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Journal of
**Pediatric
urology**



Etiology and outcome of the perineal repair of posterior and bulbar urethral strictures in children: A single surgeon experience

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Received 22 May 2012; accepted 14 September 2012
Available online 13 October 2012

KEYWORDS

Urethral stricture;
Urethroplasty;
Buccal mucosa;
Pediatric urology

Abstract *Objective:* To evaluate the etiology of posterior and/or bulbar strictures in children in an industrialized country and assess the outcome of its repair by perineal approach. Urethral strictures in children are rare and often challenging to treat. Trauma is the main etiology in developing countries. However, data for industrialized countries are sparse.

Material and methods: Retrospective analysis of 17 patients treated with perineal urethroplasty 2001–2010. Data were assessed by chart review and non-validated standardized questionnaire. Hypospadias cases were excluded. Reconstruction was performed by stricture excision and primary anastomosis, or a single-staged or two-staged buccal mucosa graft.

Results: Mean age at surgery was 7.9 years (range 1–13) and mean follow-up was 42.6 months (4–115). Eight patients (47.1%) had post-traumatic strictures, five (29.4%) had a history of posterior valves, and previous transurethral catheterization and irradiation each accounted for one patient (5.9%). In the remaining two (11.8%), the etiology was unknown. The success rate was 88.9%. All but one patient were continent postoperatively.

Conclusions: Most common etiology for open urethral reconstruction in children was trauma and previous valve treatment. In our hands the perineal approach for stricture repair is safe

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and successful. Stricture recurrence rate is low, and incontinence is only associated with additional bladder neck trauma.

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Introduction

Several causes for the development of proximal urethral strictures have been described, including post-traumatic, post-inflammatory, and iatrogenic circumstances [1]. In children, however, proximal urethral strictures are a rare entity, and there have been only a few series with a significant number of patients treated by open reconstruction. The number of patients ranges from 2 to 75 [2–4]. Trauma is the main etiology in developing countries and the transpubic approach is often used for repair [5]. However, there are limited data for industrial countries, with most published series reporting on small numbers of patients.

Clinical signs for urethral stricture in children can be incontinence or bed-time wetting, as well as common symptoms like difficulties at micturition, weak urine flow and recurrent urinary tract infection. Pelvic fracture posterior distraction defects frequently lead to obliterative strictures and cause acute urinary retention.

Therapeutic options are similar to those in adults, ranging from endoscopic treatment for short strictures [6] to open reconstruction in long strictures or failed endoscopic treatment. In open reconstruction, access is gained via the perineum [7] or in a combined perineal and transpubic approach [8]. In short strictures, excision and primary anastomosis (EPA) with *en bloc* resection of scar tissue can be performed [6]; longer strictures can be treated using scrotal flaps [3,9], appendix [2], tubularized penile skin [6] or buccal mucosa [10]. However, the delicateness of the pediatric urethral tissue as well as the small anatomy poses a considerable surgical challenge.

The aim of this study was to evaluate the etiology of posterior (post-traumatic) and anterior bulbar strictures in children in an industrialized country and to assess the intermediate-term outcome of a repair by perineal approach in a European tertiary centre in a single-surgeon series. Anterior penile strictures – mainly due to complications of hypospadias repair – were excluded from this series.

Material and methods

We relied on the data of 17 patients with posterior (post-traumatic) or bulbar urethral strictures who were treated with open perineal repair at our institution between 2001 and 2010. All surgeries were performed by a single surgeon (MF), no other pediatric urethroplasties were performed within the indicated time, and direct visual internal urethrotomy (DVUI) was performed for posterior urethral valves (PUV) but not for urethral strictures. A retrospective analysis of the patients was conducted by means of chart review and a non-validated standardized questionnaire. This questionnaire was mailed to the patients at time of follow-up. Children with meatal stenosis or a history of

hypospadias were excluded. Stricture etiology, previous surgeries, the postoperative recurrence rates, complications and postoperative incontinence were assessed.

Preoperative diagnostics

Preoperative workup included routine uroflowmetry and a combined voiding cystourethrogram (VCUG) and retrograde urethrogram. If the length of the stricture remained unclear, a retrograde and rarely an antegrade cystoscopy through a suprapubic tube site (under anesthesia) was additionally performed.

Surgical technique

Urethral reconstruction was performed by stricture excision and primary anastomosis (EPA), or single-staged or two-staged buccal mucosa graft (BMG).

A posterior post-traumatic stricture and a bulbar stricture of ≤ 1 cm were treated by end-to-end anastomosis

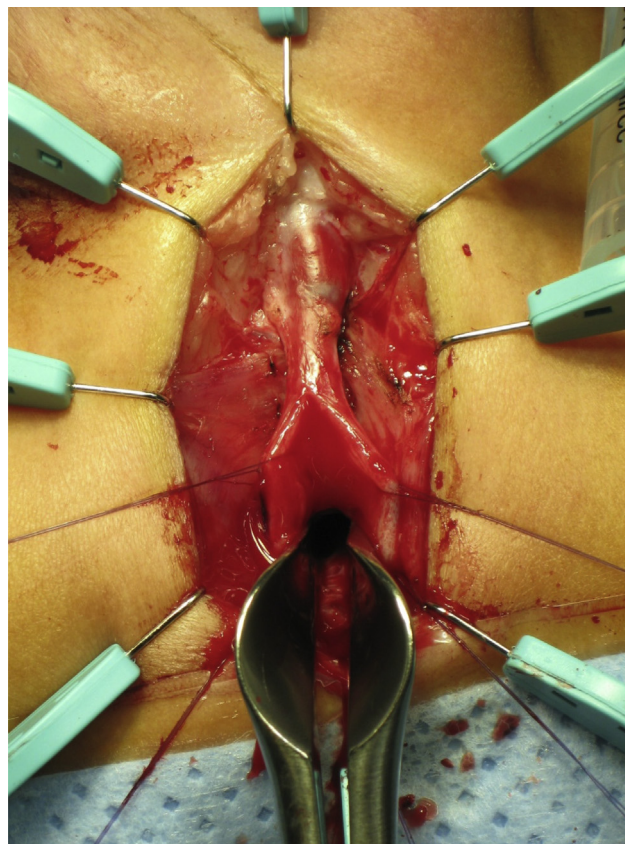


Figure 1 Inspecting the proximal urethra using a children's nose speculum.

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