Case Study:

Use of the ArcPhix Angled Compression Screw for Functional Fusion of the 3rd Distal Interphalangeal (DIP) Joint

Lloyd Champagne, MD
Arizona Center for Hand to Shoulder Surgery
Phoenix, AZ

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Innovations in Hand Surgery

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Lloyd Champagne, MD
Arizona Center for Hand to Shoulder Surgery, Phoenix, AZ

Case Presentation

Pre-op

Patient was a 55-year-old male who was scheduled for DIP joint fusion to his middle finger due to osteoarthritis. A percutaneous approach providing compression and stability was desired to achieve early mobilization and return to daily activities.

Pre-op Plan

Dr. Champagne normally considers intramedullary (IM) fixation with multiple K-wires but wanted to avoid extramedullary hardware due to the possibility of infections. K-wire fixation also results in unsatisfactory fixation and typically requires multiple follow ups. Dr. Champagne decided to proceed with the ArcPhix angled compression screw using a minimally invasive approach to achieve rigid fixation. The angled design allowed for a simple and reproducible implantation technique with the additional benefits of improved finger dexterity and grip strength achieved by functional flexion.

Operative Findings and Approach

Dr. Champagne used the cup and cone reamer technique to prepare the bones of the middle finger in a manner that allows for good apposition at the desired angle. He aligned the distal and middle phalanges, in a manner typical for standard IM K-wire placement, to insert the guidewire percutaneously into the distal phalanx. Dr. Champagne drilled by passing the cannulated drill over the guidewire to the desired depth of the implant, which was approximately 16mm into the middle phalanx. He removed the drill and guidewire to insert the ArcPhix angled compression screw into the drill hole at the tip of the distal phalanx.

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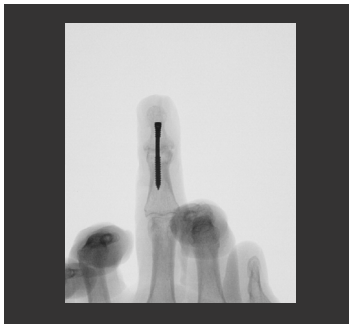
Post-op



Dr. Champagne advanced the screw until the apex of the bend was across the DIP joint with the convex side of the screw facing dorsally. With ArcPhix, Dr. Champagne achieved excellent compression across the DIP joint along with good rotational stability. Total surgery time was approximately 25 minutes.

Follow-up

At 1-week post-op, the patient was recovering well and had full range of motion (ROM) at both the metacarpal (MCP) and proximal interphalangeal (PIP) joints. At 3-weeks post-op, radiographs were satisfactory and the patient was allowed to return to his daily activities without any complications or restrictions.

Discussion

Dr. Champagne has been pleased with the ArcPhix angled compression screw because of the minimally invasive approach that allows for immediate mobilization and excellent outcomes achieved by compression and stable fixation. Most importantly, his patients have been pleased with the functional flexion achieved with the bent design of ArcPhix.