Achilles tendon interposition allograft for treatment of post-traumatic deformity of the ulnar head with distal radioulnar joint arthritis and instability

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The distal radioulnar joint (DRUJ) is a complex structure that depends on bony and soft tissue stability to allow for painless forearm rotation. Arthritis of the DRUJ that is refractory to conservative measures can be treated with ulnar head resection with or without soft tissue stabilization, hemi-resection arthroplasty, fusion (e.g., Sauvé-Kapandji procedure), or partial or total implant arthroplasty.1 The Achilles tendon interposition allograft has been described for use in the setting of failed ulnar head resection2–6. However, its utility in treating severe ulnar head dysmorphia has not yet been described.

Purpose:

This video overview and case presentation demonstrates salvage for DRUJ arthritis and instability with an Achilles tendon interposition allograft arthroplasty.

Methods:

Here we present a 39-year-old right hand dominant female who sustained a physeal right distal radius fracture after falling off a roof as a child. She was initially treated with a cast, and subsequently developed chronic wrist pain and DRUJ instability which worsened over the last two years. Nonsurgical treatment measures included bracing, pain medication, and corticosteroid injections were attempted. On examination she had dorsal wrist edema, tenderness at the DRUJ and fovea, and pain with wrist and digital flexion and extension. Imaging demonstrated significantly shortened and deformed ulnar head with associated scalloping of the distal radius. MRI demonstrated chronic bone remodeling, bone marrow edema and cystic changes of the distal ulna with DRUJ effusion and synovitis, chronic TFCC degeneration, and 4th extensor compartment tenosynovitis. Following discussion of treatment options, she was taken to the OR for wrist arthroscopy with synovectomy, open 4th compartment tenosynovectomy, and distal ulna resection and DRUJ arthroplasty with Achilles tendon interposition allograft.

Results:

Arthroscopy revealed chondromalacia of the radiolunate joint and radiocarpal synovitis. The 4th extensor compartment had significant synovitis with 90% attritional rupture of the EDC tendon of the index finger, requiring tendon transfer to the adjacent EDC to middle finger. Following distal ulna resection, DRUJ arthroplasty with Achilles tendon interposition allograft was completed using suture anchors to the distal radius. Postoperatively the patient was placed in a long arm splint which will was transitioned to a cast for a total of 6 weeks postoperatively.

Conclusion:

This video provides an overview of the evaluation, diagnostic workup, and treatment options for DRUJ instability and arthritis. We provide a detailed surgical technique video of the Achilles interposition allograft arthroplasty for a severely dysmorphic ulnar head. This technique can similarly be used in cases of failed ulnar head resection and is a valuable tool for the hand and upper extremity surgeon.