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A Unique Mode of Failure in the Non-Contact Bridging Periprosthetic Plating System

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Program: Orthopaedic Surgery Residency Program
Type: Case Report

Background: Although lateral locking plates are often a preferred and successful fixation construct for the treatment of periprosthetic proximal and distal femur fractures, certain complications and modes of failure have been well-described with their use. We experienced two cases of a unique mode of failure in the Non-Contact Bridge Periprosthetic Plating System (Zimmer Biomet) in which a nonlocked screw fretted through the annular seating of the plate. Appropriate patient consent was obtained for the use of these cases for educational purposes.

Case 1: An 85-year-old woman with a history of dementia and osteoporosis sustained a right proximal femur periprosthetic fracture after suffering a ground level fall. Open reduction and internal fixation were performed and there were no identified complications on radiographs obtained 7 weeks post-operatively. Radiographs obtained 11 weeks post-operatively demonstrated fretting of the distal-most screw through the plate (Fig. 1a).

Case 2: A 73-year-old man with a history of multiple myeloma, diabetes, and chronic left lower extremity weakness sustained a right periprosthetic supracondylar distal femur fracture after suffering a ground level fall. Open reduction and internal fixation was performed and there were no identified complications on radiographs obtained 8 weeks post-operatively. Radiographs obtained 14 weeks post-operatively demonstrated fretting of the distal-most screw placed proximal to the fracture site (Fig. 1b).

Conclusion: Periprosthetic fractures are complex orthopaedic injuries. Lateral locking plates are often the preferred treatment because of their excellent stability and ability to be placed in a minimally invasive manner. Plate or screw fracture and screw pull-out are well-documented complications, however no literature exists demonstrating the unique mode of failure exhibited in our clinical cases.

https://doi.org/10.32873/unmc.dc.merj.3.1.046