Evaluation of anatomical structures after calcaneal Evans- or Hintermann osteotomy

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Introduction/Purpose: Both Evans- and Hintermann-osteotomies are commonly used for the treatment of flexible pes planovalgus deformity. The aim of this study was to examine, which anatomical structures are affected by the performed osteotomy.

Methods: Two experienced foot and ankle surgeons performed an Evans- or Hintermann-osteotomy on each of 7 cadaver feet (Science Care, Arizona, USA). There were no defects on the preparations. All cadaver feet were prepared in the same way following predetermined preparation guidelines. All individual anatomical structures were prepared and, in particular, peroneal tendons, nervus suralis as well as articular surfaces evaluated.

Results: The mean age of the donors was 80.8 years. Eight left and six right feet were prepared. After Hintermann osteotomy there was no damage of the peroneus longus tendon, after evans-osteotomy in one case (14.3%). The peroneus brevis tendon was once totally damaged after Hintermann osteotomy and once partially damaged after evans osteotomy. In one cadaver the suralis nerve was partially damaged after hintermann osteotomy, in no case after evans osteotomy. After Hintermann osteotomy the calcaneal anterior and medial articular surface were 100% and 85.7% intact, whereas after Evans osteotomy only 42.9% and 71.4% were not damaged. The posterior articular surface was affected in no cadaver.

Conclusion: After both osteotomies anatomical structures can be damaged. Besides biomechanical advantages, with the Hintermann osteotomy the calcaneal anterior and medial articular surface can be protected in a higher percentage than with the Evans osteotomy. Further studies should be performed, if these findings correlate with the clinical outcome.

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