Outcomes Following Flexible Fixation of the Syndesmosis

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Introduction
While rigid fixation of the syndesmosis is standard, the advent of flexible fixation has generated interest in a less rigid form of stabilization, and fixation that potentially does not require secondary hardware removal. As previous reports in the literature have examined relatively small study populations, the purpose of this study was to further examine outcomes following flexible fixation of syndesmotic injuries with regard to re-operation rate, complications, as well as maintenance of reduction. We hypothesize that flexible syndesmotic fixation produces a reliable and functional outcome.

Methods
The database of a fellowship-trained orthopaedic foot and ankle surgeon was retrospectively reviewed to identify cases of syndesmotic fixation from 2005 to present. All cases utilizing a flexible device (TightRope, Arthrex; ZipTight, Biomet) were considered for inclusion. Disqualification criteria included previous surgery to the involved ankle, associated pilon type fractures, malunion/nonunion repairs, rigid syndesmotic fixation and charts with inadequate data. All patients followed a postoperative protocol of 6 weeks non-weight bearing unless the injury was an isolated syndesmotic injury in which case protected weight bearing was typically permitted after 2 weeks. Charts were reviewed for complications (heterotopic ossification, infection), reoperation rate, time to weight bearing and return to activity. Radiographs were reviewed for changes in tibio-fibular overlap as well as the medial and lateral clear spaces, comparing initial post-operative imaging to the most recent exam.

Results
A total of 66 cases were identified of which 44 met inclusion criteria for final review. Mean age at time of index procedure was 30 years (range 14-65) with 27 males and 17 females. Of the 44 cases, 8 cases were isolated syndesmosis injuries, 2 were Maisonneuve type injuries, and 34 had associated fractures requiring appropriate fixation. Thirty cases were repaired with a knotted device (TightRope), and 14 were repaired with a knotless device (ZipTight). Heterotopic ossification was identified in 4 cases (9%) with 2 cases in each of the fixation groups. Infection was found in 1 case (2%) utilizing a knotless device. Five cases required removal of the device due to pain, prominence or infection (11%) and of these, 4 were knotted devices. Average time to weight bearing was 5.6 weeks in a boot, and was 8.5 weeks out of the boot. Release to activity averaged 13.6 weeks. Radiographic review showed tibio-fibular overlap, lateral clear space and medial clear space changes to be 0.52 mm, 0.01 mm, and 0.14 mm respectively.

Conclusion
Flexible fixation of the syndesmosis appears to provide a reliable and functional method of stabilization with maintenance of reduction and return to activity. While device removal was necessary in a small number of cases, use of a knotless device, as shown by a small subgroup of cases in this study, may decrease the need for removal due to pain and prominence.