

Interposition Arthroplasty of Elbow after Proximal Ulna Reconstruction with Masquelet: A Case Report



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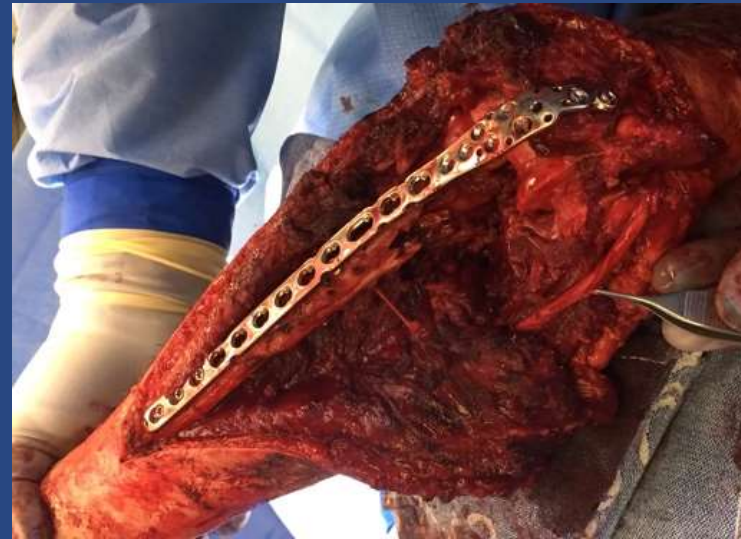
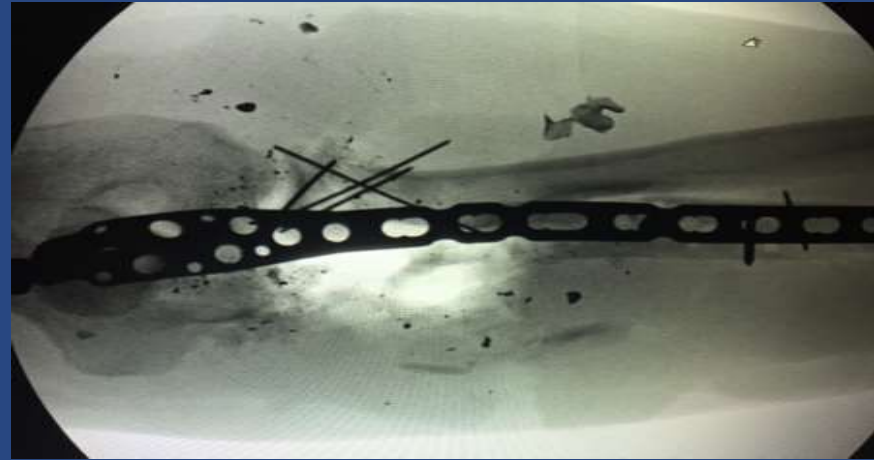
Introduction

- Mangled extremities pose significant challenges in order to optimize outcomes and function through attempted limb salvage¹
- Peri-articular bone loss creates for a difficult functional reconstruction
- One technique to maintain motion and improve pain in those patients with elbow arthritis is interposition arthroplasty²

