

Case Report

Case Report on Complex Pelvic Perineal Trauma, CPPT in a 14 Year Old Female and Literature Review

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Abstract

Introduction: Complex pelvic and perineal trauma are among the most challenging emergencies encountered in most hospital's emergency and trauma care units. They are often a consequence of high-energy mechanisms as seen in road traffic accidents and a significant cause of morbidity and mortality. The management of such severe trauma poses a great challenge in general and even more so in resource-poor economies due to limited healthcare infrastructure, resources, and access to specialized care. This case report discusses the management of a patient who sustained complex pelvic perineal trauma with pelvic organ evisceration and right midshaft femoral fracture following a road traffic accident. With this case, we seek to demonstrate that timely interventions with urgent but coordinated multidisciplinary care, and resource optimization is of value in addressing such critical injuries in a resource-limited setting.

The extent of soft tissue injuries vary greatly in cPPT sometimes involving a degloving injury which mostly results when a large rotational force avulses the skin and subcutaneous tissue from the underlying fascia. Many of such injuries involve lower extremities. Perineal degloving injury is uncommon and seldom reported in literature.

Case Presentation: This case report is about a 14-year-old female motorcycle passenger involved in road traffic accident. She sustained a complex pelvic perineal trauma PPT with pelvic organ evisceration and a midshaft fracture of the right femur.

Discussion: Proper management of complex pelvic perineal trauma PPT involves resuscitation, anticipation and identification of the extent of injury. In expert centers, a multi-disciplinary approach to care should be taken. Copious wound irrigation, decontamination and excision of devitalized tissues can salvage potentially viable structures. Emergent exploration and tissue reconstruction in the operation room should follow resuscitation. Eviscerated organs should be repaired if injured and returned to their anatomical positions while avulsed soft tissues and degloved skin flaps should be meticulously repaired without tension. Similarly, orthopedic injuries should be assessed and management instituted accordingly.

Conclusion: A meticulous wound irrigation, wound edge excision of non-viable tissues with proper identification, isolation and inspection of exposed organs for injuries prior to reconstruction is necessary to minimize complications and enhance recovery of both structure and function.

Keywords: Complex pelvic perineal trauma; Avulsed soft tissues; Vulvo-perineoplasty; Perineal degloving injury; Organ evisceration

Case Presentation

Introduction

Pelvic and perineal trauma, particularly when combined with fractures and visceral injuries, presents a complex clinical challenge. The situation is most critical in resource poor communities where access to care can be affected by funding. This was the case in this patient who sustained extensive degloving pelvic and perineal injuries with pelvic organs evisceration accompanied by a right femoral fracture consequent on a road traffic accident. Blunt pelvic trauma accounts for as much as 96.8% of all cases of traumatic pelvic ring disruption and a high index of suspicion for urethral injury should be held for all injuries where there is a pubic fracture or the pubic symphysis diastasis from any mechanism [16]. Bearing in mind that the pelvic-perineal region houses delicate complex structures, injuries

involving this area carry a multispecialty burden. A degloving injury in this region in which there is avulsion of skin and subcutaneous tissues from the deeper layer structures because of an overwhelming rotational stretching force [15], besides causing loss of structural integrity of the external genitalia may also lead to evisceration, injury and contamination of intra-pelvic organs. In such high-risk patients, a coordinated multidisciplinary approach to care is critical to improving outcome.

Patient information

Our patient, a 14-year-old female was a motorcycle passenger at the time she was knocked down from behind by a truck. She presented to the Accident and Emergency Department at the NKST Rehabilitation Hospital Mkar. Her presenting blood pressure was 110/60 mmHg, oxygen saturation was 99% (on oxygen support delivered by nasal prong) and heart rate 118 beats per minute. She was alert with a Glasgow Coma Scale score of 15 and sustained extensive complex pelvic-perineal injuries with pelvic organ evisceration and right femoral fracture.

