



PrePodiatryStudy Case Studies



First MPJ Osteoarthritis

Case

CC: “Painful Right Toe”

HPI: A 50-year-old recreational tennis player complains of increasing pain in his right foot big toe. Patient was diagnosed with hallux limitus 2 years ago. He was satisfied with his CFO's, as it relieved pain. Patient now states he has noticed swelling around the joint and is in more pain when he goes for walks with his wife. Pain is relieved with rest and takes ibuprofen occasionally. He wishes to return back to sports. Patient reports no additional pedal complaints.

Patient denies fever, chills, nausea, vomiting, SOB, CP, and calf pain.

What do you want to know next?

Past Medical History

PMH:

- Illnesses: Hypertension
- Medication: Lisinopril
- Allergies: PCN (Urticaria)
- Hospitalizations: No hx of hospitalizations
- Operations: No surgical hx

ROS: Negative

SH: Denies EtOH, tobacco, and illicit drug abuse

FH: Non-contributory

What do you want to know next?

Physical Exam

General: NAD AAOx3, pleasant, and wearing athletic shoes with a CFO that has a reverse Morton's modification

Lower Extremity Focused Exam

- Vascular: Palpable DP & PT pulses 2/4 bilaterally
 - CFT WNL bilaterally
 - Digital hair present bilaterally
 - No edema noted bilaterally
- Dermatological:
 - Hyperkeratotic lesion noted sub 5th metatarsal of Right foot
 - Abrasion noted at the dorsal aspect of the Right 1st MTPJ measuring 1.5cm diameter
 - No open wounds or lesions
- Neurological:
 - Protective sensation is intact via SWMF (5.07) 10/10 bilaterally
- Musculoskeletal:
 - 1st MTPJ ROM: 30 deg DF, 5 deg PF with crepitus
 - During gait weight is shifted towards lesser metatarsals and lateral aspect of right foot
 - Medial and dorsal bony protrusion noted of the 1st MTPJ of right foot
 - Pain upon palpation of the 1st MTPJ of right foot
 - Pain upon palpation along the lesser metatarsal heads



Read This X-Ray



Imaging

Read the image.

Can you classify this etiology?



Imaging

Read the image.



What's your diagnosis,
Doctor?

Diagnosis

- What is/are your primary diagnoses?
- What are your differentials?



What's your conservative
plan, Doctor?

Conservative Plan

- What are your initial treatments prior to surgical interventions?
- What justifies surgical intervention?



What's your surgical
plan, Doctor?

Surgical Plan

- What are the options for surgically correcting a patient with hallux limitus/1st MPJ osteoarthritis?

Surgical Post-Operative Plan

- Pain Meds?
- Post-Op protocol?
- Return to clinic in how many days?
- When to take sutures out?
- When to take follow up x-rays?
- When do you start weightbearing? **Why?**
- When to return to regular shoe?



Rapid Fire Questions

Rapid Fire Questions

- What is the most common location of OA in the foot?
- What two medical conditions are commonly associated with this condition?
- What nerve is commonly irritated by the osteophytes associated with this condition?
- What percentage of body weight does the 1st MPJ carry in gait?
- What phase of gait is this pathology usually the worst?
- What are the intraarticular findings of OA?
- What are the extraarticular findings of OA?

Rapid Fire Questions

- What is the best imaging modality for bone assessment?
- What grades of 1st MPJ OA indicate conservative treatment?
- What is the Moberg procedure?
- What are the contraindications for 1st MPJ arthroplasty?
- What grades of 1st MPJ OA indicate a 1st MPJ arthrodesis?
- What is the average satisfaction rate for a 1st MPJ arthrodesis?
- What length of shortening of the 1st metatarsal, compared to the lesser metatarsal, indicates the need for a structural bone graft?
- What is the mainstay orthotic treatment for 1st MPJ OA?



Answers



Imaging

“This is a skeletally mature patient with joint space narrowing of the 1st MPJ. Flattening of the metatarsal head. Osteophytic formation to the medial aspect of the joint. Cystic changes noted to the metatarsal head. Sclerotic changes to the head of the metatarsal and, to a lesser extent, the proximal phalanx base. Overall impression is osteoarthritic changes to the 1st MPJ”



Imaging

“This is a skeletally mature patient with joint space narrowing of the 1st MPJ. Flattening of the metatarsal head. Osteophytic formation to the dorsal aspect of the joint. Cystic changes noted to the metatarsal head. Sclerotic changes to the head of the metatarsal and, to a lesser extent, the proximal phalanx base. Elevation of the 1st MPJ noted. Overall impression is osteoarthritic changes to the 1st MPJ”

Imaging

- Anterior-Posterior View (AP View)
- Classify the injury?

