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Management of Symptomatic Urethral Diverticula in Women: A Single-centre Experience

Felicity A. Reeves, Richard D. Inman, Christopher R. Chapple *

The Royal Hallamshire Hospital, Sheffield Teaching Hospitals, Sheffield, UK

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Abstract

Background: Urethral diverticula (UDs) affect between 1% and 6% of adult women. A total of 1.4% of women with stress urinary incontinence (SUI) have a UD. Clinically significant diverticula are rare and can be challenging to manage.
Objective: To review results of surgery on UDs in a single surgical centre.
Design, setting, and participants: We retrospectively evaluated a group of 89 patients with symptomatic UDs referred for surgical intervention to one teaching hospital. Data were from two surgeons over an 8-yr period between October 2004 and November 2012. Follow-up period ranged from 3 mo to 20 mo, and all patients were physically reviewed postoperatively in an outpatient setting.
Intervention: The surgical technique involved placing the patient prone, ureteric catheterisation, dissection and removal of the diverticulum, and layered closure. Where a large defect was present following excision, a Martius flap was interposed.
Outcome measurements and statistical analysis: Outcome data collected included symptomatic cure, continence, de novo SUI, early versus late complications, and recurrence.
Results and limitations: Early complications included one urinary tract infection and one Martius graft infection, both requiring intravenous antibiotics. Overall, 72% of patients were dry and cured postoperatively; 13 patients had de novo SUI following surgery. Those with bothersome SUI went on to have an autologous sling at 6 mo. All were dry; three (23%) required clean intermittent self-catheterisation. Three patients had a recurrent residual diverticulum (3.4%) following surgery. One chose conservative management. The other two had a redo diverticulectomy performed via a dorsal approach. They have recovered well and are dry. Two (2.2%) diverticula revealed unexpected abnormal pathology. The first was a leiomyoma; the second was a squamous cell carcinoma requiring further surgery.
Conclusions: The recommended preoperative imaging is postvoid sagittal magnetic resonance imaging and appropriate use of urodynamic assessment at baseline. The 72% dry rate (including a number with preoperative incontinence) is comparable with the literature as is the development of de novo SUI in 15% of patients. There is a small risk of unexpected tumours (2%).
Patient summary: A urethral diverticulum should be excluded as a diagnosis in anyone troubled by symptoms of a swelling of the urethra often associated with discomfort, pain on intercourse, urinary dribbling after passing urine, and/or recurrent urinary infections. In these circumstances patients should seek advice from their doctors and consider referral for a specialist assessment. If the diagnosis is made and the problem is symptomatic, surgery is likely to resolve the problem but should be carried out in a specialist centre with expertise in the management of this condition.

* Corresponding author. The Royal Hallamshire Hospital, Glossop Road, Sheffield, S10 2JL, UK.
Tel./Fax:+44 1142797841.
E-mail address: c.r.chapple@shef.ac.uk (C.R. Chapple).

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1. Introduction

Symptomatic urethral diverticula (UDs) are rare and reported to affect 1–6% of adult women with a median age of 40 yr [1]. A total of 40% of women investigated for lower urinary tract symptoms (LUTS) have been noted to have a UD including 1.4% of women with stress urinary incontinence (SUI) [2].

Risk factors for development include urethral trauma during childbirth and recurrent urethral infection in the periurethral glands. The aetiological mechanism proposed is that of infection in a periurethral gland or glands with sequential obstruction, suburethral abscess formation, and subsequent rupture of the infected cavity into the urethral lumen that epithelialises [3]. Presenting symptoms include urinary frequency, dysuria, recurrent infection, a tender mass, urgency, SUI, postvoid dribbling, dyspareunia, haematuria, pus per urethra, and urinary retention. The nonspecific symptoms present a diagnostic challenge for clinicians. One study reported that the mean interval between onset of symptoms and diagnosis was 5.2 yr [4]. There is a rare potential for malignant transformation and stone formation (up to 10%) if left untreated.

A variety of preoperative investigations have been described including voiding cystourethrogram, double-balloon urethrography, and ultrasound [5,6]. Postvoiding magnetic resonance imaging (MRI) represents the most accurate and informative imaging modality (Fig. 1), although in experienced hands similar information can be obtained from a transvaginal ultrasound.

Vaginal diverticulectomy is highly effective for symptomatic disease with reported cure rates >70% [7,8]. De novo SUI has been reported in 16% and fistula formation in up to 5% [9,10] (Fig. 2).