Clinical findings and diagnostic assessment

The patient was alert and conscious but in significant pain, with stable vital signs except for an elevated heart rate due to pain and trauma. There were no signs of head or facial injuries, and no chest trauma was noted. The abdomen was soft but tender in the pubic region, medial to the area of the right anterior superior iliac spine (ASIS) is an extensive, roughly triangular injury with its apex directed

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towards the right ASIS and base tearing through the pudendal structures inferio-posteriorly, then runs anteromedially above the pubic symphysis extending to the left of the midline. A distended bladder was seen eviscerated amid vascular structures. The right thigh was swollen, tender and with obvious deformity.

A bedside FAST, chest, cervical and spinal imaging were unremarkable. A pelvic radiograph showed symphyseal diastasis with pubic rami injury. Right femoral imaging showed a displaced midshaft fracture of the right femur. Complete blood count showed a Hb. of 8 mg/dl (Figure 1).



Figure 1: Initial image of the injury prior to intervention.

Management

The emergency management of this case, a severely contaminated complex pelvic perineal injury required a coordinated systematic approach that prioritizes life-saving measures that ran concurrently with a multidisciplinary reparative procedure aimed at ensuring stability of the patient in the shortest possible time. Early intervention for hemorrhage control, stabilization of vital signs, and management of shock was prioritized. This was followed by copious wound irrigation with saline, thorough examination and identification of eviscerated organs and structures, as well as surgical debridement (Figure 2).

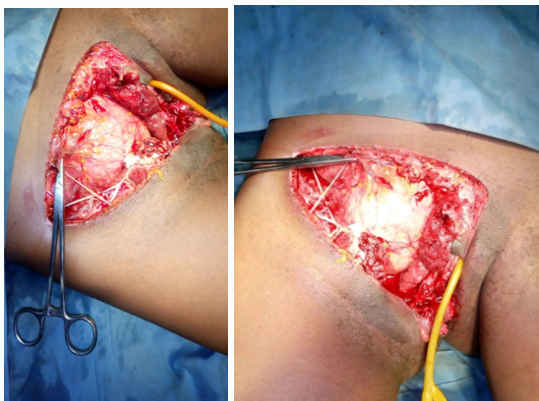


Figure 2: A and B showing a clean wound after thorough and copious irrigation and debridement.

Eviscerated pelvic organs were identified, examined, and repaired in a stepwise layered approach and subsequently reduced into their anatomical locations. Pelvic soft tissue injury was repaired in layers up

to the skin level while a Vulvo-perineal reconstruction (perineoplasty) was done to reestablish the anatomy and function of the genital structures. Prophylactic intravenous broad-spectrum antibiotics was administered intraoperatively and continued for a further 5 days post repair (Figure 3).



Figure 3: Image following reconstruction.

The femoral fracture was managed by open reduction and internal fixation while the symphyseal diastasis was managed conservatively. Recovery was swift and satisfactory with no form of deficit.

Challenges

The patient had a significant resource deficit and was unable to afford care.

Discussion

Pelvic and perineal trauma in most under 15-year-old patients resulting from high-energy mechanisms, such as motor vehicle accidents or falls from height often lead to severe life-threatening injuries [1]. This case report presents a rare and complex presentation involving multiple injuries, including pelvic organ evisceration and a right femoral fracture, following a traumatic incident. The combination of these injuries underscores the severity of the trauma and the need for prompt and coordinated multidisciplinary care. The management of Complex pelvic perineal trauma poses a great clinical challenge [2], especially when occurring in resource-limited settings where the availability of medical infrastructure and personnels are scarce. A fast early but thorough assessment that follows the ATLS guidelines, and basic imaging such as FAST and other radiographic imaging is critical in determining the extent of injury and improving survival [2,3]. While CT scanning remains the gold standard for evaluating pelvic fractures, its availability in resource-poor settings

may be limited. To maintain or restore hemodynamic stability, immediate intervention to control hemorrhage should be prioritized [1,5]. Laboratory markers such as serum lactate and base deficit can be useful in assessing the degree of hemorrhage. Ongoing bleeding should be attended with standardized or improvised pelvic binders [5]. Preperitoneal pelvic packing (PPP) can be a life-saving measure in centers without interventional radiology (IR) capabilities [4,6]. Where the facility exists, patients with life-threatening hemorrhage may benefit from resuscitative endovascular balloon occlusion of the aorta (REBOA) which requires both specialized equipment and expertise, that may not be available in resource-limited settings [5].

