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Repair-oriented categorization of circumcision urethral injury in Benin city, Nigeria

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Abstract *Background:* The wide spectrum of circumcision urethral injury/fistula makes selection of appropriate repair methods challenging in sub-Saharan Africa. This paper reports on the outcome of repair-oriented categorization in a Nigerian center.
Methods: Consecutive children presenting with circumcision urethral injury/fistula at the University of Benin Teaching Hospital were categorized into six repair-oriented groups in 2009—2011.
Results: 21 children were treated. Except in 2 cases, early neonatal circumcision at an average age of 8 days (range 4—14 days) had been performed, the majority (52%) by paramedics at home. Categories of injury/fistula based on severity ranged from isolated fistula (38%) which required fistula excision and repair (category A) to severe ventral urethral/coronal/glanular avulsion (29%) which required urethral plate tubularization/ventral penile reconstruction (category F). Overall, successful first-stage repair was achieved in 19 (91%) children. Meatal stenosis (2), urethral stricture (1), which responded to serial dilatation, and minor urinary leakage (2), which was closed at second stage, were the post-repair complications. Adequate penile size and straight penis on erection were achieved in all cases. Cosmetic outcome was excellent in 16 (76%) cases, good in 4 (19%) and fair in 1 (5%).
Conclusion: Repair-oriented categorization, which could be useful to practitioners in similar settings, was satisfactory in managing urethral injury/urethrocutaneous fistula.

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Introduction

Unrecognized urethral injury following male circumcision may ultimately manifest as urethrocutaneous fistula, an abnormal and epithelialized communication between the urethra and the skin [1,2]. Depending on the site of injury, it may result in urinary leakage through the fistulous opening to the perineum, scrotum, penile shaft, corona or glans penis, other than through the external urethral meatus located at the tip of the glans penis [1,2]. The majority of urethrocutaneous fistulae are acquired as a complication of male circumcision and hypospadias repair [1—6]. Although circumcision urethral injury is rarely a life-threatening pathology, distressing presentations are commonly seen among parents, older children and adults with urethrocutaneous fistula owing to the associated psychological effects [2,6,7]. Urethral injury and urethrocutaneous fistula following male circumcision are very common in regions such as sub-Saharan Africa where male circumcision is routinely performed and, even more so, where neonatal circumcision is practiced [8—10]. Circumcision in an unhygienic environment and the use of unsterilized instruments by untrained personnel in such regions were earlier reported to influence the development of circumcision-related complications, with urethrocutaneous fistula as one of the most troublesome problems [2,10].

The repair of male circumcision urethral injury and urethrocutaneous fistula poses a major challenge in many centers, particularly in sub-Saharan Africa [2,10]. This is due to the wide spectrum of types of injury/fistula, the associated post-circumcision severe inflammation and infection which result in excessive penile scarring and deformity, and the absence of preputial tissues and skin which may be useful for repair in some cases [8,10,11]. Also, the non-availability of appropriate instruments and materials required for a successful repair and the challenge of selecting appropriate repair methods for the different types compound the problem, which often results in a poor outcome. A single-stage repair, achievement of acceptable penile cosmetic outcome, and restoration of adequate penile size and function remain the gold standard for assessing the success of repair of post-circumcision urethral injury and urethrocutaneous fistula [5,11,12].

In 2009, a reappraisal of the challenge to determine repair methods and techniques that would improve the outcome of repair was undertaken at a Nigerian referral pediatric surgery center. This influenced the determination of repair methods and the development of a repair-oriented categorization of circumcision urethral injury/urethrocutaneous fistula. We report here on the outcomes from use of this repair-oriented categorization in a series of consecutive children recruited during the past 2.5 years.

Patients and methods

Design

This study, which involved categorization of post-circumcision urethral injury/urethrocutaneous fistula to adopt a predetermined repair method, was undertaken at the University of Benin Teaching Hospital between April 2009 and November 2011. Consecutive male children who were diagnosed with circumcision urethral injury/urethrocutaneous fistula were included in the study after ethical approval was granted by the hospital local ethics committee. Two children in whom urethral injury was a component of complete penile amputation that required penile reconstruction were excluded. At presentation, the injuries and/or fistulae were carefully assessed for etiology, age at circumcision, place of circumcision and circumcisionist, post-circumcision care, mode of referral, category of injury/fistula and the predetermined repair method adopted, post-repair protocol, and complications and outcomes of repairs, which were prospectively documented using a proforma.

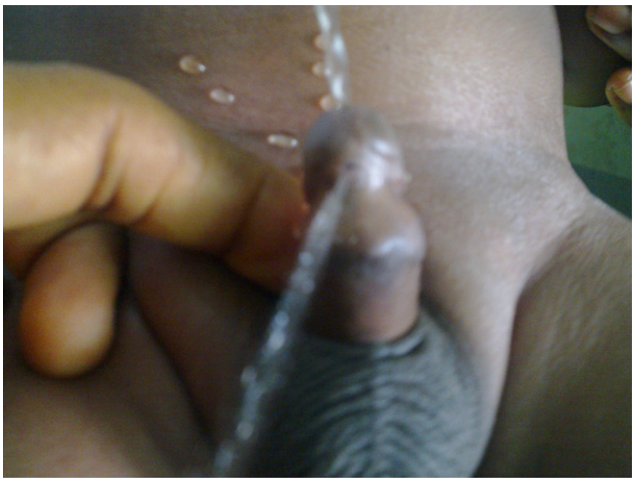

Figure 1 Pin-hole fistula in corona identified during urination which created an obvious dimple of the ostium on peri-fistula infiltration with normal saline.

Categories/predetermined repair methods

A. Isolated single pin-hole or large fistula (Fig. 1): The fistula is circumscribed, dissected and excised up to the urethra. The edge of the urethral defect is inverted with continuous water-tight suture which is overlaid with mobilized dartos fascia, subcutaneous tissue and skin.

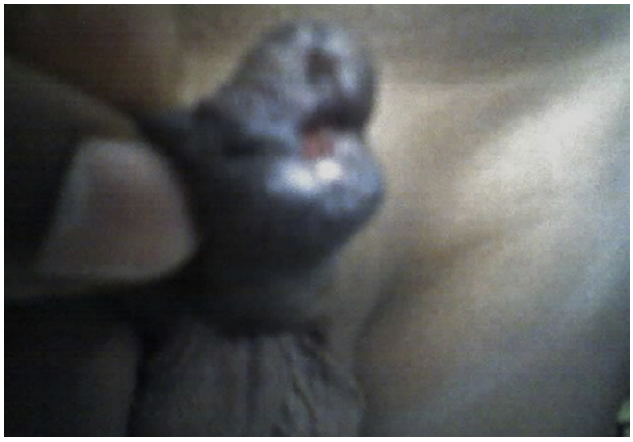

Figure 2 Large coronal and glanular fistulae which were brought in continuity with urethral meatus and the urethral plate tubularized.