

Mangled Upper Extremities: Our Experience

Francesco Gargano, Karen Szymanski, Silvio Podda
Plastic surgery division, St Joseph Hospital, Paterson, NJ



OBJECTIVES

Severe blast injuries represent a surgical challenge for the concomitant poorly vascularized soft tissues and multiple hand fractures. Controversies of treatment exist regarding the need of multiple surgical attempts to save the severely amputated limb.

METHODS

Two cases of severe blast and avulsion injuries are presented. Clinical examination in both cases showed severe mangled hands with devascularization of the thumb, index, middle fingers. Multiple metacarpals, phalangeal fractures were present. Distal soft tissues were devascularized. Surgical priorities in order of importance consisted of:

- 1) debridement of devitalized tissues,
- 2) thumb reimplantation,
- 3) open carpal tunnel release and forearm fasciotomies,
- 4) reconstruction of the soft tissues with fillet flaps, groin flap and integra placement,
- 5) open reduction and internal fixation of multiple fractures.

RESULTS

Both patients achieved limb salvage. Postoperative, one patient required further debridement and more stable soft tissue coverage with groin flap. Hand therapy was initiated and good progresses were achieved. Sensation of the right thumb was present in both cases and assessed with light touch and two point discrimination test. Pinch and grasping was achieved in one case.

CONCLUSIONS

Severe blast injuries represent a challenge and should be address with the following algorithm: debridement, reimplantation and revascularization, stable soft tissue coverage and bone fixation. Limitations of the study are the retrospective nature and the limited number of patients enrolled.

CASE 1

History. 68 year-old right hand dominant male with circular saw injury to the left hand. The patient underwent a single surgery. Operative time 9 hours



Fig.1-3. Mangled hand with left thumb and index finger amputation. Multiple segmental fractures.



Fig.4-6. Debridement, thumb reimplant, phases of microvascular repair. One artery and two dorsal veins were revascularized.



Fig.7-9. Good range of motion, pinch and grasping achieved with hand therapy.



Fig.10-11. Radiographs showing bone fixation.

CASE 2

History. 23 year-old right hand dominant male with severe blast injury to the right hand. The patient required multiple surgeries of soft tissue coverage and bone fixation

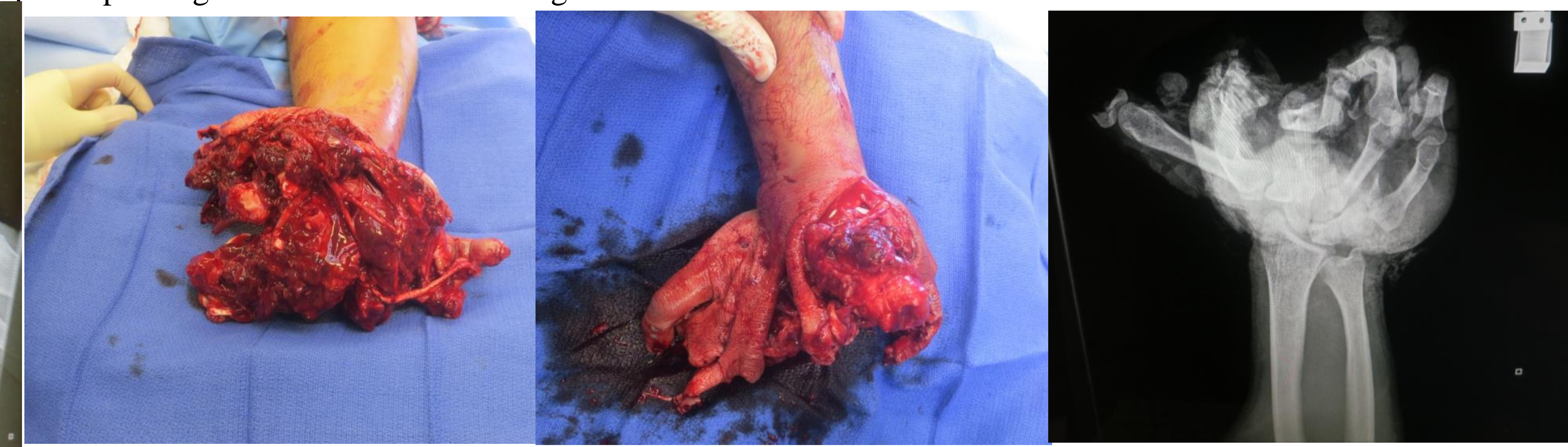


Fig.1-3. Blast injury right hand. Multiple digits devascularized. Soft tissue and bone complex injury



Fig.4-6. Revascularization of thumb and index finger with interposition vein graft



Fig.7-9. Soft tissue reconstruction with groin flap.



Fig.10-11. Bone fixation. The patient will undergo further procedures for thumb stabilization to restore grasp and pinch.