

Traumatic Degloving Injury of Penile and Scrotal Skin: A Case Report

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Summary: Penile and scrotal skin degloving is uncommon and is mainly caused by accidents with agricultural and industrial machines. Such injuries are called “power take-off injuries,” defined as injuries caused by power transmitted from one object to another. Penile injuries can be extremely disturbing to the physical and mental state of the patient, if not managed properly. We present the case of a 26-year-old man with traumatic degloving of penile and scrotal skin and exposed spongy body, cavernous bodies, and testicles caused by an accident on a farm tractor. The patient was presented to our emergency department 14 hours after his pants getting caught in the rotating driveshaft, which subsequently pulled him at the groin level, whereby the machine grasped the redundant skin of the penis and scrotum. The patient underwent single-stage surgical reconstruction using split-thickness skin graft 48 hours within initial presentation. Postoperative period was uneventful. He was discharged 6 days after operation. At the 8-week follow-up visit, he showed a satisfactory cosmetic outcome, well-healed scrotal and penile grafts, reestablished sexual function, and normal voiding. (*Plast Reconstr Surg Glob Open* 2020;8:e3024; doi: 10.1097/GOX.0000000000003024; Published online 14 August 2020.)

Degloving injuries are high-power injuries in which the skin is torn off from the underlying tissue, severing its blood supply. Road traffic accidents cause most degloving injuries. Industrial and agricultural accidents are other causes of degloving injuries, which mostly involve the upper and lower limbs.¹ Penile and scrotal degloving injuries are rare.² Most reported penile avulsion injuries are caused by farm equipment. Such injuries are called “power take-off injuries,” defined as injuries caused by power transmitted from one object to another. In penile avulsion, the skin around the penis, entrapped by surrounding clothes, is caught by a machine and traumatically ripped off. Penile injuries can be extremely disturbing to the physical and mental state of the patient, if not managed properly.³ The skin is usually most affected in a penile injury, with no actual damage sustained by other parts such as the spongy body, cavernous bodies, or even the testes.²⁻⁴ Typically, penile skin avulsion starts above the pubic symphysis and includes all of the penile skin up to the corona. Genital reconstruction is challenging because of the floating nature of the testis and the risk of hematoma, and the

area is naturally prone to infection and subsequent graft loss.⁵ We present a case of traumatic degloving injury to the penis and scrotum that was managed by a single-stage reconstructive procedure at the King Saud Medical City, Riyadh, Saudi Arabia, a tertiary-care trauma center.

CASE STUDY

Case Presentation

A 26-year-old farmer presented to the emergency department approximately 14 hours after sustaining a penoscrotal degloving injury. The patient reportedly was trapped by a rotary link at the back of his tractor while performing his routine work at a farm outside Riyadh. He recalls his pants getting caught in the rotating driveshaft, which subsequently pulled him at the groin level, whereby the machine grasped the redundant skin of the penis and scrotum. Examination showed circumferential avulsion of the penile skin extending up to the coronal sulcus while leaving the glans. From above, the avulsion extended from just above the pubic symphysis downward to involve all the scrotal skin up to the perineum (Fig. 1).

The patient provided written informed consent for the use of photographs and to publish this article. Our institution does not require ethical approval for reporting case reports.

Surgical Management

The patient was taken to the operating theater for a 1-step reconstructive procedure 48 hours within his initial

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Fig. 1. Degloved penile and scrotal skin, 14 hours after injury.

presentation. Under general anesthesia, devitalized tissue and the skin edges were excised (Fig. 2).

