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Case study

Tactoset® Case Report

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History of Present Illness

A 48-year-old male here for a second opinion regarding his 2-month history of worsening left knee pain. Symptoms of pain, swelling, inability to bear weight and maneuver stairs began after wallpapering a large house. Denies any recent falls or trauma. He admits he was standing, lifting and squatting for more than 8 hours a day for several days. Symptoms are worse with prolonged walking, standing and stairs. Symptoms are improved by rest, ice, anti-inflammatory and elevation. Currently rates his pain 7/10 and worse pain is 10/10. He admits prior to this recent exacerbation of pain, he did have years of chronic intermittent knee pain. He has a known diagnosis of left knee osteoarthritis for which he has done physical therapy, cortisone, visco-supplementation and medial unloader brace in the past. He states, "This knee pain is different than my usual arthritis pain." His primary orthopedic surgeon provided him a cortisone injection 4 weeks ago which resulted in no improvement of his symptoms.

Height: 5 feet 8 inches

Weight: 180 lbs.

Body Mass Index: 28.6

Allergies: No known drug or medical allergy

Past Medical History: Hypertension, left Knee osteoarthritis

Medication: Anti-hypertensive medication, vitamins, OTC anti-inflammatory

Past Surgical History: None

Social History: Employed- installs wallpaper

Pertinent Review of System: (+) Left knee pain; (+) Left knee swelling

Figure 1. Pre-operative MRI: Coronal view T2 weighted MRI - official radiologist MRI read Impression: "Medial tibiofemoral arthrosis with a subtle nondisplaced subchondral trabecular microfracture of the medial tibial plateau.

Focused Physical Exam:

Left knee: Slight varus alignment. Mild effusion. Skin intact. (+) Moderate tender to palpation medial joint line along tibial plateau. Non-tender lateral joint line. Neg. McMurry, Lachman. Range of motion 0-140 w/ mild pain with deep flexion.

Imaging:

X-ray: Weight bearing views of the knee: moderate medial joint osteoarthritis with decreased joint space, minimal subchondral sclerosis, minimal patellofemoral osteophytes. (-) fractures.

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MRI left knee (Figure 1): Medial tibiofemoral arthrosis with a subtle nondisplaced subchondral trabecular microfracture of the medial tibial plateau.

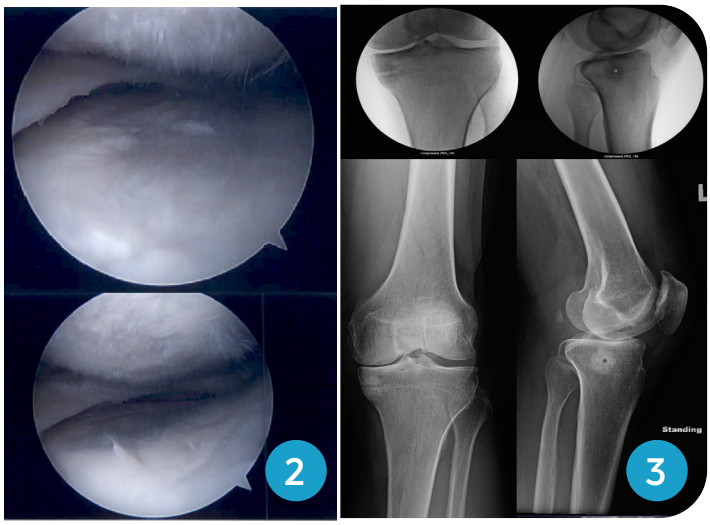

Figure 2. Arthroscopic Evaluation of Knee: Medial compartment of the knee - Moderate osteoarthritis. Medial femoral condyle (outerbridge 3/4). Medial tibial plateau (outerbridge 3/4)

Figure 3. Postop Imaging

Diagnosis:

1. Acute subchondral insufficiency facture of the medial tibial plateau
2. Chronic left knee osteoarthritis

Plan:

Patient failed conservative management with rest, anti-inflammatory and cortisone.

