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Case Report

Finger Tip Replantation Tamai Zone II – A Case Report

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ABSTRACT
Fingertip injury is one of the most commonly encountered injuries in the emergency department. In our country, hand injuries can happen for various reasons, and motorbike chain injuries are the commonest. In this case report, we present a complete traumatic amputation of the right index finger at the distal interphalangeal joint caused by a motorbike chain injury. This index finger injury falls under the category of a crush avulsion. The nerve was not repaired, but the digital artery and vein were repaired during reattachment. The patient expressed satisfaction with the surgical results three months after the procedure, both in terms of functionality and appearance. This case report aims to present a successful reimplantation of the index finger without nerve repair.

KeyWords: Fingertip, Tamai Zone II, Motorbike chain, Replantation

INTRODUCTION
One of the most frequent orthopedic emergencies is fingertip amputation, which poses several treatment challenges. Fingertip injuries are more common in the upper limb (index finger, 23%; second most common after long finger).[1] There are three standard methods of treatment for fingertip injuries: replantation, flap cover, and stump closure.

When a fingertip is successfully replanted, the finger's functional length, the nail's appearance, and its function are all improved.[2] However, this requires expertise and infrastructure. Patient expectations and specialized functional requirements of fingertips are crucial factors that must be considered when deciding on surgical modality.[3]

CASE REPORT
A 21- year-old gentleman, right-hand dominant, presented in the emergency department after 10 hours with total amputation of right index fingertip secondary to motorbike chain injury (Fig 1A, B). It was a crushed avulsion-type injury at Tamai Zone II. The amputated stump was brought to the emergency wrapped with clean gauze. However, it was not preserved in ice or cold water. The patient has no co-morbidities, was a non-smoker, and has no drug allergic history. On clinical examination, there was a complete traumatic amputation of the index fingertip through the DIP joint and loss of distal phalanx, as in Figure 1. The X-ray revealed loss of distal phalanx of the right index finger (Fig 1C).

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The patient wanted reimplantation after counseling the patient about all available options. The stump was cooled with ice blocks in a room temperature at around 27 degrees during app the process of counseling. Thorough debridement of the amputated stump and finger was done. Under loupe magnification, neurovascular structures have been identified in both segments (proximal and amputated stump). Artery and veins were identified and prepared for replantation. Shortening of the bone was done and DIP arthrodesis was performed with 1.5 mm axial K-wire. After bony stabilization, artery and vein end to end anastomosis was done with 10.0 nylon (Fig 2). Immediately after vascular anastomosis, pulp fullness and capillary refill were satisfactory (Fig 3). Skin was apposed and wound closed with interrupted suture.

Postoperatively limb is immobilized in the long arm posterior slab. The patient is kept in a warm room (around 35 degrees), well hydrated, and comfortable to avoid peripheral vasospasm. The patient was put on IV antibiotics and continuous injections of heparin combination of 500ml normal saline and 5000IU of Heparin for three days. This is followed by 75mg of Ecosprin for six weeks. The patient was kept under regular follow-up and wound care. K wire was removed in 6 weeks. In three months, the patient could do routine work. Capillary refill time was less than 3 seconds. However, the sensation was inappropriate.

The patient was satisfied with the functional length of a finger and its aesthetic appearance (Fig 3).

DISCUSSION
The dominant hand's long fingers are the most commonly injured finger, followed by the index finger. Fingertip replantations are a technically challenging procedure. Many sal-

