Case Report

Total Glans Amputation in a Child following Ritual Circumcision – Report of a Case and Review of Literature

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Abstract

Ritual circumcision in children remains a trivialized procedure in some countries, especially in rural areas. It is often performed by unqualified paramedical personnel, or even by religious workers whose notions of surgery and asepsis are uncertain. Although it is thought to be a minor procedure, major complications with sexual or even life-threatening prognosis can occur. Amputation of the glans during circumcision is a rare incidence secondary to poor application of operating principles. We report the case of a 1½-year-old boy who underwent a progressive amputation of the glans after a ritual circumcision by a religious worker. The child was brought 10 days after the procedure with totally amputated, nonsalvageable glans. A urethral meatoplasty was performed to enable proper voiding and prevent meatal stenosis. The child has been in follow-up for the past 6 months without any urinary symptoms.

Keywords: *Children, glans amputation, ritual circumcision*

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Introduction

Pediatric circumcision is a surgical procedure that must be performed in safe conditions by trained medical personnel. In many communities, it is still considered a trivial procedure. This gives a free rein to paramedics and nonhealth professionals to practice it in noncompliant conditions.[1-4] Being the most practiced surgical intervention in the world for religious, ritual, esthetic and medical reasons, circumcision can be a source of numerous complications. Hemorrhage and infection are the most common complications. Other complications, such as meatal stenosis, urethrocutaneous fistula, and necrotizing fasciitis have also been reported in the literature.[1-5] Total glans amputation is one of the worst complications of circumcision. It has tremendous urinary, sexual, and psychological repercussions for the patient and his family. This complication is attributable to an inexperienced, incompetent operator who does not respect the surgical principles.[5-8]

Case Report

We report the case of a 1½-year-old boy who underwent ritual circumcision by an unqualified traditional person (religious worker). The child had severe bleeding following the procedure, after which a horsehair was tied around the glans, and it was covered with a tight circular dressing. On the 10th postoperative day, the mother noted that the entire dressing had come off and the glans was completely amputated. On examination, the child had a complete amputation of the glans at the corona with a buried urethra in the center. There was no active bleeding over the penile shaft [Figure 1]. There was no chance of salvaging the glans. Further to this, a urethral meatoplasty was planned. Under general anesthesia, the urethra was mobilized, and meatoplasty was done by suturing the urethral wall to the surrounding corporal tissue with interrupted 6-0 polyglactin sutures over a 6 F urethral catheter. The urethral catheter was removed after 72 h of the procedure and the child was discharged after he passed urine with a good stream. There were no complications of the procedure. The child has been in follow-up for the past 6 months, and there are no urinary symptoms or stenosis of the neo meatus.

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Figure 1: Photograph showing the amputated glans with the residual urethra and penis

Pediatric circumcision is one of the most common surgical procedures performed around the world. Most pediatric circumcisions are performed by pediatric surgeons. However, in many countries, ritual circumcisions are still performed by nonprofessionals such as barbers, quacks, and religious practitioners. These procedures can result in fatal complications due to a lack of basic surgical knowledge, poor hygiene, and incorrect circumcision methods.[2]

The most common early complications of such procedures are bleeding and local infection. Unsatisfactory esthetic outcomes, surgical trauma, or injury to the urethra are also prevalent. There have been reports of babies dying following circumcision due to sepsis or tetanus.[3] Buried penis due to cicatrix development, amputation of the glans, and necrotizing fasciitis are rare but serious complications.[4] Complication rates have been reported to be as low as 1% when conducted by professionals, 10% when performed by unlicensed health technicians, and 85% when performed by traditional circumcisers.[5]

Complete amputation of the glans is a rarely reported complication following circumcision. It is a serious problem as it has negative functional, cosmetic, and psychological consequences on the child and the family. For a delicate surgery such as circumcision, lack of training, improper surgical technique, and inappropriate instruments are all risk factors for glans injury. Many operators use the Mogen clamp, which is likely to cause this injury due to the provider's inability to directly visualize the glans before incising the foreskin.[6] According to a retrospective study analyzing the causes and severity of penoscrotal injuries in 25 patients, six patients sustained glans amputations by a quack during circumcision.[7] The authors indicated that the use of a bone cutter for circumcision is increasing and that steps should be taken to stop it.[7] In our case, the boy had a hair tourniquet which was applied by the quack to control the bleeding. This is an ancient practice and has been reported in the literature. The tourniquet is made from ponytail hair and applied after circumcision for homeostasis.[8]

