Stress Fractures as a Result of a Non-osteotomy Technique for IM Angle Reduction in Adult Hallux Valgus Surgery Utilizing a Novel Non Absorbable Suture-Button Implant

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The tightrope device enables a novel non osteotomy technique for correction of hallux valgus with promising early results however an unacceptable number of second metatarsal stress fractures.

Many options for surgical treatment of adult hallux valgus currently exist and depend on patient demands, radiographic measures, and surgeon training. Distal or proximal 1st metatarsal osteotomies are currently utilized in the treatment of most hallux valgus deformities. Complications associated with these osteotomies include malunion, nonunion, AVN, metatarsal shortening, transfer metatarsalgia, and technical difficulty associated with the osteotomy. The following is a retrospective review of a non-osteotomy technique for reduction of the IM angle in hallux valgus surgery utilizing a modified non-absorbable suture-button implant previously described for ankle syndesmotic injuries.

Between 2006 and 2007, twenty consecutive patients (20 feet) with moderate or greater IM and HV angles, as well as non-arthritic 1st MTP and TMT joints, who failed conservative management, were treated with this implant. The average follow up was 16 months (range 12-24 months). All patients were females. Eighteen out of 20 surgeries included a distal soft tissue procedure. Twelve other procedures were performed on the lesser toes. The average age was 59 (range 42-72). Pre-operative IM and HV angles were 15.1° (range 12°-20°) and 30.5° (range 24°-48°), respectively. Post-operative IM and HV angles were 8.2° (range 6°-11°) and 10.2° (range -10°-22°). Average post-operative AOFAS Hallux score was 90. There was no change in metatarsal length. No arthrosis of the TMT joints was noted on follow-up radiographs. Two patients did have radiographic hallux varus, of which one was clinical noticeable (10° varus), neither were symptomatic. The most common complication was stress fracture of the second metatarsal around the drill hole used to pass the suture-button construct. Five patients (25%) developed these stress reactions. Post-operative management was changed to include the use of a CAM boot instead of a cast shoe for first month post-operatively.

This modified suture-button technique for the reduction of the IM angle in adult hallux valgus, shows similar short term results to those seen with other bunion surgeries without the complications associated with osteotomies, however an unacceptable number of stress fractures occurred with the current design of the implant. A smaller diameter drill used to pass the implant through the 2nd metatarsal is now being used which will hopefully reduce the occurrence of stress fractures.