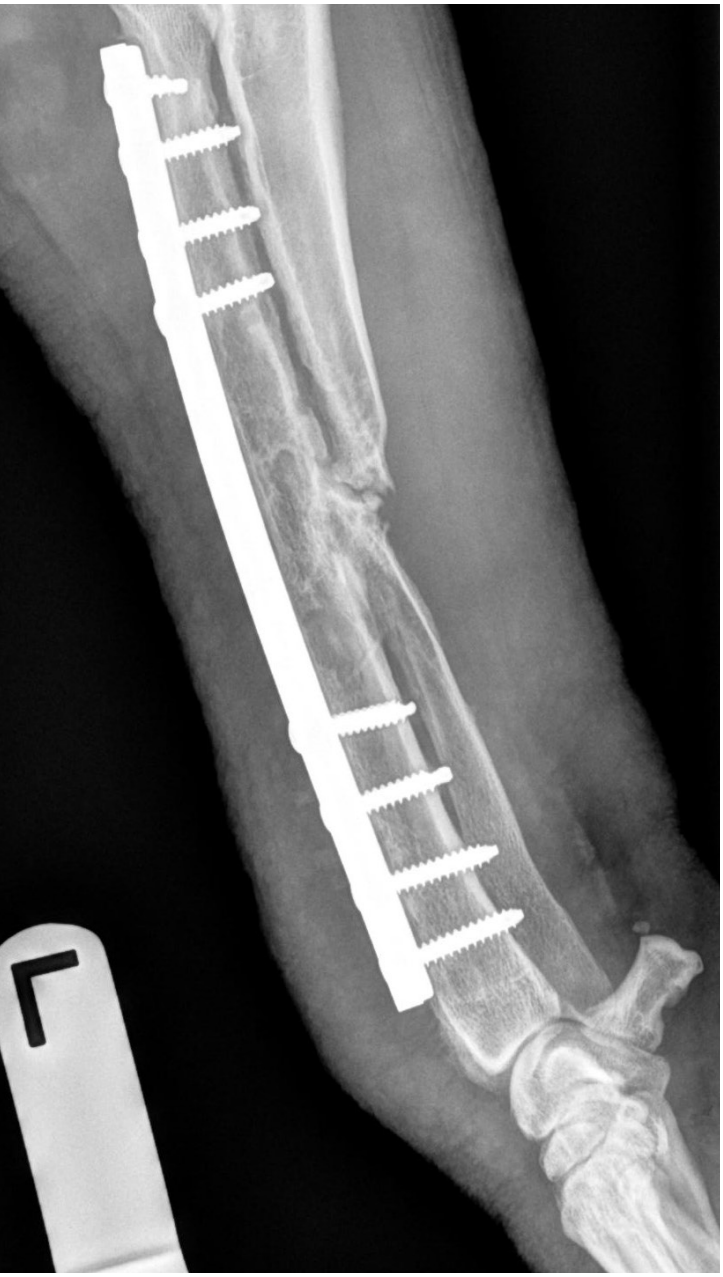
OsteoCentric TECHNOLOGIES

Mid-diaphyseal, Open (Grade II), Comminuted, Radius/Ulna Fracture

Unifi*MI* 3.5 mm Bone Screw Fasteners

Case Study | Dr. Daniel Mertens

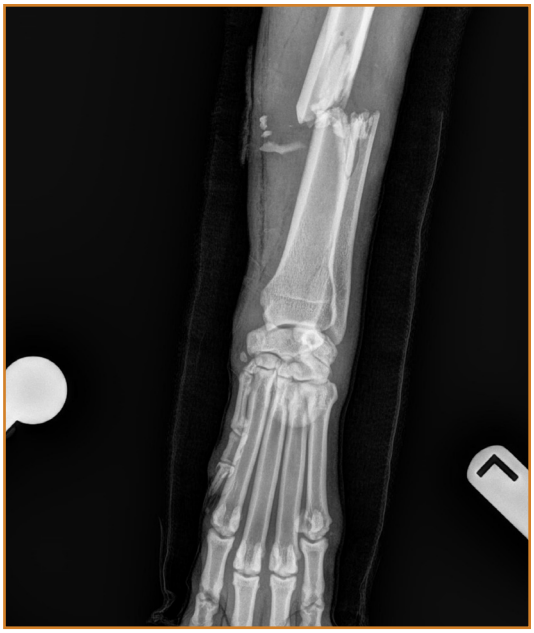


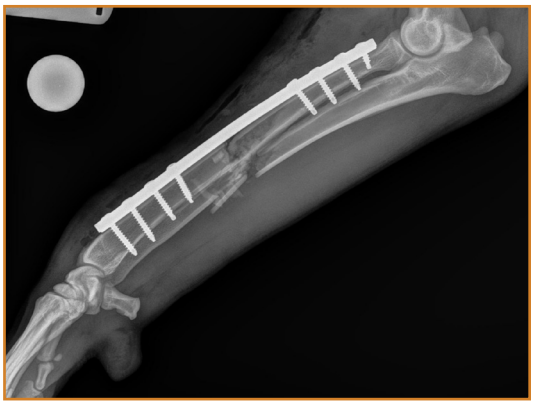
Patient History

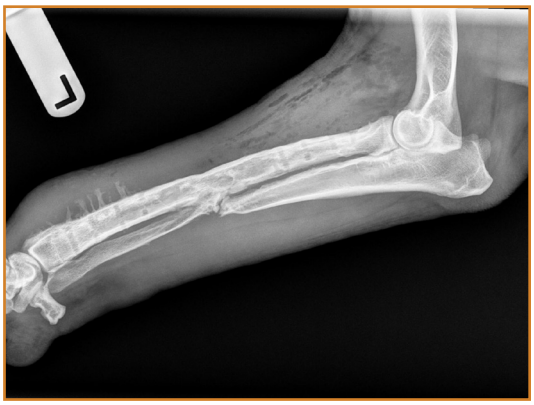
The patient is a 4-year-old male intact German Shepherd Dog who escaped the client's yard and was hit by a car, sustaining a left, mid-diaphyseal, open (grade II), comminuted, radius/ulna fracture. The patient was taken in by animal control which delayed presentation to us until the following day. The patient was triaged by our emergency service: the wounds were clipped and cleaned, the limb was bandaged and splinted, and pain management and antibiotics were initiated. The patient was obese (40.0kg, body condition score of 8/9) and struggled to ambulate on his three sound limbs. Due to pulmonary contusions and client indecision, surgery was delayed four days after sustaining the injury which placed the patient at increased risk for an implant associated infection. The patient also had a history of allergic skin disease and had abrasions on the left antebrachium in addition to the open wound caused by the fracture, all of which placed the patient at increased risk for an implant associated infection. After a detailed discussion of the patient's treatment options, the clients elected to have us proceed with internal reduction and fixation.

Pre-Op Surgical Plan

We opted to perform internal fixation with a 3.5mm broad dynamic compression plate placed in buttress fashion. We expected a bone gap defect created by loss of bone secondary to comminution and poor soft-tissue attachment and thus planned on harvesting an autologous corticocancellous bone graft from the patient's ipsilateral proximal humerus.







Surgical Procedure

