A Comparison of Outcomes in Ankle Syndesmosis Injuries Treated With an Aperture Fixation Device, Suture Button, and Syndesmotic Screw

*Garrett K. Berger, MD; **Sean Thomas, BS**; Avinaash Korrapati, MD; Brendan O'Leary, MD; Aaron Tran, MD; Zachary G. Brumm; Brendon Mitchell, MD; William T. Kent, MD*

Purpose: Historically, syndesmotic instability in ankle fractures has been managed with syndesmotic screws or suture button (SB) devices. More recently, the development of a hybrid aperture fixation device (AFD) provides an alternative surgical implant for the treatment of these injuries. To date, no studies have compared AFDs with SBs and syndesmotic screws. The purpose of this study was to compare clinical outcomes in patients with syndesmosis injuries treated with screw fixation, SBs, and AFDs.

Methods: Reviews were conducted on 307 cases of operative ankle injuries with syndesmotic instability treated at a Level I trauma center between 2013 and 2023. Demographic information, follow-up duration, radiographic data, and postoperative complications were recorded. Exclusion criteria included patients with pilon fractures and patients with less than 3 months of follow-up.

Results: 92 patients were identified, including 40% treated with an AFD, 42% with syndesmotic screws, and 18% with SBs. In the screw cohort, adverse events included reoperation for symptomatic hardware (10%), wound healing complications (5%), infection (6%), and loss of reduction (3%). In the SB cohort, symptomatic hardware removal was observed in 6% of patients. In AFD patients, wound healing complications were observed in 8% of cases. AFD patients had significantly less reoperations at final follow-up when compared with screws.
Differences in tibiofibular clear space widening between cohorts was not statistically significant. Average follow-up length was 9 months in the screw fixation cohort, 5 months in the SB cohort, and 5 months in the AFD cohort.

Conclusion: Patients treated with an AFD demonstrated significantly less reoperations in comparison to patients treated with syndesmotic screws. Other rates of complications and widening of the tibiofibular clear space at final follow-up were similar between implants. Further investigation in the form of a matched cohort study will better characterize outcomes in AFDs, SBs, and screws.