Ten Tips for Successful Treatment of Atypical Femoral Fractures

*Nisha Crouser, BS; **Ryan Blackwell, MD**; Jane Han, MD; Carmen E. Quatman, MD, PhD; Laura Phieffer, MD*
The Ohio State University, Columbus, OH, United States

Purpose: Atypical femur fractures (AFFs) associated with bisphosphonate use have become an increasingly common problem for the treating orthopaedic surgeon due to the increased worldwide awareness and treatment of osteoporosis. The average postoperative healing time for an AFF ranges from 6 to 12 months, compared with 3 to 6 months for typical femoral fractures. Patients who sustain an AFF often have more medical comorbidities, prolonged hospital stays, and are at higher risk for reoperations and failed union than patients with typical femur fractures. These fractures require complex, specialized management in order to offer the best outcome possible. The aim of this study is to provide a comprehensive review of the 10 most important variables when managing AFFs and suggestions for how they can be incorporated into clinical practice.

Methods: A review of the literature was conducted in order to describe the diagnosis, medical and surgical management, operative pearls, postoperative care, and future directions for AFFs. The available literature was analyzed and 10 clear steps are provided to optimize patient outcomes and reduce treatment failures in this difficult population.

Results: Step 1 is recognizing and diagnosing an AFF. These fractures can be seen in patients with thigh pain alone, low-energy femur fractures, or as impending fractures. Step 2 is to always assess the contralateral femur, as the contralateral side is involved in 28% of cases of AFF within 4 years. Step 3 is optimizing medical management. This can include discontinuing or changing bisphosphonates as well as the early involvement of internal medicine and endocrinology colleagues. Steps 4 through 6 discuss the importance of and recommendations for preoperative planning, implant selection, surgical technique, and technical aspects in the surgical treatment of AFFs. Step 7 recommends treating the AFF as a nonunion on the first attempt as these fractures show prolonged healing times and higher nonunion rates with devastating functional consequences for patients. Step 8 reviews augmentation with biologics and bone graft. Techniques reviewed are reamer-irrigator- aspirator (RIA), bone marrow aspirate, platelet-rich plasma (PRP), and bone morphogenetic protein (BMP). Step 9 involves the postoperative management recommendations for AFFs, including weight bearing, therapy involvement, and frequent clinical and radiographic evaluations. Step 10 discusses future directions for research and management of AFFs.

Conclusion: Atypical femur fractures are difficult injuries to manage; however, outcomes can be optimized through an evidence-based approach to the surgical and medical management of these patients.

See the meeting app for complete listing of authors' disclosure information.