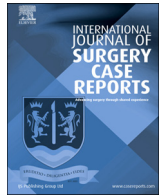




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Management of traumatic urethral injuries in children using different techniques: A case series and review of literature



Ricardo Torres da Silveira Ugino^{a,*}, Suzane Pasqual^{a,1}, Adria Karina Farias^b,
Andre Ivan Bradley dos Santos Dias^b, John D. Stratigis^c, Bruno Pinheiro Falcão^b,
Antônio Carlos Amarante^b, Marcelo Stegani^b, Miguel Angelo Agulham^b,
Camila Girardi Fachin^b

^a Medical School, Federal University of Parana, Curitiba, PR, Brazil

^b Pediatric Surgery Department, University Hospital, Federal University of Parana, Curitiba, PR, Brazil

^c The Children's Hospital of Philadelphia, Philadelphia, PA, USA

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ABSTRACT

INTRODUCTION: Most pediatric urethral injuries are a result of pelvic fracture after high-impact blunt trauma, mainly due to motor vehicle accidents. The management of urethral injuries depends on if the rupture is complete or partial as well as the timing of surgical intervention.

PRESENTATION OF CASES: Three male children with urethral trauma caused by motor vehicles accidents are presented in this article. Preoperative suprapubic catheterization was initially carried out in all patients. Each patient then received one of three different techniques during the deferred time to surgical intervention: anterior sagittal transanorectal approach (ASTRA) for end-to-end urethral anastomosis, perineal approach for urethroplasty using buccal mucosa, and urethroplasty with preputial skin flap. The three techniques were successfully performed.

DISCUSSION: In the initial management suprapubic cystostomy has been a good solution in urgent situations. Deferred urethroplasty is the procedure of choice for the definite treatment of posterior urethral distraction defects. The anterior sagittal transanorectal approach provides excellent exposure of the posterior urethra and retrovesicular region, and allows the surgeon to perform dissection under direct vision.

CONCLUSION: It's very important for the pediatric urologist to be familiar with the different techniques available in order to choose the best approach for each particular patient.

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1. Introduction

The incidence of posterior urethral injury after pelvic fracture in children is 2.4–7.5% [1,2]. Males more commonly sustain a urethral injury secondary to pelvic fracture than females, with a mean age of 9 years-old [3]. The orthopedic reports show that the most common mechanism of injury is trauma associated with pedestrian impact by motor vehicles (71%), followed by passen-

gers in motor vehicles (24%) [3]. Pelvic fracture is a major cause of post-traumatic posterior urethral stricture in children [4]. The management of posterior urethral injuries in blunt trauma depends on complete or partial rupture. In immediate management, insertion of a suprapubic catheter is a good temporary solution in urgent situations, especially in complete rupture [5]. Another possibility for the acute definitive treatment of complete posterior urethral rupture includes immediate realignment or urethroplasty, while partial rupture can be managed by fluoroscopic guided realignment or anastomotic urethroplasty [6].

The definite treatment of urethral trauma includes several techniques such as the anterior sagittal transanorectal approach (ASTRA), reconstructive management of urethral stricture with graft urethroplasty and single-stage preputial skin flap urethroplasty.

The objective of this case series is to demonstrate 3 different approaches for urethral trauma in male children that were suc-

* Corresponding author at: Medical School, Federal University of Parana, 15, Vicente Machado, Centro, Apartment 2007, Curitiba, PR, 80420-010, Brazil.

E-mail addresses: ricardougino@gmail.com (R.T.d.S. Ugino), pasqualsuzane@gmail.com (S. Pasqual), adriakarina1986@hotmail.com (A.K. Farias), andrebradleynd@gmail.com (A.I.B. dos Santos Dias), stratigisj@gmail.com (J.D. Stratigis), brunofalcaoceipe@gmail.com (B.P. Falcão), antonio.amarante@gmail.com (A.C. Amarante), mstegani@ufpr.br (M. Stegani), miguelagulham@uol.com.br (M.A. Agulham), camilafachin@gmail.com (C.G. Fachin).

¹ Equal contribution.

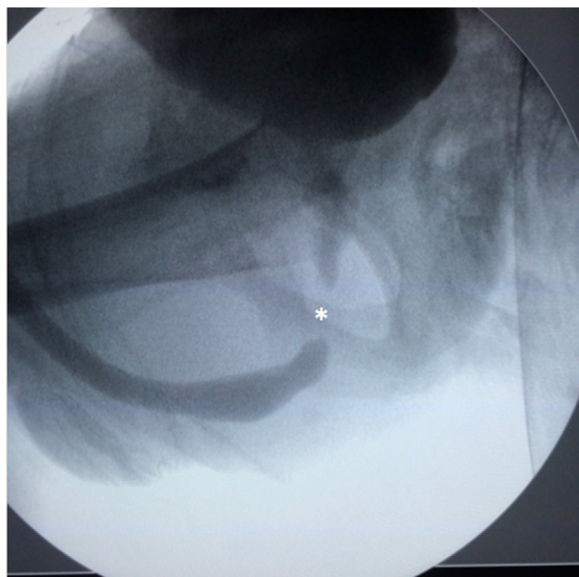


Fig. 1. Patient 1 preoperative urethrocytography showing a short urethral gap (*) between the urethral stumps with possibility of primary anastomosis.

cessfully performed. The work has been reported in line with the Surgical Case Report (SCARE) guidelines [7].