Copious wound irrigation and tissue debridement are vital to controlling contamination in complex perineal injuries, and to prevent sepsis [7]. Pulsed lavage, gravity irrigation with simple bulb syringes, or immersion techniques may be used for effective wound cleansing. Given the high risk of contamination with foreign bodies and extensive tissue damage, thorough irrigation, extraction of foreign bodies under direct vision and a meticulous debridement of necrotic tissue can substantially reduce bacterial load and aid healing [7,8]. Incorporating topical antibiotic in irrigation fluid during surgical debridement is practiced widely to reduce microbial colonization though evidence for definitive superiority over saline alone remains under investigation [7]. Infection control modalities using systemic antibiotic and local wound care helps to ensure aseptic wound environment and encourages adequate healing. Because the repair of pelvic trauma injury involves extensive surgical procedure that may take some time, to effectively control soft tissue and Fracture-Related Infection (FRI) it is standard practice to re-dose the antibiotic once the duration of surgery exceeds two half-lives of the antibiotic. Otherwise, antibiotic prophylaxis should normally be single dose [3,5].

The focus of surgical intervention which is to restore anatomy and function requires a comprehensive understanding of the regional anatomy and injury patterns [5]. The main goal is hemorrhage control, debridement of non-viable tissue, repair of visceral injuries, fracture stabilization of the pelvic ring and other associated injuries, the right femoral fracture as it is in this case [1,4,5]. In extensive perineal injury, vulvo-perineoplasty to reconstruct the perineal region may be indicated particularly in female patients [1,9,10]. Bladder injuries may be surgically repaired if intraperitoneal or managed conservatively if an extraperitoneal injury had occurred. In general, orthopedic, urological and gynecological injuries when they exist, will benefit from the specific specialty's input [5]. In non-operative candidates with pubic symphysis diastasis, a conservative management with external stabilization and limited mobility remains crucial [11].

Effective pain management is essential for improving patient comfort and facilitating rehabilitation. However, in resource-poor settings, pain control is often under-resourced and usually limited to paracetamol and NSAIDs use while access to opioid is either controlled by stiff policies that reserves it for extremely debilitation pain episodes or completely beyond the reach of many. Other pain control approaches such as regional anesthesia, epidural or spinal anesthesia, can help alleviate pain but require trained personnel and specialized equipment [12]. Therapeutic positioning, wound care, and emotional support are some of the non-pharmacological interventions that also play a role, especially in chronic pain scenarios. Adequately addressed pain care can significantly improve compliance with rehabilitation protocols and decrease the psychological burden associated with trauma recovery [12,13].

Rehabilitation protocol must be comprehensive, encompassing both physical and psychological components, necessary to minimize complications such as chronic pain, sexual dysfunction, and post-traumatic stress. Early mobilization through physiotherapy and occupational therapy accelerates fracture healing and restores functionality. Most patients who had perineal repair surgery like vulvo-perineoplasty and or recovering from pelvic fractures pelvic floor strengthening exercises and biofeedback techniques are required [3,14]. Long-term follow-up often includes pelvic floor therapy and functional rehabilitation to regain continence and mobility [14]. Psychological support remains an integral part of rehabilitation care, though this is often affected by limited availability of mental health services in low resource settings.

Conclusion

We demonstrate with the management of this case the importance of a standardized stepwise approach to care for trauma patients with specific attention to hemodynamic stabilization, surgical intervention, and post-operative care. In the context of a polytrauma patient with the additional challenge of organ evisceration and bony injuries, carefulness is required if function must be preserved and sepsis prevented. This case underscores the need for specialized care and the coordination of trauma, orthopedic, gynecological, urology, general surgical and other professional teams to optimize recovery and minimize morbidity in such complex trauma scenario. However, where there is a challenge to this as often is in resource poor economies, the managing team must ingeniously provide the missing link.

