Case report

Single stage reconstruction of a post traumatic complete penoscrotal degloving injury: A case report and Review of Literature

ABSTRACT

Penoscrotal skin degloving injuries are uncommon in Plastic surgery practice which are mostly due to industrial and agricultural related accidents. Although this type of injury is not dangerous to life, it can be psychosocially bothersome to patients if not treated properly.Here, we present the case of a 34-years patient with complete penoscrotal degloving injury due to agricultural machine accident. He came to our trauma centre 4 hours after the accident and treated by partial thickness skin grafting in a single stage. Postsurgical period was normal and he was discharged 9 days after the operation. Follow up at 3 months, patient showed anexcellentoutcome in terms of aesthesis, a well settled penoscrotal grafts, normal voiding and regained sexual functions.

Keywords – *Degloving injury, penoscrotal, genitalia, perineum, split thickness skin graft.*

INTRODUCTION

Degloving injury of penoscrotal regionresulting incompleteavulsion of the scrotum with normal spermatic cords and testes are usually rare.Mostly skin degloving injuries of penile region are due toaccidents at agricultural fields.In this, penoscrotal skin is injured by the entrapment of clothes which are caught by agricultural machines. However, corpora spongiosum, corpora cavernosaand testes are relatively spared. This is probably due to mobile nature of genitalia and special protective covering around the testes by tunica albuginea. Cremasteric reflex also plays a role.[1-3]In this injury mechanism, the penoscrotal skin avulsion injury initiates from the level of pubic symphysis and goes up to corona of penis. However, this type of injury is often difficult to treat due to mobile nature of genitalia, chances of hematoma formation in pelvis, infection and subsequent graft loss.[4] To have an ideal reconstruction of the scrotum, it should be a unistage procedure which gives a non-bulkytissue, maintains thermoregulation, provide a natural looking scrotal ptosis and colour match, resistant to shearing forces from the thighs with minimal donor site morbidity.[5]Here, we present a case of traumatic penoscrotal injury which was treatedwith a single stage procedure at our hospital.

CASE EXAMPLE

A 34yearsold patient came to our advanced trauma centre 4 hours after sustaining degloving injury at the penoscrotal region. His loose skin at the penoscrotal level was accidently pulled off by the rotating blades of a machine which entrapped his clothes while doing agricultural work at his fields. On arrival, patient was conscious and vitals were stable. Physical examination showed a complete circumferential degloving of shaft of penis and scrotum upto the level of perineum.Both testis and spermatic cordwere found to be intact **(Figure 1)**. He was managed with pain killers, antibiotics and anti-tetanus injections. A Foley's urinary catheter was inserted. Ultrasound showed that there were no testicular or urethral injuries. The laboratory parameters were normal. Patient was taken to operation theatre and debridement of the necrotic tissues, thorough saline and betadine wash was given under spinal anaesthesia. All foreign bodies were removed. Foley's urinary catheter was changed to silicon catheter.**(Figure 2).**

