IAOM-US
PO Box 65179
Tucson, AZ 85728

(p) (866) 426.61.01
(f) (866) 698.48.32
(e) info@iaom-us.com
(w) www.iaom-us.com

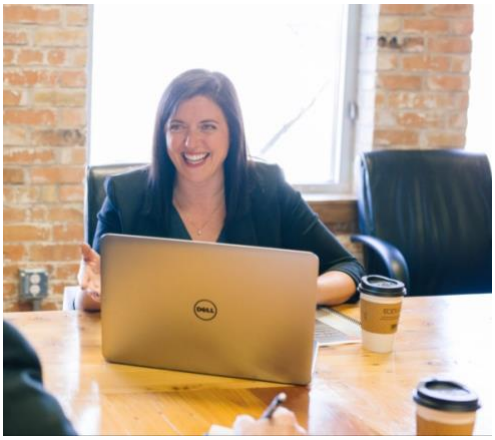
A Complete Clinician's Approach to Musculoskeletal Management of Knee Pain

CASE STUDY

HISTORY

WHO:

55 y/o female secretary of a lawyer with self-reported good general health. She walks daily for health purposes for about 20 minutes around lunch.
Previous Medical History of kidney stones and osteoporosis.



WHAT:

Right knee aching pain. Reports clicking, popping in the right knee that is sometimes painful (she does not know exactly where the pain is located). Also, right ankle stiffness and pain 0 to 3/10 with no specific movement or activity.

WHERE:

Right deep aching medial knee pain mainly with prolonged weight bearing activities - almost always more medial than lateral. Also, right lateral ankle "feels like it is bone on bone" (pressure/tightness).

WHEN:

Aggravating factors:

1. single leg stance (on the right)
2. walking up a step is more painful than stepping down
3. walking causes a medial click with occasional locking on the right knee
4. prolonged weight bearing activities produce deep aching pain
5. she is unable to squat due to pain

Alleviating factors:

1. getting off feet and elevating right foot
2. pool walking

WHY:

1. Patient sustained non-displaced fracture right tibia plateau while standing in the water and a big wave hit her on the side (4 months ago). She did not have surgery.
2. Six (6) weeks in straight leg brace non-weight bearing.

IAOM-US
PO Box 65179
Tucson, AZ 85728
(p) (866) 426.61.01
(f) (866) 698.48.32
(e) info@iaom-us.com
(w) www.iaom-us.com

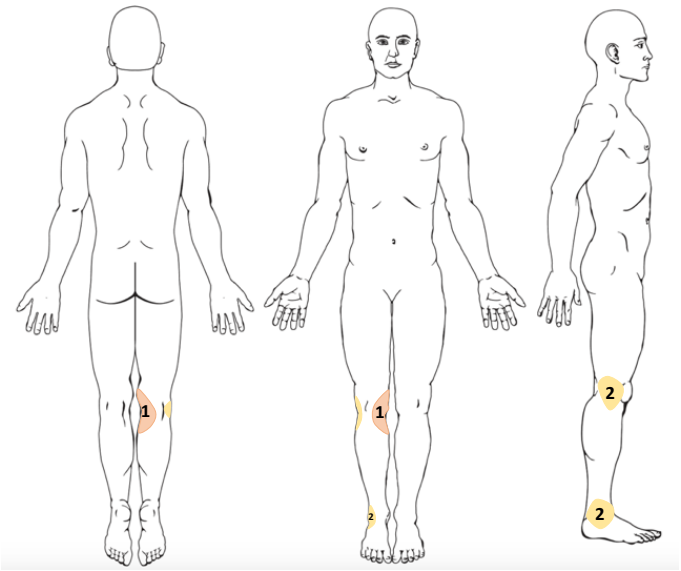
3. Started Physical Therapy treatment at 8 weeks (post fracture) and had quite a bit of therapy but still had issues.
4. The right ankle is also very painful with terminal stance phase and irritates the anterior knee.

TO WHAT EXTENT:

1. Knee pain present for 4 months not really improving much at this time in regard to pain and movement.
2. Right knee pain 6/10 at its worse and 0/10 at its best.
3. Right ankle stiffness and pain 0 to 3/10.
4. Patient able to keep working at the office.
5. She experiences medial knee pain that is a bit exacerbated during her lunch walking program.
6. Have been doing Rolfing at a local place and have been aggressively doing exercises in the past.

Pain Diagram:

1. Primary reported symptom:
Comments: “medial and posterior aching pain a bit vague”
2. Secondary reported symptom:
Comments: a. knee: “occasional lateral mild achiness”
b. ankle: “pain is vague and more lateral than medial”



Imaging:

1. Had an MRI 4 months following the initial injury that indicated tibial eminence avulsion was not healing properly.
2. Last X-ray: three weeks ago, in weight bearing, showed reduced right knee joint space.
3. Having an MRI next week (follow-up MRI showed healing of the tibial eminence).

