



# Urethral fistula repair, including urethral elongation and an anti-incontinence procedure - a case report

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## ABSTRACT

Vesicovaginal fistula remains a significant cause of female urinary incontinence and impaired quality of life worldwide. Urethral-vaginal fistulas are less common, and difficult to manage, posing difficulties in terms of diagnostic evaluation, the surgical approach to closure, and how the associated complication of stress urinary incontinence is addressed. In this case report the management of a 34-year-old woman who presented with a urethral fistula following initial surgery for a urethral abscess is presented, including fistula closure; lengthening of the urethra; and addressing the loss of sphincter function. This case highlights the fact that a successful outcome in these patients depends on proper surgical technique, and the experience and skill of the management team.

## 1. Introduction

Urogenital fistulas (UGFs) are abnormal communications between the urinary and genital tract; they may be located at different levels and usually follow a traumatic insult [1–4]. UGFs negatively impact the quality of life of affected individuals and are mainly vesicovaginal fistulas (VVF) [1,3,4], with urethral fistulas occurring less frequently. A case is presented of a urethral fistula and its subsequent management, including fistula closure, lengthening of the urethra and addressing of the loss of sphincter function.

## 2. Case presentation

A 34-year-old woman, P2, with no known comorbidities presented to a regional centre with a one-year history of a painful, slow-growing mass around the urethral orifice; pus was draining from the mass and a diagnosis of a urethral abscess was made. Incision and drainage of the mass was carried out, and immediately postoperatively she had urine leakage. She was discharged home and the leakage continued. On re-presentation to the regional centre, a diagnosis of VVF was made, and she subsequently underwent a repair. Five days after the repair, she started to leak urine again, and was then discussed with the urogynaecology unit at the tertiary centre, where she was accepted for further management.

A juxta-urethral fistula was confirmed, classified as 3bII according to Goh's system [5]. There was extensive fibrosis and shortening of the urethra, with loss of urethral sphincter integrity. The patient was counselled appropriately and booked for a repair.

### 2.1. Procedure

The aim of the repair was to close the fistula; lengthen the urethra; and then address the loss of sphincter function. The urethra was about 2.5 cm long, measured using a Foley catheter, as described by Waaldjik [7] and Browning [8].

Mobilisation and repair of the fistula as described by Browning [8] in 2006 were carried out. With a rotunda catheter in situ, the vagina was incised vertically, beginning adjacent to the external urethral meatus, for about 3–4 cm (the expected length of the reconstructed urethra). The incision was extended horizontally on to the vaginal walls on both sides to resemble an inverted 'T' (Fig. 1). Sharp dissection under the horizontal incision mobilised the distal bladder, while the urethra and bladder were mobilised laterally, opening up the para-vesicle space on either side (Fig. 2).

The fistula was repaired in two layers using interrupted sutures of Vicryl® (polyglactin 910) 3.0 (Fig. 3).

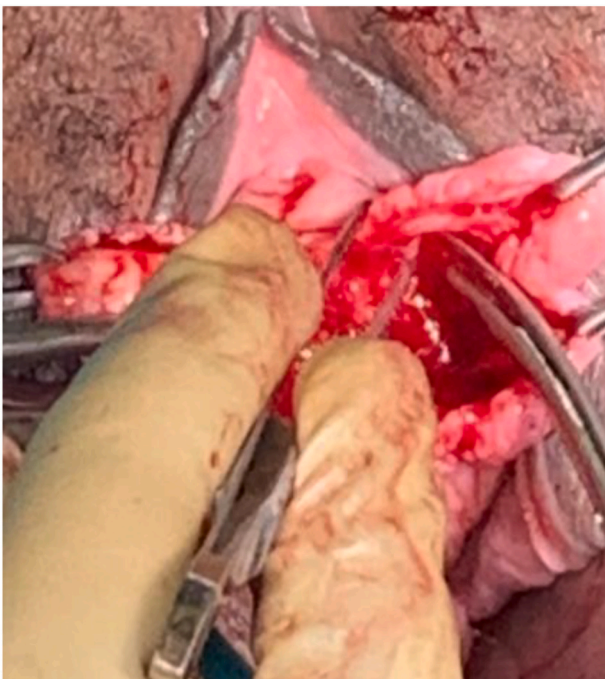
The next step involved 'urethralisation', as first described by Waaldjik [8] in 1994. This involved plication of the lower extremity of

