Negative Pressure Wound Therapy in Pediatric Trauma: A Triad of Healing Cases

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Keywords:

NPWT, soft tissue injury, trauma, wound

Background:

Negative pressure wound therapy (NPWT) has proven a powerful tool in healing complex and large wounds of varying etiologies. We report three diverse cases of pediatric patients who presented as follows: polytrauma with severe soft tissue damage of the lower extremity (pt.1), open fracture with soft tissue defect – Gustilo-Anderson grade III. (pt.2), and an infected upper extremity fracture (pt.3).

Case presentation:

Patient one (pt.1) is a 10-year-old involved in a car-bicycle collision. Patient presented as a severe polytrauma with extensive soft tissue and vascular defects of the upper left leg. Despite multiple attempts at revascularization, the patient ultimately required a high femoral amputation with a concurrent infection. NPWT was then applied to the wound in order to promote healing.

Patient two (pt.2) is a 2-year-old hospitalised for 37 days following a crush injury caused by a forklift. Patient presented with a crural fracture and severe skin and soft tissue defects. NPWT was started on the 5th day of hospitalization with a Thiersch skin graft on day 10 followed by additional NPWT dressings.

Patient three (pt.3) is a 9-year-old with an open forearm fracture. On the 3rd post-op day, signs of gas gangrene started to develop. Because of that, a fasciotomy was performed, followed by a 7-day course of hyperbaric oxygenation therapy along with triple antibiotic therapy. Wound management was further facilitated by the application of NPWT.

Conclusion:

Extensive care is needed to protect the delicate tissues of pediatric patients. This is why NPWT has proven to be a safe and effective treatment for a variety of wounds, especially infected wounds with edema and exudate production, or significant tissue defects, such as traumatic and dehisced injuries that cannot be repaired surgically. These cases underscore NPWT's vital role in enhancing pediatric wound care and optimizing patient outcomes.

https://doi.org/10.26800/LV-145-supl8-26