IAOM-US NEXT

IAOM-US
PO Box 65179
Tucson, AZ 85728

(p) (866) 426.61.01
(f) (866) 698.48.32
(e) info@iaom-us.com
(w) www.iaom-us.com

CLINICAL EXAMINATION

Inspection / Palpation:

1. Right knee – medial aspect feels warm when comparing with left knee.
2. No observable changes in right knee contour, shape or volume.

Passive Motions in Supine

	Degree ROM	Pain Level	Location	Notes
Left knee extension	0 deg	none		
Right knee extension	5 deg limitation	Mild (2-3/10)	Antero-Medial knee	Firm end-feel
Left knee flexion	130 deg	none		
Right knee flexion	120 deg	Moderate (5-6/10)	Mainly posterior medial. Some at posterior lateral.	Springy end-feel
Tibial External Rotation (L knee)	5-10 deg	none		Firm end-feel
Tibial External Rotation (R knee)	5-10 deg	2/10	anterior lateral knee pain	Firm end-feel
Tibial Internal Rotation (L knee)	WNL	none		Firm end-feel
Tibial Internal Rotation (R knee)	WNL	none		Firm end-feel

Stability Tests

	Instability	Pain Level	Location
Varus (in flexion)	none	Mild (2-3/10)	Medial
Varus (in extension)	none	Mild (2-3/10) – (R knee)	Medial
Valgus (in flexion)	none	none	
Valgus (in extension)	none	none	
Anterior-Posterior Translatory Test	Moderate (R knee)		

NEXT

IAOM-US
PO Box 65179
Tucson, AZ 85728

(p) (866) 426.61.01
(f) (866) 698.48.32
(e) info@iaom-us.com
(w) www.iaom-us.com

Lachman	Moderate (R knee)		
Lateral-Anterior Drawer Test	none		

Resisted Tests (Supine)

	Strength		Pain	Location
Knee Extension	L 5/5	R 5/5	R – (vague 1-2/10)	Medial
Knee Flexion	L 5/5	R 5/5	R – (4/10)	Medial and lateral

Resisted Tests (Prone)

	Strength		Pain	Location
Knee Flexion (IR)	R	L	R – (3/10)	Medial
Knee Flexion (ER)	R	L	R – (6/10)	Lateral and some deep joint

Laxity Test

	Laxity	
External rotation in 30-deg	R negative	L negative

Meniscus Tests (extra test)

	Provocation/click		Pain	Location
Thessaly test (mid substance)	R negative	L negative	4/10	Deep aching pain
Steinman Tenderness Displacement Test (anterior horn)	R negative	L negative	none	
Modified McMurray Test (posterior horn)	R positive	L negative	Vague / deep (2-3/10)	Medial knee

Comments: Plica, Iliotibial, and patellofemoral provocation and mobility tests are negative.

IAOM-US NEXT

IAOM-US
PO Box 65179
Tucson, AZ 85728

(p) (866) 426.61.01
(f) (866) 698.48.32
(e) info@iaom-us.com
(w) www.iaom-us.com

CLINICAL IMPRESSION:

This patient has signs and symptoms which are consistent with right knee arthropathy secondary to tibial plateau fracture.

DIAGNOSIS PAIN GENERATOR

1. Pain generator:
    a. Right knee traumatic arthropathy (consider bone bruise)
    b. Potential posterior horn, lateral meniscus tear (consider meniscal root or ramp lesion)
    c. Lateral menisco-tibial ligament
2. Dysfunction:
    a. ACL laxity due to tibial eminence avulsion
    b. The ankle condition may be perpetuating the problem

PLAN OF CARE

1. Education and reassurance
    a. Avoid stairs, squatting, kneeling.
    b. Reduce walking time (modified loading, consider a cane) and encourage cycling with seat high if does not aggravate symptoms. Avoid pivot shift in weight bearing.
    c. Cyclic load/unload activities.
    d. Healing environment: walking with walking sticks.
    e. Bike, aqua jog.
    f. Appropriate nutritional considerations
    g. 8 hours sleep.

2. Traction/glides of right knee PPT, MLPP. Mobilize the ankle as needed to improve motion depending on diagnosis and what structures are responsible for the limitations of motion.
3. Neuromuscular and sensorimotor reeducation of lower quadrant
4. Menisco-tibial & femoral mobilization at end range limits.
5. Soft Tissue Mobilization tibial meniscal ligaments.
6. Soft neoprene sleeve for knee bracing.
7. Gentle activation of quadriceps, HS co-contraction for weight bearing activities.
8. Ankle and foot clinical evaluation.

NEXT