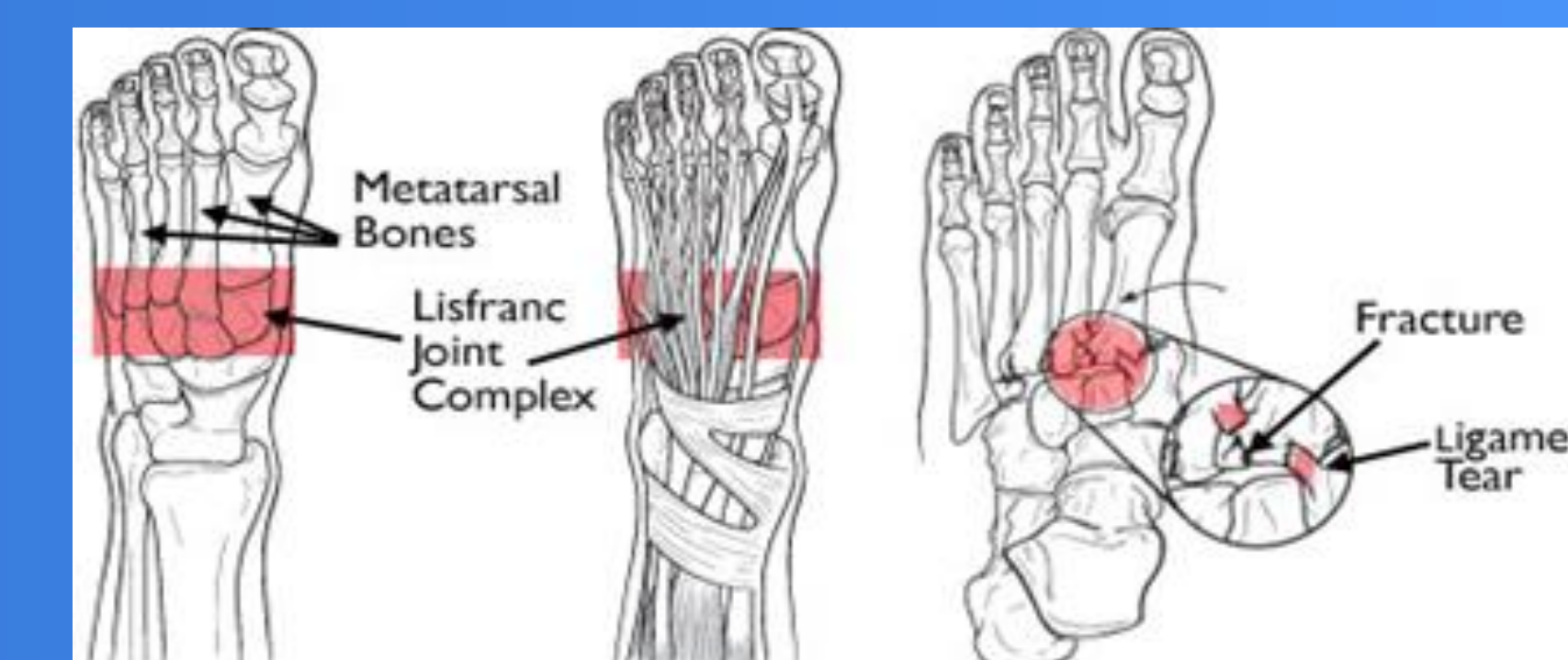




Collegiate Football Player with Lisfranc Fracture

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◆ Abstract

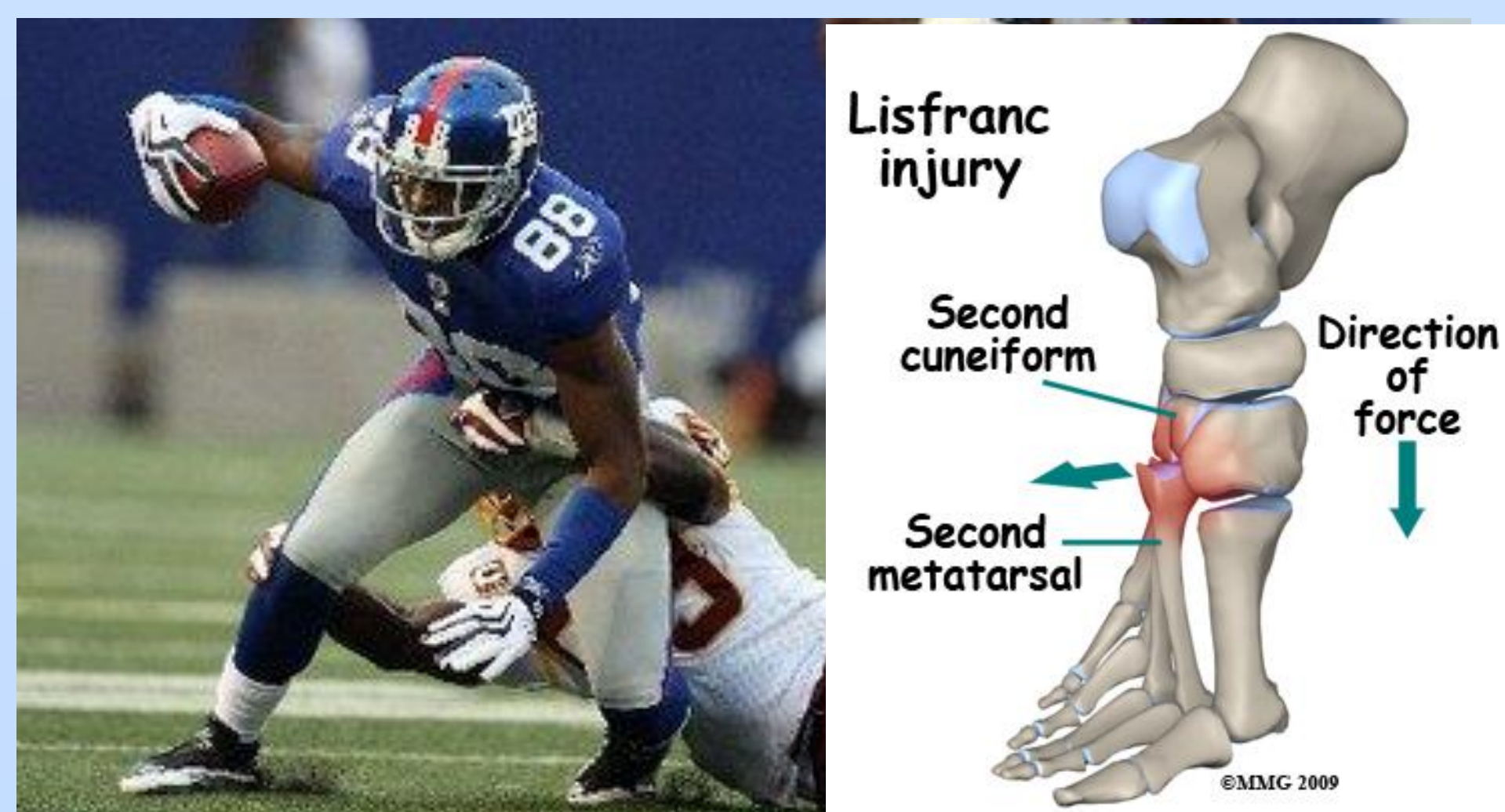
Injuries to the tarsometatarsal joint, also known as Lisfranc injuries, are uncommon in athletes and can be difficult to diagnose. Timely and proper diagnosis of these injuries is critical since any delay in treatment can result in delayed return-to-play (RTP), chronic pain and arthritis. This case report described a collegiate football player with a Stage 1 Lisfranc injury.

◆ Purpose

The purpose of this case report demonstrated a high index of clinical suspicion, careful physical examination, appropriate radiographic assessment and prompt treatment were essential to achieving the best possible outcome. If athletic trainers suspect an injury to the TMT region a Lisfranc injury should be suspected until properly ruled out.

◆ Background

- ❖ 20 year male
- ❖ Division III Football Player
- ❖ Height: 5' 9"
- ❖ Weight: 185
- ❖ No previous history of foot injury
- ❖ Athlete reported to the athletic trainer during practice complaining of a sharp pain in his left foot when trying to bear any weight.
- ❖ Athlete reported a player fell on his left heel while his foot was in a planter-flexed position.