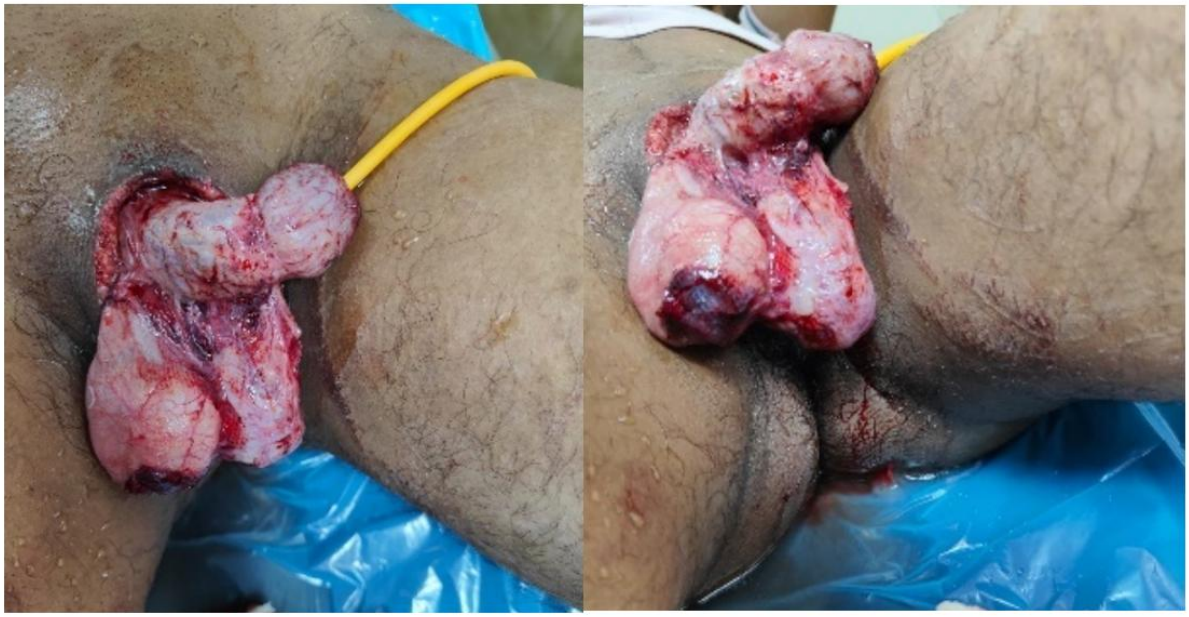

Figure 1:- Complete circumferential penoscrotal degloving injury at presentation exposing testicles and spermatic cords.

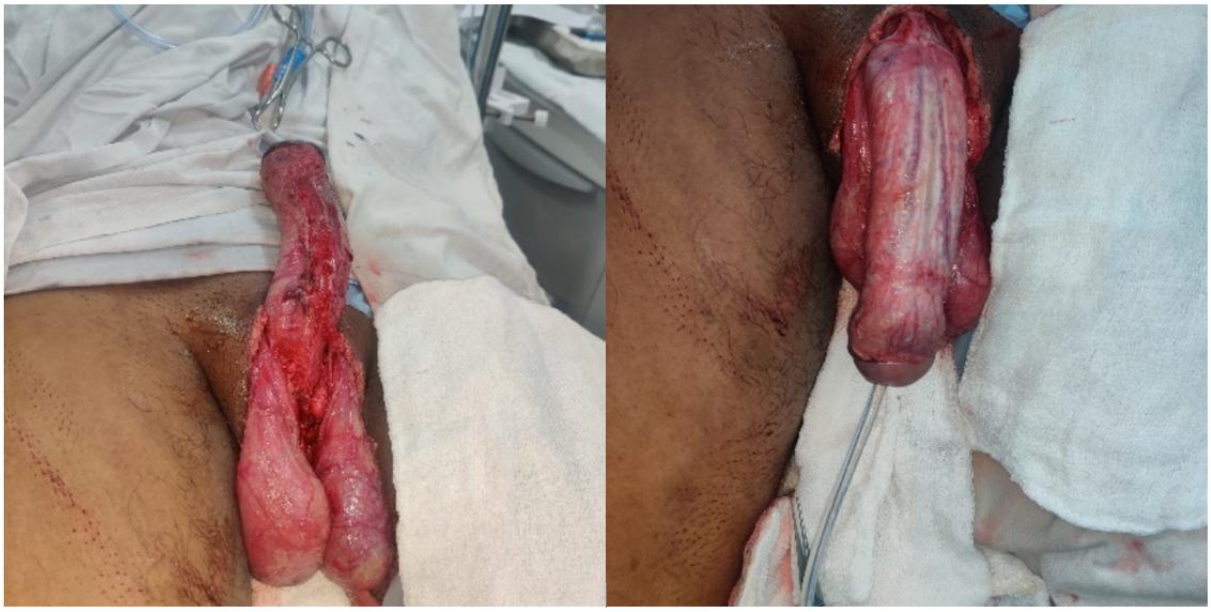

Figure 2:- Intraoperative pictures following through washing and debridement.