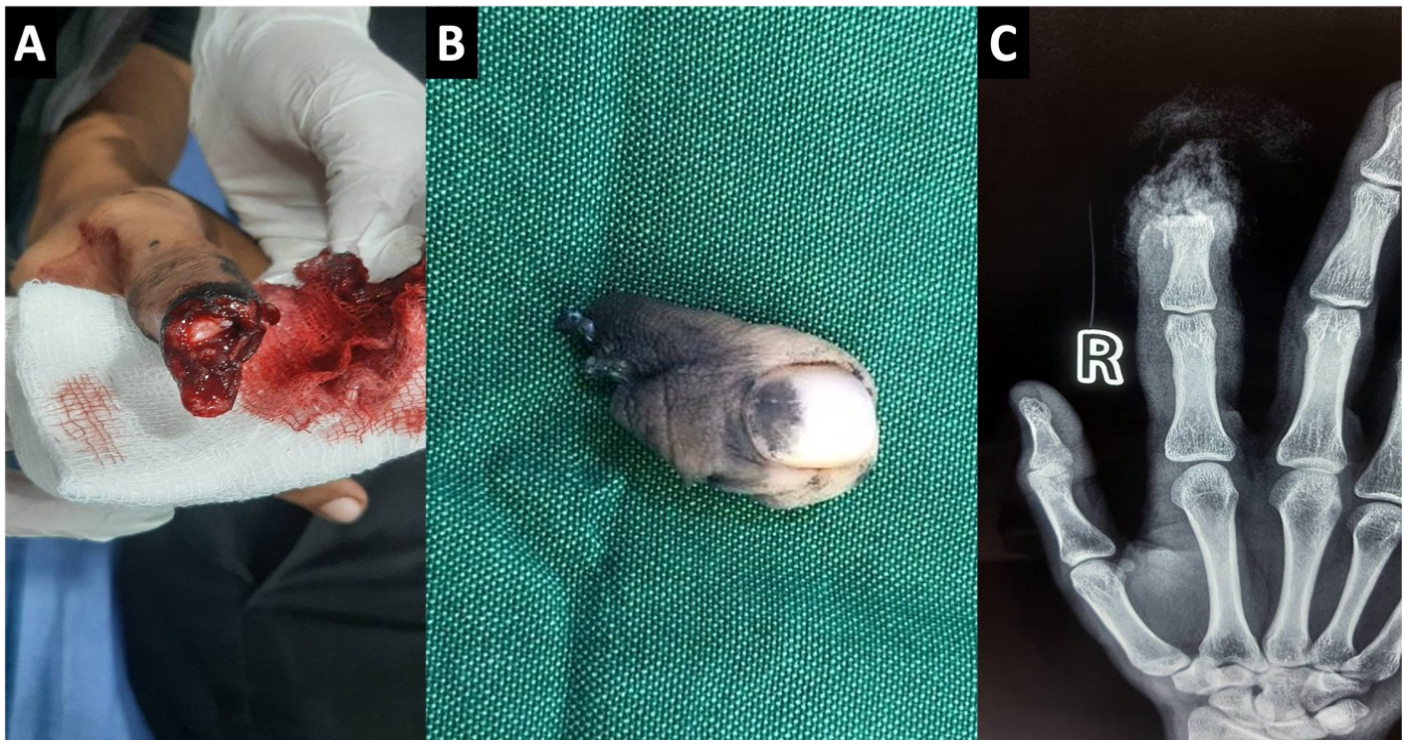

Figure 1. A. Clinical picture showing total traumatic amputation of the index finger. B. amputated stump with greasy materials and dirt. C. X-ray of the same patient showing loss of distal phalanx of the right index finger.

Figure 2. A. Vascular anastomosis. B. Stump after vascular anastomosis. Pulp fullness and pink in color. C. Capillary refill time was satisfactory.

vage procedures fail due to no suitable vein in a fingertip. Fingertip amputation through the nail base has a significantly lower chance of survival. The stump can be used as a composite graft with a success rate of 20% at or proximal to the lunula of a nail.

Replantation is the only option for successful survival of fingertip amputation to give functional and aesthetic outcomes.2 The survival rate for Tamai Zone I is 86 percent, and that for Zone II is 88 percent.3

In this case report, the distal inter phalangeal joint was destroyed, so bone shortening was done to achieve arthrodesis with a single axial 1.5mm k wire. This allowed extra length of vessels and gave a tension-free anastomosis.4 Venous anastomosis is more difficult compared to arterial as they are very thin and difficult to identify.5 Koshima et al. suggested performing arterial anastomosis, waiting 24 hours, and re-exploring the engorged palmar vein for easier identification and anastomosis.6 But in our case, we did arterial anastomosis and waited some time to identify engorged veins and anastomosis.

Post operatively, there were no complication and wound healed well. The patient is satisfied with the functional length and aesthetic outcome at three months follow up period.

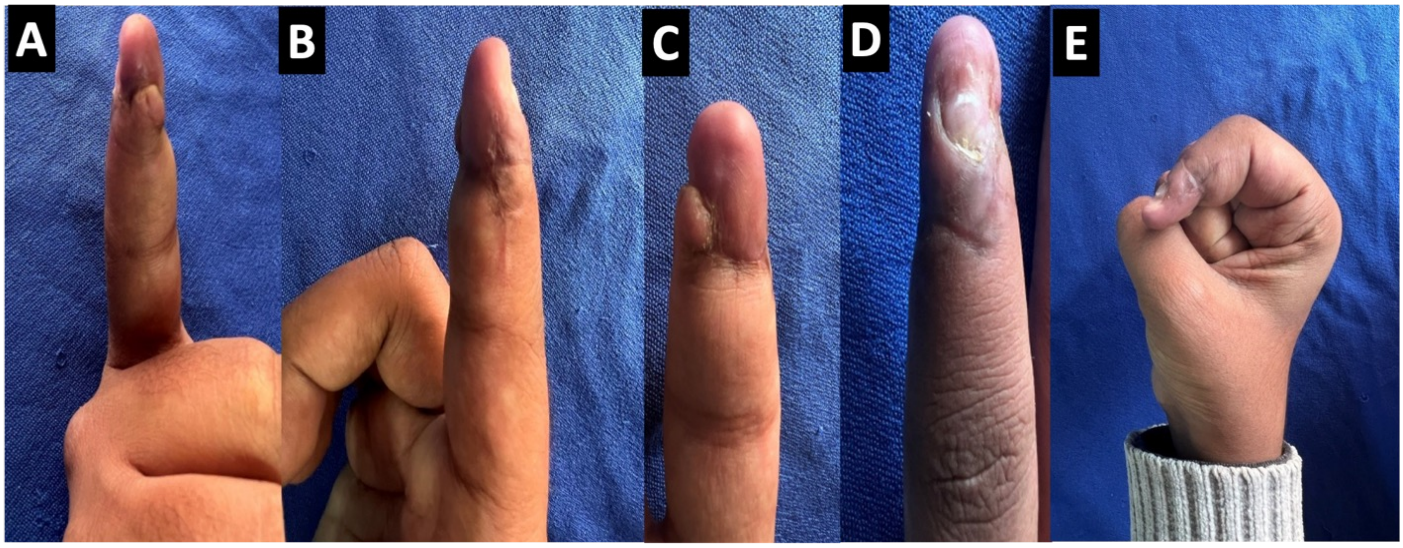

Figure 3. Clinical picture after three months postoperative.

CONCLUSION

Fingertip replantation is one of the most difficult procedures and is more demanding. This requires proper microsurgical skills. Regular fingertip replantation will minimize the duration of operation, have higher success rates.

CONSENT

Consent from the patient was taken to report all pictures and case information without revealing their identity.

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