Utilization of Retrofusion screw for PIP fusion for treatment of hammertoes

Henry Ran, MD, Andrew Palisch, MD, Jason Ahuero, MD

Category: Lesser Toes

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Introduction/Purpose: The rigid hammertoe deformity requires realignment of the proximal interphalangeal joint. Traditionally this has been achieved with resection arthroplasty with K-wire fixation of the joint. However, this method is prone to complications such as pin migration, pin tract infection, pin breakage, nonunion, and malunion. Recently, a variety of treatment options have been developed to achieve appropriate PIP joint fusion while minimizing these risks. This study investigates the fusion rate and outcomes of a novel internal fixation screw.

Methods: A retrospective review was done to determine the short term fusion and satisfaction rate of hammertoe corrections performed by 2 surgeons utilizing a specifically designed longitudinal compression screw. A typical dorsal approach to the PIP joint was performed, followed by a resection arthroplasty, and the screw was inserted in the appropriate described manner. At the last follow up, the radiographs and clinical condition was observed. The fusion and alignment of the joint were then analyzed by an orthopaedic resident (PGY3), an orthopaedic attending, and a musculoskeletal radiologist. Clinical satisfaction and appearance was derived from chart review. A total of 55 screws were placed in 40 patients. Thirty-nine of these toes were second toes, 12 were third toes, and 4 were fourth toes. This implant was not designed for the fifth toe. The median final X-ray follow up was 10 weeks (range 5 to 40 weeks).

Results: After evaluation of the post-operative X-rays by all 3 evaluators, at least 76% of these toes were definitively fused. About 13% of the joints were difficult to judge for radiological union based on the available X-rays. Approximately 11% of the joints went into nonunion or were not fused by final (typically asymptomatic) follow up. Two toes (3.6%) had persistent pain and swelling at the last visit. Two toes (3.6%) had slight misalignment (more than 5 degrees of varus/valgus), and only one was a cosmetic issue. No toes changed in alignment from the immediate post-operative position. There was no evidence of post-operative infection in the entire series. None of the toes required a return to the operating room for any reason.

Conclusion: Compression screw fixation for the treatment of hammertoe deformities is a relatively effective method in that it demonstrates reasonable rates of radiographic union with very high rate of symptomatic relief. There were no complications associated with infection or loss of alignment. Furthermore, even in patients without firm evidence of bony union, the presence of an intramedullary implant maintains alignment while relieving symptoms.

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