbearing age, and improved capacity of our healthcare systems to manage these fistulas may avert the poor compliance with treatment schedules observed in this study,

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

There is no conflict of interest.

Statement of ethical approval

The present research work does not contain any studies performed on animals/human subjects by any of the authors.

Statement of informed consent

Informed consent was obtained from all individuals participants included in this study. Consent was obtained from the UPTH Ethics Committee for this study.

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