The availability and condition of the amputated tissue, the extent of injury, and the time from injury to obtaining medical attention appear to be the key guiding factors in decision-making. In the event of an amputation, the penis should be cleaned with normal saline, wrapped in saline-soaked gauze and placed in a sealed sterile bag and on an ice bath as soon as possible. The glans must be reimplanted as soon as possible after injury since excised glans tissue remains viable up to 8 h after injury. Successful reimplantations have been documented even up to 18 h after glans amputation.[6,9] In our case, the glans was gradually amputated over the course of 10 days and rendered nonviable for any reconstructive procedure. Closure of the corpora cavernosa and meatoplasty are recommended on late presenters and those with poor tissue quality so that the patient can urinate freely without straining. This is an option that many healthcare facilities have chosen because it does not require microsurgical anastomosis for late-occurring glans amputations.[10] Several authors agree that in the event of a circumcision accident, a reimplantation, whether microsurgical or not, should be performed as soon as feasible with the preservation of the foreskin.[1-10] In late presenters, some authors recommend neo-glans reconstruction and proximal lengthening using gracilis muscle or distal lengthening using rectus abdominis fascial island flap covered by a skin graft or buccal mucosal graft.[11] The approach and results of different authors are enlisted in Table 1. Irrespective of the reimplantation technique, the risk of complications such as cutaneous or distal stump necrosis, urethrocutaneous fistulas, urethral stenosis, and erectile and sensory disorders have been described. In order to reduce the risk of complications and increase the chances of success in penile reimplantation, adjuvant measures such as washing of the penile stump with isotonic saline, storage in an aseptic environment at 4°C, debridement if necessary, antibiotic therapy, administration of low-molecular-weight anticoagulant, and hyperbaric oxygen therapy have been recommended.

In later life, glans amputations may be associated with psychological issues. These can be linked to a change in body schema and low self-esteem. Such patients may be referred to a psychologist for additional assistance and counseling. The patient's sexual function should also be assessed.[10]

Table 1: Summary of reports of glans amputation following circumcision

Author/year	Patient's age	The operator of the circumcision	Clinical presentation after the circumcision	Time between the complication and surgical intervention	Treatment
Sow *et al*. (2022)[10]	9-year- old boy	Pharmacist	Total amputation of the glans penis	10 h	Meatoplasty with antibiotic therapy for 10 days
Petrella *et al*., (2021)[12]	12-day- old	Experienced religious practitioner	Total amputation of the glans	2 h	Reimplantation of the glans
Akakpo-Numado *et al*., (2021)[13]	1-year- old	Nurse	Penile amputation located at 2 mm below the neck of the glans penis	3 h	End-to-end urethra, corpus spongiosum, corpora cavernosa and skin to mucosa anastomosis. There was progressive necrosis of the skin and the glans mucosa. A debridement was performed without microsurgical anastomosis
Ahmed *et al*., (2021)[14]	5-month- old	Local nonqualified traditional person	Amputation of the distal part of the penis	2 days	Unsuccessful reimplantation. He was scheduled for surgical reconstruction in the future
Manentsa *et al*., (2019)[15]	10-year-old boy	Medical officer	Glans had been amputated at a level just below the coronal sulcus	40 min	Glans was successfully reattached during surgery. Subsequently, the patient developed a fistula which had to undergo future reconstructive surgery
	15-year-old	Medical officer	Partial amputation of the glans and exposition of the urethra	3 h	Reattachment of the transacted part of the glans. However, reattached glans became necrotic, and the patient subsequently developed a urethrocutaneous fistula. The patient required further reconstruction
	10-year-old	Clinical associate	Partial amputation of the glans on the dorsal aspect	Immediately	Insertion of the urethral catheter with hemostatic control of the wound through cauterization and sutures then, the patient was transferred to the hospital for reconstruction by the urologist. The patient has healed without sequelae
Soltani *et al*., (2020)[16]	4-year-old boy	General practitioner	Penile glans amputation	<2 h	Reimplantation with urethral anastomosis. Favorable after three months of follow-up
Giovanny *et al*., (2018)[11]	5-year-old child	Medical doctor	Lost glans penis when the baby was 2 days old with complaints of difficulty in urinating freely and the penis was disfigured	3 years	Neo-glans reconstruction with autologous buccal mucosal graft. At the 6-month follow-up, the patient had a largely patent urethral meatus with no scarring at the distal end of the penis with acceptable cosmetics
Khaireddine *et al*., (2014)[17]	5-year-old	Urologist	Ampsutation of half the penis glans and the urethra was sectioned	1 h	Microsurgical successful reattachment of a distal penile glans
	3-year-old	General practitioner	Amputation of the entire glans with and the corpora cavernosa were sectioned at their distal par	2 h	Microsurgical successful reattachment of a distal penile glans
Faydaci *et al*., (2011)[18]	7-year-old	Nonqualified person	Glans penis amputation	1 h	Urethral end-to-end approximation and glanular anastomosis and then applied hyperbaric oxygen therapy postoperatively

Conclusion

Pediatric circumcision is a delicate surgical procedure that engages the responsibility of the operator. It is an intervention that presents various complications, one of the most tragic of which is amputation of the glans. The standard treatment of penile microvascular and nerve reimplantation may not be feasible in many countries where circumcision is commonly done by unqualified personnel and due to a lack of appropriate equipment. Medicalization of circumcision and sensitization of the population on the impact of circumcision performed by unqualified people needs to be stressed. Finally,

well-structured training should also be offered in countries where religious practitioners still practice this process.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the legal guardian has given consent for images and other clinical information to be reported in the journal. The guardians understand that the name and initial will not be published and due efforts will be made to conceal the patient's identity.

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Conflicts of interest

There are no conflicts of interest.

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