

Surgical Treatment of Paediatric Nail Bed Injuries in the United Kingdom:
Surgeon and Patient Priorities for Future Research

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***Reconstructive Surgery Trials Network Nail bed INJury Analysis (NINJA)**

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The results of the online survey of plastic and orthopaedic hand surgeons were
presented at the British Society for Surgery of the Hand Autumn Scientific Meeting,
held at the Royal College of Surgeons of England, London, 16th October 2014.

SUMMARY

Nail bed injuries are the most common paediatric hand injury, yet there is a limited evidence base to guide treatment. The aim of this study was to gather information on current practice to help inform future clinical research. We conducted an online survey of hand surgeons and a retrospective audit of nail bed injuries managed at four plastic surgery units. In addition, we surveyed parents of children with nail bed injuries to identify their concerns regarding the injury. Overall, 84% of hand surgeons surgically repair paediatric nail bed injuries. The preferred technique is a simple, interrupted Vicryl Rapide suture. Most replace the nail plate and secure with a figure-of eight-suture. There was no consensus on perioperative antibiotic prescribing. Parents' main concerns were return of normal nail plate growth, infection-free healing and cosmesis.

Keywords: Nail bed; injury; repair; survey; audit

Dear Sir,

Despite a high incidence, controversy remains around the appropriate management of paediatric nail bed injuries.¹⁻³ We undertook a data gathering exercise to define current practice and help inform future research. This comprised 1) an online survey of plastic and orthopaedic hand surgeons, 2) a retrospective audit of nail bed injuries managed over the course of one month at four plastic surgery units in England and 3) a survey of parents of children with nail bed injuries.

Members of the British Association of Plastic Reconstructive and Aesthetic Surgeons, the British Society for Surgery of the Hand, the Reconstructive Surgery Trials Network and the Plastic Surgery Trainees Association were invited by e-mail to complete an online questionnaire on nail bed repair practice. We received 116 responses, comprising 73 plastic surgeons and 43 orthopaedic surgeons. The majority of respondents were of consultant or associate specialist grade (70%), followed by registrars or fellows (28%) and core trainee grade (2%). Sixty-two NHS Trusts from across England, Scotland, Wales and Northern Ireland were represented. The results are shown in Table 1.

Ninety-eight (84%) respondents stated that it was their normal practice to surgically repair paediatric nail bed injuries. Eighteen (16%) did not repair paediatric nail bed injuries. The ratio of plastic surgeons who repair versus do not repair was 12:1; amongst orthopaedic surgeons, the ratio was 3:1. The difference between the two specialties was statistically significant ($p=0.0072$, Fisher's exact test).

The most common repair technique is a simple interrupted suture (85%), using Vicryl Rapide (83%). Having repaired the nail bed, 96% of surgeons replace the nail plate,

whilst 4% prefer to discard it. Responses regarding antibiotic usage for uncomplicated nail bed injury reveal a wide variation in practice. Surgeons were asked what they would consider to be the single most important outcome measure for paediatric nail bed repairs. The majority (33%) cited cosmetic appearance of the nail as the most important outcome, followed by nail re-growth (28%) and parent satisfaction (14%).

Fifty-six patients across the four units underwent surgery for nail bed injury in the month audited. Two patients were excluded from the final analysis due to insufficient data, leaving 54 patients to be included (24 girls and 30 boys). The average age was 60 months (range, 10 to 156 months). The grade of surgeon responsible for assessing the patient on arrival was a core trainee in 58% of cases and a registrar / fellow in 42% of cases. Eighty-nine percent of injuries were graded as clean on admission and 9% were contaminated. One patient presented with a grossly infected nail bed injury. Fifty-two percent of nail bed injuries were associated with an underlying fracture of the distal phalanx.

The operating surgeon was registrar / fellow grade in 85% of cases (supervised in one case by a consultant) and core trainee grade in the remaining 15% of cases, half of which were supervised by a registrar / fellow. Six nail bed injuries (11%) were deemed not to require repair at the time of surgery, either because the laceration was considered too small to require sutures or the edges were well apposed. Only one case required the use of a K-wire. Details of repair technique and antibiotic use are shown in Table 2.

The average time until first follow-up review was eight days (range, 2 to 10 days). Forty-four percent of patients were subsequently seen again in outpatient clinic, whilst 43% were discharged after their first review. Thirteen percent of patients did not attend

their clinic appointment.

Only two postoperative complications were reported (4%): one soft tissue infection, which resolved with oral antibiotics and one instance of distal fingertip necrosis following a subtotal amputation through the nail bed.

Thirty parents provided 85 written responses to the following request: “Please list the three main concerns that you have regarding your child’s nail bed injury”. The three most common concerns were normal re-growth of the nail (22%), infection (16%) and long-term appearance (14%).

A recent Cochrane review highlights the lack of research informing the treatment of one of the most common paediatric hand injuries.⁴ The authors note that “despite the relative frequency of this injury, there is no consensus on the best course of management, with decisions usually based upon the inclination of the individual clinician and not on any local, regional, national or international evidence-based policy”. This is confirmed by our study that demonstrates the wide variation in practice in the management of this common injury, both between units, but also within the same unit.

Future research is required to define the optimum repair technique based on outcomes, including nail growth, appearance and infection and to examine the need for prophylactic antibiotics following uncomplicated nail bed repair. The findings from our study have been used to design a multicentre randomized controlled trial, the Nail bed INJury Analysis (NINJA) trial and the pilot is underway.

Conflicts of interest

None.

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Ethical approval

N/A

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