

Wrist Salvage of the Radiocarpal Joint Using Cadaver Meniscus

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Background: Wrist salvage with either a proximal row carpectomy (PRC) or scaphoidectomy with four-corner fusion (4CF) can be compromised by osteochondral defects in the capitate or lunate fossa. In cases where a dorsal capsule arthroplasty is not possible, there are limited alternative options. In the patient with significant osteochondral defects, we propose an adjunct for PRC wrist joint salvage: using cadaveric meniscus. It is an off-the-shelf alternative that is not only malleable but has been used to address focal osteochondral effects, and restore intra-articular contact stress distributions and congruity toward normal levels.

Methods: The senior author reconstructed three radiocarpitate joints with osteochondral defects using cadaveric meniscus from the Musculoskeletal Transplant Foundation to facilitate PRC of the wrist and preserve pain-free motion. Patient demographic, pre and post operative pain and range of motion data was examined as well as operative complications.

Results:

Three patients aged 50 to 73 years old underwent PRC treatment for severe, painful and motion limiting wrist arthritis secondary to traumatic scaphoid non-union (n=1) and scaphoid-lunate advanced collapse (n=2). Each patient underwent successful PRC of the wrist (2 right, 1 left) prior to debridement of the radiolunate facet and proximal capitate articular surfaces (Figure 1). Osteochondral defects were inset with meniscus 3 cm x 1 cm (Figure 2), sutured with 4-0 mersiline (Figure 3) and coated with fibrin sealant glue (Figure 4). Intraoperatively, joint space was preserved without radius and capitate bone contact (Figure 5). All patients underwent early hand therapy and had complete reduction in pain as well as improvement in their affected wrist range of motion (average 10 degrees for wrist extension and 20 degrees of wrist flexion). There were no complications and no revisions necessary. Postoperative films identify preservation of radiocarpitate joint space in all patients (Figure 6).

Conclusion: Multiple modalities have been used to salvage the joints of the wrist in an effort to preserve motion and pain relief for degenerative wrist arthritis but patients that are not candidates for PRC salvage due to radiocarpitate arthrosis often resort to total wrist arthrodesis to address chronic pain. We believe that meniscus as it has been used to address degenerative arthritis in the knee is a viable adjunct option to PRC salvage and reconstruct wrist joints to preserve pain-free motion. Furthermore, cadaveric meniscus advantageously thrives in a synovial environment, *maintains a low metabolic demand*, biointegrates through revascularization and cellular repopulation, and is surgically malleable. These qualities may prove to absolve foreign body complications of 4CF procedures to provide a stable, pain-free, and functional wrist.

Figure 1:

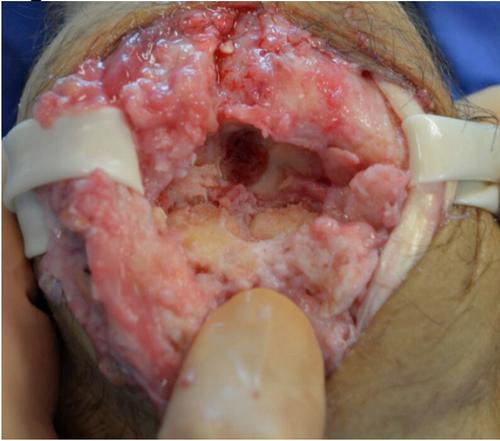


Figure 2:



Figure 3:



Figure 4:



Figure 5:



Figure 6:

