PATTERN AND OUTCOME OF IATROGENIC GENITOURINARY FISTULA FROM OBSTETRIC AND GYANAECOLOGICAL SURGERIES IN A TERTIARY INSTITUTION, NORTH-WESTERN NIGERIA

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ABSTRACT

Introduction: Genitourinary fistula is commonly caused by prolonged obstructed labour, however not all genitourinary fistulas are obstetric in origin. Inadvertent injuries to the urinary tract leading to fistulae do occur during obstetric and gynaecological procedures, because of the close anatomical relationship between the urinary tract and the genital tract.

Objectives: This study aims to determine the prevalence, aetiology and outcome of iatrogenic genitourinary fistula repair at the National Obstetric Fistula Centre, Katsina (NOFIC).

Methodology: This was a two-year retrospective review of all cases that had surgery for iatrogenic fistula between 1st January 2015 and 31st December 2016 at NOFIC, Katsina. All the case notes of the patients that had repair during the stated period were retrieved and analyzed.

Results: A total of 728 genitourinary fistula surgeries were carried out in the centre, out of which 117(16.1%) were repairs for iatrogenic fistulae giving a prevalence rate of 16.1%. Only 110 case notes were eligible for analysis giving a retrieval rate of 94%. The mean age of the patients was 30.40 ± 8.39 years and the modal parity was 1. All presented with the history of continuous leakage of urine with the history of previous caesarean section in 71(73.6%). The procedures that lead to the development of the fistula were conducted at secondary healthcare centres in 84(87.5%) of the patients. The fistula was as a result of emergency caesarean section in 73.6%, yankan gishiri 9.1%, caesarean hysterectomy for ruptured uterus 6.4%, elective caesarean section 4.5%, and gynaecologic hysterectomy in 5.4%. A diagnosis of vesicocervicovaginal(VCVF) fistula was made in 62.7%, vesicouterine(VUF) 12.7%, and ureteric fistula in various combination 10%. Abdominal route was used for the repair in 20.9% of the patients. Intraoperative bleeding was the commonest (21%) complication that was associated with vaginal repair of VCVF. At discharge 73.6% were successfully closed and continent while 19.1% had residual fistula.

Conclusion: The prevalence of 16.1% found in this study was high and the most common cause

of iatrogenic fistula was emergency caesarean section. It was noted that majority of the causal procedures were done at secondary healthcare centres, therefore it is recommended that, there is need for adequate training, mentoring and ongoing supervision of doctors on the conduct of caesarean section and other gynaecological procedures in secondary health centres and also the need for community education and involvement in preventing harmful traditional practices like yankan gishiri.

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INTRODUCTION

A genitourinary fistula is an abnormal communication between the bladder and/or the urethra and the vagina, which may develop after prolonged obstructed labour and leads to continuous urinary incontinence. These women, apart from surviving the ordeal of obstructed labour with a genitourinary fistula, face the physical and psychosocial challenges of living with obstetric fistula.[1]

Obstetric fistula occurs in all developing countries but it is mostly seen in the "fistula belt," across the northern half of sub-Saharan Africa from Mauritania to Eritrea and in the developing countries of the Middle East and Asia.[2,3] The exact prevalence is hard to determine, but it is thought that patterns follow maternal mortality ratios, with higher prevalence seen in regions with high maternal mortality. This is in contrast to developed countries where the causes of fistula are mainly iatrogenic secondary to radiation therapy and surgery.[2,4] In 2006, the WHO estimated that more than 2 million young women throughout the world live with untreated fistula and between 50,000 and 100,000 new women are affected each year.[5] In Nigeria it is estimated that between 400,000 to 800,000 women are living with obstetric fistula with about 20,000 cases annually.[6]

Iatrogenic fistulae are also commonly seen in developing countries. While providing emergency obstetric care for obstructed labour through caesarean section is essential in preventing the obstructed labor complex including fistula, poor surgical skill has been shown to actually lead to iatrogenic fistula.[7]

An iatrogenic genitourinary fistula (IF) is an abnormal communication between the bladder or ureter and the uterus/cervix/ vagina, resulting from a surgical procedure. Iatrogenic fistulae are

typically caused during cesarean section (CS), ruptured uterus repair, hysterectomy for ruptured uterus, and gynecological hysterectomy. Raassen considered iatrogenic fistula to cover spectrums ranging from "definitely iatrogenic" to "likely iatrogenic."[7] Three groups of fistulas are definitely iatrogenic. All ureteric injuries are iatrogenic, whether following CS, CS/hysterectomy, or planned gynecological hysterectomy. Vesico-vaginal vault fistulas appearing after hysterectomy for gynecological reasons, such as fibroids, are iatrogenic. Finally, VCVF following delivery of a live baby by CS VCVF located between the lower segment of the uterus/cervix and the bladder strongly suggests an accidental bladder injury (suture or cut) during a CS. Vault fistulae following emergency hysterectomy for a ruptured uterus or CS/hysterectomy are probably iatrogenic. Vesico- [utero]/-cervico-vaginal fistulas following CS for a stillborn baby are likely to be iatrogenic.[7]

