

# POST-OPERATIVE RIGHT DIAPHYSEAL FEMUR FRACTURE IN A 21-YEAR OLD MALE ICE HOCKEY ATHLETE

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## BACKGROUND

### PATIENT

- 21-year-old division III male ice hockey athlete

### HISTORY

- Patient states that his injury occurred when he was moving "quite fast" while skateboarding, lost control and fell into an embankment
- Patient felt immediate pain and tingling in his lower extremity and was unable to walk
- Patient reported to urgent care first complaining of right left pain, but was then referred to emergency room
- Patient reported his pain scale to be a 6/10

### OBSERVATION

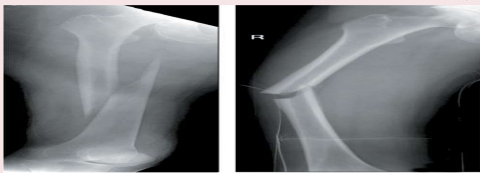
- Obvious deformity
- No present edema

### PALPATION

- Showed overall point-tenderness in the anterior/posterior thigh region

### RANGE OF MOTION (ROM)/STRENGTH

- Patient faced pain with range of motion (ROM) testing
- Manual muscle testing not performed secondary to pain, decreased ROM and obvious deformity



Example of a R' Diaphyseal Femur Fracture<sup>3</sup>

## TREATMENT

### INITIAL CARE

- Patient was referred for x-rays to rule out any fractures
- Radiographs showed he sustained a Diaphyseal Femur Fracture

### SURGICAL TREATMENT

- Patient was advised that surgery was needed
- Patient received an intramedullary nailing rod (6 R' 1 implanted 12 mm Synthes titanium femoral end caps)

### POST-SURGICAL TREATMENT

- Patient was given post operation plan, that included weight bearing as tolerated, start (DVT) prophylaxis with aspirin the morning of, progressive mobilization, compression stockings, and antibiotics.
- Patient was immobilized for 6 weeks that consisted of non-weight bearing and was advised to use crutches to help with ADLs.

### PHYSICIAN FOLLOW UP/POST-OPERATIVE CARE

- Patient had follow-up appointments with his Orthopedic Surgeon at weeks 2, 5 and at the 2.5-month mark.
- At the 2.5-month mark, he was no longer using crutches, but did present a mild antalgic gait.
- The patient went to physical therapy for 3 months to gain back range of motion (ROM), strength, neuromuscular control, and balance.

### RETURN TO PLAY

- Patient was cleared for return to play (RTP) with no restrictions after 3.5 months of rehab.

## UNIQUENESS

- The incidence of diaphyseal femur fractures ranges from 9.9 to 12 for every 100,000 persons/year: 60% occur in men and 40% in women.<sup>1</sup>
- Interlocking nail surgery is the best treatment for femur fractures because the high rate of union, low rate of complications and better advantages during early stabilization that decrease morbidity and mortality rate in patients.<sup>2</sup>
- The intramedullary nail is close to the center of the femur but can be tolerated by bending and torsional loads.<sup>2</sup>
- Overall, this athlete's case is unique due to him returning to play within 3.5 months when it usually takes over one year.

## RELEVANT EVIDENCE

- The emergency management of femur injuries in sport settings is intended to restore alignment.<sup>1</sup>
- Femur fractures are treated based upon fracture pattern.
- Overall, the most effective and safest surgical route is doing any intramedullary pinning to the femur due to the results of having less infection.
- In conclusion, this relates to Athletic Training since we are healthcare providers that provide emergency care, preventive care, therapeutic intervention, professional responsibility, and have evaluation/assessment skills.
- This is an important injury for Athletic Trainers to be knowledgeable about due to it being a medical emergency.
- It is critical for Athletic Trainers to know how to handle the situation appropriately by providing proper patient care, along with informing the patient about their injury and what needs to be done.

## DIFFERENTIAL DIAGNOSIS

- Femur Fracture
- Diaphyseal Femur Fracture
- Femur Stress Fracture

## REFERENCES

1. Rodriguez-Merchan EC, Moraleta L, Gomez-Cardero P. Injuries associated with femoral shaft fractures with special emphasis on occult injuries. *Arch Bone Jt Surg*. 2013;1(2):59–63.
2. Ebnezar J. Femur Injuries. *Text and Atlas on Complications of Fractures*. 2012:73-73. doi:10.5005/jp/books/11526\_8.
3. Themes UFO. Femoral diaphyseal fractures. Musculoskeletal Key. <https://musculoskeletalkey.com/femoral-diaphyseal-fractures/>. Published November 6, 2016. Accessed May 26, 2020.

## CONCLUSIONS

- A femur fracture should begin to heal by 4 months depending on patient progression, but most athletes will not return to play until the 1-year mark.<sup>2</sup>
- Once the fracture is healed the patient will begin to focus on muscle rehabilitation.<sup>1</sup>
- The program should be focused on range of motion, proprioception, neuromuscular control, strength, agility, and sport related exercises.<sup>1</sup>