

Leahthan Domeshek, Carrie Bettlach, Austin Ha, Amy Moore

Objectives & Background

- Approximately 70,000 firearm-related injuries per year in the U.S.
- Rates vary based on location, gender, and age
- Approximately 1/3 of gunshot wounds (GSW) involve the upper extremity
- Infection in the setting of GSW:
 - Past: high concern, especially wartime, with high-velocity injuries & large zones of destruction
 - Lower concern for infection in low-velocity wounds, with modern antibiotics and prompt attention, though studies have shown low-velocity gunshot wounds to be contaminated
 - Studies examining infection rates on extremity (excluding hand) GSWs find low rates (1.5 – 15.1% depending on type of antibiotics, presence of fracture, etc...)
- OBJECTIVE: *Will early instrumentation lead to infections in open metacarpal and phalangeal fractures from gunshot injuries?*



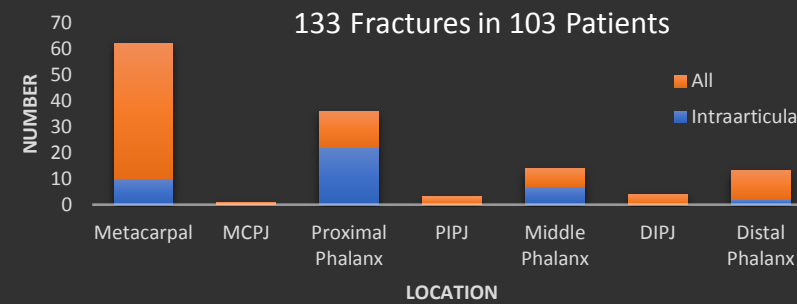
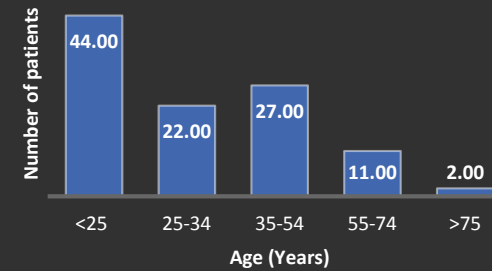
Methods

Retrospective Chart Review

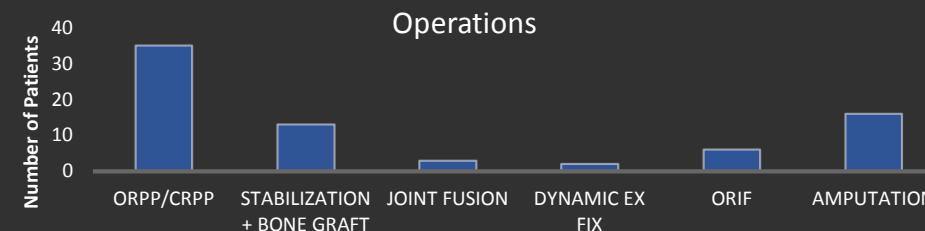
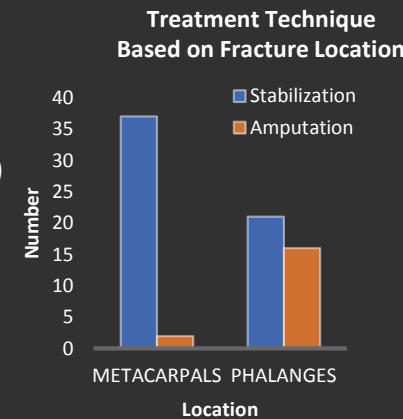
- Patients: All treated by Plastic Surgery for metacarpal or phalangeal fractures due to gunshot wounds 2010-2017
- Data: demographics, nature of injury, fracture details, method of treatment, antibiotics, follow-up

Results

- 96 males (92%)
- Average age: 33.6 years
- All patients presented to ED within 1 day of injury
- Etiology of injury:
 - Assailant: 69 (67%)
 - Self-Inflicted: 35 (33%)



- 80% of patients received Abx at time of presentation: Ancef > Clindamycin, Ertapenem, Keflex, Gentamycin
- 80 fractures managed operatively (60.1%)
 - Amputations: 18 (14%)
 - Stabilization: 58 (46%)
- Average time from presentation to treatment: 6.4 days



Follow-up (time of injury to last follow-up visit):

- All patients: 79.7 days
 - Non-operative: 33.8 days
 - Operative: 93.9 days
- Time from removal of hardware to last follow-up: 36.7 days
- 50% of patients did not follow up after removal of hardware

Unplanned return to the operating room:

- Failed dynamic ex fix → CRPP
- Ray amputation → Suture reaction
- CRPP → stiffness
- Deep infection x 3
- Failure to return to OR: Ex-fix (2)
- Removal of foreign body in 1 non-operative patient



Infection: 3.9% (4 patients)

DEEP (3 patients)

- ORIF (MRSA): 42 days after surgery Removed hardware; healed
- PIPJ Arthrodesis (OSSA): 22 days after surgery → Opted for revision amputation PIPJ
- Revision amputation → noted to be Possible foreign body reaction on I&D, 619 days after original surgery; no culture data

SUPERFICIAL (1 patient)

- Pin-site infection, 36 days after surgery. Pins removed, infection resolved; no culture data

Conclusions

- Risk of infection in metacarpal and phalangeal gunshot wounds remains low in the setting of early instrumentation
 - Rates of infection similar to treatment of open metacarpal and phalangeal fractures in general
- Patient counseling on close follow up and surgical plan should be routine in our treatment of these patients
- General outcomes studies in this patient population made difficult by short follow-up and low follow through with hand therapy