

Urinary symptoms and urodynamics following obstetric genitourinary fistula repair

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Abstract

Introduction and hypothesis The aim of this study was to evaluate urinary symptoms and urodynamic diagnoses in women following repair of obstetric fistula of the lower urinary tract.

Methods Women with previous genital tract fistula and ongoing urinary symptoms were evaluated at the Addis Ababa Fistula Hospital. The women were referred to the Urodynamic Unit by doctors reviewing women at the hospital. Consecutive women between December 2008 and September 2009 were assessed (including urodynamic studies) and data collected

Results One hundred and fifty-four women were referred for urodynamic assessment. Only women with previous obstetric fistula were included in the study. Of the 154 women, 5 were excluded from the study—1 declined the assessment, 1 had a non-obstetric fistula and 3 were found to have recurrence of the fistula. Forty-nine percent had urodynamic stress incontinence only, 3 % had detrusor overactivity only and 43 % had both urodynamic stress incontinence and detrusor overactivity. Five percent of women had neither detrusor overactivity nor urodynamic stress incontinence. Seven percent had post-void residual volume of 150 ml or more.

Conclusions Non-surgical management of post-obstetric fistula urinary symptoms may be neglected. The reduced success rates in surgery for post-obstetric fistula urinary incontinence may be due to the lack of attention to the other reasons for urinary symptoms and markedly impaired urethral function. Urethral closure pressures in this group of women often did not reflect the severity of urinary incontinence.

Keywords Obstetric fistula · Urinary incontinence · Urodynamics

Introduction

Obstetric fistulas continue to be a considerable cause of morbidity worldwide. Prolonged obstructed labour often results in significant tissue loss and scarring in the vagina and lower urinary tract. The primary goal in the management of obstetric fistula is prevention. However, for women who have undergone successful closure of the fistula, ongoing urinary incontinence remains a common and significant problem. About 1 in 4 women following obstetric fistula repair complain of significant urinary symptoms [1, 2].

Post-obstetric fistula urinary incontinence continues to be a difficult problem to manage. Follow-up of women in developing countries is hampered by a lack of infrastructure, illiteracy, poverty, and concerns regarding political unrest and personal safety. There is a paucity of literature regarding post-obstetric fistula urinary incontinence and in particular the reasons for the incontinence. In the past, clinicians have mainly used surgical means to treat the women without prior investigations. These included standard surgeries for stress urinary incontinence together with unconventional and unproven means such as using the labia to fashion a tube at the end of the external urinary meatus for “urethral lengthening”

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procedures. The limited information available significantly impedes effective management of these women.

The aim of this paper is to further investigate these women who presented with ongoing urinary symptoms following surgery for obstetric fistula.

Materials and methods

Between December 2008 and September 2009, data were collected on consecutive women who were referred to the Urodynamic Unit at the Addis Ababa Fistula Hospital, Ethiopia, for further assessment. The women have had previous surgery for genital tract fistula and presented with ongoing urinary symptoms. All urodynamics presented were performed or supervised by urogynaecologists (JG, HK). Ethics approval was obtained for this study. The women were referred to the Urodynamic Unit by the medical staff at the hospital, from either the outpatients or the inpatients (from the ward or living in the hospital “hostel” accommodation for patients).

Urodynamics was performed using dual-channel subtracted filling cystometry, placing a catheter in the bladder and in the vagina or when the vagina was extremely stenosed, in the rectum. Filling was performed in the supine position using normal saline at room temperature. All procedures were performed as recommended by the International Continence Society unless stated otherwise. The terminology used conforms to the IUGA/ICS standards for terminology [3]. Information obtained included voided urinary volumes, residual volumes, detrusor pressures during filling, maximum urethral closure pressures and demonstrable urinary incontinence with/without provocation. Voiding studies and pressure monitoring during voiding were challenging and unobtainable as most of the women were not accustomed to passing urine sitting on a commode, with catheters in-situ and could only void in a squatting position without catheters. Residual urinary volume assessment, using an in-out catheter, was performed after voiding in a squatting position. Equipment for cystoscopic evaluation or imaging was not available.

