

Management of a Mangled Thumb and Index Finger: Pearls for a Successful Outcome

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Abstract

- Mangled hand and thumb injuries are complicated and difficult to manage.^{1,2}
- Purpose: elaborate on employing a standard protocol for multi-staged reconstruction of mangled hand and thumb deformity.
- First surgery: evaluate extent of the injury and reconstruct compromised vessels, tendons, nerves, and bones.
- Second surgery: attain prehensile strength and dexterity.
- Post-operative management: 44 weeks of occupational therapy to increase functionality.
- Outcome: Patient showed marked improvement in strength and coordination following operative and post-operative management.

Introduction

- The hand is extremely important for gross and fine motor function
- The thumb is a unique digit that plays a role in ~40% of all hand function.²
- Loss of the thumb contributes to 22% loss of whole body function, which is equivalent to loss of an eye.²
- Thumb amputations account for the greatest burden of disability globally compared to hand/wrist fractures.³
- Most digit amputations are due to industrial injuries.³
- In most cases, thumb salvage should be attempted due to benefits outweighing those of amputation.^{2,4}
- Treatment requires timely and appropriate management.

Clinical Case

- 60 y/o male presented to the ER after sustaining an injury to his non-dominant left hand with a tablesaw.
- Initial evaluation displayed mangled injury, thumb cold to touch, decreased sensation over the left thenar eminence, and preserved sensation and perfusion to the left index finger.
- X-ray displayed near amputation with middle phalanx and distal phalanx fracture, second metacarpal fracture of the thumb, and multiple foreign bodies.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6.

Figure 1. Pre-operative x-ray

Figure 2 & 3. Pre-operative evaluation

Figure 4. Post-operative x-ray

Figure 5 & 6. Post-operative follow up

Conclusion

- The senior author (SMW) performs a standard approach to reconstruct mangled hand and digit deformities to achieve a successful, functional outcome
- Pearls:
 - Immediate 'damage control' operative intervention for stabilization and salvage
 - Multi-staged therapy-guided operative interventions enhancing function
 - Aggressive and consistent hand therapy by a therapy specialist
 - Understand the critical link between surgery and therapy for successful outcomes - 'a journey'.
 - Motivated and determined patient with close, consistent follow up for short and long-term goals achievement.

References

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