

## **Second screw optimal compression of the posterior facet with subtalar joint arthrodesis: A comparison of two different screw placements**

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**Introduction:** Subtalar joint (STJ) arthrodesis has historically been a common method of treating a variety of foot and ankle pathologies. Previous research describes varying surgical methods, as well conflicting evidence on success rates for STJ arthrodesis. One of the potential limitations of STJ arthrodesis is the small joint size for the arthrodesis and the unique joint anatomy. The purpose of this study is to provide a consensus on the optimal screw placement for the second screw that is extra-articular that will allow optimal compression across the posterior facet.

**Methods:** 5 frozen cadavers were utilized for this study. Ultra-low contact film was carefully placed and secured within only the posterior facet of the joint. Two screw positions were utilized: (1) Posterior-inferior aspect of the calcaneus to the talar neck and (2) plantar aspect of the calcaneus to the dorsal talus just anterior to the posterior facet. 6.5mm compression screws were used separately for each location. The film was then analyzed using a Fujifilm Pressure Mapping System© while varying the location of the second screw.

**Results:** In all 5 cadavers, the plantar-inferior to the talar neck screw provided more compression across the posterior facet of the subtalar joint compared to the plantar to dorsal screw.

**Conclusion:** This cadaveric study shows that the compression pressure and area of the posterior facet greater when the second screw runs from posterior-inferior calcaneus to the dorsal distal talar neck compared to the plantar to dorsal screw configuration.