Scrotal injuries during neonatal circumcision

Y. Bar-Yosef *, S. Dekalo, N. Bar-Yaakov, J. Binyamini, M. Sofer, J. Ben-Chaim

Summary

Objective
To report very rarely encountered scrotal injuries during neonatal circumcision. Hospitals and physicians in the authors’ country are mandated to report circumcision complications to the Ministry of Health. Those reports include the discharge summary from the emergency room or the admitting department. This is believed to be the first case series describing scrotal injuries during ritual circumcision.

Patients and methods
Reports of all circumcision complications between 2007 and 2014 were evaluated. Retrieved data on cases of scrotal injuries included patient’s age, time between injury and hospital admission, nature of the injury, and administered treatment.

Results
Twelve of a total of 489 reports of circumcision injuries involved the scrotum (2.5%). All circumcisions were performed during the neonatal period, and the infants were admitted on the day of injury. The only related genital injury was significant shortage of penile skin reported in six patients. Scrotal exploration and skin closure in the operating room was undertaken in six cases, five under general anesthesia. Suture closure in the emergency department was performed in three patients, and the scrotal skin was left to heal with secondary intention in three other patients. Scrotal content injury that extended to the tunica vaginalis of the testis was noted in one exploration.

Discussion
The injuries sustained by the 12 study infants were mostly superficial and are not expected to cause long-term damage, although half of the patients required treatment under general anesthesia in the operating room or under sedation in the emergency department. While all reported patients emerged unscathed from the anesthetic procedures, the possible immediate complications of anesthesia as well as its long-term effects are not to be taken lightly, especially when treating a newborn. Further education of medical providers as well as performers of ritual circumcisions may help lower the risk of this rare injury as well as other more severe complications.

Conclusion
Scrotal injury during neonatal circumcision is rare. While half of the 12 reported patients required exploration in the operating room, the injuries were mostly superficial and did not involve scrotal content, although they often involved extensive resection of penile skin.

Summary Fig. 1 Scrotal skin injury and penile skin deficiency following neonatal circumcision, left to heal by secondary intention.
Introduction

The more commonly reported genital injuries during neonatal circumcision include bleeding and shortage of skin. Bleeding is usually mild, and it frequently resolves with conservative treatment. Massive bleeding is occasionally encountered, and it requires surgical intervention [1,2]. Glans amputation [3] and urethral injury are rarer and more complicated injuries [4,5], while scrotal injuries are very rare. The hospitals and physicians in the authors’ country are mandated to report circumcision complications to the Ministry of Health. Those reports include the discharge summary from the emergency department or the admitting department. This is believed to be the first case series describing scrotal injuries during ritual circumcision.

Patients and methods

The circumcision complications database of the Ministry of Health was reviewed for reported cases of circumcision injuries involving scrotal skin or content. The study was approved by the local institutional review board committee. Reports of all circumcision complications between 2007 and 2014 were evaluated. The data retrieved on cases of scrotal injuries included patient’s age at the time of the procedure, time elapsed between injury and presentation for medical care, nature and extent of the injury, and the administered treatment.

Results

Twelve out of a total of 489 (2.5%) reports of circumcision injuries involved the scrotum. All circumcisions were performed during the neonatal period by non-physicians, and all the infants were admitted for treatment on the day of injury. The only related genital injury was significant shortage of penile skin, and it was reported in six patients. Scrotal exploration and skin closure in the operating room was undertaken in six cases, five under general anesthesia and the sixth under sedation. Suture closure in the emergency department was performed in three patients, and the scrotal skin was left to heal with secondary intention in three other patients. Scrotal content injury was noted in one exploration where the injury extended to the tunica vaginalis of the testis with no damage to the testis or testicular vasculature.

Discussion

Circumcision remains a very common procedure, with varying rates reported worldwide. A recent report from the Centers for Disease Control and Prevention estimated a prevalence rate of 80.5% for circumcision in the United States [6]. While circumcision may have health benefits, they should be weighed against possible complications. The 2012 policy statement of the American Academy of Pediatrics states that the health benefits of neonatal circumcision outweigh the possible risks of the procedure. The policy lists reduction of urinary tract infection during the first year of life as well as reduction of the risk of heterosexual acquisition of HIV and transmission of other sexually transmitted infections among the benefits [7].

