

Femoral Bone Restoration Patterns in Revision Total Hip Arthroplasty Using Distally Fixed Modular Tapered Titanium Stems and an Extended Trochanteric Osteotomy Approach

Andreas Ladurner, Vilijam Zdravkovic & Karl Grob

BACKGROUND

Mechanical failure of modular revision stems is a serious complication in revision total hip arthroplasty. The lack of adequate osseous support to the proximal component, especially in cases of an extended trochanteric osteotomy approach, is considered a risk factor for stem failure. In this study, we analyze proximal bone regeneration patterns in patients undergoing revision total hip arthroplasty for aseptic stem loosening through an extended trochanteric osteotomy approach using an uncemented dual modular stem.

METHODS

Fifty-four patients treated for aseptic stem loosening were radiologically reviewed. The femur was divided according to the Gruen zones. Preoperative bone loss, formation of new cancellous bone, and presence of direct osseous contact to the stem were noted right away for each Gruen zone. The presence of osseous support at the modular junction and the proximal component were examined.

RESULTS

All patients showed restoration of proximal bone mass at final follow up. New bone formation was first seen in more distally located Gruen zones. Cases with longer proximal components had a trend toward earlier osseous support at the modular junction. Overall, 75% of patients showed osseous support at the modular junction 2 years after surgery.

CONCLUSION

Restoration of proximal bone occurs in a distal to proximal direction. Shorter proximal components require more time until osseous support to the modular junction is achieved, which may result in a higher risk of mechanical failure. Based on this study, bony support at the modular junction should not be expected in 25% of cases 2 years after surgery.

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