

Published in final edited form as:

*Int J Gynaecol Obstet.* 2012 January ; 116(1): 64–66. doi:10.1016/j.ijgo.2011.08.005.

## Characterization of colorectal symptoms in women with vesicovaginal fistulas

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### Abstract

**Objective**—To characterize colorectal symptoms in women with a history of an obstetric vesicovaginal fistula (VVF).

**Methods**—Patients under evaluation with a VVF during two 2-week surgical service trips to Evangel Hospital VVF Center in Jos, Nigeria, in 2010 were assessed for symptoms of fecal incontinence (FI) using the Vaizey and Colorectal-Anal Impact (CRAIQ) questionnaires. Women with rectovaginal fistulas were excluded. Each participant's impression of overall health was assessed using a visual analog scale (VAS) from 0 (poor) to 15 (excellent). A study nurse translated questionnaires into native languages.

**Results**—The mean age of the 83 women included was 29 years. Three women (3.6%) reported FI and 42 (50.6%) reported constipation. All of the women with FI reported that it affected their quality of life on the CRAIQ. Average VAS score was 10.8 overall and 6.8 for women with FI.

**Conclusion**—In this population of women with VVF but no rectovaginal fistulas, we found a low prevalence of fecal incontinence and a high prevalence of constipation. Despite significant pelvic floor trauma resulting in VVF, the majority of patients appeared to have an intact bowel continence mechanism.

### Keywords

Colorectal symptoms; Constipation; Fecal incontinence; Nigeria; Vesicovaginal fistula

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**Conflict of interest:** The authors have no financial disclosures or conflicts of interest.

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## 1. Introduction

Obstetric vesicovaginal fistulas (VVF) resulting from obstructed labor are a well-described problem in low-resource countries where access to obstetric care is limited [1–4]. With medical advancement and access to emergency health care, obstetric fistulas are essentially nonexistent in high-resource nations; however, they continue to be a source of significant suffering for families in low-resource countries, particularly among the uneducated and poor [5,6].

Pelvic floor disorders including urinary incontinence (UI), fecal incontinence (FI), and pelvic organ prolapse, however, are common among women in the USA, with increasing prevalence rates of UI and FI as age increases. A significant proportion of women with UI may also have symptoms of FI, suggesting a related pathophysiologic etiology that may include impaired neurologic and/or musculo-connective tissue dysfunction [7,8].

Given the significant injury necessary to cause tissue necrosis and VVF in the anterior pelvis of women with prolonged obstructive labor, the hypothesis of the present study was that these women may also have colorectal symptoms, including FI, even in the absence of rectovaginal fistulas (RVF) owing to neuromuscular, neurologic, or functional damage in the posterior pelvis. In the only prior study addressing this issue, 41% of 44 Ethiopian women presenting for vesicovaginal fistula repairs reported “altered fecal continence”; this rate included incontinence of flatus [9]. Other more recent prospective reports [10,11] have characterized UI symptoms, one using validated measures, in women who had undergone VVF repairs. However, there was no attempt to characterize colorectal symptoms in these cohorts, except for those with a history of rectovaginal fistula [10].

The aim of the present study was to characterize colorectal symptoms and impact on quality of life in a cohort of women with a history of a clinically diagnosed VVF and without a history of concurrent rectovaginal fistula to more fully understand the effect of obstructed labor on the pelvic floor.

## 2. Materials and methods

This is a case series from two 2-week surgical service trips to Evangel Hospital in Jos, Nigeria, in February and November, 2010, during which FI symptoms and quality of life (QOL) questionnaires were administered to women undergoing care for obstetric VVF. All study procedures were approved by a University of Alabama institutional review board, and approval was waived by the University of California San Diego institutional review board. Verbal informed consent was obtained from all women prior to enrollment.

The study population included all women at the hospital during the 2-week periods with a diagnosis of obstetric VVF on clinical examination, either at the time of study or recorded in the hospital chart of patients who had already undergone VVF repair. Women with concurrent rectovaginal fistulas (RVF) were excluded in order to evaluate the impact of tissue injury that fell short of causing an overt RVF. Because most of the patients (64 of 83) had already undergone at least 1 VVF repair, hospital charts and patients' recollection were partially relied upon to exclude women with RVF. If a woman had RVF listed as a problem in her hospital chart or answered yes to the question, “Do you or have you ever leaked stool from your vagina?” she was assumed to have an RVF. Patients were interviewed in a private room and questionnaires were translated from English, the official language of Nigeria, to Hausa and other Nigerian dialects as necessary by one study nurse in the VVF Center.