We review the results of UD repair in a single surgical series. We believe the results demonstrate the largest reported experience in the last two decades and emphasise the efficacy of this surgical procedure.

2. Patients and methods

A retrospective case note review was performed of a referred consecutive sample of all women in a single centre having surgical treatment for symptomatic UDs. A total of 89 cases were performed by two surgeons over an 8-yr period between October 2004 and November 2012. Data were collected prospectively regarding mode of presentation, site, size, shape, and operative technique (prone position). The follow-up period ranged from 3 to 20 mo; patients were discharged when asymptomatic. Outcome data collected included cure in terms of symptoms, continence, rate of de novo SUI, early versus late complications, and recurrence rate. Six women were referred having been operated on previously for a UD (7%), three of whom had fistulae following failed surgery. A further 20 women had previous vaginal trauma (22%) including previous vaginal surgery ($n = 10$), urethral dilation ($n = 5$), or traumatic vaginal delivery ($n = 5$).

Overall, 30% ($n = 27$) underwent videourodynamics to investigate preoperative SUI. All patients underwent a postvoid sagittal MRI scan. Malignancy was not suspected in any of the preoperative examinations or imaging, although in the case of the leiomyoma the solid appearances of the diverticulum were considered atypical.

Medical records from all women were reviewed by an investigator not involved in the operations or follow-up. A period of at least 7 mo elapsed following surgery prior to a review of outcomes.

2.1. Intervention: surgical technique

Rigid cystourethroscopic examination under anaesthetic was performed in all patients at the time of surgery. This was done to exclude any further intravesical or urethral pathology and to assess communication of the diverticulum with the urethra. Surgical technique involved placing the patient in a Sims position with a self-retaining retractor (Parkes). Ureteric catheters were placed to landmark the ureters, only appropriate in large diverticula that extend towards the bladder neck to reduce the risk of ureteric injury when excising the diverticula and performing

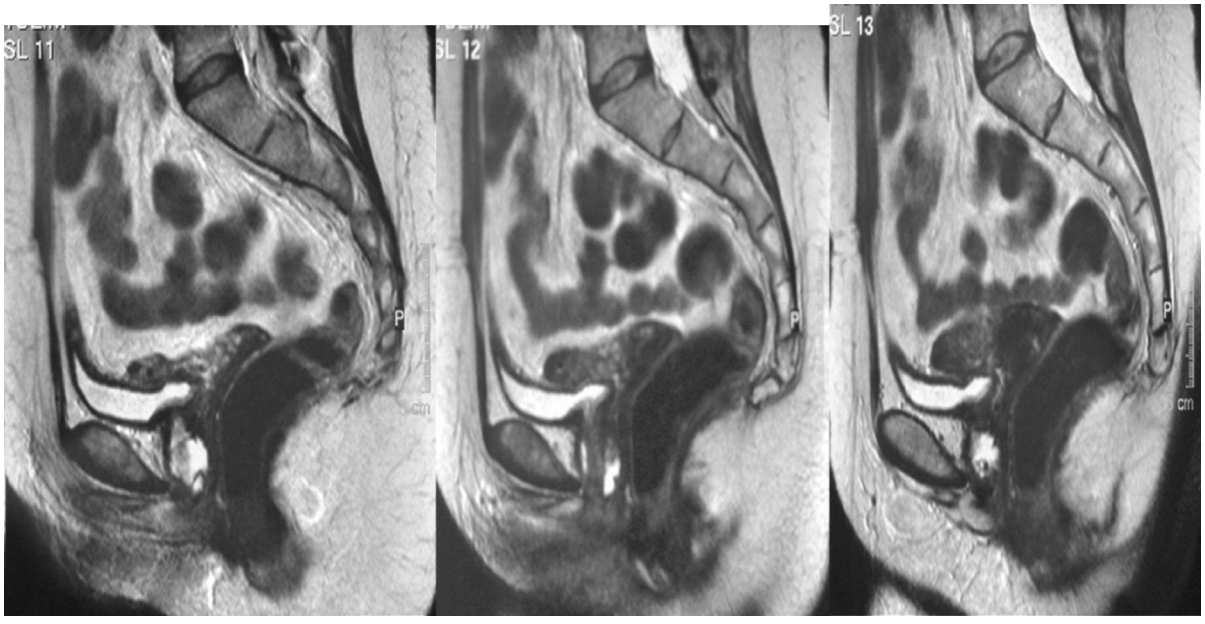

Fig. 1 – Postvoid sagittal magnetic resonance imaging of the pelvis showing a circumferential urethral diverticulum filling after the bladder has emptied.

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