A standard craniolateral approach to the radius was performed. Reduction was complicated by the high degree of comminution however there was a small area of cortical contact between the main fracture segments which allowed appropriate restoration of limb length. The elbow and carpus were used to help align the fracture segments appropriately. Devitalized bone segments were removed to prevent sequestration. The fracture was copiously lavaged and a culture was obtained. A corticocancellous bone graft was harvested from the patient's proximal humerus and placed at the fracture site. A 3.5mm broad dynamic compression plate was placed in buttress fashion using four UnifiMI fasteners on either side of the fracture zone. Due to the degree of comminution, bone screw fasteners in the main fracture segments were not able to be placed as near to the fracture zone as one would like. Closure was performed with antimicrobial suture material.

Follow Up

As anticipated, recovery in this patient was prolonged. The culture performed at surgery was negative but the patient was placed on clindamycin for three weeks following surgery. Radiographs obtained at 8, 12, and 16 weeks following fracture repair all demonstrated progressive but delayed union as expected. At this point, the case was temporarily lost to follow-up. The patient represented approximately fourteen months post-operatively with draining tracts on his antebrachium and a return to lameness. Radiographs taken at that point demonstrated full-union and plate removal was recommended. Following removal of the plate and fasteners, the fistulous drainage and lameness resolved.

Clinical Advantages of Unifi*MI*

In this case, the patient was at risk for delayed union secondary to anticipated infection and a large fracture gap. Unifi*MI* fasteners were advantageous for a couple of reasons:

1. The Unifi*MI* threads interlock with the bone due to their unique geometry, providing a strong interface that could endure over time and in the face of infection.
2. Due to his obesity, the patient was struggling to ambulate on his three sound limbs and needed a solid repair on which he could bear weight immediately. The Unifi*MI* bone fasteners offered superior implant stability over standard industry screws.

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