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Trephination vs nail removal and nailbed repair: the optimal treatment of traumatic subungual hematoma

Subungual hematomas can cause pain and are commonly associated with traumatic hand injuries seen in the ED. Hematomas associated with distal phalanx fractures or those that involve >50% of the nail surface area have been highly associated with underlying nailbed laceration, and thus have been traditionally treated by nail removal and nailbed repair. Smaller hematomas were alternately treated with trephination. The risk of not treating the underlying laceration is possible nail deformity/poor cosmetic or functional outcome, but **does the method of treatment affect the outcome?**

Trephination most commonly is accomplished by using a heated paper clip (alternatively an 18 gauge needle) to bore a hole through the nail without extending into the nailbed. This allows a pore through which the subungual hematoma can be drained at the cost of converting any co-existing underlying distal phalanx fracture from closed to open. In a study by Meek, 123 patients with traumatic subungual hematomas were treated by trephination and then 94 followed up 5-13 months later.<sup>1</sup> The examiners found that 67% of patients reported no residual abnormality (85% rated excellent or very good appearance) while 13% had fair or poor outcomes owing to grooves, decreased nailbed adherence, a narrow or curved nail, or nail splitting. There was no correlation between either size of the hematoma or fracture and outcome. Furthermore, 5 patients reported infections but all of these patients scored their eventual outcome as very good or excellent. Three patients reported sensory changes and one of each, decreased fine finger work and nail catching on clothing, were reported as functional problems. A limitation to this study is that only 11 patients had a hematoma that was 25-50% of the surface area. Another study by Roser examined 52 children that were randomized to either trephination or surgical nail bed repair. All patients had an intact nail margin, >25% subungual hematoma, crush mechanism, and no previous nail abnormality. Notably, only 11 of the trephination group were actually trephinated while 16 were just observed due to patient or parent refusal. The majority of patients were given prophylactic Keflex. Both groups had 1-3 patients that reported transient nail abnormalities that resolved by 4 months. Otherwise, there was “no notable difference in outcome between the 2 groups regardless of hematoma size, presence of fracture, injury mechanism, or age. Charges, however, were 4 times greater for the operative group.”<sup>2</sup>

When combing the functional, cosmetic, and financial aspects of each modality, **trephination is superior to nail removal and nailbed repair assuming an intact nail plate and nail margin.** “Clear indications for surgical intervention are a **nailbed injury with associated displaced distal phalangeal fracture, disruption of the dorsal nail fold or other paronychia tissues, or a disrupted or avulsed nail plate.**”<sup>3</sup>

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1 Meek. Subungual haematomas: is simple trephining enough? J Accid EM 1998

2 Roser, Comparison of nail bed repair versus simple trephination for subungual hematomas in children. J Hand Surg 1999

3 Shafritz. Hand Surgery. 2004 Lippincott Williams & Wilkins. Chapter 64: Fingertip and Nailbed Injuries