Complex Proximal Malunited Tibial Plateau Fracture Treated Primarily by Total Knee Arthroplasty-A Case Report

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Learning Point of the Article:
Primary TKA for proximal tibia fracture is an option for elderly patients based on a clinical and radiological presentation the surgeon can opt for total knee arthroplasty even in younger individuals.

Abstract

Introduction: Post-traumatic Osteoarthritis of the knee is a common complication following malunited proximal tibia fractures treated by internal fixation. Delayed treatment failed internal fixation native splinting can lead to malunited tibia plateau fractures.

Case Report: We report a 10-month-old malunited proximal tibia fracture with osteoarthritis of the knee joint who had undergone native splinting. The patient presented with complaints of pain over the left knee joint and inability to weight bear over his left leg for the past ten 10 months. Radiographs showed malunited proximal tibia fracture. Since there were signs of osteoarthritis of the affected knee joint, it was decided to treat primarily by total knee arthroplasty. Postoperatively, the patient could walk freely without a stick and had no pain. The knee was stable and had a full range of movement.

Conclusion: Post-traumatic knee arthritis is a dreaded complication following both conservative and surgical management of proximal tibia fracture due to immobilization and knee stiffness. The primary use of total knee replacement TKR can be considered an alternative treatment for patients with intra-articular fractures of the tibia not extending past the metaphysical area to provide the patient with a stable and pain-free joint.

Keywords: Proximal tibial plateau fracture, total knee replacement, osteoarthritis knee.
developed pain and inability to weight bear over his left leg. The patient initially underwent native splinting for 6 months following the injury. As patient was not relieved of his symptoms following native splinting, patient came to Sri Ramachandra Medical College Porur for further management. With complaints of pain, deformity, and unable to bear weight on left leg (Fig.1). There is no history of fever, loss of appetite or any other bone injury. The patient is not a known case of diabetic mellitus, Hypertension hypertension cardiac disease tuberculosis asthma epilepsy. The patient is not a smoker or an alcoholic. Examination revealed left lower limb appears to be shorter than the right lower limb. Muscle wasting was noted over the thigh and calf region. Healed abrasion scar present over the anterior aspect of the knee joint and the distal aspect of the leg. Dilated veins present over the posterolateral and the medial aspect of the knee joint. No popliteal fossa fullness was noted. Tenderness present over medial and lateral jointline Swelling present over the anterior aspect of knee joint. Bony mass is palpable over the anteromedial and lateral aspect of the knee. The Range range of Movement movement of the knee was 20 to −70° with fixed flexion deformity of 20°. Further movements were painful. There was no neurovascular deficit noted. Radiographs showed comminuted malunited proximal tibia with depression over the medial condyle 1-2 cm and fracture line extending to the lateral and posterior condyle of tibia (Fig.2). Computed tomography CT of the knee revealed that the whole of the medial condyle was depressed by more than >2 cm and the fracture line was extended into the medial and posterior condyle. (Figs.3and ,4). There was no fracture line noted over the metaphyseal region of the shaft of the tibia. Knee joint showed significant osteoarthritis changes. Intraoperatively, we found that the articular cartilage was found to be completely damaged and there was a coronal split of the tibial plateau. The depressed medial condyle was raised and fixed with the help of of cannulated cancellous screw from the medial aspect of the knee joint. No popliteal fossa fullness was noted. Tenderness present over medial and lateral jointline Swelling present over the anterior aspect of knee joint. Bony mass is palpable over the anteromedial and lateral aspect of the knee.

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**Discussion**

The commonly followed method of the treatment for patients with the above history would have been to treat with ORIF open reduction and internal fixation and autologous bone grafting. The knee would have been immobilized for four 4 weeks, and no weight bearing bearing would have been possible possible for 3-4 months. The patient was initially
treated with native splinting, and there were as significant muscle wasting and fixed flexion deformity of 20° degrees of the knee joint. Further management with the usual treatment protocol will have an increased risk of developing gonarthrosis, deep vein thrombosis DVT, and significant muscle wasting necessitating total knee prosthesis [5, 6]. Hence, we planned for single stage procedure TKA Total Knee Arthroplasty, hence allowing the patient immediate mobilization and weight bearing. Knee arthroplasty has been used after failure of internal fixation of the tibial plateau [5, 7] and in patients with post-traumatic arthritis and have given excellent results in elderly at midterm follow-up [8, 9]. Treatment with long-stemmed total knee replacement (TKR) has been suggested for fractures of the proximal tibia below an osteoarthritic knee in elderly patients [10]. The primary use of prosthesis has been recommended for the dislocated neck of femur fractures of the hip [11, 12] as well as for comminuted fractures of the proximal humerus [13] and of the distal humerus [14]. Cemented TKA total knee arthroplasty may produce excellent mid- and long-term results in patients younger than 40 years of age with end-stage arthrosis, if they are willing to modify their day to day activities [15, 16]. In a series of 74 cases as reported by Duffy et al. [17] which had 54 patients under 55 years of age a final Knee Society knee score of 84 points, and functional score of 60 points at 10-year follow-up was noted. The study had 18 patients only with with diagnosis of osteoarthritis or post-traumatic arthrosis. Implant survivorship at 10 years was 99% and at 15 years was 95%. It was only after discussion and consent of the patient that TKA total knee arthroplasty was planned. The good early result was surprising. It might be that the patient before the accident was fit and had no knee arthritis, but he showed signs of gonoarthrosis from native splinting which was treated with TKR. When using this method, it is important to have at hand tibial prostheses with long shafts allowing for better fixation and cannulated cancellous screw for depressed fractures of the tibial plateau. The primary use of TKR might be considered an alternative treatment for patients with intra-articular fractures of the tibia not extending past the metaphysical area.

### Conclusion

Post-traumatic osteoarthritis of the knee is common complication following proximal tibial plateau fracture. Early internal fixation and mobilization in the younger age group are is advised. Primary TKA total knee arthroplasty for proximal tibia fracture has been accepted mode of treatment in the elderly age group. In malunion with early osteoarthritis, TKA Total knee arthroplasty can be considered as an option to provide the patient with pain-free and stable mobile joint.

### Clinical Message

Primary TKA total knee arthroplasty for proximal tibia fracture is an option for elderly patients. Based on a clinical and radiological presentation the surgeon can opt for total knee arthroplasty even in younger individuals.

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**Consent:** The authors confirm that Informed consent of the patient is taken for publication of this case report.