From the right thigh, harvesting of two sheets of partialthickness skin grafts was done. Penile shaft was covered with unmeshed sheet of graftand the graft was fixed with vicrylrapide 4-0 suture. The scrotum defect was covered withminimally meshed partial thickness skin graft. Skin graft dressing was done by a tieover bolster.Around the penile shaft, a sponge was kept to make erect position for good take of the graft**(Figure 3)**.

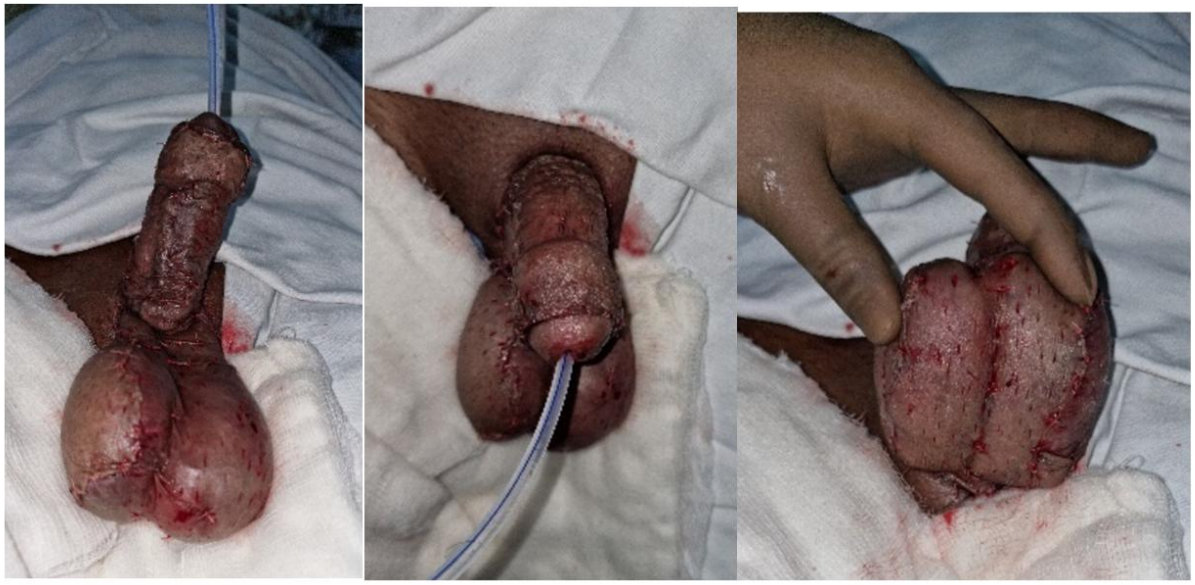

Figure3:- Single stage reconstruction using split thickness skin grafting. Both testes were sutured together to prevent torsion before grafting.

Clinically, patient wasstable and afebrile throughout the hospital stay. Tablet diazepam 10mg HS was given to prevent penile erections and subsequent graft mobility for around 10 days. On post operative days 5, 7 and 9, dressing was changed**(Figure 4)**.

