Mid- to Long-Term Results of Supramalleolar Osteotomy
Nicola Krähenbühl, MD, Lukas Zwicky, Lilianna Bolliger, MSc, Beat Hintermann, MD, Markus Knupp, MD

Category: Ankle Arthritis

Keywords: Ankle osteoarthritis, supramalleolar osteotomy, realignment surgery, hindfoot deformity

Introduction/Purpose: Good clinical and radiographic short-term results have been reported for patients who underwent realignment surgery of the hindfoot for treatment of early- and mid-stage ankle osteoarthritis. However, no mid- to long-term results have been reported. The aim of this study was to gain a better insight on the indications and contraindications for supramalleolar osteotomies. More specific, we assessed the survival rate of a consecutive cohort of 294 patients who underwent supramalleolar osteotomy for ankle osteoarthritis and investigated the effect on functional outcome, pain relief and patients’ satisfaction. Risk factors for failure were additionally determined. We hypothesized, that realignment surgery is a valuable treatment option for young and physically active patients suffering from early to mid-stage ankle osteoarthritis.

Methods: Two hundred and ninety-four patients (298 ankles) underwent realignment surgery between December 1999 and June 2013 in our institution. For four patients who were operated on both feet, only the measurements from the foot operated first were used for further analysis. The patients were assessed clinically and radiographically preoperatively, six and 16 weeks postoperatively and thereafter annually. The examination was done by independent examiners who were not involved in the treatment of the patients or analysis of the data. Kaplan-Meier survival analysis was performed with total ankle replacement and arthrodesis of the ankle joint as endpoints. A Cox proportional hazards model was performed to identify risk factors for failure.

Results: The mean time to follow-up was 5.0 ± 3.7 years. The overall five-year survival rate was 88%. Thirty-eight patients (12.9%) either underwent secondary total ankle replacement or ankle arthrodesis (thirty total ankle replacements, eight ankle arthrodesis). A lost to follow-up was reported in eleven patients (3.7%). Overall, the AOFAS Hindfoot score increased from 53.2 preoperatively (SD, 19.9) to 72.7 (SD, 19.2) postoperatively. Risk factors for failure following realignment surgery were age at the time of surgery and a Takakura score of 3b preoperatively. An interaction by trend was also found between age and smoking, indicating that the increased risk in elderly patients was larger in smokers than in non-smokers at the time of surgery.

Conclusion: We found good mid- to long-term results for supramalleolar osteotomies in patients with ankle osteoarthritis. The present data suggests that corrective osteotomies need to be considered in the surgical treatment of young and active patients with early- to mid-stage ankle osteoarthritis (Takakura stage 1 to 3a). This is particularly important, as ankle replacement at young age cannot be considered a lifetime solution. However, care should be taken in elderly patients who smoke at the time of surgery.

This open-access article is published and distributed under the Creative Commons Attribution-NonCommercial 3.0 License (http://www.creativecommons.org/licenses/by-nc/3.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).