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A Novel Technique Utilizing External Fixation for Intramedullary Total Femur Arthroplasty

Blake Martin, Matthew Hnatow MD, Emma Herrera

Background

Total femur replacement (TFR) exists as a salvage procedure option after multiple failed hip and knee arthroplasties. It can restore a patient's quality of life and function but is associated with a high complication rate. Historically, the procedure has been performed utilizing *en bloc* resection of the femur. More recently, intramedullary TFR has been utilized as a method of preserving critical soft tissue attachments. More studies are needed describing intramedullary TFR as to enhance the technique and outcomes for future procedures. We describe a case of intramedullary TFR utilizing external fixation as a means of maintaining critical aspects of the limb such as length, alignment, and rotation during the procedure.

Case Presentation

A case study is presented in which a patient with an indwelling hinged knee tumor prosthesis has subsided to the level of the greater trochanter. Intramedullary TFR was indicated. The residual femoral and tibial bone was targeted for placement of an external fixation device. The device maintained the thigh's length, alignment, and rotation during the revision knee arthroplasty and total hip arthroplasty portions of the procedure. The device was removed upon union of the endoprosthesis at the midshaft femur. Photographs and schematics are presented. Our patient was successfully treated with intramedullary TFR. The patient demonstrates no evidence of complication or infection after 1 year. His functional outcome was greatly improved post procedure.

Conclusions

To our knowledge this is the first case described in which external fixation was utilized during an intramedullary TFR. We demonstrate a successful procedure with no complications at 1 year. Intramedullary TFR utilizing external fixation can be used to maintain critical aspects of the limb, therefore easing many of the technical challenges of the procedure.