Plan for left knee arthroscopically assisted fracture fixation of medial tibial plateau subchondral insufficiency fracture.

Operation:

1. *Knee Arthroscopy Setup:* Standard arthroscopic evaluation of the knee was completed and demonstrated chronic osteoarthritis changes in the medial joint line-outerbridge classification grade III/IV. *(Figure 2)*

2. *Insertion of Cannula:* Under fluoroscopic guidance, the location of the subchondral fracture was confirmed. Cannula was drilled into correct location. Then the inner cannula was removed leaving the outer cannula in place. For this case, decision made to use the side delivery system.

3. *Tactoset® Injectable Bone Substitute:* Tactoset was readied by surgical tech once patient arrives in the operative suite. Nurse in the room records the time once mixing begins. Wait time prior to injecting 3 cc of Tactoset was 10 minutes. Tactoset was injected circumferentially into the subchondral fracture under image guidance as well as arthroscopic inspection of the joint to confirm no extravasation.

4. *Final Imaging:* Tactoset was set to cure for 10 minutes, after which final fluoroscopic images were obtained to demonstrate radiopaque Tactoset correctly placed into the area of subchondral insufficiency fracture. *(Figure 3)*

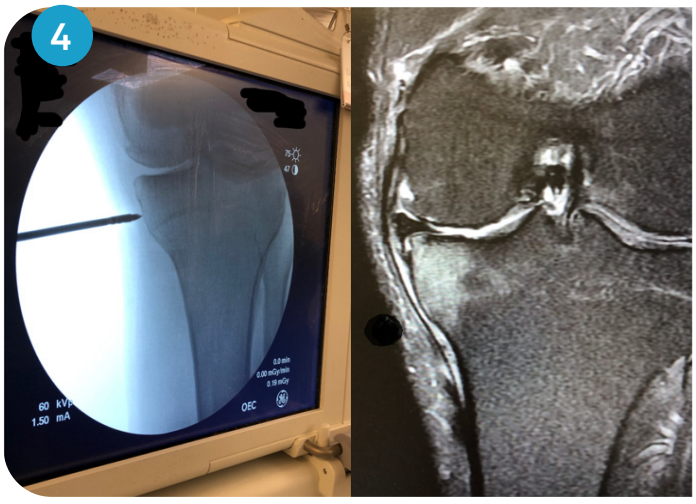

Figure 4. Identifying the pathology: Subchondral insufficiency fracture

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Discussion:

Subchondral insufficiency fractures are strongly associated with pain, swelling and progression of osteoarthritis. Arthroscopic fixation of these fractures in the setting of osteoarthritis of the knee has been shown to decrease pain and potentially prevent a premature total knee arthroplasty.

Figure 5. Solution: Arthroscopic fixation of subchondral insufficiency fracture

Arriving to a correct diagnosis is sometimes challenging due to a patient's chronic diagnosis of knee osteoarthritis. It is important to critically obtain an accurate history and acquire additional imaging such as an MRI. This will further demonstrate the acuity and location of the subchondral fracture which is usually in line with the location of pain during the physical exam, in this case, the medial aspect of the tibial plateau. Once the correct diagnosis of subchondral insufficiency fracture has been established, the corrective surgical intervention of arthroscopic aided fixation via Tactoset offers patients an important minimally invasive treatment option. (Figures 4 and 5)

As a surgeon who has used other commercially available systems for treatment of subchondral insufficiency fractures, Tactoset offers several distinct advantages. The mixing of the Tactoset is significantly easier and reproducible which allows for consistent volume to be injected into the treatment area. The cannula design allows a surgeon to inject with the side and/or end delivery without removing the outer cannula. This allows for increased intraoperative flexibility and decreased operative time. With the addition of the hyaluronic acid, Tactoset has greater flow and is easier to inject, which provides more efficiency during the surgical procedure.

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