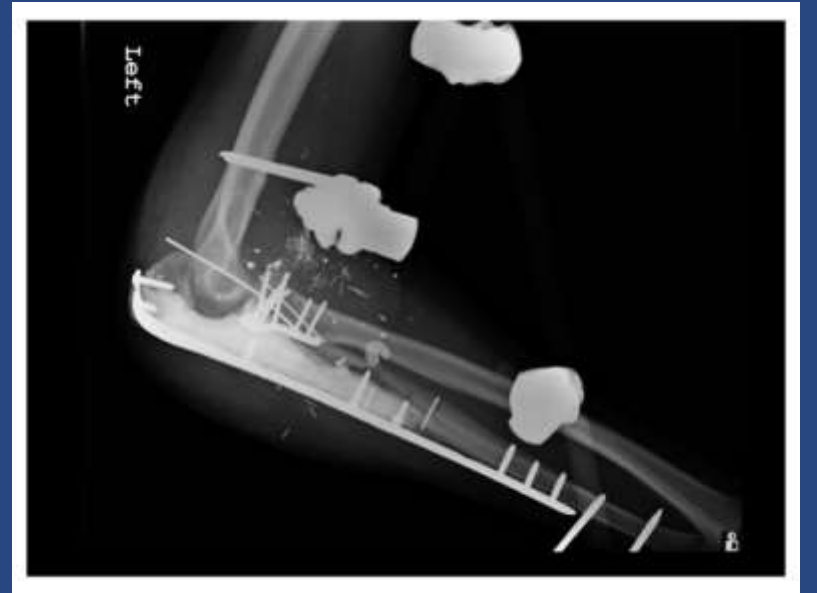
Case Presentation

- 32 RHD M presented with a left open elbow fracture dislocation after injury from a high velocity weapon
- At time of injury, he had significant soft tissue loss about the posterolateral elbow with >10cm of proximal ulna bone loss
- He weakness and altered sensation in ulnar and median nerve distributions. Vascularly intact.
- He underwent initial D&I, limited internal fixation, and wound vac application
- He underwent two additional debridements prior to revision ORIF, antibiotic spacer placement, ex-fix application and rectus flap coverage at 7 days from injury.

Case Presentation



Case Presentation



Case Presentation

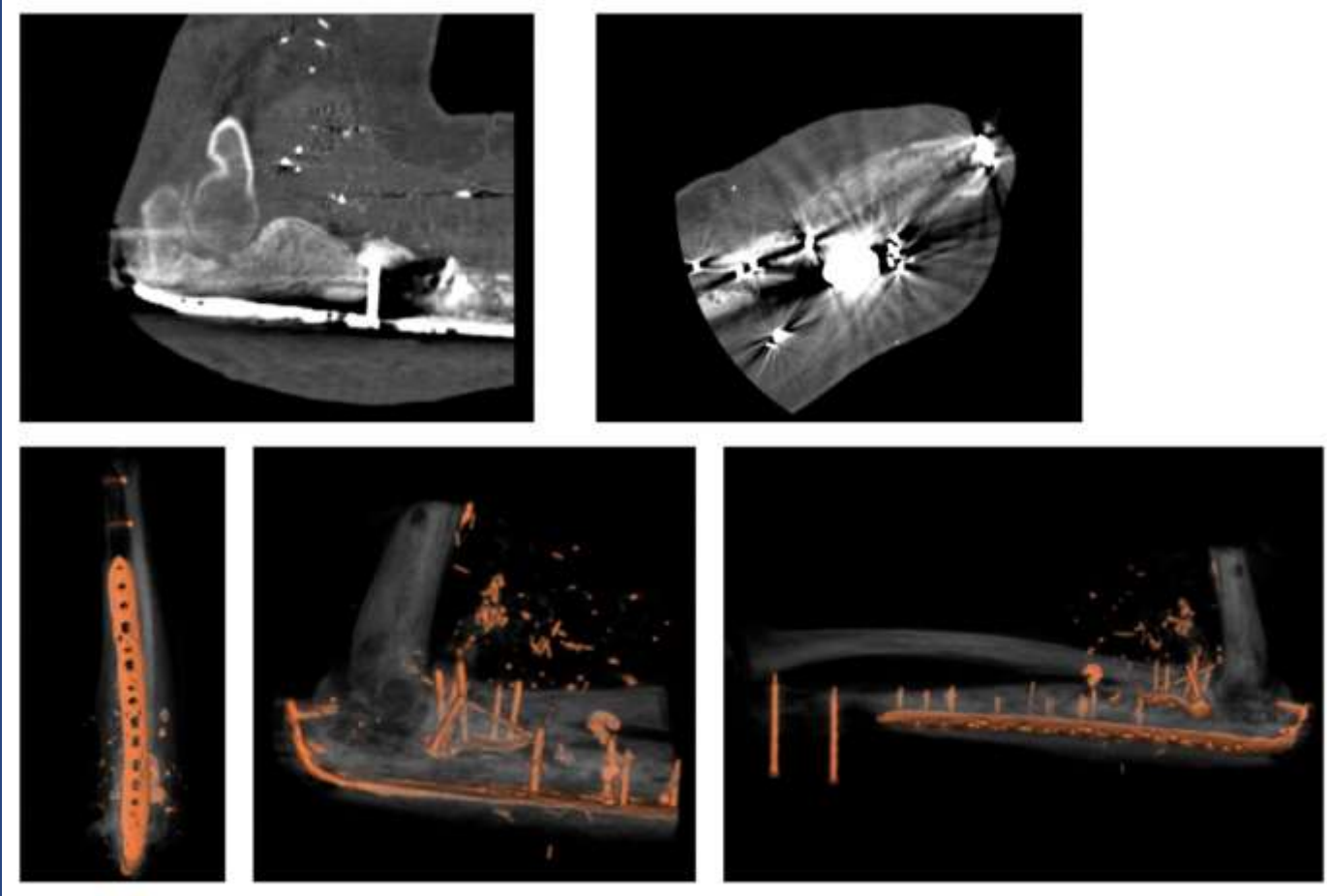
- Flap failure occurred on post-op day 3 secondary to venous congestion and failed anastomosis within the zone of injury. A second free flap was performed using latissimus and STSG was performed
- Two months later, the cement spacer was removed and the defect was grafted with RIA, BIO4, and Demineralized Bone Matrix