Demographics, previous history and current presenting complaints were also collected at the time of presentation to the Unit. The women were interviewed on current presenting complaints and past history. Previous hospital records, where possible, were obtained for information regarding previous surgery and any other treatment.

Results

A total of 154 women presented to the Addis Ababa Fistula Hospital Urodynamic Unit with urinary symptoms for further evaluation, following previous fistula repair. One woman had

a urethral fistula from coital injury and was excluded from the data analysis.

Of the 153 women who had a fistula from obstetric injury, the average age at presentation to the Unit was 22.6 years (range 12–68, median 20). Eighteen women did not know their age. In many Ethiopian rural communities, age and dates are often estimated as the calendar year is less important or not known. Time-lines are often related to other important events in one’s life, such as the outbreak of war. The average parity was 1.7 (range 1–12). Only 3 women delivered a live birth for the delivery that was associated with the fistula. Of the 132 women who could recall the length of their labour, the average was 3.8 days (range 1–8). Women who had a spontaneous vaginal delivery (89 women) had an average of 3.9 days in labour compared with instrumental delivery (25 women) of 3.8 days and caesarean section (18 women) of 3.5 days.

The time interval from last fistula repair to presentation at the unit, as obtained from previous medical records, varied from 2 months to 31 years (mean 51 months). Twenty-four women had no records of their surgery (either done elsewhere or lost record) and could not remember the date of surgery.

Information from previous operation records was also obtained regarding the type of fistula. In 28 women, no information was available (8 women had fistulas repaired elsewhere, 16 with lost records, 4 had lost operation notes in their records). One woman had a ureteric fistula following a caesarean section after 4 days in labour. Of the remaining 124 women information regarding the site of the fistula, in particular, urethral involvement was obtained. There was no standardized method of classifying or describing the fistula in the operative notes. Nineteen women had a documented “good urethra” or distance of 3.5 cm or more from the distal edge of the fistula to the external urinary meatus. “Poor urethra” or distance of less than 3.5 cm from the external urinary meatus was documented in 101 women. In 4 women, there was no documentation on the urethral involvement in the operation notes. A circumferential fistula, where the urethra was transected, was noted in 29 women and 38 had an episiotomy or “relaxing incisions” to gain access to the fistula. Twenty-nine women had a concomitant rectovaginal fistula.

Forty-two women had 52 procedures for urinary symptoms. The procedures documented (Table 1) were obtained from past procedure notes, often with little description of the procedure undertaken. Indication for these procedures was documented as urinary symptoms or urinary incontinence. In this sub-group of women, 1 had recurrence of her fistula. Of the remaining 41 women, 23 (56 %) had urodynamic stress incontinence only, 3 (7 %) had detrusor overactivity only, and 15 (37 %) had combined detrusor overactivity and urodynamic stress incontinence.

Intra-urethral devices (urethral plugs) for the management of urinary incontinence have been used for a number

Table 1 Previous procedures for post-fistula urinary symptoms (number of women 42, number of procedures 52)

Procedure	<i>n</i>
Paraurethral hitch	11
Pubococcygeal sling	6
Kelly plication	8 (7 women)
Pubovaginal sling (rectus/fascia lata)	11 (10 women)
Raz	3
Urethral lengthening	5
Urethral tightening	4
Urethral dilatation	1
Unknown procedure done elsewhere	3

of years at the Addis Ababa Fistula Hospital. The women are taught how to use and self-manage the plugs. Forty women had tried urethral plugs for urinary incontinence, 7 of whom were completely dry and 1 woman had to have the plug retrieved from the bladder.

One hundred and fifty-four women were referred to the Urodynamic Unit for assessment. None of these women had been previously assessed in the Unit. One woman declined as she was using a urethral plug, was completely dry and did not wish further assessment and 1 had a non-obstetric-related fistula. Hence, 152 women with obstetric fistulas underwent further assessment. The majority of women presented with being “wet all the time” or continuous incontinence (Table 2).

Three women had recurrent genitourinary fistula on further assessment.

