CASE REPORT

Urinary bladder rupture in an 18-day-old boy following circumcision at a health centre in Uganda

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Abstract

An 18-day-old boy with a recent history of circumcision presented with abdominal swelling and a prolonged cessation of urination. Physical examination revealed abdominal distension and a firm penile dressing. A diagnosis of peritonitis was made, and urinary bladder rupture with ascites was revealed by laparotomy. He had an uneventful postoperative recovery and was discharged on the seventh postoperative day. One month after surgery, he was well with normal bladder function and no evidence of urethral stricture formation. Urinary bladder rupture is a rare complication of circumcision; in this case, it possibly resulted from the occlusive dressing. Early identification is key to achieving favourable outcomes for such patients.

Keywords: neonatal circumcision, neonatal surgery, urinary bladder rupture, peritonitis, Uganda

Introduction

Isolated bladder injuries in children are uncommon, more so during the first 28 days of life.[1],[2] Medical procedures and investigations, including any form of instrumentation, hernia repairs, and voiding cystourethrograms, are known to cause bladder injuries.[1],[3],[4] Early detection of bladder injuries leads to better outcomes.[2]

In Uganda, most circumcisions are performed during infancy.[5] Complications associated with circumcision include sepsis, genital mutilation, dehydration, bleeding, loss of penile sensitivity, delayed wound healing, excessive foreskin removal, genital amputation or injury, and death.[6],[7]

Case presentation

A healthy 18-day-old boy presented to our department 3 days after undergoing circumcision, with a 2-day history of abdominal distension associated with a failure to pass urine and stool. The circumcision had been performed by a clinical officer at a health centre. He was unable to breastfeed but was not vomiting. He was delivered vaginally, at term, with good Apgar scores, at a health centre, following an uneventful pregnancy. He was the second born of 2 children and had received all of the appropriate immunizations at the time of presentation. On examination, he was tachypnoeic with a moderately distended and tender abdomen that had diminished bowel sounds. There was a firm penile dressing wrapped around the circumcision site. His laboratory results were as follows: white blood cell count 8.26 × 10^3/μL, haemoglobin 12.6 g/dL, platelet count 647 × 10^3/μL, urea 11.64 mmol/L, creatinine 158.2 μmol/L, sodium 136 mmol/L, potassium 7.43 mmol/L, chloride 99.5 mmol/L. An erect abdominal x-ray showed abdominal distension with opacification of the lower abdomen. A clinical diagnosis of peritonitis was made, and the patient was taken to the operating theatre. When the penile dressing was opened, there was a fresh circumcision wound with active bleeding. Urethral catheterization was unsuccessful. Laparotomy was performed; 450 mL of ascites and purulent fluid in the pelvis was observed. A 2-cm perforation in the posterior bladder dome was repaired primarily in 2 layers. The patient had an uneventful postoperative course and was discharged on the seventh postoperative day. He had improved renal function test results before his discharge from the hospital. At 2 postoperative check-ups at our paediatric surgical outpatient department, including 1 month after surgery, the patient was well with normal bladder function and no evidence of urethral stricture formation.

Discussion

Circumcision is among the most commonly performed surgical procedures worldwide, and the most common complication is bleeding. In our unit, we have seen many urethral and glans injuries, especially after ritual circumcisions. Bladder rupture, however, is a rare complication. We know of 2 previously reported cases of circumcision-associated bladder rupture, including a rupture that resulted from the urethra being stitched closed during the circumcision. We

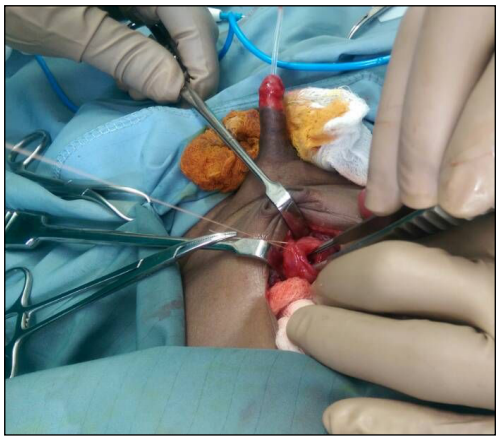

Figure. Intraoperative view of the perforated bladder in an 18-day-old boy

believe that, in our case, the bladder rupture resulted from an occlusive dressing that obstructed the urethra.

In Uganda, circumcisions are performed by clinical officers (trained to perform circumcisions), medical officers, or specialist surgeons. The associated complication rates reported in Africa do not vary much among the different health professionals that perform circumcisions.[8]

Bladder rupture has an associated mortality rate of about 80%,[9] partly because its rarity among nontrauma patients makes it less likely to be suspected and diagnosed.[10] Circumcision-associated bladder ruptures are so rare that many publications have not reported them as potential complications of circumcision.[8] Bladder perforations have been known to occur in association with sepsis, bladder instrumentation, and trauma, among other causes.[1] In children, the urinary bladder is mainly intraperitoneal given the small size of the pelvic cavity,[11] and this—combined with thin bladder walls—increases the risk of bladder rupture during childhood relative to adulthood.[3] The weakest part of the bladder is the dome,[12] which is why most bladder ruptures occur at the dome, as was the case with this patient.

Diagnosing spontaneous urinary bladder rupture can be challenging, especially in resource-limited settings. However, a complete lack of urine output for more than 24 hours, abdominal distension, a suspicion of ascites, and a raised serum creatinine level can be suggestive of urine extravasation into the peritoneal cavity. Preoperative ultrasound and voiding cystourethrography examinations were not performed in this case because of concern regarding the likely presence of peritonitis.

Early diagnosis is crucial, as late intervention leads to sepsis, hydronephrosis, and renal failure.

Conclusions

This was a rare case of bladder rupture, attributable to an occlusive dressing applied after neonatal circumcision. The diagnosis can be elusive in resource-limited settings. This patient recovered with no further complications and had normal renal function. Continued follow-up visits were scheduled to monitor for potential urethral stricture development.

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