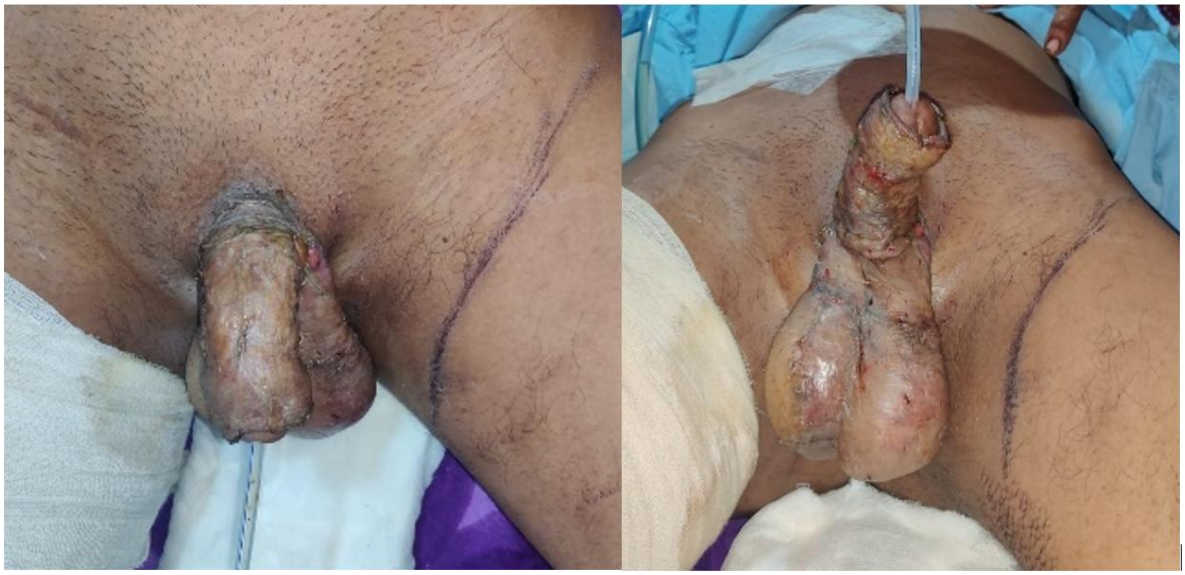

Figure 4:- At primary dressing on post operative day 5, showing good graft uptake. Machine belt mark can be seen on left thigh.

The patient was discharged on 9thpost operative day and was kept on oral antibiotics for five days. Patient normally voided urine after the silicon urinary catheter was removed at 2 weeks. At the 3 months follow-up visit,the penoscrotal grafts weresettled well. There was noinfection signs and no graft contracture related to skin grafting **(Figure 5).**He was psychologically satisfied with theexcellent cosmetic result with normal sensation, shape and size of his penis.

