Clinical and Radiographic Results of the Pro-Toe® Implant for Hammertoe Correction Surgery

Foot & Ankle Category: Midfoot / Forefoot

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Introduction
The results of proximal interphalangeal arthrodesis historically have been unpredictable due to limited fixation devices available. The most common type of fixation is a Kirschner wire (K-wire), which does not provide rotational stability but can be sufficient to achieve fusion or a stable arthrodesis. This type of device has to traverse the distal interphalangeal joint to achieve fixation, which can lead to joint stiffness. Another disadvantage is that there is a potential for the wire to be bent, break or inadvertently pulled out. The Pro-Toe implant is a one-piece implant made of stainless steel that provides multi-axial fixation. The purpose of this study is to evaluate radiographic and clinical results with the Pro-Toe Implant® (Wright Medical Technology, Arlington, TN) used for hammertoe deformity correction surgery.

Methods
A retrospective chart review of demographic, radiologic, and clinical data was performed. Patients were followed for a minimum of 6 months post-operatively. Toes were evaluated for alignment in the transverse and sagittal planes, radiographic bony union, implant failure, and the need for revision surgery. Implant failures were defined as implant breakage or cut-out. Patients completed the AOFAS lesser MTP-IP Scale (Max 95) at their 6 month post-op visit. Patients were also asked if they were satisfied with the alignment of their toe and with their surgery.

Results
Sixty-three patients (52 Females and 11 males) and a total of 93 lesser toes were included in the study. The average patient age was 62 (range 25-82) years with an average follow-up of 8.4 (range 6 – 14.7 months) months. Eighty-one (87.1%) toes compared to ten (10.75%) fair and two (2.2%) poor had good medial/lateral angulation and 74 (79.6%) toes had good alignment compared to 14 (15.1%) with fair and 5 (5.4%) with poor alignment in regards to dorsal/plantar angulation. Fifty-eight (62.4%) toes had achieved bony union at the proximal interphalangeal joint (PIP). Four (4.3%) implants failed with three failures due to implant cut-out and one implant broke requiring removal. All of the implant cut-outs occurred at the middle phalanx. Eight patients (8.6%) required revision surgery, three (3.2%) of the eight revisions were performed at the PIP joint and the remaining five were procedures were at the metatarsal-phalangeal joint. The average AOFAS score was 84.7. Seventy-four percent of patients rated their toe alignment as good to excellent compared to 17.2% and 8.6% who rated their toe alignment as fair or poor, respectively. Eighty-seven percent of patients said they were satisfied with the surgery.
Conclusion
Based on our results the Pro-Toe® is a safe and reliable implant for hammer-toe correction without the disadvantages of k-wire fixation such as rotational instability, pin-tract infection, inadvertent wire pull-out, or the wire breaking or bending in-situ. Only 3.2% of patients required revision surgery of the PIP joint, and 62% of patients achieved a radiographic bony fusion with the remaining patients developing a clinically stable fibrous union.