Case Presentation

- 4 months after soft tissue coverage and two months after bone grafting, a CT scan was obtained which demonstrated bridging bone posteriorly about the ulna
- Interposition arthroplasty performed
- 2.5 months after interposition arthroplasty, the ex-fix was removed. Radiographs demonstrated bony union. Patient had a 60-120 ° arc of motion
- He has no pain with rest, minimal discomfort with activity and no instability

Case Presentation



Case Presentation



Case Presentation



Discussion

- Masquelet technique uses cement spacer with subsequent bone grafting of the induced membrane
 - Used to managed defects up to 25 cm in length³
 - Does not require microsurgical technique or donor site morbidity
 - Induced membrane demonstrates growth factors VEGF, TGFB1 and osteoinductive factor BMP2⁴
 - Typically not used in periarticular setting. However there are case reports of it being used with elbow arthrodesis⁵

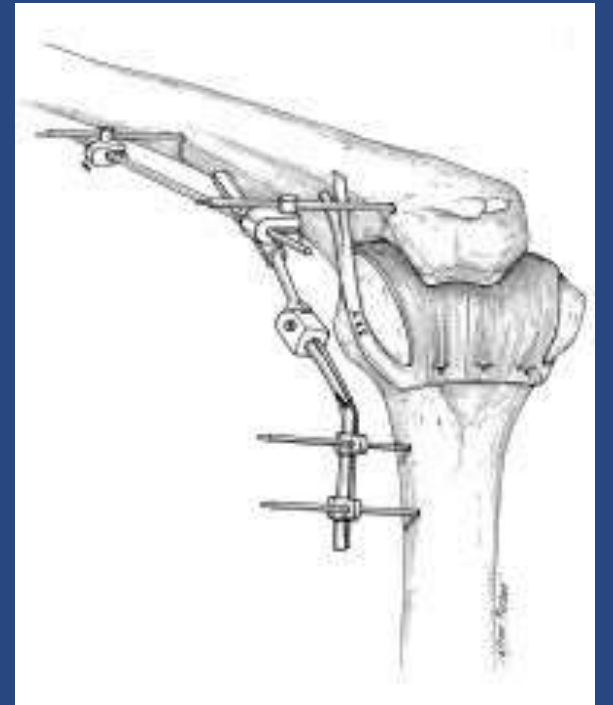


Discussion

- Reconstructive options for a young patient with this injury include elbow arthrodesis
 - Salvage procedure
 - Suggested fusion position ranges from 70-110 ° to allow for activities of daily living⁶
 - Has significant associated disability⁷
- An alternative to elbow arthrodesis is Interposition arthroplasty

Discussion

- Interposition arthroplasty uses autograft (Fascia lata) or allograft (Achilles tendon, dermis). It is a treatment alternative for young patient with elbow arthritis
 - Requires use of hinged elbow external fixator post-operatively to minimize risk of instability, which is one of complications of procedure
 - Studies have demonstrated sustained functional motion of nearly 90 degrees over the course of 6 to 32 years in the majority of patients. ^{8,9}
 - Elbow arthrodesis remains the answer should pain or function worsen in the future.



Conclusions

- While not previously described, Masquelet technique may be successfully utilized in a periarticular setting, particularly around the proximal ulna
- Interposition arthroplasty may be used to preserve motion. Instability is a concern with this procedure and a hinged external fixator must be used in the immediate post-op healing period.
- Elbow arthrodesis is a viable salvage option for painful motion or poor function, though it has its functional challenges.

Sources

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Questions?