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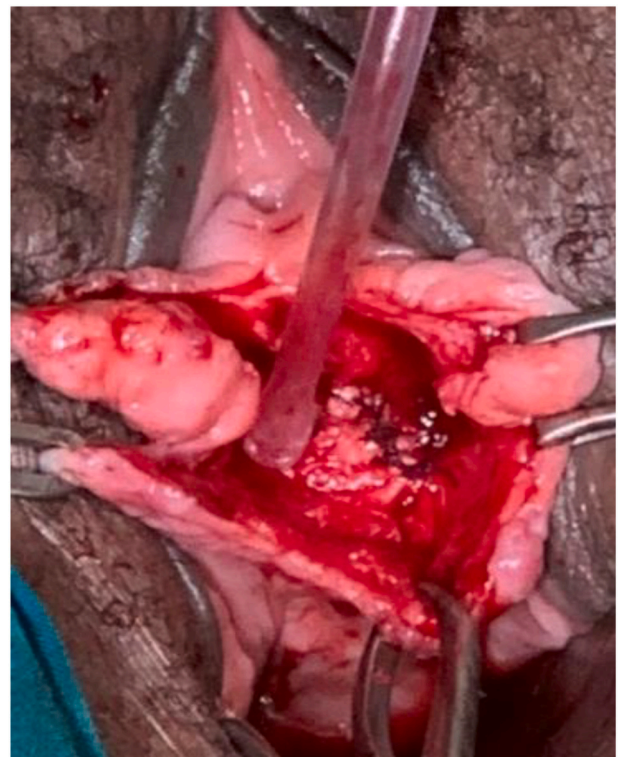
**Fig 1.** Vertical incision of the vagina and horizontal extension onto the vaginal walls laterally



**Fig. 2.** Para-vesicle space opened up on both sides.

the urethra and the distal bladder with 3 or 4 interrupted sutures centrally, elevating the pubo-cervical fascia, and narrowing and drawing the walls of the distal bladder together, thus producing a lumen within the bladder that has its diameter narrowed to resemble that of the urethra.

The urethra was measured again and found to have almost doubled in length. The damaged sphincter was then addressed by providing support with a fibro-muscular sling, a technique described by Browning [7]. This involved mobilising blocks of fibrous tissue from the levator



**Fig. 3.** Fistula repaired in 2 layers.

complex on the medial aspect of the inferior pubic ramus on each side to be sutured together in the midline forming a tension-free sling under the urethra (Fig. 4a and b).

The vagina was then repaired, and a dye test performed to confirm a watertight repair. The patient did well postoperatively, and was discharged on day 5. Two weeks later, she reported no leakage, the sutures were intact, and the urinary catheter was removed. She had good bladder sensation, no leakage was observed on Valsalva manoeuvre, and the residual urine volume measured less than 5 ml.

She was counselled to return if symptoms recurred. Six-week follow-up was unremarkable, and on telephonic follow-up she was still doing well.

### 3. Discussion

When dealing with urethral fistula one needs to make the distinction between fistulas with a minor defect and those with a substantial defect.

