Ankle Arthroplasty in the Setting of an Acute Ankle Fracture

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Statement of Purpose

The purpose of this case is to report the outcome of a patient who sustained a closed ankle fracture and underwent a concomitant ankle arthroplasty and ankle open reduction internal fixation.

Literature Review

In recent years, ankle arthroplasty has become a primary option to treat painful ankle arthritis (1). Displaced femoral neck fractures have commonly been treated with total hip arthroplasty in the acute setting (2). Unlike the hip, ankle arthroplasty has not been indicated in the acute traumatic setting. One case has been reported of an ankle arthroplasty with concomitant open reduction internal fixation for the treatment of a comminuted pilon fracture (3).

Case Study

A 65 year old patient presented for left ankle pain. The patient had a prior history of chronic left ankle pain for which she was treated with ossicle excision and then arthroscopy and bone marrow stimulation for a large medial osteochondral defect of the talus two years prior to this presentation. The patient was then subsequently treated conservatively for early ankle arthritis. The patient presented acutely after a slip and fall at home. Radiographs were taken and was significant for a left supination external rotation ankle fracture with Weber B fibula fracture, medial clear space widening and posterolateral subluxation.

At this time, open reduction internal fixation was discussed, as well as ankle arthroplasty, given the prior worsening symptoms associated with the patient’s ankle arthritis. A splint was applied to allow adequate resuscitation of the soft tissues prior to surgical intervention.

An anterior incision was made approaching the ankle joint. Dissection carried down through the anterior compartment, which was divided longitudinally. The tibialis anterior was retracted to the medial side and the remaining contents of the anterior compartment were identified and mobilized to the lateral side. A linear arthrotomy was performed and the ankle joint was entered. End-stage degenerative changes were noted. The anterior alignment fixture was placed and using both visual and fluoroscopic guidance, the jig was placed with respect to frontal sagittal plane alignment. A distal tibial cut was made with approximately 6 mm of bone being removed.

Once this was done, the bone was removed and the talar cut guide was placed and the top of the talus resected. The talus was sized to an extra-small. The datum was placed and from the datum, the medial-lateral and anterior-posterior chamfer cuts were performed. After this was done, the joint was irrigated and the bone fragments and loose bone were removed. The talar cage was then placed and the keel fashioned and broached. The joint was then removed of all metal instrumentation and the joint was copiously irrigated. The barrel cut guide was placed and the barrel holes were drilled and the bone evacuated. The tibia was sized to a large. Once this was done, the talar component was placed and the tibial component was tamped into position and the ankle was sized to a 7 mm poly.

A 2 cm incision was made over the distal aspect of the fibula and a 2 cm incision was made over the fracture of the fibula laterally. A 3/3 tubular plate was then placed in a minimal invasive plate osteosynthesis technique in a subcutaneous fashion. This was fixed to the proximal fibula with one cortical screw. Another screw proximal to the fracture was placed across the fibula into the tibia, securing the plate to the fibula. Once this was done, the fracture was reduced and secured distally with 2 locking screws.

The patient remained non weightbearing for 6 weeks, then transitioned into a cam boot with physical therapy. The patient had no functional limitations at the 3 month follow-up.

Analysis & Discussion

There is a plethora of literature regarding treating of end stage ankle arthritis with total ankle arthroplasty. To date, there have been no reports of total ankle arthroplasty in the setting of an acute rotational ankle fracture. At the 1 year post operative follow up, the patient has not had any complications. The patient had improved function and decreased pain.

We do not advocate ankle arthroplasty routinely for this injury in the acute setting. This may be an option for patients with known ankle arthritis who sustain a rotational ankle fracture.

References


Financial disclosures: none