One of these women had 2 previous fistula repairs and complained of stress incontinence. The second woman had 4 previous fistula repairs and complained of continuous incontinence. This second woman used a urethral plug and was dry with the plug. She had a small recurrent fistula in the urethra and declined further surgery. The third woman had undergone 1 previous fistula surgery and then had 2 Kelly plications and a pubococcygeal sling. She complained of continuous incontinence and was subsequently scheduled for repeat fistula repair.

Therefore, 149 women with previous obstetric lower urinary tract fistula underwent urodynamic assessment for ongoing urinary symptoms. The majority of women who had

Table 2 Presenting urinary symptoms (*N*=152)

Symptom	<i>n</i>
Incomplete bladder emptying	2
Continuous incontinence	115
Stress urinary incontinence only	22
Overactive bladder only	6
Mixed urinary symptoms	4
Continuous incontinence, but contained with urethral plug	3

urodynamic studies (137 or 92 %) had urodynamic stress incontinence. Seventy-three women (49 %) had urodynamic stress incontinence only. Forty-six percent of women (69 women) had detrusor overactivity. Forty-three percent (64 women) had both detrusor overactivity and urodynamic stress incontinence. Of the 5 women with detrusor overactivity only, 2 had previous procedures for urinary incontinence, and 1 had tried the urethral plug unsuccessfully. Seven women had neither detrusor overactivity nor urodynamic stress incontinence. Two of the seven had significant post-void residual volumes (over 200 ml), 1 had bladder oversensitivity and the remainder had no abnormalities detected.

Nine women had residual urine volumes of 150 ml or more (range 150–500 ml). Two of the 9 presented with a feeling of incomplete bladder emptying, another 5 presented with continuous incontinence, 1 complained of overactive bladder symptoms only and 1 stress urinary incontinence. Six of the 9 women had urodynamic stress incontinence and detrusor overactivity, 2 had urodynamic stress incontinence only and 1 had neither urodynamic stress incontinence nor detrusor overactivity.

During the filling phase of urodynamic assessment, 1 in 3 women (50 cases) leaked per urethra without a detrusor rise or provocation. Digital paraurethral compression (performed vaginally) was required in these women to enable filling of the bladder. Leakage of urine in these women occurred at filling to less than 100 ml. Paraurethral compression to fill the bladder was undertaken if the woman had no sensation of bladder filling and no rise in detrusor pressure. The presenting complaint of this subset included 42 women with continuous incontinence (2 of whom were dry with urethral plugs), 6 complained of stress incontinence, 1 overactive bladder only and 1 mixed symptoms. Table 3 is a summary of other findings in this group of women. Eight women in this group were documented to have had circumferential fistulas. The mean (\pm SD) maximum urethral closure pressure in this group of women was 34 ± 29 cmH₂O compared with 38 ± 27 cmH₂O in those not requiring digital compression.

Table 3 Women required digital compression to enable bladder filling during urodynamics (*N*=50)

Diagnosis/site	<i>n</i>
Urodynamic diagnosis	
Urodynamic stress incontinence only	27
Mixed urinary incontinence	23
Site of fistula	
“Urethra good” or distal edge of the fistula 3.5 cm or more from the external urinary meatus	6
“Urethra involvement” or distal edge of the fistula less than 3.5 cm from the external urinary meatus	32
No operative record of the site in relation to the urethra	12

Information was also obtained from previous surgical records regarding the size of the fistula and the degree of scarring at the time of fistula surgery. Of the women with urodynamic stress incontinence only ($n=73$), 40 % had fistulas over 3 cm in size compared with 45 % in the mixed incontinence group ($n=64$). However, 22 % in the urodynamic stress incontinence group and 27 % in the mixed group had no operative record or size of fistula recorded at the time of surgery. Moderate or severe scarring was documented in 47 % of women with urodynamic stress incontinence only and 58 % of those with mixed incontinence. Thirty-two percent of the urodynamic stress incontinence only group and 31 % of the mixed group had no operative notes or documentation of scarring.

Discussion

Urinary incontinence following fistula repair, in particular obstetric fistula continues to be a significant problem [1, 2]. A number of papers have described surgical interventions, but often with much less success than that enjoyed in women without fistulas [4–7].

