The Corrective Power of the Cotton Osteotomy

Foot & Ankle Category: Midfoot / Forefoot

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Introduction
The purpose of the study was to determine the amount of angular correction from the Cotton osteotomy of the medial cuneiform using measured wedge grafts.

Methods
Ten cadaver specimens were used to determine the amount of angular correction using various sized Cotton wedge grafts. Fluoroscopic exam was performed using a template jig, to simulate weight bearing, and Meary’s angle was measured. A Cotton osteotomy was performed in the medial cuneiform and the Cotton wedge grafts were inserted. The sizes of the Cotton wedges used were 4.5 mm, 5.5 mm, and 6.5 mm. Fluoroscopic exam was once again performed and Meary’s angle was measured with the various sized wedges.

Results
There was a mean change in Meary’s angle by 9.4 ± 2.07 degrees with the creation of the Cotton osteotomy and insertion of the 4.5 wedge as compared to the pre-operative radiograph. This angular change increased by a mean change of 3 ± 1.04 degrees with 5.5 mm wedge and 3.5 ± 1.18 degree change with the 6.5 mm graft. The total degree change was 9.4 ± 2.07 degrees, 12.4 ± 2.41 degrees, 15.9 ± 2.08 degrees respective to 4.5, 5.5, and 6.5 mm Cotton wedge grafts. The mean correction seen was 2.27 degrees for each millimeter of wedge graft.

Conclusion
Based on our findings we feel this will give foot and ankle surgeons a set of guidelines to use when planning for the Cotton osteotomy. With this data, the surgeon can pre-operatively reliably estimate the size of the wedge graft needed to achieve the desired correction.