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Introduction

- Replantation attempts after avulsion is less successful compared to clean cut amputations
- Single stage recon with grafts/flaps is preferred
- Complication risk increases with greater soft tissue injury and presence of flap

Case History & Examination

A 22-year-old, right-hand-dominant male presented from an outside hospital 4 hours after sustaining a right thumb avulsion injury while using an industrial drill with gloves

- Amputated thumb to MCPJ with exposed 1st metacarpal
- FPL, EPL, EPB tendons extend from amputated thumb
- Avulsion at musculotendinous junction of forearm
- Avulsed radial/ulnar digital nerves/arteries + dorsal veins

Treatment

- Osteotomy with subsequent fixation with K wires
- Arterial/venous reconstruction, nerve transfer, and tendon repair
- Skin substitute, Biological Temporizing Matrix (BTM), was used to cover missing skin on hand and thumb
- 7 weeks later
 - BTM was delaminated
 - Pedicled groin flap placed
- 4 weeks later
 - Flap was divided

Results

- Vessels remain well perfused
- Able to make fist with 62% strength of uninjured left hand, 5 mm two-point discrimination present

Discussion

- We propose the use of a skin substitute to protect exposed soft tissue when digit survival is unpredictable
- This allows for the completion of a flap or graft later when the tissue is more stable
- Use of a skin substitute is *not* inferior to a flap or skin graft in soft tissue coverage
- Skin substitutes have been shown to be viable options in single stage procedures for fingertip and ring avulsion injuries

Conclusion

The use of a skin substitute serves as a temporizing method while confirming digit survival. A flap procedure can be completed later.

Initial injury



7 weeks later



8 months after division of pedicled flap