There are only a small number of studies of urodynamic assessments following fistula surgery [8, 9]. This is mainly due to the lack of accessibility and cost of urodynamic studies in developing countries. Schleicher et al. [8] reviewed 18 women following fistula repair. Two had recurrent fistulas; of the remaining 16 women, half had no urinary incontinence and the remaining 8 complained of urinary stress incontinence. Urodynamics on the 8 incontinent women demonstrated no abnormalities in 2 women (25 %) and urodynamic stress incontinence in 5 (62.5 %); the remaining woman (12.5 %) had mixed incontinence. Murray et al. [9] reviewed 55 post-fistula women, 30 of whom had urinary incontinence. Urodynamic studies on the 30 women demonstrated urodynamic stress incontinence in 17 women (56.7 %), detrusor overactivity only in 2 (6.7 %) and mixed incontinence in 11 (36.7 %).

To our knowledge, our study is the largest reported to date on urodynamic studies following fistula repair in a developing country. In our study, over 90 % of women had urodynamic stress incontinence and 46 % had detrusor overactivity, which is similar to that reported by Murray et al. [9]. Our mixed urinary incontinence rate was slightly higher at 42.7 % than that reported by Murray et al. (36.7 %) [9].

In our group of women, it was difficult to obtain clues of a possible diagnosis from the history alone as three quarters complained of continuous incontinence.

A weakness in this study is the reliance on retrospective surgical records that often used subjective descriptions such as “good or poor urethra”. In addition, there were also poor records and descriptions of the other procedures performed

for ongoing urinary symptoms. It was also difficult to comment on the association of operative findings and the types of urinary incontinence because of the poor and missing operative records. Again, the lack of standardized description of the fistula hampered any possible correlations with the findings. Also, current findings on vaginal examination may not reflect findings at initial fistula surgery as a number of women have had other subsequent vaginal surgery.

The authors believe that digital paraurethral compression during the filling phase of urodynamics was required owing to the marked reduction in the function of these urethras. All these women had urodynamic stress incontinence (45 % of whom had mixed incontinence). Obviously, the paraurethral compression may affect the results as this is not the standardized way to perform bladder filling but as indicated above, it was a practical method to perform bladder filling in some women. We do not believe that this significantly affected the maximum urethral closure pressure as digital compression was not used while obtaining pressures. We hypothesize that the urethral closure pressures are not reliable indicators of urethral function in many women with fistulas as the pressures recorded may be due to the urethral catheter measuring the resistance from a narrowed or scarred urethra that is functionless. At the time of obstetric fistula surgery, it is not uncommon to find a completely blocked distal opening of the fistula due to scarring. Unfortunately, in this series, the available operative notes do not comment on this finding.

This study provides further information on urinary symptoms following repair of an obstetric fistula of the lower urinary tract. Urinary symptoms are common and often frustrating problems to treat in developing countries with the lack of equipment to further assess the women, a paucity of health professionals with knowledge of pelvic floor rehabilitation and often no appropriate pharmacological agents, such as anti-cholinergic medications. In this study, although the data on the assessment of the urinary incontinence were collected prospectively, lack of standardized data collection and classification of fistulas impeded correlations of previous fistula type and urinary symptoms. Further prospective data are required to gain more insight. This study, however, does show that detrusor overactivity is not uncommon in women presenting with post-fistula urinary symptoms and residual volumes of over 150 ml are present in a small percentage of women. Assessments of post-operative residual volumes and bladder training have been adopted in some fistula units prior to discharge after fistula repair.

Conclusion

This study demonstrates that detrusor overactivity may be an important forgotten component in the management of the woman with post-fistula urinary incontinence. Much effort

has been made with the surgical treatment, but less with the conservative approach. Significant post-void residual urine volume in a small percentage of women also needs attention.

The suboptimal success of continence surgery in post-fistula women may be due to a number of reasons, including untreated/undiagnosed detrusor overactivity and marked reduction in urethral function.

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Conflicts of interest None.

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