Two split-thickness skin grafts (STSG) were harvested from the right thigh, with one remaining unmeshed while the other was meshed 1:1. To cover the penile shaft skin defect, an unmeshed sheet graft was sutured around the penile shaft, and Vicryl 3/0 (Ethicon, Inc., Somerville, N.J.) was used to suture the graft along the base of the

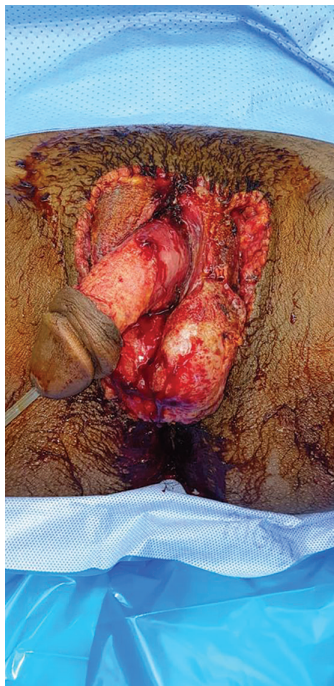


Fig. 2. After initial debridement.



Fig. 3. First dressing, 3 days after surgery.

penile shaft and to the subcoronal tissue, while a meshed split thickness skin graft was used to cover the skin defect of the scrotum with Vicryl 3/0 sutures. Framycetin sulfate gauze and tie-over dressing were applied, and a sponge kept the penile shaft erect for optimal take of the graft.

Postoperative Management

The patient was clinically and vitally stable and afebrile. Approximately 3 days after the operation, the dressing was changed under general anesthesia (Fig. 3). Next dressing was in the ward under adequate analgesia 5 days after the operation.

The patient was discharged 6 days after his operation, and he was placed on 625 mg oral amoxicillin/clavulanic acid 3 times a day for 5 days. After the Foley catheter was removed, the patient successfully passed urine.

At the 8-week follow-up visit, examination showed that the scrotal and penile grafts healed well, with no signs of infection and no scar contracture related to STSG (Fig. 4).

DISCUSSION

Encountering penoscrotal degloving injuries is unusual in clinical practice, and data published on these injuries are lacking.² These injuries are not particularly life-threatening; however, they have been reported to inflict significant psychological sequelae. Thus, they present the need for the restoration of form and function.⁶ Furthermore, the mechanism typically associated with



Fig. 4. Successful skin graft take 8 weeks after surgery.

these injuries is a power take-off incident, first described by Brown et al,⁷ making farmers and industrial workers particularly prone to this injury because of the machinery they handle. The success of reconstruction using a split-thickness skin graft along with the administration of prophylactic antibiotics is largely attributed to the abundant vascularity of penile tissue.^{4,7} The split-thickness skin graft used to cover the penile shaft was an unmeshed plane sheet, while that used to cover the scrotum was meshed 1:1. Ahmed and Mbibu⁸ suggested burying the testes in the thigh for protection. However, this method poses a threat to spermatogenesis.⁹ A meshed graft has the advantage of reducing graft failure because it inherently provides an outflow path for any discharge that may form. A sponge immobilized the penile shaft in the erect position, as described by Li et al.¹⁰ This helped reduce contracture formation and enhanced the success of the graft. Another method has been previously mentioned in the literature by Fang et al¹¹; they managed a similar case of a massive traumatic penile and scrotal skin avulsion by combining split-thickness skin graft and dermal regeneration template with negative pressure wound therapy, which resulted in a satisfying outcome. In this report, the use of a split-thickness skin graft to cover the skin defects of traumatic penoscrotal degloving injuries demonstrated promising results cosmetically and functionally. Furthermore, the meshed graft used for the scrotal defect allowed the graft to take and provided adequate functionality. The unmeshed split-thickness skin graft used to cover the penile defect led to a more desirable

cosmetic result. Therefore, we recommend the surgical management of traumatic penoscrotal injuries presented here; however, further research is needed to assess any potential unforeseen long-term complications, as well as the need for future clinical studies to use the valid and reliable visual analog scale in assessing the management outcome in using split-thickness skin graft to cover the skin defects of traumatic penoscrotal degloving injuries.

SUMMARY

Penoscrotal degloving injuries are rare. Proper safety measures and awareness are needed while working with industrial and agricultural machinery. Penile and scrotal skin form an integumental unit, which can be pulled in a power-takeoff incident, resulting in degloving injuries.

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PATIENT CONSENT

The patient provided written consent for the use of his image.

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