# Olecranon-Triceps Tendo-Osseous Allograft is a Salvage Solution for Complex Extensor Mechanism and Bone Loss at the Elbow

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INTRODUCTION: Failure of the elbow extensor mechanism presents a complex problem for upper extremity surgeons. Patients who lack a reconstructable extensor mechanism may benefit from an olecranon allograft with an attached triceps tendon as a salvage solution. The attached triceps accommodates for native triceps defects and eliminates the need for healing a triceps advancement or reconstruction with an allograft tendon to an allograft bone at the proximal ulna. In addition, the use of an olecranon allograft provides an articular surface to restore ulnohumeral joint anatomy and stability. We present here our experience with triceps-olecranon allograft (TOA) for patients with unreconstructable triceps loss with associated proximal ulna deficiency due to trauma or failed total elbow arthroplasty (TEA).

METHODS:

A retrospective review was performed of all patients with extensor mechanism loss after trauma or failed TEA who were treated with a triceps-olecranon tendo-osseous allograft as well as fracture fixation or elbow arthroplasty, as indicated. Primary outcome measures were successful healing of the allograft and restoration of extensor mechanism function. Secondary outcomes included patients' active range of motion and unplanned surgical interventions.

RESULTS: Nine patients had extensor mechanism and proximal ulna loss as a sequela of prior TEA, acute trauma, or failed surgeries for prior trauma. All but one had undergone multiple prior surgeries. The mean follow up was 2.3 years (4.8-60 months). All patients regained triceps function, with an average strength of 4/5 (range 3/5 – 5/5). At final follow up, the mean elbow arc motion was 108º, with a mean extension of 16º (0º-45º) and mean flexion of 124º (70º-150º). Three patients healed uneventfully, and 8 had a TOA at the most recent follow up. Complications included triceps weakness, allograft olecranon stress fracture, deep infection, instability, and complications related to the TEA prosthesis.

DISCUSSION AND CONCLUSION: Triceps-olecranon tendo-osseous reconstruction is a reasonable salvage surgery to reconstruct the extensor mechanism in patients who have advanced bone loss and extensor mechanism deficiency. Despite relatively high complications, a TOA may restore elbow function in patients who otherwise have few surgical options.