Iatrogenic causes appear to contribute significantly to the burden of genital fistula in low-income countries. A review of 5,959 fistula cases from 11 Sub-Saharan African and South Asian countries classified 13.2% as caused by errors during medical procedures[7]. Eighty percent of these iatrogenic fistula cases occurred after procedures to address obstetric complications—frequently cesarean section, hysterectomy, and repair of ruptured uterus. An overall incidence of 0.33% urinary tract injury has been reported in all pelvic surgeries.[8]

Reviews of fistula case records at repair sites supported by Fistula care Plus in three countries in 2015 showed that 27% of cases in Bangladesh, 8% of cases in the Democratic Republic of Congo (DRC), and 10% of cases in Niger were iatrogenic. Procedures associated with iatrogenic fistula also varied among the countries. Notably, in Bangladesh, 75% of iatrogenic fistula cases resulted from hysterectomy, whereas cesarean section was the more frequent cause in the DRC and Niger.[9]

The objectives of this study were to determine the prevalence, etiology and outcome after repair of iatrogenic genitourinary fistula at the National Obstetric Fistula Centre, Babbar– Ruga, Katsina.

METHODOLOGY

This was a two-year retrospective review of all cases that underwent repair for iatrogenic genitourinary fistula at the National Obstetric Fistula Centre, Babbar Ruga, Katsina, Katsina state, North - Western Nigeria from 1st Jan 2015 to 31st December 2016. NOFIC is the second

national fistula centre in Nigeria. The tertiary health centre provide services to the obstetric fistula population in the North – Western Nigeria and neighboring countries like Niger Republic. Ethical approval was obtained from the ethics and research committee of the institution.

Data was obtained from the patient admission form specially designed by the Centre that is filled for all patients upon admission, intra-operatively, post operatively and at discharge.

The following criteria is used in the Centre to classify a fistula as iatrogenic

I. Ureteric fistula following obstetric or gynaecological surgery.
II. VesicoCervicoVaginal Fistula/Vesico uterine fistula following elective caesarean section.
III. Vault fistula following hysterectomy for gynaecological conditions, hysterectomy for postpartum haemorrhage, and hysterectomy for ruptured uterus.
IV. Vesicouterine fistula following emergency caesarean section.
V. VesicoCervicoVaginal Fistula located within the cervical canal following emergency caesarean section with a live baby.
VI. Fistula following assisted vaginal delivery with a live baby for indication other than obstructed labour.
VII. Fistula following yankan gishiri.
VIII. Fistula following other gynaecological surgeries like anterior colporrhaphy for cystocoele.

All the case notes of the patients that had repair during the stated period were retrieved and analyzed using simple percentages.

RESULTS

A total of 728 genitourinary fistula surgeries were carried out in the Centre during the period of study, out of which 117(16.1%) were repairs for iatrogenic fistula, given a prevalence rate of 16.1%. Only 110 case notes were eligible for analysis. The mean age of the patients at presentation was 30.40 ± 8.39 years with a minimum age of 14 years and maximum of 50 years. The mean age at fistula development was 29.18 ±8.34 with most (39.1%) of the patients within 30 – 39 years age group. The modal parity was 1 with 75.4% being multiparous, primiparous 17.3% and nulligravida 7.3%. Majority 106(96.4%) had no formal education and 88.2% were Hausa by tribe.

Table 1: Sociodemogaphic Characteristics

Variable	Frequency	Percentage
Age (yrs)		
10-19	17	15.4
20-29	29	26.4
30-39	43	39.1
40-49	20	18.2
50-59	1	0.9
Parity		
0	8	7.3
1	19	17.3
2-5	27	24.4
>5	56	51.0
Educational status		
Koranic	106	96.4
Primary	2	1.8
Secondary	1	0.9
Tertiary	1	0.9
Ethnicity		
Hausa	97	88.2
Fulani	10	9.1
0thers	3	2.7
Occupation		
None	77	70
Petty trading	23	20.9
Food vendor	5	4.5
Cattle rearing	3	2.7
Begging	2	1.8
Previous caesarean section		
Yes	71	64.5
No	39	3.5

All the patients presented with history of continuous leakage of urine with history of previous CS in 71(64.5%). The procedures that lead to the development of the fistula were conducted at

secondary healthcare Centre's in 84(76.4%), private hospitals 13(11.8%), traditional barber 10(9.1%) and tertiary hospital 3(2.7%). The fistula was as a result of emergency caesarean section for prolonged obstructed labour in 73.6%, yankan gishiri 9.1%, caesarean hysterectomy for ruptured uterus 6.4%, elective caesarean section 4.5%, and gynaecologic hysterectomy in 5.4%.

