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Floating Knee with Foot Drop: A Case Report

[1]Abhijeet Senapati, [2]Pulin Bihari Das and [3]Subham Panigrahy
[1-3]*Department of Orthopaedics, IMS and SUM Hospital, Kalinga Nagar, Bhubaneswar, Odisha , India 751003*

ABSTRACT
A "floating knee" injury, characterized by simultaneous fractures of the femur and tibia, is rare and often associated with significant trauma. This case report details a 20-year-old male presenting with a floating knee and associated foot drop, highlighting the clinical management and implications of such injuries. A 20-year-old male was involved in A motorbike accident caused extreme pain, edema and deformity of the left leg. He had discomfort, a limited range of motion and an unstable left knee. Neurological examination indicated a foot drop on the left side, indicating a possible peroneal nerve damage. Radiographs revealed a mid-shaft fracture of the femur and an oblique fracture of the tibia in the left leg. An MRI of the knee verified the existence of a hematoma and indicated a peroneal nerve injury. The patient was stabilized and treated surgically, including open reduction and internal fixation (ORIF) for both fractures. The peroneal nerve was examined and decompressed during the surgery. Postoperative treatment comprised immobilization and progressive recovery. Right side: distal femur with screw and tens with foot drop, proximal tibia with tens fixation and radius and ulna with tens fixed. At the six-month follow-up, the patient had increased knee stability and mobility. Despite the initial foot drop, there was a considerable recovery of peroneal nerve function, including partial dorsi flexion. The patient reported less discomfort and an increased quality of life, however full nerve function recovery is still underway. This example highlights the complexities of addressing floating knee injuries, particularly when they are accompanied by neurological abnormalities such as foot drop. Prompt surgical intervention and therapy are critical for a successful recovery. Continuous monitoring of nerve function is required to determine long-term consequences. Floating knee injuries in young people can result in serious consequences, including nerve damage. A multi disciplinary approach incorporating trauma surgery and rehabilitation is essential for optimum healing and functional restoration.

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Key Words
Floating knee, foot drop, knee instability, lower limb dysfunction and neurological conditions

Corresponding Author
Pulin Bihari Das,
Department of Orthopaedics, IMS and SUM hospital, Kalinga Nagar, Bhubaneswar, Odisha, India 751003
pulin_bdas@yahoo.ca

Author Designation
[1,3]PG Resident
[2]Professor MS Orthopaedics

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INTRODUCTION

Floating knee is used to describe fractures of the ipsilateral femur and tibia. Fractures can occur anywhere along the femur and the tibia and must occur in both bones to be considered a floating knee injury. Floating knee refers to the knee joint and not necessarily the connection to either long bone. Although tibial and femur fractures are not uncommon, having injuries to both bones simultaneously on the ipsilateral limb is uncommon. Blake and McBryde used the term floating knee (FK) in 1975, referring to ipsilateral fractures of the femur and tibia that disconnect the knee joint from the rest of the lower limb[1]. FK damage is a flail knee joint and includes associated diaphyseal, metaphyseal and intra-articular fractures[2]. The exact incidence of FK remains undetermined, but it is likely to be infrequent, with Letts[3] reporting an incidence of 2.6% of all fractures in 1986. The incidence of FK, caused by high-velocity and high-energy trauma, is increasing because of changing lifestyles, high-speed motor vehicles and poor road conditions[4].

Case Presentation: A 20 years young male with a history of pain and swelling of right forearm and elbow and right knee and right thigh and leg who got admitted SCB Cuttack where he was operated (tens fixation was done for both bone forearm fracture and proximal tibia, distal femur fracture right side). After the operation the patient complaints of having pain and difficulty of movement of the above regions. The patient has now come to sum for further management.

Physical Examination:

O/E of Right Lower Limb:

- Swelling Around Knee+Tenderness Around Knee + Rom- Restricted And Painful Around Knee.
- Distal Pulsation-Present Dorsalis Pedis Artery.
- Distal Sensation-Present Over All Toes.
- Active Toe-Flexion+, Extension+Active Ankle-Plantar Flexion +, Dorsiflexion Absent(Foot Drop)
- Crt-Normal.

O/E of Right Upper Limb:

- Swelling Present over Midpart Of Forearm.
- Tenderness Peresent over Midpart Of Forearm.
- Rom Painful and Restricted In Wrist And Elbow Movements.
- Distal Pulsation-Palpable Radial Artery.
- Distal Sensation-Present over All Fingers And Thumb.
- Crt <3 Secs.
- No Dnvd.

