

Reconstruction of Elbow Joint and Soft Tissue Defect with Anterolateral Thigh Flap and Total Elbow replacement

- A Case Report -

Hyun Sik Park, Dong Jin Kim, Jong Ick Hwang
Department of Orthopaedic surgery, Institute of Hand and Microsurgery, Duson Hospital, Ansan, Korea

Introduction

- ✓ Machinery penetrating injury of the elbow
: A rare and challenging problem
- ✓ The anterolateral thigh (ALT) flap is commonly used
: Versatility, ease of use, large size and minimal donor site morbidity
- ✓ Total elbow replacement (TER) is a reliable treatment option for acute distal humeral comminuted fractures.
- ✓ In this case, we treated the elbow joint that showed a comminuted fracture of the distal humerus with bone loss and soft tissue defects after the machinery penetrating injury with ALT flap and TER.

Case Presentation

- ✓ M/58
- ✓ High pressure injecting machinery injury

Initial status



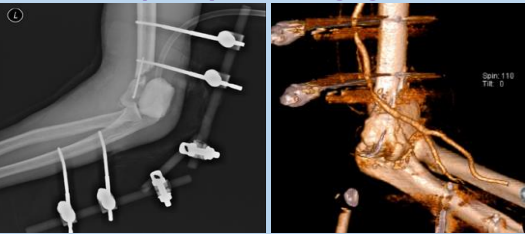
(A, B) Initial X-ray and CT : Severely comminuted fracture of distal humerus.
(C) Initial wound : Both medial and lateral soft tissue defect.

Emergency operation



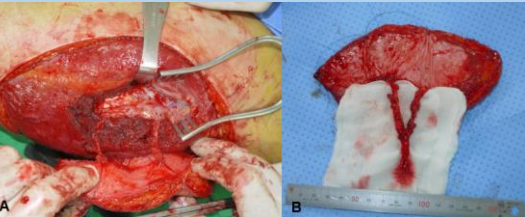
(A) Ulnar nerve anterior transposition for subsequent TER.
(B) The medial side was approximated.
(C) The lateral side remained for ALT flap. Debridement of the wound, external fixation was established and antibiotic cement block was inserted.

Postop X-ray and CT Angiogram

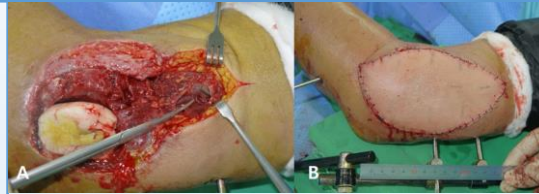


CT angiogram for evaluation of the intact brachial artery.

2nd operation : ALT flap for lateral side (2 weeks after trauma)

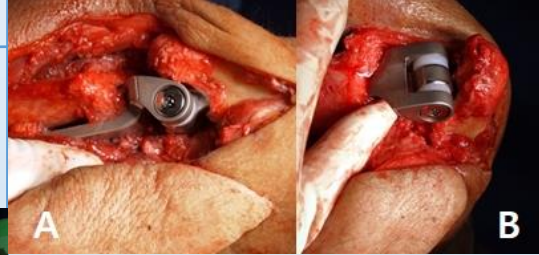


(A) Two septocutaneous perforating arteries from the descending branch of the lateral femoral cutaneous artery (LFCA).
(B) A 15.0 × 10.0 cm sized flap was harvested. The pedicle was prepared as long as possible (about 10 cm).



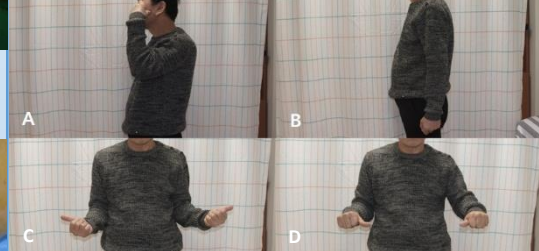
(A) Recipient artery : The profunda brachii artery.
- End to end anastomosis between LFCA and the recipient artery.
- End to end anastomosis between two vena comitantes to cephalic vein.
(B) ALT flap performed

3rd operation : TER (5 weeks after trauma)



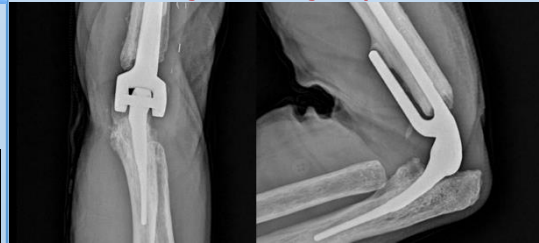
(A, B) Posterolateral approach under the base of the ALT flap

F/U results Early ROM recovery at 3mons



(A, B) The arc of flexion-extension was 0° to 110°.
(C, D) The arc of pronation-supination was 90° to 70°.

No radiological loosening at 1 yr f/u



Discussion

- ✓ ALT flap with TER was a challenging surgical procedure for the reconstruction of machinery penetrating injury of the elbow joint.
- ✓ The authors considered **subsequent TER in emergency surgery** because of large bone loss except for medial condyle. Therefore, **ALT flap was performed for soft tissue coverage, then TER was performed.**
- ✓ Treatment of complex injury of the elbow joint using **free flap coverage with TER** is the rarely documented reconstruction method.
→ **early recovery of range of motion**
- ✓ **Successful reconstruction of the elbow joint and soft tissue defect was possible using ALT flap and TER**