

Periprosthetic Tibia Fracture after Total Knee Arthroplasty: A Case Report

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Abstract: Peri-prosthetic tibia fracture after knee arthroplasty is not a very common complication in the arthroplasty population. We came across one such fracture in our patient who was under follow up in OPD for last six years post arthroplasty. We treated the fracture with locking plate. The patient is faring well in short term follow up, however a long term follow up is needed to know the clinical, radiological and functional outcome as well as to know the complications like implant failure, non-union or re-fracture.

Keywords: Peri-prosthetic fracture, Knee, Tibia, Arthroplasty, Felix Classification, Locking plate

1. Introduction

Peri-prosthetic tibia fracture after total knee replacement is an uncommon condition. In the present article we are discussing a case of peri-prosthetic tibia fracture treated at our hospital.

2. Case Report

A 67 year old female had undergone total knee arthroplasty of both knees six years ago at our hospital. She was faring well and satisfied with the replacement. Patient presented to us with a history of slip while moving out of the bathroom, following which she started having severe pain, swelling in the right knee and was not able to bear weight on the affected side. The pain was sudden in onset, non-radiating, aggravated by activity and weight bearing and relieved by rest. A painful restriction of the right knee movements was noted. Antero-posterior and lateral views of the knee confirmed the Felix TYPE III-A peri-prosthetic tibia fracture of the knee. ESR and CRP were normal. Since tibial component of the prosthesis was found to be stable, we contemplated for open reduction and internal fixation of the fracture with plate. The patient was investigated and pre-anesthetic fitness was taken.

Once declared fit for anaesthesia the patient underwent surgical intervention. Lateral approach to the proximal tibia used and fracture fixed with two inter-fragmentary screws and proximal tibia locking plate. Now patient is under post-operative rehabilitation.

3. Discussion

A high satisfaction level has been reported among TKR patients. A revision rate of 10% in 10 years and 20% in 20 years has been reported¹. And among all the reasons for the failure of the procedure, peri-prosthetic tibia fracture is considered as rare². Felix has classified the peri-prosthetic tibia fracture in four types³:

- Type I: occurring at the tibial plateau
- Type II: occurring adjacent to the prosthetic stem
- Type III: occurring distal to the prosthetic stem
- Type IV: involving the tibial tubercle

Three subtypes to these types are:

- a) The prosthesis appeared to be radiographically well fixed.

- b) The prosthesis appeared to be radiographically loose
- c) The fracture occurred intra-operatively

We classified the fracture in our patient as Type III subtype A of Felix classification system which includes a fracture distal to the prosthetic stem (**Fig**) and the prosthesis is stable or well fixed. The fracture was fixed with locking plate (**Fig**).

Ebraheim NA et al² in their review concluded that peri-prosthetic tibia fractures are less common and Subclass A fractures were treated with locking plates.

4. Conclusion

Tibia fracture in a patient with knee arthroplasty is a challenging situation. Stability of the prosthesis is the most important variable directing the treatment plan. If the prosthesis is stable then the solution to the problem is to reduce and fix the fracture with locking plate. If prosthesis is unstable then revision arthroplasty is required. Our experience with locking plate has been satisfying in immediate post-operative period and short term follow up, though we recommend a long term follow up to make a definite opinion. Since tibia fracture in post knee arthroplasty patients are uncommon we recommend a multicenter study involving large number of patient and long term follow up to know the clinical, radiological and functional outcome and incidence of complications like non-union, implant failure and re-fracture.

References

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Figure 1: Pre-operative Radiograph Felix Type III-A



Figure 2: Pos-operative Radiograph