Fig. 1: X Ray After Trauma

Fig. 2: 3 Months Follow Up

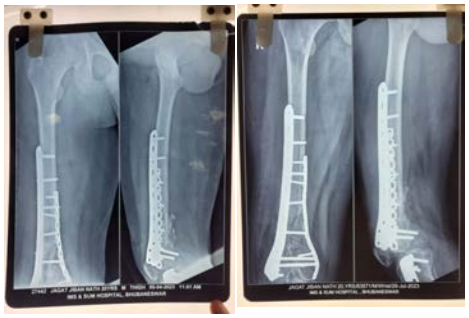

Fig. 3: Revision Surgery X-Ray's

Fig. 4: X-Rays 3 Months Follow Up Revision Surgery

Fig. 5: 3 Months Follow Up on 9.12.23

Fig. 6: 1 Year Follow Up

Final Diagnosis:

- Distal Femur With Screw and Tens With Foot Drop Right Side.
- Proximal Tibia With Tens Fixation Right Side.
- Radius and Ulna With Tens Fiχαγion Right Side.

Treatment: The patient received a blood transfusion of 2U of packed red blood cells (RBCs) to treat hypovolemic shock. Primary suture of the forehead and lower lip wounds was performed in the ER. Within 4 h of sustaining the injury, after the laboratory data had been received and life-threating complications excluded, the patient was transferred to the operating theater for surgery. The surgical procedure was performed on the Right Side first because of the greater number of comminuted. The patient received general anesthesia at and was placed on the operating table in the right lateral decubitus position. After sterilization and draping, we performed open reduction and internal fixation (ORIF) with a locking plate in the left femoral shaft. The operating table was then tilted backward approximately 20° to expose the anterior of the leg more fully, and ORIF was performed using a narrow dynamic compression plate (DCP). Two 1/8 Hemovac drains were then inserted into the thighs and calves and the wound was closed in layers. Finally, Patient Was Operated on 03/01/23 Under Sa (Implant Removal With Bicolumnar Plating For Distal Femur With Bone Grafting Right Side) with an 18-gauge needle, we punctured hundreds of small holes around the closed wound in the left leg and thigh, imitating a Chinese medicine blood-letting method, to allow the accumulated blood in the tissue to flow out to prevent skin necrosis and compartment syndrome. Then on 20/01/23 Operated for Implant Removal with Orif and Plating for Both Bone Forearm and lastly 14/02/23 Postop Dressings Done On Pod2 and Pod 5. Implant Removal with Orif and Plating for Proximal Tibia on Right Side. The same ORIF procedure was performed on the right femoral fracture using a broad DCP and on the tibial fracture using a narrow DCP after changing the patient's position to left lateral decubitus.

Discharged: Patient was discharged in a Clinically Stable Condition, with Healthy wound Condition.

RESULTS AND DISCUSSIONS

When Blake and McBryde first developed the concept of FK in 1975, they classified the injured extremities according to the fracture site: type I fractures involved femoral and tibial shaft fractures, type IIA fractures involved the knee joint and type IIB fractures involved the hip or ankle joints[1]. In 1978, Fraser[5] revised the classification system, in which FK injuries involved the intra-articular knee joint, which affects treatment choices. Type I involves simultaneous femoral and tibial shaft fractures without extension into the knee joint, and type II fractures extend into the knee and are subdivided in the following: type IIA involves a tibial plateau fracture and an ipsilateral femoral shaft fracture., type IIB includes distal femoral fractures extending into the knee joint and type IIC involves both tibial plateau and distal femoral fractures extending into the knee joint. An overall incidence of 4.6% and 3.8% has been reported for bilateral femoral and bilateral tibial shaft fractures, respectively[6]. As the number of motor vehicle accidents increases, a progressive increase in the incidence of ipsilateral femur and tibia fractures has been reported. Concomitant fractures of the ipsilateral femur and tibia are serious because of the high mortality associated with these injuries. Although the incidence of FK is undetermined, the related mortality rates range from 5-15% and amputations are reported in up to 27% of patients. The incidence of knee ligament injuries related to FK is as high as 53% according to the literature. Accurate reduction and firm fixation to regain articular and mechanical alignment are the treatment goals to optimize later function. Generally, femoral fractures should be fixed prior to the tibial fracture, except in the case of an open tibial fracture. The choice of implants for fixation includes intramedullary nails, plates, or a combination of the two. Although Rethnam[7] reported a short fracture union time and positive functional recovery in patients treated with intramedullary nails for extra-articular fractures and plates for intra-articular fractures in FK, each fracture is unique and treatment should be decided based on a patient's individual circumstances, the fracture pattern and the extent of the soft tissue injury.

CONCLUSION

In conclusion, floating knee with foot drop presents a complex injury pattern that requires prompt and comprehensive management. The combination of femoral and tibial fractures, along with associated nerve damage leading to foot drop, complicates the treatment approach. Early surgical intervention, coupled with neuro vascular assessment, is critical to optimize recovery and function. Rehabilitation plays a key role in addressing muscle weakness and nerve dysfunction, ensuring the best possible outcome for

patients. Close follow-up is essential to monitor for complications such as non-union, infection, or persistent nerve deficits, which can significantly affect long-term mobility and quality of life.

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