Table 1: Grading of hallux rigidus, by Coughlin and Shumas [2]

Grade	Clinical findings	Range of motion	Radiographic findings
0	No significant pain Stiffness, loss of passive motion	Dorsiflexion: 40–60° ±10–20 per cent loss compared with normal side	Normal or minimal changes
1	Mild or occasional pain and stiffness Pain at extremes of motion	Dorsiflexion: 30–40° ±20–50 per cent loss compared with normal side	Dorsal osteophyte main finding
2	Moderate to severe pain, constant stiffness Pain before maximal dorsi- or plantar-flexion	Dorsiflexion: 10–30° ±50–70 per cent loss compared with normal side	Dorsal, lateral ± medial osteophytes Flattened appearance of metatarsal head Mild–moderate joint space narrowing ≤1/4 dorsal joint space involvement on lateral radiograph
3	Constant pain, significant stiffness Pain throughout motion, except for mid-range	Dorsiflexion: ≤10° ±75–100 per cent loss compared with normal Notable loss of plantar-flexion (usually ≤10°)	As grade 2, and: Substantial joint space narrowing Periarticular cystic changes ≥1/4 of dorsal joint surface involved on lateral view Sesamoids enlarged, cystic or irregular
4	As for grade 3, with additional pain	As for grade 3	As for grade 3

Diagnosis

- 1) Hallux Rigidus and 1st MPJ osteoarthritis
 - 2) Metatarsalgia of right foot 2/2 hallux rigidus
- Differentials: septic 1st MTPJ, Gouty arthritis, psoriatic arthritis, osteoarthritis

Conservative Plan

- What are your initial treatments prior to surgical interventions?
 - Immobilization
 - Morton's extension in orthotics
 - Stiff soled shoes
 - NSAIDs
 - Activity restriction
 - Intra-articular injections
- What justifies surgical intervention?
 - Failure of conservative treatment or high-grade hallux limitus

Surgical Plan

- Options:
 - Cheilectomy
 - Arthrodesis of 1st MTPJ
 - Implant
 - Keller
 - Combination of the above

Surgical Post-Operative Plan

- Pain Meds?
 - Tylenol if possible, Oxycodone 5mg if needed for severe pain
- Post-Op protocol?
 - Fusion: NWB for 4-6 weeks, Implant and Cheilectomy: Immediate WB in post-op shoe
- Return to clinic in how many days?
 - 3 to assess for infection
- When to take sutures out?
 - 10-14 days
- When to take X-rays?
 - 2 weeks post-op
- When do you start weightbearing? **Why?**
 - 4 weeks after in a CAM boot
- When to return to regular shoe?
 - 6-12 weeks

Rapid Fire Questions

- What is the most common location of OA in the foot?
 - 1st MPJ
- What two medical conditions are commonly associated with this condition?
 - RA and gout
- What nerve is commonly irritated by the osteophytes associated with this condition?
 - Medial dorsal cutaneous nerve
- What percentage of body weight does the 1st MPJ carry in gait?
 - Up to 120%
- What phase of gait is this pathology usually the worst?
 - Toe Off

Rapid Fire Questions

- What are the intraarticular findings of OA?
 - Joint space narrowing
- What are the extraarticular findings of OA?
 - Osteophyte formation, cyst formation in the metatarsal head, sclerosing of the bone
- What is the best imaging modality for bone assessment?
 - CT scan
- What grades of 1st MPJ OA indicate conservative treatment?
 - Grade 0 or 1
- What is the Moberg procedure?
 - Dorsal closing wedge of the proximal phalanx

Rapid Fire Questions

- What are the contraindications for 1st MPJ arthroplasty?
 - Infection, insufficient bone stock, sesamoid arthritis
- What grades of 1st MPJ OA indicate a 1st MPJ arthrodesis?
 - Grade 3 or 4
- What is the average satisfaction rate for a 1st MPJ arthrodesis?
 - 95%
- What length of shortening of the 1st metatarsal, compared to the lesser metatarsal, indicates the need for a structural bone graft?
 - > 5mm
- What is the mainstay orthotic treatment for 1st MPJ OA?
 - Morton's Extension



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Thank You