Patients were asked to respond to baseline demographic questions (including medical, surgical, and obstetric histories), the Vaizey [12] and Colorectal-Anal Impact Questionnaires

(CRAIQ) [13], and whether or not they had symptoms of constipation. They were also asked to mark their personal sense of overall health on a 15-cm visual analog scale (VAS) between poor (0) and excellent (15). The Vaizey score [12] is a widely used questionnaire measuring the severity of FI symptoms. Participants are asked to rate the severity of incontinence for solid stool, liquid stool, gas, and alterations in lifestyle with responses scored as follows: Never = 0; Rarely = 1; Sometimes = 2; Weekly = 3; and Daily = 4. They are also asked to answer “Yes” or “No” to the need to wear pads and take constipating medications, and whether they lack the ability to defer defecation for 15 minutes. Scores range from 0 (total continence) to 24 (total incontinence). In the present paper, FI is used to mean bothersome leakage of solid or liquid stool. Anal incontinence (AI) also includes bothersome leakage of gas.

The CRAIQ [13] is a subscale of the Pelvic Floor Impact Questionnaire (PFIQ), which measures the impact of bowel symptoms on activities of daily living. Responses range from 0 (“not at all”) to 3 (“quite a bit”). Scores are scaled from a range of 0 to 100, with higher scores representing more severe functional impairment.

Data were analyzed using Microsoft Excel (Microsoft, Redmond, WA, USA). Differences in VAS scores were compared using the *t* test, with alpha equal to 0.05.

### 3. Results

Demographic characteristics of the 83 patients included in the study are presented in Table 1. The mean age was 29.5 years, mean body mass index (BMI, calculated as weight in kilograms divided by height in meters squared) was 22.3, and mean height was 60.6 inches. Of the 83 patients, 50 (60.2%) were Christian, and 33 (39.8%) were Muslim. The median parity was 2, and the median pregnancy during which VVF occurred (i.e. VVF pregnancy) was the second pregnancy; almost half (45.8%) of the women experienced their VVF injury in their first pregnancy. VVF injuries occurred an average of 5 years prior to the study (range, 0–40 years). The median number of prior VVF repairs was 1. Average age at the time of the first VVF repair was 24.5 years (median 21). Three (3.6%) women had also undergone hysterectomy.

The 83 women who completed the study came from 50 tribes; the 3 most represented tribes were Hausa (n=12), Fulani (n=11), and Tiv (n=8). Fifty-nine (71.1%) women had undergone at least 1 prior VVF surgery (median 1; range, 0–6). Forty-four (53.0%) women had had at least 1 prior live vaginal delivery (median live births 1; range, 0–10); 55 (66.3%) had had at least 1 stillborn vaginal delivery (median 1; range, 0–8); and 51 (61.4%) had undergone at least 1 prior cesarean delivery (median 1; range, 0–3). Thirty-eight (45.8%) VVFs occurred in the first pregnancy (median pregnancy number 2; range, 1–14). At the time of the survey, 58 (69.9%) patients were currently leaking urine, 20 (24.1%) were dry, and 5 (6.0%) had a Foley catheter in place following recent surgeries.

Regarding FI, 3 women (3.6%) had leakage of solid or liquid stool (1 leaked solid and liquid stool and gas, 1 leaked solid and liquid stool, and 1 leaked liquid stool and gas). In total, 6 women (7.2%) reported anal incontinence (i.e. 3 women had incontinence of gas only). The median Vaizey score was 0, ranging from 0 to 16. Responses to the Vaizey questionnaire are shown in Table 2. Most women (n=76) scored 0 on the Vaizey questionnaire, 4 women scored 2, 2 scored 14, and 1 scored 16. Both of the women who leaked solid stool reported using a pad. One of the women who leaked liquid stool and gas reported a lack of ability to defer defecation for 15 minutes. One woman did not report incontinence of stool, liquid, or gas but answered that FI altered her lifestyle. No patients took constipating medications.

Forty-two (50.6%) women described having bothersome constipation. None of the women who reported constipation suffered from FI or AI.

Regarding quality of life, all 3 women with FI reported that it interfered with their daily activities: 1 reported that it only somewhat affected her ability to do chores but did not interfere with anything else (score 1); the other two reported that it affected their ability to participate in activities and also caused feelings of depression and frustration (both scored 14). Four of the 6 women (66.7%) with AI reported that it affected their quality of life as assessed by the CRAIQ with a median score of 1 and a range of 0–14 (maximum score on CRAIQ is 21).

The participants' average impression of their overall health was 10.8 on the VAS, with scores ranging from 0–15. The average score for women who were currently wet with urinary incontinence was 10, compared with 12.5 for women who were dry ( $P<0.05$ ). The average score for the 3 women with FI was even lower at 6.8, compared with 10.9 in women without FI ( $P<0.05$ ). None of the women with FI were currently leaking urine.