2. Materials and methods

In this retrospective observational study, we reviewed the medical records of three male patients with urethral trauma resulting from pelvic fracture due to being run over by a motor vehicle.

Information on trauma features and treatment modalities in the acute phase was obtained from the records of the receiving hospitals.

A review of the literature was performed on PUBMED database using the following terms: “pediatric posterior urethral trauma”, “graft urethroplasty”, and “flap urethroplasty”.

3. Case reports

3.1. Patient 1

A 9-year-old male was diagnosed with urethral trauma due to a pelvic fracture. Initially a suprapubic cystostomy was performed. After 2 months, he was referred to our hospital, and underwent a cystoscopy that showed a pervious urethra up to the membranous portion with hyperemic mucosa and a distance of more than 2 cm between the urethral stumps. A Mitrofanoff procedure was done as a temporizing measure until adequate growth was achieved. After 2 years, cystoscopy showed normal urethral mucosa and radioscopy demonstrated a 2 cm gap between the stumps (Fig. 1). The urethra was anastomosed through anterior sagittal approach without splitting the rectum (modified ASTRA) (Fig. 2). The patient has been followed for 18 months postoperatively and has preserved urinary and fecal continence. He has no complaints and his uroflowmetry is normal.

3.2. Patient 2

A 10-year-old male patient suffered pubic symphysis diastasis in complex pelvic trauma. Exploratory laparotomy with splenectomy, colostomy, cystostomy (due to an extensive urethral trauma) and orthopedic intervention were done in the receiving hospital. After 3 months, the external fixator was removed without pubic

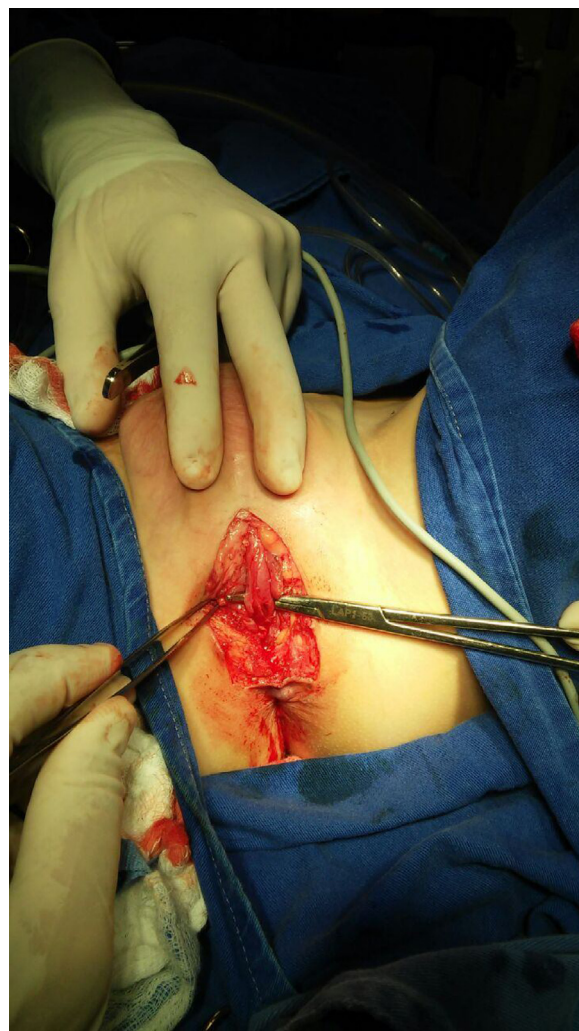


Fig. 2. Intraoperative photograph of patient 1 showing the urethral stricture. Anterior sagittal approach without splitting the rectal wall was performed and primary anastomosis between the two pervious urethral segments was successfully achieved.



Fig. 3. Patient 2 preoperative urethrocytography showing a long urethral gap (*) between the urethral stumps.

symphysis disjunction correction. After 1 year, colostomy reversal was performed. A urethrocytography done at that time showed a gap of more than 3 cm between the urethral stumps (Fig. 3). After 2 years post-trauma, a perineal urethroplasty with preputial

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