



The Degloving Injury Of Genital And Suprapubic Region As The Result Of High Kinetic Energy Impact Motorcycle Accident

Muh. Taufiqul Hidayat, Muh. Sidharta Krisna

RSUD Sawerigading Palopo, Indonesia

Muh.taufiqul14@gmail.com

Abstract: Male genital area although not one of the vital organs of the human body, it has been seen as a “vital” structure by society. Open or injury which resulting in exposing the inner part of genital area has been considered an emergency by those who are lack of medicine knowledge. According to this paradigm, degloving injury to penis and scrotum becomes an interesting challenge in receiving management or in this case reconstruction. Surgical challenges regarding functional restoration, tissue viability, and urinary function, but they also carry profound long-term physical and psychological impacts on male sexual health and overall quality of life. In January 2026, a patient was admitted to Sawerigading Hospital with degloving injury in Genital and suprapubic region with some involvement of suprapubic area. The conditions were treated with Genital and suprapubic debridement and reconstruction. The patient went through debridement and reconstruction the following morning. After antiseptic procedure had completed, followed by the reintegration of genital and suprapubic and suprapubic region. management of severe genital degloving requires careful diagnostic evaluation and surgical precision. Ultimately, preserving tissue viability serves only as the foundation achieving optimal functional outcomes remains the primary concern for the patient. 6 months follow up urinary system voiding function without complications.

Keywords: Debridement and surgical reconstruction, Degloving injury, High kinetic energy

INTRODUCTION

Male genital injuries in the form of avulsed laceration of penis and scrotum are less frequent injuries in urological practice. The cases that occur are mostly caused by road traffic accidents. Traumatic injury of external genitalia, including the penis, as it is observed in multiple published series, counted 27.8% to 68.1% of all genitourinary injuries. According to several single-institution studies, penile trauma even though it is less common, it still contributing 10% to 16% of genitourinary injuries (McGeady JB, Breyer BN, 2013)

In Indonesia, based on research at Arifin Achmad Regional Hospital in Pekanbaru from 2009 to 2013, genital trauma accounted for 24% genital trauma cases. Dr. Cipto Mangunkusumo National Hospital from 2016 to 2020 showed that genital trauma accounted for 6% urogenital trauma cases. dr. Saiful Anwar Regional Hospital from 2016 to 2020 showed 49 cases of genital trauma, consisting of 25 cases penis trauma and 24 cases of scrotal trauma (Irdam GA, Soebadi MA, 2022).

Although rarely life-threatening in isolation, injuries to the penis, scrotum, and testicular structures carry high socio-medical significance due to their potential for profound anatomical disruption, long-term erectile dysfunction, testicular atrophy, and psychological distress (Shestakov et al., 2024; Wille, 2006). These trauma patterns predominate in young,

active males, commonly resulting from road traffic accidents, occupational power-tool mishandling, contact sports, or violent assaults (Cassell & Manobah, 2021; Parajuli et al., 2021).

1. THEORETICAL REVIEW

Motorcycle accidents is the major cause of genital injury which happen by direct blunt force trauma to the genital area (Bhattarai A et al, 2020). There are also other aetiologies for genital avulsion in males such as animal and human bites, agricultural and manufacturing machinery, sexual and physical assaults, self-mutilation due to psychiatric illness, athletic activity, military setting, and gunshots (Chang AJ and Brandes SB, 2013).

The patient admitted to the hospital by high kinetic energy impact where as such condition initiates the health care professional to evaluate urethral injury, bloody meatal discharge, pelvic bone fractures, gross haematuria or inability to void. Fortunately for the patient those injury was absent hence urethral catheterization were applied without any difficulties. However, there are some external factors which require careful education for the patient for patients with genital trauma and their treatment options, these factors including psychological, interpersonal, and/or reproductive counselling The loss of urinary, sexual and/or reproductive function such as erectile dysfunction are some procedure outcome which expected to be manage with positive result (Bhattarai A et al 2020), (Zango B et al, 2015).

The operative procedure of penoscrotal avulsion require comprehensive cleaning and debridement of necrotic tissues and the exposed tissues are covered with viable flaps from the neighbouring skin. Primary surgical closure after trauma could be done with the remaining surrounding viable tissue (Bhattarai A, et al, 2020)

The avulsed shaft around penile area was covered with Z-flap method by retracting the suprapubic skin. Primarily closing of the penis is quite challenging since the shaft skin is not as redundant and elastic as scrotal skin. The main goal of penile reconstruction is to preserve erectile/sexual function. The scrotal skin loss up tp 60% could still be managed by primarily closing due to redundant and elastic state of the skin. The patient loss around 25 percent of the scrotal skin which allow bilateral testes to be covered with simple flap by retracting remaining scrotum skin and closed by primary suturing. Scrotal drain was applied despite its controversy of resulting scrotal hematomas in the interstitium, but drain also crucial to excrete post traumatic hematoceles (Chang AJ, and Brandes SB, 2013). The penile function assessment the following day showed morning erection is visible. Wound care was performed daily, wound healing progress was good. The patient was discharge after 4 days of treatment.

