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Case Report

Negative pressure wound therapy: our experience of a polytrauma with degloving injury

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ABSTRACT

Degloving injuries are uncommon serious conditions occurring in high-velocity traumas with high mortality and morbidity. The lack of standard guidelines for the diagnostic and therapeutic management of such injuries provides a challenge to the surgeon. We present a case of a 35-year-old male with an extensive degloving injury who underwent primary closure unsuccessfully. The necrotic area was debrided and negative pressure wound therapy was used for the management of the wound. The patient was managed with split skin grafting and post successful recovery on all fronts has been completely rehabilitated. Though primary suturing is always tried, the viability of the degloved skin remains questionable and might need extensive debridement. Negative Pressure Wound dressing is seen to be accelerating wound healing and improving the treatment outcome.

Keywords: Degloving soft tissue injury, Negative pressure wound therapy, Road traffic accidents

INTRODUCTION

Degloving soft tissue injury (DSTI) is a serious and dreaded condition following a road traffic accident, seen more in males disproportionately due to a higher incidence of accidents in males.[1] These are severely underestimated because of the lack of standard guidelines for diagnostic and therapeutic measures.

Variations in the size, magnitude and mechanism of injury make establishing standard criteria and guidelines difficult.[2] Negative Pressure Wound Therapy has been implicated in wound care for a long time and has been utilized for making the wounds fit for grafting and accelerating wound healing. This case report aims to present a case of an extensive degloving injury and the use of NPWT for its management.

CASE REPORT

We present a case of a 35-year-old male with an alleged history of RTA involving a bike colliding with a car; with the patient sustaining multiple injuries in the groin, left thigh and gluteal region and perineal region. There was no history of any LOC, seizures, or vomiting. The patient had no known comorbidities but a known alcoholic. On examination of the patient, the patient had tachycardia with a PR of 114/min and a BP of 102/68 mmHg. On initial examination there was an avulsion degloving type of injury in the right groin of size 30x10 cm with an underlying hematoma; a 20x15 cm degloving injury in the right gluteal cleft with underlying exposure of the sacrum; 10x5 cm laceration in the right scrotum, an ecchymotic patch in the left thigh of 10x10 cm. there was decreased anal tone and avulsion of the anal sphincter is seen. Given the above findings, the patient was

resuscitated and investigated. eFAST of the patient was negative at the time of the scan. X-ray of the pelvis of the patient showed an inferior pubic rami fracture and was advised strict bed rest for the patient.

Figure 1: POD 3 post debridement of the wound following primary closure.

Primary repair of the avulsed skin was done after thorough cleansing of the wound and the avulsed anal sphincter was repaired primarily and a diversion loop sigmoidostomy was performed. On POD 3, the patient developed necrosis of the avulsed skin. Serial debridement of the necrotic skin was done and a daily dressing was done. The stoma was functional and healthy.

Figure 2: POD 3 post debridement of the wound following primary closure.

Vacuum dressing was applied over the debrided area. The dressing was done every 5 days with the reassessment of the wound. Antibiotics were started as per culture sensitivity and healthy granulation tissue developed. 2 months later the patient underwent split skin grafting over the healthy granulation tissue over the debrided area. The patient had healthy graft uptake. The patient was then subjected to an anal manometry for assessing the sphincter function. With complete functionality of the bladder present, stoma reversal was performed and the patient was discharged.

Figure 3: POD 60 split skin grafted area of the debrided wound.

Figure 4: POD 120 post complete uptake of the graft.

DISCUSSION

With more than 4 lakh cases of road traffic accidents reported in India in 2021 alone, these present significant mortality and morbidity with the loss of significant productive years of a person's life. Road traffic accidents lead to a variety of injuries like lacerations, open and closed fractures, traumatic brain injuries and others. Degloving injuries are serious medical conditions resulting from high-velocity trauma due to sheering stress that results in the avulsion of the dermis and epidermis from the underlying fascia.[3] Major sites of degloving injury include the lower extremities, scalp and trunk.[4] Degloving injuries are of two types: open and closed.[5]

Open injuries lead to complete exposure of the underlying tissue while closed degloving leads to the creation of space underneath the skin leading to the accumulation of blood and liquefied fat.[2] Early diagnosis of DSTI is of utmost necessity, particularly in closed types of DSTI. DSTI leads to a variety of complications including infections leading to necrotizing fasciitis. The progress to necrotizing fascitis depends on the site, extent and mechanism of injury, the comorbid conditions of the patient and the type of injury (open or closed).[5] Open DSTI is a clinically self-evident condition with visibly avulsed skin, abrasions and ecchymosis. Closed DSTIs are difficult to diagnose clinically and may require radiological investigations with MRI being the ideal management. The primary goals of management of a degloving injury involve providing adequate closure of the wound, prevention of infection and early rehabilitation and preparing the patient for secondary management.[6] Negative Pressure Wound Therapy goes a long way in accelerating the recovery of the patient. VAC dressing helps in wound contraction, increased blood supply and micro debridement of the cells. This reduces bacterial load and improves the surgical site for further plastic surgical treatment involving split skin grafting for providing adequate coverage of the wound.[7]

CONCLUSION

The spectrum of injuries in road traffic accidents is quite vast. Degloving injuries represent a highly morbid condition with the patient requiring long-term hospital care. VAC dressing has been seen to be accelerating wound healing and improve the treatment outcome. In no circumstance should the evaluation of other injuries be neglected in a case of clinically visible open degloving soft tissue injury.

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