



AESTHETIC RECONSTRUCTION OF DEGLOVING PENOSCROTAL INJURIES

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Article Info	ABSTRACT
<p>Received 15/11/2014 Revised 21/11/2014 Accepted 26/11/2014</p> <p>Key words: Penis, Scrotum, Wounds and injuries, Reconstructive Surgical Procedures.</p>	<p>Avulsions of penile and scrotal skin are uncommon events and are caused mainly by accidents with industrial machines and agricultural machine belts e.g. Husking machine. We report the case of a 20-year old patient, recently married with avulsion and traumatic de-gloving injuries of the penile and scrotal skin & soft tissues while working in Husking machine with lungis wearing, with exposure of the cavernous bodies, spongy body, and testes. Reconstruction was performed in stages, achieving a satisfactory aesthetic result with normal voiding and re-established sexual function.</p>

INTRODUCTION

Skin avulsions of male genitals are a rare urological emergency [1]. Although not life-threatening, such lesions are incapacitating and psychologically devastating and occur mainly because of accidents with industrial machines or agricultural machine belts [2,3]. Avulsions vary from simple lacerations to virtual emasculations with completely denuded penis & testes. Generally, lesions reach only the skin, causing minimal bleeding without producing damage to cavernous bodies, the spongy body or testes [4].

CASE REPORT

A 20-year old agricultural worker recently married wearing a lungis was working in a Husking machine in agricultural plant sustained de-gloving injuries of penis and scrotum, attended at RKMS Hospital, Kolkata in June 2012 due to work accident in the evening.

At the emergency room it was found that he had a total avulsion of penile and scrotal skin with completely denuded testes which was hanging with spermatic cord structures. The skin of penis was also avulsed and loss of penile skin was found except Corona gland which was not injured and redundant skin was found along with it. He came with shock due to bleeding and pain. At emergency he was resuscitated with IV fluids, Antibiotics, Catheterisation & secure of haemostasis with antiseptic dressing, was taken to the operation theatre approx. 2 hours after the accident. Following sedation anaesthesia, the medical staffs performed a careful cleaning, an inventory of lesions and a debridement of devitalized tissues and was referred to us in plastic surgery department.(Figure 1&2). On the very next day the patient was taken to OT after getting temporary emergency fitness with necessary investigations and after being consented for a staged



operation. Under spinal anaesthesia the wound was explored, the penis was found completely denuded except near the corona glandes and testes was found hanging with cord structures without any skin & soft tissue coverage. Primarily the penis is covered with split thickness skin grafting taken from thigh and both testes were implanted in the inner side of thighs with medial right upper thigh rotational fasciocutaneous flap (Type B fascio-cutaneous flaps based on the perforating branches superficial femoral arteries), made to cover the testicles with ease. After that wound was closed in layers antiseptic dressing and suspensory bandage was applied. Patient was discharged from the Hospital after 3days and asked for dressing at his residence. The catheter was removed after 10 days when wound becomes healthy and sutures were removed. (Figure 3&4)

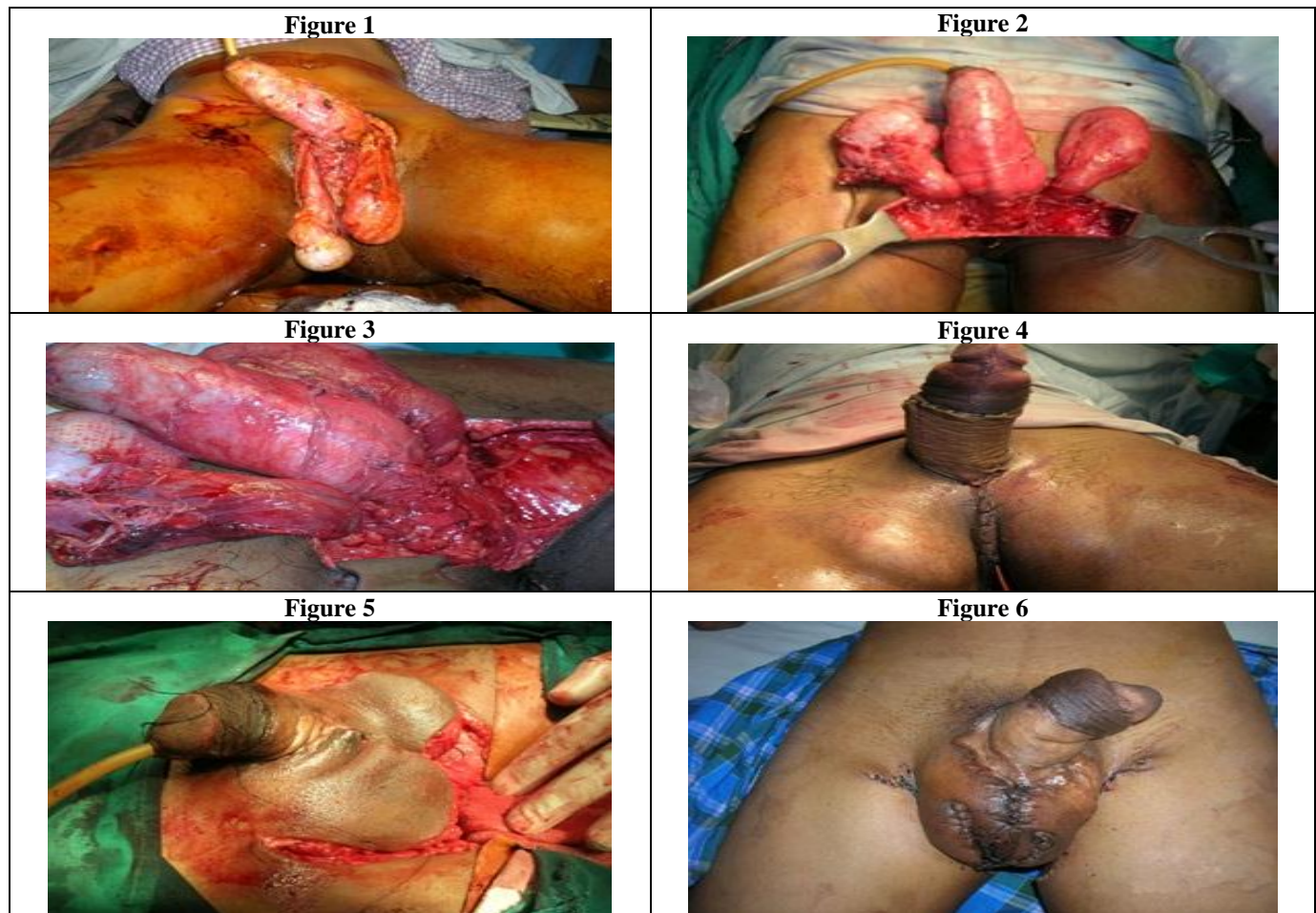
After 3 weeks he was again admitted and taken to OT for 2nd stage of operation. Under spinal anaesthesia, wound was exposed and implanted testes were detached with thigh flap along with its vascularity and pedicle. The