Education prescribe for the patient to ensure wound healing are wound hygiene and care, avoid any activities which trigger penile erection to preserve the wound, and routine control for follow up care or follow up procedure. Post-operative complications which require mindful attention are infections, necrosis of the flap tissue, wound dehiscence and gaping, reduced spermatogenesis as the result of dartos muscle and fascia avulsion which play crucial role for temperature regulation, painful erection secondary to penoscrotal scars and cicatrix formation. Early treatment is coherence to good prognosis (Bhattarai et al, 2020), (Zango B et al, 2015).

2. PATIENT AND METHODS

A 37-year old male was on his way home from work when he lost control of his motorcycle due to being asleep following an exhausted day post work. He was brought to emergency department (ED) by some local by stander who happens to be present at the scene of the accident. The motorcycle was going at a high pace which confirmed by the patient and witness. The patient went for a transfer from Morowali Regional General Hospital to Sawerigading Regional Hospital at Palopo City due to the absent of Urologist from original Hospital.

3. RESULTS AND DISCUSSION

The patient could provide the history on his own despite the severe pain in the genital area due to a wide avulsion of penile, scrotum and cutaneous layer of suprapubic with active bleeding around the degloving area while surprisingly the penile were intact. Bilateral testes were widely exposed but still intact therefor the Epididymis still connect to spermatic cord (Fig 1).



Figure 1: Initial encounter of the injury



Figure 2: Post insertion of foley catheter in the ER

Immediate wound care performed in the Emergency Room such as normal saline wash, povidone iodine, mild debriment and light dressing. The mere perfect condition of urethra allowed the insertion of foley catheter in the ER, with urine outcome present as normal viscosity and yellowish colour (Fig 2). The patient received antipyretic, analgesic, antihemorrhage, and antibiotic and he was recharged after 4 days. The patient was prepared for operation process and soon transferred to operation room. Laboratory examination including blood count, blood glucose, bleeding-clotting time, and HbsAg antigen detection, all examination within normal result.



Figure 3: Post-Operative Reconstruction

Upon arrival in the operation room patient positioned in Lithotomy position while is undergo general anesthesia. Antiseptic procedure executed by using normal saline irrigation followed by povidone iodine to eliminate the necrotic tissue, stool cell and foreign body/particle. Complete assessment was initiated on the genital and suprapubic area, and penile and testes were confirmed viable. The avulsed shaft around penile area was covered with Z-flap method by retracting the suprapubic skin while bilateral testes were covered with simple flap by retracting scrotum skin and closed by primary suturing (pict. 3). The patient received antipyretic, analgesic, and antibiotic as post-operative medication, the

antihaemorrhage could be stopped since the haemorrhage already handled. Patient was discharged after 4 days of careful management of the injury and routine management of wound dressing.

The present case demonstrates that extensive penoscrotal degloving injury following high-kinetic-energy motorcycle trauma can be successfully managed through early wound assessment, adequate debridement, preservation of viable genital structures, and immediate reconstruction. In this patient, the penis and bilateral testes remained viable despite extensive avulsion of the penile, scrotal, and suprapubic skin (Kim et al., 2021; Iafrate et al., 2021).

Reported successful single-stage reconstruction of complete penoscrotal degloving injury using a split-thickness skin graft, with satisfactory voiding and recovery of sexual function during follow-up. These findings indicate that reconstruction should be individualized according to the amount and quality of remaining tissue rather than applying a single reconstructive technique to all patients (Jangra et al, 2024)

emphasized that reconstruction of the male external genitalia should aim not only to achieve wound closure but also to restore anatomical form and function. In the present case, the use of a Z-flap to cover the penile defect and primary closure of the remaining scrotal skin provided tissue coverage while preserving the anatomical structures required for future sexual and urinary function. (Croghan et al, 2022)

A recent review by Rago et al. (2024) highlighted that scrotal advancement flaps may be appropriate when the defect involves less than approximately half of the scrotal surface, whereas larger defects may require grafting or more complex flap reconstruction. In the present case, approximately 25% of the scrotal skin was lost, allowing the remaining scrotal tissue to be mobilized and primarily closed.

Scrotal flaps can provide tissue with characteristics closely resembling normal penile skin and may achieve satisfactory functional and aesthetic outcomes. Presence of morning erection encouraging findings, but longer-term assessment of erectile function, scar formation, urinary function, sensation, and patient satisfaction remains necessary. (Parasca et al. 2025). Górka et al. (2025) further demonstrated that preservation and replantation of viable avulsed genital skin can be considered in selected patients.

Recent evidence further supports the importance of early and systematic surgical management in severe degloving injuries Eric Chung et al (2026) Six complex degloving perineal injuries, reported that prompt diagnosis, resuscitation, adequate debridement, and immediate surgical intervention were associated with favorable functional outcomes Lee et al. (2022). The choice of local tissue for penile reconstruction is also supported by recent

reconstructive studies. Neuville et al. (2023) demonstrated that bilateral pedicled scrotal flaps can provide reliable coverage for penile shaft skin defects and represent an alternative to skin grafting.

4. CONCLUSIONS AND RECOMMENDATIONS

Management of degloving injury around genital area required careful investigation and execution. Preserving the viability of the remaining tissue/organ is not the only goal, post-operative outcome in term of visual and functional usage will be first focus of the patient and/or partner

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