Case Report

Degloving injury to the penis

Raj K. Mathur, Brajesh K. Lahoti, Gaurav Aggarwal, Bhaskar Satsangi

ABSTRACT

A case of reconstruction after penile skin avulsion is described in an eight-year-old boy. Penile coverage was gained by use of the avulsed skin flap itself, without a graft or local tissue flap. The procedure avoids any valuable time delay; thus, enhancing the chances to obtain adequate flap viability, avoids patient discomfort caused by perineal expansion, gives a satisfactory cosmetic appearance, and taking into account his age, avoids future psychosomatic and psychosexual problems.

Key words: Avulsion injury penis, dog bite, no graft or flap

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INTRODUCTION

Avulsions or degloving injuries of the penile and scrotal skin are rare urology emergencies and occur mainly due to accidents with industrial machines and agricultural machine belts.[1] Such lesions are incapacitating and have a devastating psychological impact.[1] Avulsions may vary from simple lacerations to virtual emasculations.[2] Generally, lesions reach only the skin, causing minimal bleeding without producing damage to the cavernous body, the spongy body or the testes.[1,2]

CASE REPORT

An eight-year-old boy presented with a degloving injury of his penile skin, following a dog bite, nearly eight hours ago. The entire penile shaft was exposed, with penile skin dangling from the glans via a thin vascular pedicle [Figures 1,2]. Without further ado, he was taken to the operation theatre, where under spinal anaesthesia, a primary repair was done without the use of a local flap or graft (taking into account his age). The exposed penile shaft was regloved with the same penile skin whilst, keeping the vascular pedicle as the base for reconstruction [Figure 3]. Sutures used were of a fine calibre and absorbable variety, and interrupted suturing technique was used. Hitching sutures were also taken along the penile shaft to ensure adequate approximation with the avulsed skin. After penile shaft coverage, an intraoperative decision of constructing a neoprepuce, using the redundant skin, was taken and subsequently the patient was catheterised with a 10 French Foleys catheter. The immediate results were excellent and adequate cosmesis was achieved [Figure 4]. His postoperative period was uneventful, with vasodilators and antibiotics being the mainstay of therapy. He was subsequently discharged on his sixth postoperative day after catheter removal. Six month follow-up revealed a normal appearing penis with no phimosis or skin necrosis [Figure 5].

DISCUSSION

The penis is particularly susceptible to avulsion injuries. The overlying skin of the penis is loose and elastic. The penile skin must be highly mobile to accommodate both the rigid and flaccid state of the penis. This loose base predisposes the skin to be ripped off easily from the penis.

Penile soft tissue injuries can result through multiple mechanisms, namely infection, burns, human or animal bites, and degloving injuries that involve machinery. Although not life threatening, such lesions are incapacitating and psychologically devastating.[1] Avulsions vary from simple lacerations to virtual emasculations.[2]

Examination of the penis reveals soft tissue loss. Those who have undergone laceration secondary to a human or animal bite, usually present late because of embarrassment of the injury. This results in increased risk for infection, which may be seen in the form of abscess, cellulitis, or tissue necrosis; and further worsens the postoperative prognosis.

The anatomy of the penis and scrotum accounts for the

Department of Surgery, [1]Division of Paediatric Surgery, MGM Medical College and MYH Group of Hospitals, Indore, Madhya Pradesh-452 001, India

Address for correspondence:
Dr. Raj K. Mathur,
Department of Surgery, MGM Medical College and
MYH Group of Hospitals, Indore, Madhya Pradesh-452 001, India.
E-mail: rkmmyh60@yahoo.com



Figure 1: Preoperative photographs revealing the avulsed penile skin dangling from the edge of the glans



Figure 2: Preoperative photographs revealing the avulsed penile skin dangling from the edge of the glans



Figure 3: Postoperative photographs demonstrating the regloved penis with adequate skin viability



Figure 4: Postoperative photographs demonstrating the regloved penis with adequate skin viability



Figure 5: Postoperative follow-up: at 6 months

reproducible nature of this injury. The skin of the penile shaft is loosed up to an area just behind the coronal sulcus. The glans penis is essentially fixed in position. The natural cleavage plane along the shaft of the penis is between the Buck's fascia and the loose areolar tissue that surrounds it. The avulsed segment of the skin from the penis includes the loose areolar tissue with its subcutaneous veins, the dartos fascia, and the skin as a unit. Because the Buck's fascia is preserved, the corpora cavernosa and corpus spongiosum, including the urethra, are spared, as are the deep dorsal vein and dorsal artery, and nerve. The avulsion injury travels along the level of the areolar tissue on the underside of the penis, because the Colles' fascia is included in the scrotum, and this most probably pulls the anterior half of the scrotal skin. Testicular sparing is the rule with this injury, and the cremasteric reflex has been implicated as a cause.[3] In traditional treatment, after cleaning and debridement of devitalised tissues, the exposed tissues are covered with viable flaps from the remaining skin. When there is no available skin, penile burial in the scrotum or in the suprapubic region is performed. The use of posterior scrotal skin for primary closure of the scrotum is also supported by Finical and Arnold.[1] Posterior scrotal skin can usually

be stretched to cover the defect and any subsequent defect from the expansion of the posterior scrotal skin, to cover the injured area, can be skin-grafted anteriorly. When scrotal remnants are available, the results are optimal as far as size, cosmetics, and function measured by sperm count, are concerned.[2] Other techniques, such as banking of the testicles in the inner thighs or reconstruction of the scrotum by tissue expansion, as described by Still and Goodman,[4] bear the disadvantage of time delay. Conley[5] has recognised the disadvantages that accompany multistage operations, namely, the negative psychological effects experienced by the patient of losing his sexual apparatus.

Industrial machines, such as pulleys, chains and rotary discs, are responsible for genital injury, when they snag the operators' clothes and pull out the skin of the penis. Although, not common, this kind of injury occurs occasionally; particularly in the farm industry. Mechanised farming is involved in a majority of these injuries. In 1958, Kubacek presented the first case report of this type of injury.[6]

Bite injuries to the penis require extra care, as they have the potential for infection with unique organisms. Dog bites, the most common animal bite, consist of multiple pathogens such as *Staphylococcus* and *Streptococcus* species, *Escherichia coli,* and *Pasteurella multocida.* Antibiotic treatment should generally include oral dicloxacillin or cephalexin. Patients with possible *Pasteurella* resistance can be treated with penicillin V. In addition, chloramphenicol has also shown to have good efficacy.

Human bites are considered infected by definition and should not be closed. They can be treated with antibiotics similar to those used in animal bites, despite the fact that bacterial cultures may differ.

Surgical repair of soft tissue loss to the penis should be undertaken quickly. Prolonged exposure of the denuded penis increases the risk of secondary infection as well as significantly compromise the vascularity. The most frequent complication of avulsion injuries is postoperative infection. If the graft does not take in patients who undergo split-thickness skin grafting, the consequences can be devastating and complications such as erectile dysfunction, curvature, and fistula are associated risks.

Thus, the crux lies in considering the fact that in young children, taking into account the age, better vascularity, negligible disadvantages and in order to avoid future psychological problems, a single attempt at penile reconstruction without a graft or a flap can be attempted.

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