◆ Clinical Presentation

- ❖ Significant pain & dysfunction when walking
- ❖ Edema
- ❖ Point tenderness over 2nd & 3rd TMT joints
- ❖ AROM & strength decreased
- ❖ Bump test (+ for p!), Tap test (+ for p!)
- ❖ Anterior Drawer (-), Talar Tilt (-)
- ❖ Initial NWB X-rays unremarkable
- ❖ After re-injury WB X-rays showed 1mm diastasis between 1st and 2nd metatarsals
- ❖ CT scan confirmed diastasis and revealed partially healed, non-displaced micro-fractures to 2nd metatarsal shaft and navicular bone

◆ Differential Diagnosis

- ❖ Midfoot sprain
- ❖ Lisfranc sprain
- ❖ Lisfranc fracture

◆ Treatment

Due to significant pain and swelling athlete was immobilized in a controlled ankle motion (CAM) walking boot with crutches and made non-weight-bearing (NWB) for the first week. X-rays were unremarkable. Twelve days post-injury pain and swelling decreased and range of motion (ROM) returned with toe flexion and extension. Athlete transitioned to partial-weight-bearing (PWB) in CAM walking boot with gradual addition of therapeutic exercise. Athlete was full-weight-bearing with no pain at 4 weeks with gradual return to practice. Athlete returned to play (RTP) 6 weeks post injury. Two weeks after RTP athlete reinjured his foot during a game. There was minimal swelling and no gross deformity during evaluation. Athlete was placed back into the CAM walking boot to stabilize the foot and referred to a specialist.

◆ Treatment

Athlete received weight-bearing X-rays which revealed subtle diastasis between the bases of the first and second metatarsals. CT scan confirmed diastasis and revealed partially healed, non-displaced micro-fractures to the second metatarsal shaft and navicular bone. Athlete was diagnosed with a stage I Lisfranc fracture. Athlete was placed in a NWB cast for 6 weeks with follow-up X-rays and CT scan required monitoring anatomic alignment. After 6 weeks athlete transitioned to PWB in a CAM walking boot and begin ROM and aquatic exercises. Once injury is asymptomatic, functional rehabilitation will begin with RTP estimated at 6 months

Phase I- Maximum Protection (Weeks 0 to 6)

- ❖ Cast or boot for 6 weeks
- ❖ Non-weight bearing x 6 weeks
- ❖ Multi-plane hip strengthening
- ❖ Core and upper extremity strengthening

Phase II- ROM / strengthening (Weeks 6 to 12)

- ❖ Begin progressive weight bearing
- ❖ Orthotic support to maintain arch
- ❖ Restoration of normal gait mechanics
- ❖ Full active and passive ROM all planes
- ❖ Isometric and early isotonic ankle
- ❖ Foot intrinsic strengthening
- ❖ Bilateral progressing to unilateral squat and linear step progression
- ❖ Proprioception training with shoe and orthotic support

Phase III- Progressive Strengthening (3-6 months)

- ❖ Pool progressing to dry land running
- ❖ Functional training linear gradually progressing to lateral and rotational
- ❖ Sport specific drills on field with orthotic
- ❖ Sport test at 5-6 months based on progress



(Left) Non-weightbearing x-ray, no abnormal widening.
(Right) Weightbearing stress x-ray shows a widening of the joint.

◆ Uniqueness

Low-velocity Lisfranc injuries are uncommon in athletes and misdiagnosed in up to 40% of the cases. Most require advanced imaging to properly diagnosis and manage these injuries. Timely and proper diagnosis of these injuries is critical since any delay in treatment can result in delayed RTP, progressive foot deformity, chronic pain, dysfunction and osteoarthritis.

◆ Conclusion

This case highlighted the diagnosis of a collegiate athlete with a Lisfranc injury. If athletic trainers suspect an injury to the TMT region a Lisfranc injury should be suspected until properly ruled out. This case supported the evidence for the need of imaging, specifically weight-bearing imaging with support from advanced imaging, in order to rule out more serious differentials when dealing with acute foot injuries. It also indicated the recovery from a Lisfranc injury can be a lengthy process with RTP often taking between 3 and 6 months, depending on the athlete and the severity of the injury.