



Management of a fingertip nail bed injury in the emergency setting: A case report

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Abstract

Fingertip nail bed injuries are common presentations in the emergency department and require careful management to preserve both function and cosmetic appearance. We report a case of a fingertip nail bed injury in an adult male that was managed in the emergency department. The patient sustained the injury from a sharp object, resulting in disruption of the nail bed and nail margin without active bleeding. Based on the clinical assessment, the nail bed was repaired to prevent long-term nail deformity. A digital nerve block was used to achieve adequate analgesia, allowing precise repair. The nail plate was preserved and secured, and the nail bed was repaired using simple interrupted sutures with careful attention to anatomical alignment. Post-procedure assessment demonstrated a satisfactory cosmetic outcome with preserved finger function. This case highlights the importance of a reconstructive approach to nail bed injuries and supports the safe management of selected cases in the emergency setting.

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Introduction

Fingertip and nail bed injuries are frequently encountered in emergency departments and can result in significant functional and cosmetic complications if not properly managed¹. Fingertip injuries mean any trauma, injury, or damage occurring to the end of the finger, including the skin, bone, nail, and soft tissue. These injuries are common and can range from minor cuts to more severe damage involving bone fractures or tissue loss. Fingertip injuries are among the most common hand injuries encountered in clinical practice, often resulting from occupational, recreational, or domestic accidents. They can range from minor lacerations to severe tissue loss, fractures, and nail bed damage; each needs a tailored approach to ensure optimal recovery². Given the detailed anatomy of the fingertip, comprising skin, soft

tissue, bone, and nail apparatus, its functional and anatomical integrity is crucial for hand dexterity and overall preserved hand function³. Accurate assessment of the extent of injury and appropriate repair of the nail bed are essential to prevent long-term deformity⁴. In this case report, we described the management of a nail bed injury in the emergency setting, emphasising the clinical evaluation, decision-making, and technical considerations involved in repair.

Case Presentation

A 46-year-old adult male presented to the emergency department with an acute fingertip injury sustained from a sharp object. On initial assessment, he was hemodynamically stable and reported localised pain at the fingertip without



numbness or loss of function. Physical examination of the affected finger revealed disruption of the nail bed and nail margin, with partial separation of the nail plate. There was no active bleeding at the time of examination, and the surrounding soft tissue appeared viable. Sensation and capillary refill were intact, and there was no evidence of tendon or bony injury. The pre-repair appearance of the injury is shown in Figure 1.

Figure 1: Pre-repair appearance of the fingertip injury demonstrating nail bed involvement



Given the degree of nail bed involvement and the risk of future nail deformity if left untreated, formal nail bed repair was indicated. After discussing the procedure with the patient and obtaining consent, the repair in the emergency department proceeded.

Adequate analgesia was achieved using a digital nerve block, which provided effective pain control without distorting the local anatomy. This allowed careful inspection of the nail bed and precise repair. The nail plate was preserved and secured in its anatomical position to act as a protective splint. It was repaired using simple interrupted sutures with 4-0 suture material, with particular attention paid to accurate alignment and gentle tissue handling.

Following completion of the repair, the fingertip demonstrated appropriate nail alignment and a satisfactory cosmetic appearance. Neurovascular status remained intact, and finger function was preserved. The immediate post-repair outcome is shown in Figure 2.

Figure 2: Post-repair appearance showing proper nail alignment and satisfactory cosmetic outcome.



Discussion

Nail bed injuries require a reconstructive approach focused on restoring normal anatomy rather than simple wound closure. Failure to accurately repair the nail bed can result in permanent nail deformities and poor cosmetic outcomes. Preservation of the nail plate, when feasible, provides structural support and helps maintain the normal contour of the nail unit^{5,6}.

In this case, the use of a digital nerve block provided effective anaesthesia while maintaining tissue integrity, facilitating precise repair. This experience demonstrates that, with appropriate assessment and technique, selected nail bed injuries can be safely and effectively managed in the emergency setting, including during internship-level clinical practice under appropriate supervision^{7,8}.



In conclusion, this case revealed the importance of thorough evaluation and meticulous repair of fingertip nail bed injuries to optimise both functional and cosmetic outcomes. A reconstructive mindset, effective anaesthesia, and attention to anatomical detail are essential components of successful management. Selected nail bed injuries can be appropriately treated in the emergency department when these principles are applied.

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