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Original article

Opening-wedge high tibial osteotomy without bone grafting in severe varus osteoarthritic knee. Rate and risk factors of non-union in 41 cases.

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Abstract

Introduction

Using locking plates in opening-wedge high tibial osteotomy (OWHTO) via a medial opening theoretically allows early weight-bearing without need for bone or bone-substitute grafting. It incurs a risk of non-consolidation in case of large correction (> 10°), although rates and risk factors of non-union are not known. The present retrospective study compared OWHTO with correction <10° versus >10°, with a view to determining: 1) complications rates (non-union) according to degree of correction, and 2) risk factors for such complications.

Hypothesis

OWHTO with correction greater than 10° without graft shows normal consolidation and allows early weight-bearing.

Material and method

Forty-one patients treated by OWHTO for medial osteoarthritis of the knee between January 2011 and November 2015 were included in a retrospective study. HKA angle was assessed by long-leg axis radiographs, preoperatively and at 3 months. Clinical and radiological follow-up at 6 weeks, 3 months and 6 months assessed consolidation in terms of >40% filling of the osteotomy site. Partial (contact) weight-bearing was allowed from the first postoperative day, with full weight-bearing at 6 weeks.

Results

Mean patient age was 59 ± 5 years. Mean body-mass index (BMI) was 30.3 ± 5.2; 17 patients (41.5%) had BMI >30. Mean initial HKA angle was 173.5° ± 3° (range, 167° – 178°) and mean correction was 10.7° ± 2.7° (range, 5° – 15°). There were 27 corrections of 10° or more, and 14 less than 10°. At 3 months, mean HKA was 182.9° ± 2.5° (range, 178° – 187°). Twelve cases showed lateral tibial cortex fracture after opening. Thirty-six patients (87.8%) showed consolidation, at a mean 5 ± 3 months. Five patients showed osteotomy site non-union; in all these cases, the lateral cortex was broken initially (p=0.003); all had BMI >30 (mean, 37.2 ± 3.8; p<0.03); none were smokers. On univariate analysis, lateral tibial cortex fracture (OR=10; 95% CI, (1.59-196.30)), BMI > 30 (OR=1.18; 95% CI, (1.03-1.41)) and correction ≥10° (OR=10.50; 95% CI, (2.49-53.86)) were associated with delayed consolidation. On multivariate analysis, only degree of osteotomy was significantly associated with delayed consolidation (OR=11.51; 95% CI, (2.13-95.74)).

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