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Case Report

Perineal laceration treated with negative pressure wound therapy following colostomy

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ABSTRACT

A male in his early 30s was transported to the emergency room after being hit by a vehicle while inebriated and lying in the street. His general condition was stable; however, he had a perineal laceration that extended to the coccyx. Due to the proximity of the wound margin to the anus, we were concerned regarding the potential contamination and opted not to suture it. Therefore, we refrained from suturing the wound and kept the wound open after irrigation and debridement. Additionally, we performed a transverse colostomy. On day 4, we initiated negative pressure wound therapy for 40 days, during which sufficient wound granulation occurred. The patient was discharged, and the colostomy was closed approximately 4 months after the injury. Our case illustrates the effectiveness of negative pressure wound therapy in managing perineal lacerations.

Background

Perineal lacerations are often challenging to manage because of the risk of faecal contamination. While the use of negative pressure wound therapy (NPWT) has been reported in many cases of extremity trauma, there have been no reported cases of perineal trauma [1]. This case report presents a successful application of NPWT in the management of a perineal laceration, demonstrating effective wound healing without infection.

Case presentation

A male in his early 30s was transported to the emergency room after being struck by a garbage truck while lying in the street in an inebriated state. He had no preexisting health conditions or prescribed medications. Upon arrival at the hospital, the patient's airway was clear during the initial assessment. The respiratory rate was measured at 14 breaths/min, and the oxygen saturation level (SpO₂) was 98 % with high oxygen supplementation. The circulation was stable, and based on the chest and pelvic radiographs findings, no immediate intervention was required. The Extended Focused Assessment with Sonography for Trauma yielded negative results. The patient scored 13 points on the Glasgow Coma Scale, indicating a possible impact of alcohol. There were no evident signs of tetraplegia or pupillary immobility. During a further assessment, reduced respiratory sounds were detected on the right side. Additionally, the patient had extensive abrasions on the back and extremities as well as a perineal laceration extending from the anus to just below the scrotum, near the coccyx (Fig. 1).

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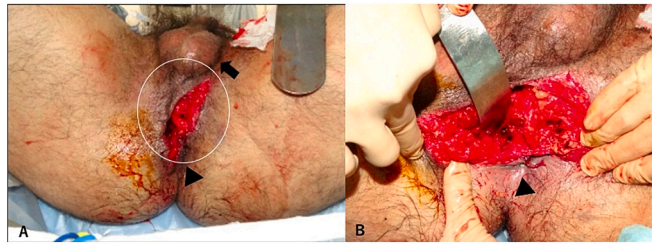


Fig. 1. Perineal laceration that extended from the anus (arrowhead) to just below the scrotum (arrow) (A). The depth reached the coccyx (B).

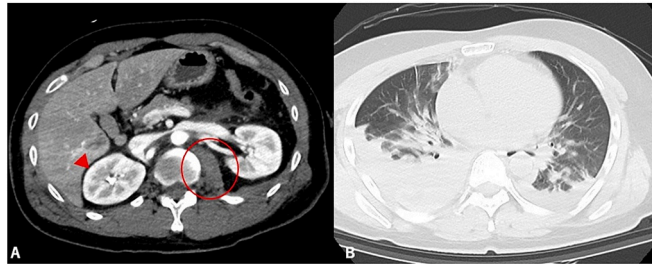


Fig. 2. On admission, abdominal CT showed liver injury (arrowhead) and left retroperitoneal haematoma (circle) (A). Chest CT showed bilateral haemothorax with a right-sided predominance (B). CT, computed tomography.



Fig. 3. A covering material (arrow) shaped to the contour and depth of the perineal laceration was utilised (A), and continuous constant negative pressure was applied using NPWT (B). NPWT, negative pressure wound therapy.



Fig. 4. With time, granulation tissue formation progressed, and the depth of the wound gradually decreased. The wound was almost closed on the 40th day. Images captured on the (A) 19th, (B) 34th, and (C) 40th days depict the wound's healing progression.



Fig. 5. At 10 months post-injury, complete healing of the perineal laceration was observed.

Investigations

Whole-body computed tomography (CT) revealed bilateral haemothorax, multiple rib fractures on the left side, liver injury of World Society of Emergency Surgery (WSES) grade I [2], splenic injury (WSES grade I) [3], left retroperitoneal haematoma, lumbar vertebral fracture, and an open fracture of the left clavicle (Fig. 2). The Injury Severity Score was 17 points.

Treatment

A treatment plan was formulated based on the CT results. The liver and splenic injuries were managed non-operatively, while the lumbar vertebral fracture was treated via a quasi-emergency surgery policy (performed on the eighth day). Due to the proximity of the perineal laceration wound to the anus, the potential for infection resulting from exposure to faeces and intestinal fluids was a concern. Therefore, we abstained from suturing the wound and kept it open after irrigation and debridement. An open transverse colostomy was performed on the 1st day, with no damage detected in the anorectum. A right thoracic drain was inserted for the right haemothorax, and the patient was admitted to the intensive care unit. Oral intake was initiated on the 3rd day. After confirming the absence of infection in the perineal laceration, NPWT with RENASYS TOUCH (Smith & Nephew, Watford, United Kingdom) was initiated on the 4th day (Fig. 3). The vacuum setting pressure was always set at 100 mmHg. The covering material was changed twice or thrice a week. The wound vac sponges were applied directly to the wound but did not demonstrate persistent adhesion during replacement. Adequate granulation of the wound was confirmed, and the wound was closed approximately on the 40th day (Fig. 4).

Outcome and follow-up

Rehabilitation was carried out during the hospitalisation, and the patient was discharged home after several days. The stitches for the perineal laceration were removed during an outpatient visit. At approximately 4 months after the injury, the patient was readmitted to the hospital for closure of the transverse colon colostomy. By the 10th month after the injury, the perineal laceration had completely healed (Fig. 5). The patient received outpatient follow-up for approximately 1 year after the injury. By the 1-year mark post-injury, the patient had fully returned to work and resumed his previous lifestyle.

Discussion

This case report suggests that treating perineal lacerations with NPWT after adequate debridement effectively avoids infection and promotes easy wound healing. NPWT protects the wound, removes wound exudate and waste products, reduces bacterial contamination, and promotes angiogenesis and granulation of the wound base [4,5]. In chronic wounds, NPWT has shown greater effectiveness than standard wound care in reducing wound size and shortening healing time [6]. However, the benefits of NPWT in open trauma wounds compared to standard wound care remain unclear [7]. Perineal trauma can cause Fournier's gangrene due to bacterial invasion of subcutaneous tissues and faecal contamination [8]. Therefore, thorough infection control is important. While the faecal management is an option for managing faecal incontinence, it may not be suitable for all patients due to the risk of catheter displacement, challenges in keeping the wound clean, and potential hindrance to rehabilitation progress. In this case, a colostomy was created on the day of injury, which ensured that wound contamination could be avoided, leading to early enteral feeding and rehabilitation. We conclude that NPWT and colostomy could be useful strategies for perineal trauma.

CRedit authorship contribution statement

Kenta Mitsusada: Writing – original draft, Visualization. **Hisashi Dote:** Writing – review & editing. **Shinichiro Irabu:** Writing – review & editing, Supervision. **Takahiro Atsumi:** Supervision.

Declaration of competing interest

None.

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Ethics

Informed consent was obtained directly from the patient for the publication of this case report and any accompanying images.

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