Table 2: Aetiological procedure that lead to the fistula and place of performance

Procedure	**Frequency**	**Percentage**
Emergency CS	81	73.6
Yankan gishiri	10	9.1
Caesarean hysterectomy	7	6.4
Elective CS	5	4.5
Abdominal hysterectomy	4	3.6
Vaginal hysterectomy	2	1.8
Forceps delivery	1	0.9
Total	110	100
Place of procedure		
Secondary health centre	84	76.4
Private health centre	13	11.8
Home by traditional barber	10	9.1
Tertiary health centre	3	2.7
Total	110	100

A diagnosis of vesicocervicovaginal fistula (VCVF) was made in 62.7%, vesicouterine fistula (VUF) 12.7%, urethrovesicovaginal fistula (UVVF) 10.9% and left and right ureteric fistula in various combinations 10%. Using the Kees classification, majority 79.1% of the cases were Type I, Type II 10.9%, Type III 6.3% and combination of type I and type III in 3.6%. The major co-morbidities found at presentation were depression in 77.3%(85/110), urine dermatitis 39.1%, and foot drop 33.6%. Majority 70%(77) had no previous attempt at repair in the Centre or elsewhere and out of the77, 31.8% had early surgical repair i.e repair within three months from the time of injury. Abdominal route was used for the repair in 20.9%. Intraoperative bleeding was the commonest (21%) complication that was associated with vaginal repair of VCVF. At discharge 73.6% were closed and dry, closed with residual incontinence 7.3% while 19.1% had residual fistula.

Table 3: Fistula type and Kees classification

Type of fistula	Frequency	Percentage
VCVF	69	62.7
VUF	14	12.7
UVVF	12	10.9
VAULT	4	3.6
LUF	4	3.6
RUF	3	2.7
VUF + LUF	3	2.7
VCVF + RUF	1	0.9
Kees classification		
Type I	87	79.1
Type II	12	10.9
Type III	7	6.3
Type I + III	4	3.6

Table 4: Co-morbidities at presentation

Morbidities	Frequency	Percentage
Depression	85	77.3
Urine dermatitis	43	39.1
Foot drop	37	33.6
Amenorrhoea	35	31.8
Anaemia	27	24.5
Hypertension	19	17.3
Type 1 diabetes mellitus	1	0.9

DISCUSSION

Genitourinary fistula is a distressing complication that leads to serious social and psychological problems. It is among the most distressing complications of obstetric and gynecological procedures.[10] During the study period a total of 117 (16.1%) surgeries for iatrogenic genitourinary fistula were carried out in the centre. The prevalence of 16.1% found in this study is lower than 27% and 54% reported in Lahore and Bangladesh respectively,[8, 11] However, this is higher than 8% in the DRC, 10% in Niger**,** 13% reported by Raassen et al. and 13.5% reported by Etim et al in Calabar.[12] The high prevalence could also be as a result of the centre being a referral centre from within and outside Nigeria.

Upon reviewing iatrogenic genitourinary fistula cases operated in the centre, we found that 84.5% were obstetrical surgical complications, and 5.4% were complications of different gynaecological hysterectomies. Among the obstetrical complication cases, 76.3% resulted from complications of emergency cesarean section, which is higher than 66% reported in Saudi Arabia.[12] This is however contrary to hysterectomy that was reported as the most common cause of iatrogenic fistula in Karachi, and Lahore.[14-16]

The mean age of 29.18 ±8.34 reported in this study shows that majority of patients, 89 (80.9%) were below 40 years of age, at the peak of their reproductive career. Delay in the treatment of these women leads to social and psychological problems in addition to medical issues. Factors that are suspected to place a woman at risk of iatrogenic fistula are prior uterine operation, endometriosis, cervical myoma, and prior pelvic radiation.[16] in this study 64.5% of the women had previous caesarean section, which is lower than the 98% obtained by Raassen.[7]

A difference in opinion exists regarding the route of repair. The choice of route of repair depends on the characteristics of the fistula, the choice of the surgeon and his experience.[17]

Most fistula experts are in favor that almost all vesicovaginal fistula can be repaired by vaginal route.[19] Whatever approach is adopted, the basic principles for successful repair are same, adequate exposure, tension free, good hemostasis, water tight closure and adequate postoperative bladder drainage.[20] In this study abdominal route was used for the repair in 20.9% of the patients. All the ureteric fistulae with the exception of one were repaired through the abdominal route.

Conclusion: The prevalence of 16.1% found in this study was high. The most common cause of iatrogenic fistula in the present study was emergency caesarean section. As majority of the causal procedure was done at a peripheral hospital it indicates the need for adequate training, mentoring and ongoing supervision of doctors on the conduct of caesarean section and other gynaecological procedures.

Consent

It is not applicable.

Ethical approval

Ethical approval was obtained from the ethics and research committee of the institution.

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