Conflict of Interest

Authors have no conflict of interest

Authors' Contribution

Author 1 led the management team, coordinated the report and literature review, assisted by author 2. Both authors jointly read and approved the final manuscript.

Consent

As per international standard, patient's written consent as well as that of her mother were collected and preserved by the authors.

References

1. Scheidler MG, Schultz BL, Schall L, Ford HR. Mechanisms of blunt perineal injury in female pediatric patients. *J Pediatr Surg.* 2000;35(9):1317-9.
2. Arvieux C, Thony F, Broux C, Ageron FX, Rancurel E, Abba J, et al. Current management of severe pelvic and perineal trauma. *J Visc Surg.* 2012;149(4):e227-38.
3. Metsemakers WJ, Onsea J, Neutjens E, Steffens E, Schuermans A, McNally M, et al. Prevention of fracture-related infection: a multidisciplinary care package. *Int Orthop.* 2017;41(12):2457-69.
4. Murphy TP, Kuo MD, Benenati JF, Dixon RG, Goodwin SC, Hicks M, et al. Position statement by the Society of Interventional Radiology: maintenance of privileges for image-guided interventions. *J Vasc Interv Radiol.* 2011;22(10):1353-4.
5. Coccolini F, Stahel PF, Montori G, Biffl W, Horer TM, Catena F, et al. Pelvic trauma: WSES classification and guidelines. *World J Emerg Surg.* 2017.
6. Burlew CC, Moore EE, Stahel PF, Geddes AE, Wagenaar AE, Pieracci FM, et al. Preperitoneal pelvic packing reduces mortality in patients with life-threatening hemorrhage due to unstable pelvic fractures. *J Trauma Acute Care Surg.* 2017;82(2):233-42.
7. Metsemakers WJ, Fragomen AT, Moriarty TF, Morgenstern M, Egol KA, Zalavras C,

- et al. Evidence-based recommendations for local antimicrobial strategies and dead space management in fracture-related infection. *J Orthop Trauma*. 2020;34(1):18-29.
8. Svoboda SJ, Bice TG, Gooden HA, Brooks DE, Thomas DB, Wenke JC. Comparison of bulb syringe and pulsed lavage irrigation with use of a bioluminescent musculoskeletal wound model. *J Bone Joint Surg Am*. 2006;88(10):2167-74.
 9. Inan C, Agir Mc, Sagir FG, Ozer A, Ozbek O, Dayanir H, et al. Assessment of the Effects of Perineoplasty on Female Sexual Function. *Balkan Med J*. 2015;32(3):260-5.
 10. Goodman MP, Placik OJ, Benson RH, Miklos JR, Moore RD, Jason RA, et al. A large multicenter outcome study of female genital plastic surgery. *J Sex Med*. 2010;7:1565-77.
 11. Chawla JJ, Arora D, Sandhu N, Jain M, Kumari A. Pubic symphysis diastasis: a case series and literature review. *Oman Med J*. 2017;32(6):510-4.
 12. Morriss WW, Roques CJ. Pain management in low- and middle-income countries. *BJA Educ*. 2018;18(9):265-70.
 13. Banierink H, Reininga IHE, Heineman E, Wendt KW, Ten Duis K, IJpma FFA. Long-term physical functioning and quality of life after pelvic ring injuries. *Arch Orthop Trauma Surg*. 2019;139(9):1225-33.
 14. Weidner AC, Barber MD, Markland A, Rahn DD, Hsu Y, Mueller ER, et al. Perioperative behavioral therapy and pelvic muscle strengthening do not enhance quality of life after pelvic surgery: secondary report of a randomized controlled trial. *Phys Ther*. 2017;97(11):1075-83.
 15. Nair AV, Nazar P, Sekhar R, Ramachandran P, Moorthy S. Morel-Lavallée lesion: A closed degloving injury that requires real attention. *Indian J Radiol Imaging*. 2014;24(3):288-90.