

Case Study:

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



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Case Presentation

Pre-op



Patient was a 63-year-old male who sustained an accidental, self-inflicted injury to his left middle finger while operating a circular saw. Radiographs revealed a fracture to his middle phalangeal head with approximately 3mm of longitudinal bone loss. Clinically, there was a volar-based wound which extended 270° circumferentially. Although the extensor tendon was intact, the flexor digitorum superficialis (FDS) and both neurovascular bundles were completely lacerated. There was perfusion to the fingertip. The decision was made to allow the soft tissue to heal before proceeding with a delayed DIP fusion. The patient was placed into a DIP extension splint for comfort and stability. A minimally invasive approach providing compression and stability was desired to achieve immediate mobilization and rapid recovery.

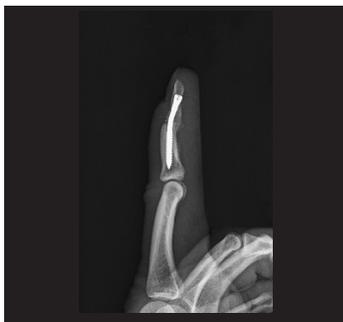
Pre-op Plan

Dr. Babovic normally considers intramedullary (IM) fixation with fully threaded headless compression screws due to satisfactory DIP fusion outcomes but proceeded with the ArcPhix angled compression screw due to the additional benefits of improved finger dexterity and grip strength achieved by functional flexion.

Operative Findings and Approach

After six weeks, the patient's soft tissues reached a favorable condition, allowing Dr. Babovic to perform surgery. At that time, the patient still had significant pain at the DIP joint and dysfunction of the hand. A longitudinal dorsal incision was made in an attempt to preserve perfusion to the fingertip, given the significant initial soft tissue injury. Scar tissue was removed and the bone ends were decorticated in a manner that allowed for good apposition at the desired angle. The DIP joint was then aligned straight to allow for IM guidewire placement through both the distal and middle phalanges in a retrograde fashion. Afterwards, Dr. Babovic drilled by passing

Post-op



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. Dr. Babovic 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, he achieved excellent compression across the DIP joint along with good rotational stability. Total surgery time was approximately 25 minutes.

Follow-up

At 10-days post-op, the patient had his sutures removed and was placed into a removable DIP splint. He had full range of motion (ROM) at both the metacarpal (MCP) and proximal interphalangeal (PIP) joints. At 6-weeks post-op, radiographs indicated that fusion was occurring, the patient was symptom free, and he was allowed to return to full activity without a splint.

Discussion

Dr. Babovic has been pleased with the ArcPhix angled compression screw. It is minimally invasive, provides excellent compression and stability, and allows for immediate mobilization and rapid recovery. Most importantly, his patients are pleased with the functional flexion achieved with ArcPhix.