

Simple Approach. Beautiful Outcome in Nail Bed Repair in Pediatric Patients

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Abstract

Pediatric population is very vulnerable to nail bed injuries due to their inherent tendency to explore their surrounding environment. Among children, toddlers are the most common victims. Our study target was to see if a simple technique of meticulous repair of the injured nail bed would result in a very favorable outcome or not. All patients had the same technique of meticulous surgical repair under loupe magnification using interrupted stitches with vicryl 6-0 suture, followed by replacement of nail plate to prevent adhesions and slab or metal splint application, based on the age of the child. All patients were found to have normal growth of nail plate without any deformity at 3-6 months' period post operatively.

Discussion

Ours was a prospective study design which included pediatric patients presenting with nail bed injury in Doha, Qatar.

- The duration of study was 18 months, starting from 1st of March 2016 through 30th June 2017, of which the last 6 months were dedicated only for following up the patients who underwent repair.
- The minimum follows up of each patient was 6 months postop.
- Study group included all pediatric patients (less than 14 years old) who had nail bed injury with/without distal phalanx tuft fracture.
- We excluded the patients with distal phalanx shaft/ base fracture and cases with nail bed substance loss or severely crushed nail bed (dusky non-viable nail bed) which would need nail bed grafting.

We had 203 cases of nail bed injuries, of which 119 cases met our inclusion criteria and were taken into the study. 11 cases were lost for follow up at 6 months' post operative visit, so the total number was further reduced to 108 with the youngest being 19 months old and the oldest, 11 years. 80% of the children were younger than 4 years (Figure 1).

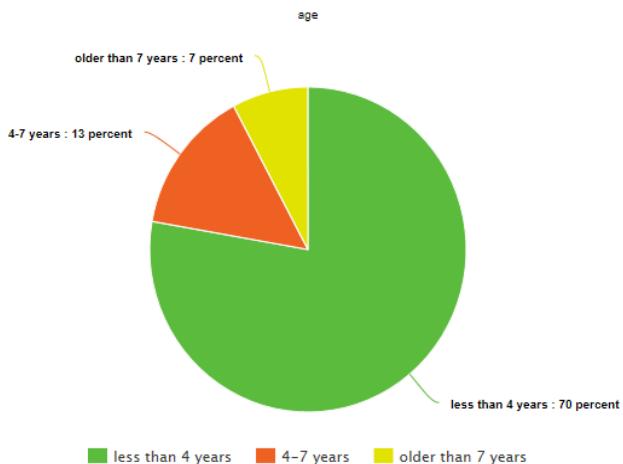


Figure 1: Age Chart.

The most common mode of injury was domestic door trap injury. Others included fall, contact sports injury at home or school and road traffic accidents.

All the patient had an initial radiological assessment by X ray on admission at emergency department. 77% of patients in the study group had tuft fracture of the distal phalanx and the rest had isolated injury to the nail apparatus.

Management

The surgical repair was carried out by three different surgeons who followed the same management protocol as follows;

- The child was admitted to the plastic surgery unit and received a preoperative prophylactic dose of intravenous amoxicillin/clavulanic acid.
- The surgery was performed under deep sedation combined with levobupivacaine digital block to reduce the need for systemic sedation and to provide adequate postoperative pain free interval [1,2].
- The nail plate was removed gently with periosteal elevator to avoid further trauma to nail bed followed by cleansing and irrigation of the wound with normal saline and povidone iodine solution [3].
- The skin was sutured first, with 5-0 rapide vicryl suture then the nail bed, meticulously with 6-0 vicryl sutures with round body needle in an interrupted fashion, under 4 x loupe magnification [3,4].
- The nail plate was replaced to prevent adhesions between the dorsal fold and nail bed. No stitches were taken to secure the nail plate in its position, but only non-adherent paraffin gauze soaked with fusidic acid ointment was wrapped around the digit to keep the nail plate intact.
- Dressing was completed using plane 4x4 inches raytec gauze and plaster of paris slab in children less than 8 years old or metallic finger splint in those who were 8 years or above [5,6].

1.1. Post-operative care

All patients who had a fracture of distal phalanx were given oral antibiotic for 3 days postoperatively. The first change of dressing was done at 6th postoperative day. If the nail plate was found detached at that time, it was discarded. The wound dressing was then changed twice a week for until healed completely [1,6].

The follow up was done regularly at one month, three months and six months' periods when nail plate growth was monitored. All patients but one showed normal growth of nail plate without any deformity. Only one patient developed deformity due to adhesions between the dorsal fold and germinal matrix and it was managed by adhesiolysis and insertion of non adherent dressing

material as a spacer between the dorsal fold and germinal matrix for 5 days, which resulted in normal nail plate growth in 4 months' period. There were no other complications like wound infection, dehiscence or tissue necrosis, in any of the cases. Generally, the outcomes were excellent and the complications were exceedingly rare with our technique (Figure 2).



Figure 2: Nail growth at 3 months postop.

Conclusion

Nail bed injuries are very common in children, especially toddlers. Any nail bed injury should not be overlooked, since prompt surgical management could restore normal nail plate growth. Pediatric population brings very good results in nail bed injuries when timely management is delivered. Our technique of surgical repair emphasizes on very meticulous repair of the defect under proper settings including loupe magnification which produces excellent results and leaves no room for complications including nail plate deformity, which is quite common after nail bed injuries (Figure 3-6).



Figure 3: Case of right middle finger nail bed laceration with partially avulsed nail plate.



Figure 4: X ray of right middle finger nail bed injury shows tuft fracture.



Figure 5: One-week postop repair.



Figure 6: Case of 3 months' postop repair of nail bed injury of middle finger.

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