

The syndesmotic positioning screw – retrospective CT evaluation

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Background

If the syndesmotic screw is misplaced or the syndesmosis not tightened enough, it is possible that a post-traumatic arthrosis develops. We assumed that with a conventional postoperative x- ray minimal malreductions can not be identified reliably, causing false interpretations of anatomical positions, leading to a higher risk of arthrosis. In current research and daily practice we could not find an exact or even common definition or recommendation giving the necessary insight to systematically decide whether or not an operative revision should be performed. The target of this retrospective study was to create measuring points in the computed tomography, which are significant enough, to evaluate the position of the ankle in comparison to the contralateral healthy ankle.

Methods

The study took place at the AUVA Unfallkrankenhaus Graz. Between January 2011 and August 2012 CT images of 80 patients, who needed a syndesmotic screw as part of their treatment, were reviewed. In the retrospective, monocentric and open study different measuring points were nominated and used for measuring the necessary distances needed for the comparison. The nomination of the chosen points was the result of an interdisciplinary assessment between experts in the field of trauma surgery and radiology, due to the lack of systematically defined and described measuring points in literature. The comparative analysis was conducted using the contralateral non operated ankle of each respective patient.

Results

During the study 328 patients underwent operative treatment. 138 of these patients were supplied with a syndesmotic screw. 80 patients could be identified as fulfilling the necessary inclusion criteria and were admitted to the study. It was possible to find significant differences between the healthy and the operated ankle with the nominated measuring points. The two proximal distances of malleolus medialis - talus and the two distal distances of malleolus lateralis - talus as well as the medial distance of the fibula - tibia in the syndesmotic level provided significant differences.

Conclusion

Differences between the compared measurements were in a very narrow range of only a few millimeters, proving that intraoperative adaption is very difficult. However it was shown that the measuring points should be used when conducting a postoperative check, giving helpful insights to whether or not the operation was a success causing anatomical recovery or if an operative revision is needed.