Several anatomic genital characteristics or pathologies, including scrotal or penile features, may raise the risk for scrotal injuries. Scrotal pathologies, such as hydroceles, may make newborns prone to circumcision-related scrotal injuries, but none were reported for any of the patients reported herein. Penile malformations, such as a buried penis or penoscrotal webbing, may also be a risk factor for scrotal injury. A multi-institutional consensus on objective criteria for use in determining patient suitability for neonatal clamp circumcision was recently published [8]. Several anatomic characteristics were included in its checklist, including penile length, lack of curvature or torsion, evident coronal ridge, appearance of the prepuce and the median raphe, and the appearance of penoscrotal and penopubic junctions. Out of 193 candidates for circumcision, 23% were found unsuitable for a neonatal clamp procedure. Penoscrotal webbing accounted for 19 of the cases deemed unsuitable, representing 30% of the 64 unsuitable patients and 9.8% of the entire cohort. Those authors, however, did not precisely define what they meant by ‘penoscrotal webbing’. Other reports in the literature include the results of corrective procedures, but little or no information on the prevalence of penoscrotal webbing [9–12]. This relatively common anatomic finding may cause scrotal skin injury during ritual circumcision, but it would not be evident directly after the performance of a circumcision and therefore not included in the admission reports available for the current review, thus precluding the possibility of determining its contribution to injury in the herein reported cases.

Previous reports of severe circumcision-related injuries have speculated on possible mechanisms of these injuries. Insufficient lysis of adhesions is one of those mechanisms that has been implicated [3]. Persistent adhesions may also very well lead to scrotal injuries, since tension applied to the preputial skin may lead to inclusion of scrotal skin when penile skin is not adequately released and mobilized. Inappropriate instruments or technique are other possible reasons for these rare injuries. The authors have no information regarding the instruments used in the cases they describe. However, all were performed by non-physicians. Ritual circumcision in the authors’ country is commonly performed with the traditional Jewish device known as Mogen (Hebrew for shield), a slotted shield designed to protect the penis. Alternatively, the Mogen clamp (also known as the Bronstein clamp after its inventor) is used, which has the same design as the traditional Mogen with the addition of a hinge and cam which create a crushing hemostatic effect. Other devices such as Gomco clamp or Plastibell are not used.

The reported rate of scrotal injuries during neonatal ritual circumcision in the current study is approximately 2.5%. As is the case with any study which is based on reports and databases, it is limited by a reporting bias. Not all complications are reported for various reasons. It is possible that physicians tend to report unique and rare injuries, such as scrotal injuries, whereas common injuries remain unreported. As such, scrotal injuries would be over-represented in the current series, and the actual rate of scrotal injuries out of the total circumcision complications would be lower than reported. Moreover, failure to report even a small
number of scrotal injuries may significantly alter the results and lower the reported rate of these rare injuries.

The injuries sustained by the 12 study infants were mostly superficial and are not expected to cause long-term damage related to their scrotal injury. The deficiency of skin, noted in many of the patients, could however lead to skin tethering, penile curvature, pain with erections or cosmetic concerns later in life. Half of the patients required treatment under general anesthesia in the operating room or under sedation in the emergency department. While all reported patients emerged unscathed from the anesthetic procedures, the possible immediate complications of anesthesia as well as its long-term effects are not to be taken lightly, especially when treating a newborn. Further education of medical providers as well as performers of ritual circumcisions may help lower the risk of this rare injury as well as other more severe complications.

Conclusions

Scrotal injury during circumcision is rare. While one-half of the reported patients required exploration in the operating room, the injuries were mostly superficial and did not involve scrotal content, although they often involved extensive shortage of penile skin.

Author statements

Ethical approval

None sought.

Funding

None declared.

Competing interests

None declared.

References


Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpurol.2018.10.009.