

**Salvage Procedure for Cut-Through After Surgical Fixation of Trochanteric Fractures with Trochanteric Fixation Nail**

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**Purpose:** Closed reduction and fixation using cephalomedullary nailing (CMN) represents the accepted management of unstable intertrochanteric fractures. Cut-through has been described as a complication associated with the treatment. Although a hip arthroplasty may be the most predictable revision method, a non-prosthetic option can lead to similar results. The objective is to describe a non-prosthetic revision procedure in cases of cut-through.

**Methods:** We performed a retrospective analysis of our Institutional Registry for Hip Fractures in elderly patients (RIAFC) from January 2000 to June 2017 searching for cut-through as a failure after unstable intertrochanteric fracture treatment. Age, gender, fractures pattern, fracture reduction (tip to apex score/Garden angle/Cleveland classification), surgical blood loss, and fracture healing during the last follow-up visit were analyzed. The revision procedure was (A) helical blade removal, introduction of structural bone graft (autologous or allograft) as a plug to obliterate the communication to the joint, and a new blade insertion or (B) same as in A but augmenting the blade/head purchase with Polymethylmethacrylate (PMMA). Before the cement insertion, a radiopaque solution was instilled to ensure lack of joint leakage.

**Results:** We evaluated 1616 patients. 16 of them presented a cut-through complication (1%). 10 of them were females with an average age for all of 84 years. In 14 cases the fracture was 31A2 and in 2, 31A3. Six patients had a Garden angle associated with a bad reduction. Four patients had their blades inserted in a dangerous zone according to Cleveland's. Blood loss had an average of 3.6 points of hematocrit declination. One patient denied an implant revision and opted for a total joint replacement. In 4 of the patients, the procedure A was done; 2 of them had a new failure and a joint arthroplasty was performed. In the B group, only 1 patient needed a revision to a total hip. The other 10 patients healed uneventfully and did not need any further intervention.

**Conclusion:** Cut-through revision after fixation of unstable intertrochanteric fractures treated with CMN by blocking of the joint communication and augmenting the head blade purchase with PMMA is a safe and minimally invasive procedure, generates low blood loss and rate of complications, and allows bone healing preserving the native joint.