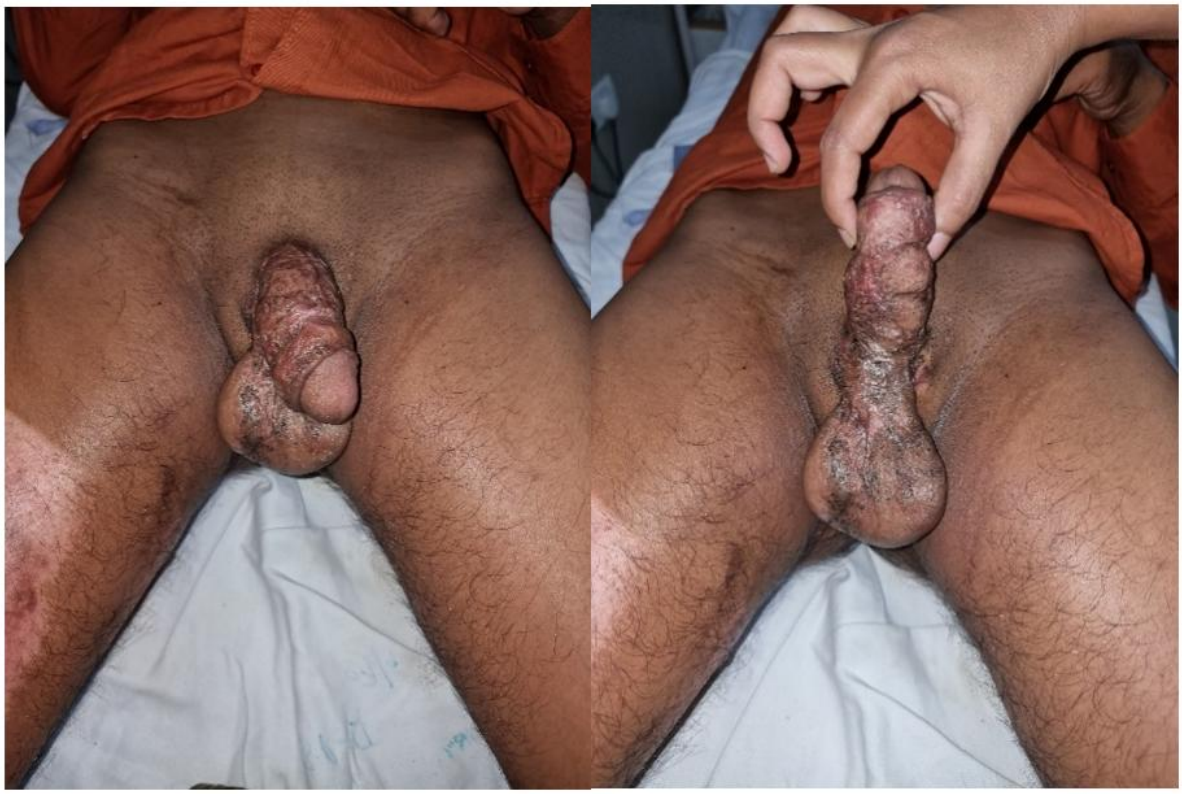

Figure 5:- At 3 month follow up, showing well settled skin graft, good contouring and excellent colour matching.

DISCUSSION

Generally, only the skin is damaged in penoscrotal degloving injuries which bleeds minimally. There isusually no further damage to the testes, corpora spongiosa and corpora cavernosa. This due to the fact that this injury occurs in an avascular plane. Scrotal defect can be closed primarily with the available surrounding tissue if the defect size is less than 50%.Withsignificant loss, there are several reconstructive options: partialthickness skin grafts or a different type of musculocutaneous or fascio-cutaneous flaps [6-8].Burial of testes in medial thigh pockets can be avoided due to the associated pain, testicular atrophy, poor cosmetic and psychosocial effects, harmful effects on spermatogenesis, risk of pouch infection and endocrine dysfunction.[9]Medial thigh pedicle flaps were considered by some authors but these can lead to deformed contour of the scrotum which can be unsightlyin appearance.[10] A proximalthigh flapcannot cover both the penoscrotal and perineo-scrotal junction in a single stage. Also, it can lead to obliteration of the perineal cleftwhich leads to scrotal contour deformity.In addition, these pedicled flaps may need multi-staged operations like shown by Zanettini et al[11] and Conley et al[12]which can extend up to several months that may have negative psychological effects. It was shown that better spermatogenesis can be achieved with thinner tissues over scrotal region.[13]

Many authors have reported excellent results of penoscrotal degloving injury managedwith splitskin grafting.[14-16]As the present case had complete circumferential loss of penoscrotal skin, the

reconstruction was done by using partial thickness skin grafting in a single stage.Skin defects of penoscrotal region can be best managed with this technique as it is simple and tolerated well by the patients.Other advantages of this method are that it is easy to execute by the surgeons who are inexperienced, it gives almost natural temperature for spermatogenesis, provides a natural looking scrotum, less post operative morbidity, good colour match, great scrotal contouring and can be finished in single stageif executed appropriately.Patient returns earlyto normal lifestyle without any psychosocial problems.Sanchez et al [17] stated that there are no differences between gracilis muscle flap and skin grafting in terms of testicular hormonal functions for scrotal reconstruction. Wang et al.[18]advised skin grafting over the scrotum of younger patients who wished to remain fertile.Demir et al [19]studied on rodents and found that as long as dartos thermoregulatory function remains intact, there will not be any effect on testicular hormonal functions.Sun et al[20]showed that the physiological function of the testis in terms of volume of sperms, motility, time taken to liquefy and their overall numbers at the 1 year follow up was within normal limits in patients with skin grafting and this was maintained for at least 2 years. However, skin grafting may lead to painful erections due to penoscrotal or perineo-scrotal junctional contractures which can be relieved by daily corticosteroid cream massage.The reconstructed scrotum in our patient was mobile, cosmetically appealing, had excellent colour match and didn't alter the sexual functions.

CONCLUSION

Penoscrotal degloving injuries are rare surgical emergencieswhich can be difficult to manage by the surgeons as well as can be distressing to the patients. Reconstruction of the penoscrotal skin defect is recommended as early as possible. There is no perfect treatment for all cases. Instead, the ideal methodology is determined by the patient'sexpectations anddefect characteristics.The present casehas been managed with a single staged split thickness skin grafting which gave good cosmetic and functional results, also maintain the sexual and testicular function.

CONSENT

The patient provided written informed consent for the use of photographs for the article.

ETHICAL APPROVAL

Our institution does not require ethical approval for reporting case reports.

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