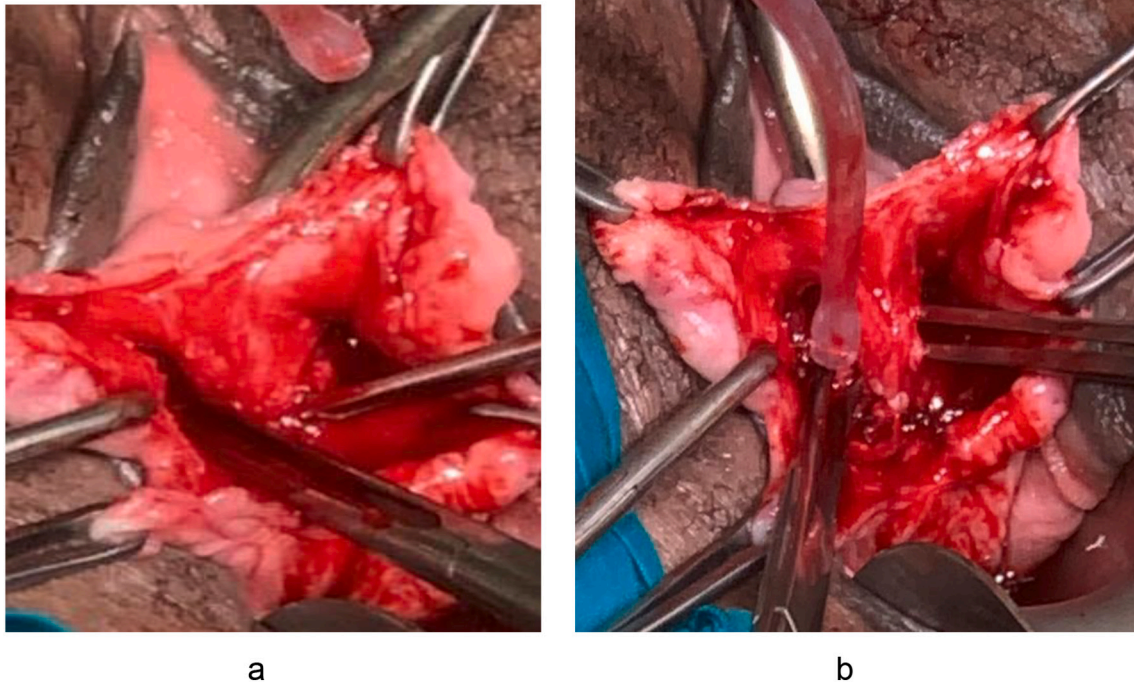
If the continuity between urethra and bladder is still maintained to some degree, it is called a juxta-urethral fistula. When there is complete separation of the two, it is called a circumferential fistula [6].

Consideration needs to be given to:

- the extent of separation of bladder and urethra, and whether this is partial or complete;
- and how much of the urethra has been destroyed.

Usually, partial defects span only the superficial quarter and are readily closed by transverse sutures. Other defects may span both sides, and urethral and bladder continuity is maintained only on the deep aspect, where it is attached beneath the pubic arch. Usually in these cases re-anastomosis of the urethra to the bladder along one-half to three-quarters of the diameter is required, with no discrepancy in size between urethra and bladder neck.

When there is complete separation, a circumferential re-anastomosis is generally recommended [6].



**Fig. 4.** a: Fibrous blocks of tissue mobilised on both sides.  
b: Fibrous blocks sutured in the midline.

In these kinds of fistula urethral damage is inevitable, and often there is a stricture requiring dilatation. The normal urethra is about 3.5-4 cm long, and length is a major prognostic indicator for stress incontinence. The functional integrity of the urethra usually depends on the length from the external meatus to the distal edge of the fistula. If the urethra is less than 3.5 cm in length then 'urethralisation', as first described by Waaldjik, is usually performed [7,8]. Most urethral fistulae will require urethral elongation and some degree of urethral support.

Incontinence commonly follows urethral surgery in cases where there is complete urethral damage, or the repair of a urethral-vaginal, or bladder neck fistula [7,9].

Three procedures have been described with regard to management of this problem. The first describes a rectus sheath sling, along with urethrolisis in specific patients, with a 67% success rate at 14 months [10]; and the second a vaginal colposuspension, which has also proved beneficial in some cases [7]. However, both are performed at follow-up surgery and often with complications, such as further development of fistulas. The third procedure involves a fibro-muscular sling derived from the levator complex, creating a hammock for the urethra to fall against with increase in abdominal pressure, hence mimicking the functioning of the damaged urethral sphincter. This procedure has been shown to be associated with low morbidity and a good success rate [8].

#### 4. Conclusion

While urethral fistulas occur less frequently than other types of UGF, and the treatment is made difficult by the shortened urethra, the lack of available tissue, and the ensuing stress urinary incontinence, the procedure described above offers some hope for women suffering from this debilitating cause of incontinence. However, the success rate is highly dependent on proper patient evaluation and the experience and skill of the management team. These repairs should be carried out in centres where the necessary expertise can be found.

#### Contributors

Thinagrin D. Naidoo, the sole author, was responsible for surgical

management of the case, as well as manuscript writing and editing.

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#### Patient consent

Informed consent was obtained from the patient prior to compilation of this case report.

#### Provenance and peer review

This article was not commissioned and was peer reviewed.

#### Conflict of interest statement

The author declares that there is no conflict of interest regarding the publication of this case report.

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