

# Alleviation of pain and restoration of function following osteotomy with self-compressive titanium headless and Weil snap-off screws in patients with hallux valgus

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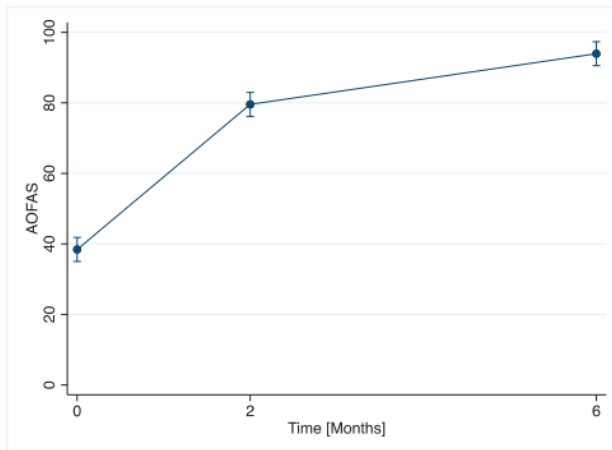
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**Disclosures:** Hallie Murray (3A – Tyber Medical), Peter Fennema (5 – ADSM, a Tyber Medical Company), Jillian Mohn (3A – Tyber Medical), Madilyn Riegel (3A – Tyber Medical) and Christophe Averous, (5 – ADSM, a Tyber Medical Company)

**INTRODUCTION:** It is estimated that 23% of adults 18-65 years old and 35.7% of adults over 65 years old have hallux valgus accompanied with foot pain and functional disability<sup>1</sup>. Surgical management is often required for more severe deformities. Therefore, the purpose of this study was to assess the effectiveness of osteotomy using self-compressive titanium headless and Weil snap-off screws to treat hallux valgus.

**METHODS:** A retrospective study of 51 consecutively treated patients with moderate to severe hallux valgus undergoing osteotomy with self-compressive titanium headless screws between September 2017 and October 2017 were evaluated for clinical and radiographic outcomes. Twelve patients were treated with two screws instead of one, including seven patients treated with one headless screw and one titanium Weil snap-off screw. The American Orthopaedic Foot and Ankle Society Hallux Metatarsophalangeal-Interphalangeal (AOFAS) Scale assessed pain, function and alignment.

**RESULTS:** All 51 subjects obtained fusion with no reported complications following treatment. Patients had significant improvement in pain ( $38.8 \pm 3.3$  compared to  $9.8 \pm 1.2$ ), function ( $40.8 \pm 3.8$  compared to  $24.4 \pm 8.7$ ) and alignment ( $14.3 \pm 2.1$  compared to  $4.2 \pm 4.0$ ) at 6-month follow-up compared to pre-operative assessment. At 6-month follow-up, patients had an average AOFAS score of  $93.9 \pm 5.9$  demonstrating a mean improvement of 55.5 points compared to pre-operative scores ( $38.4 \pm 17.9$ ) (see **Figure 1**). Moreover, 44 patients reported excellent outcomes, 6 reported good outcomes and 1 reported a fair outcome following treatment.



**Figure 1:** Graphical presentation of the development of the AOFAS score over time. Error bars represent 95% confidence intervals (obtained with a linear mixed effects model).

**DISCUSSION:** This study was the first to evaluate patients undergoing osteotomy with self-compressive titanium headless and Weil snap-off screws to treat hallux valgus. Study results demonstrated good fusion outcomes and significant improvement in pain and function as demonstrated by AOFAS assessment. While additional research is required to fully evaluate these self-compressive titanium headless and Weil snap-off screws, including long-term follow-up, this initial data supports the effectiveness of these screws as a treatment option for hallux valgus.

**SIGNIFICANCE/CLINICAL RELEVANCE:** This study was the first to demonstrate successful fusion with restored alignment, improved functionality and decreased pain in patients undergoing osteotomy to treat hallux valgus with self-compressive titanium headless and Weil snap-off screws.

## REFERENCES:

1. Nix S, Smith M, Vicenzio B. Prevalence of hallux valgus in the general population: a systemic review and meta-analysis. *J Foot Ankle Res.* 2010 Sep 27;3:21.