reconstruction of scrotum was performed with the thigh skin flap as much aesthetically as possible. Haemostasis was secured, corrugated rubber drain was kept, and wound closed in layer, antiseptic dressing applied. Scrotum thus reconstructed was kept in suspensory bandage for 2weeks. Flaps were found healthy and viable after 3 days, corrugated rubber drain was removed. Patient was discharged after 7days, asked to come in OPD after 7 days for removal of sutures. (Figure 5&6)

The sutures are removed after 14 days of 2nd OT and wound was found healthy. Both penis & scrotum was aesthetically looking good with normal voiding of urine and good erectile function after 3 months.

Four months after the last procedure, the patient recovered regular sexual activity as he was recently married at the time of accident.

About two year later patient came with his wife with a male child of their own. Both of them were happy & undergoing satisfactorily married conjugal life.



DISCUSSION

Traumatic penile injury can result through multiple mechanisms, including infection, burns, human or animal bites, and degloving injuries that involve

machinery. Even there, avulsion injuries to the penis and scrotum are less frequent than penile fractures or penetrating injuries due to gun shots [3]. Avulsions may

vary from simple lacerations to virtual emasculations [5]. Generally, lesions reach only the skin, causing minimal bleeding without producing damage to the cavernous body, the spongy body or the testes [5,6]. It requires careful selection of which tissue to debride, as well as proper selection of grafts and flaps for reconstruction, aiming to achieve a satisfactory aesthetic result, normal voiding and re-established sexual function. 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 [3]. 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. 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. Scrotal skin avulsion is especially difficult to repair. The skin of the scrotum is extremely loose, and the deeper layers contain the Dartos, which is a thin layer of smooth muscle fibers. Beneath the Dartos lie the intercolumnar fascia and the cremasteric fascia and muscle, which are important for thermoregulation of the testicles to maintain adequate spermatogenesis [7]. Therefore it is important that the testicles be replaced as close to their original location as possible. Testicular sparing is the rule with this injury, and the cremasteric reflex has been implicated as a cause.^[6] 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. 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 may also be applicable [8]. Staged reconstruction has a better functional outcome, a sensate and hair-bearing scrotum, and more reliable coverage without the problems of graft take and graft contracture which may cause painful erection. However some staged operations like that described by Luiz *et al* which extend to

7 months may have emotional impact on the patient which we aim to minimize without jeopardizing the satisfactory outcome [9]. Combination of the flap and split skin graft described by Sengathir may have given a better scrotal contour and less curvature [10]. Although the procedure we describe here does not include skin grafting which is often needed in major avulsions, we ended with satisfactory results. It can be done by general surgeon with no special facilities at district hospitals to save the valuable time and avoid infection. However, Michael Ward highlighted the role of multidisciplinary approach, with urology and plastic teams, to offer the highest level of surgical care for patients with polytraumatic injury, including significant genital trauma: penile degloving, bilateral testicular avulsion and bilateral spermatic cord laceration [11]. There is an increasing role in recognizing potential quality of life issues beyond the scope of a trauma for general surgeon to spare reproductive and endocrine difficulties later in life. We recommend that these types of injuries should be referred to specialized hospital at which the reconstruction can be carried out by a multidisciplinary team. However, in remote areas where service is conducted by a general surgeon with good understanding of the principles the described operation might be a suitable solution.

CONCLUSION

Surgical outcome of peno-scrotal injuries depends upon the type and severity of the injury, age, time elapsed, causative agent and associated trauma. The goals in managing such injuries are resuscitation, restoration of normal urinary and sexual functions and achieving acceptable cosmesis. The different modalities of treatment are debridement and primary closure, split thickness skin grafting, composite grafts and replantation with local vascularised superiorly based thigh flap with good aesthetic outlook and happy conjugal married life.

Penoscrotal degloving and amputations injuries are frightening for the patient and formidable to the surgeon. Urgent referral to the unit specialized in these injuries is necessary to achieve good results. Careful selection of which tissue to debride, along with proper selection of primary closure and grafts for reconstruction, allows satisfactory results to be obtained and minimizes further morbidity. Surgeons must take a rational approach to provide the patient with safe and timely care and produce a favourable outcome.

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