#### 4. Discussion

In this small series of 83 women with isolated obstetric VVF, approximately 7% ( $n=6$ ) of patients reported suffering incontinence of solid stool, liquid stool, or gas. The prevalence of FI symptoms in this group of patients is lower than expected given the extensive damage to their anterior pelvis from prolonged obstructed labor. The prevalence of FI and AI in postpartum women in the USA ranges from 10%–18% and 24%–29%, respectively [14–16]. Thus the prevalence of symptoms in women with VVF is lower than rates reported in the USA where prolonged labor and VVF are much less common. This difference may be due to a lack of willingness to share this potentially embarrassing information in the presence of an investigator and interpreter, or because the questionnaires utilized were developed and validated in a US population of women, introducing a potential language barrier despite translation by capable personnel. Although screening for patients without RVF was done by asking “Do you or have you ever leaked stool from your vagina?” or by reading their hospital charts, the present study was limited by language barriers and small numbers, and it is possible that some patients presumed to have RVF who in fact had fecal incontinence were excluded.

It is also possible that in women with a VVF without an RVF, the fetal head remains elevated above the pelvic floor. This high obstruction may be somewhat protective of the posterior compartment of the pelvic floor, including the levator ani and the external anal sphincter, resulting in a lower prevalence of FI. Numerous studies have observed that anal sphincter injuries increase rates of FI [14,15].

The 7% prevalence of AI reported here is also considerably lower than the 41% previously reported in a similar Ethiopian series [9]. The major difference between these samples is mean age: 29 years in the present study compared with 23 years in the Ethiopian study [9]. It is possible that the older population was further remote from delivery and that their symptoms had resolved (average time between VVF injury and enrollment in the present study was 5 years). It has been shown that fecal incontinence symptoms improve with increased time from delivery [15]. These ethnic groups may also have different pelvic phenotypes resulting in a different distribution of pressure from the fetal head.

Constipation in nearly half of this group of women is a notable finding and has not been described previously. While this may be due to neuromuscular damage around the rectum, it could also be caused by diet, activity level, or other factors. Theoretically, women with urinary incontinence from VVF might be expected to have more constipation than women

without urinary incontinence if they limit their fluid intake to decrease the amount of urine they leak, but see this difference was not observed: 51% of women who were currently wet had constipation compared with 50% of women who were currently dry. Further studies would be needed to characterize the extent of constipation as well as possible causes.

Health scores on the VAS for these women reflected a mostly good impression of overall health. This is somewhat surprising given the life-altering nature of continuous urinary incontinence along with its social and cultural consequences. Women with urinary incontinence gave themselves, on average, lower scores than women no longer leaking urine, and the women with fecal incontinence gave themselves, on average, lower scores than women with urinary incontinence; thus, although the prevalence of these symptoms is lower than expected, there is evident impact on the quality of life of these women.

In conclusion, in this population of women with VVF, there was a low prevalence of fecal incontinence. Fecal incontinence should be proactively screened for in women with VVF to more fully understand the breadth of pelvic floor injury that is sustained from obstructed delivery. If these results are representative, they suggest that—despite suffering significant anterior compartment pelvic injury with resulting VVF from obstructed labor—FI appears to be uncommon in these women.

## Acknowledgments

HER was partially supported by the National Institute of Diabetes and Digestive and Kidney Diseases 2DK24-068389.

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**Table 1**  
**Demographic characteristics of participants (n=83) <sup>a</sup>**

Characteristic	Value
Age, y	29.5 (15–55)
BMI <sup>b</sup>	22.3 (16.5–36.9)
Height, inches	60.6 (54–69)
Religion	
Christian	50 (60.2)
Muslim	33 (39.8)
Prior hysterectomy	3 (3.6)
Parity	2 [1–14]
VVF pregnancy	2 [1–14]
Prior VVF repairs	1 [0–6]
Age at VVF	24.5 (10–48)

<sup>a</sup>Values are given as mean (range), median [Range], or number (percentage).

<sup>b</sup>BMI, body mass index (calculated as weight in kilograms divided by height in meters squared).

**Table 2**  
**Fecal incontinence results on Vaizey questionnaire (n=83)**

	<b>Incontinence of solid stool</b>	<b>Incontinence of liquid stool</b>	<b>Incontinence of gas</b>	<b>Alteration in lifestyle</b>
Never	81	80	78	80
Rarely	0	0	0	0
Sometimes	1	1	3	0
Weekly	0	0	0	0
Daily	1	2	2	3