Case Study:

Use of the ArcPhix™ Angled Compression Screw to address arthritis of 3rd Distal Interphalangeal (DIP) Joint

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EXSOMED™
Innovations in Hand Surgery

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Case Presentation

Pre-op

Patient was a 64-year-old female who suffered from pain in her long finger, DIP joint due to arthritis. Previously, she was treated for a bony mallet fracture on the same finger that resulted in slight extensor lag and when she recently fractured her middle phalanx, her chronic mallet finger was exacerbated due to hyperextension of her proximal interphalangeal (PIP) joint. Dr. Yi allowed his patient to heal non-operatively but the patient returned because she felt pain in her DIP joint and did not like how her finger popped from hyperextension to flexion. Dr. Yi felt that it was an opportune time to fuse the DIP joint to remove the pain and correct the swan neck. A minimally invasive approach that resulted in an angled fusion to eliminate the hyperextension she suffered from her malunion and chronic mallet injury was desired.

Pre-op Plan

Dr. Yi typically elects to utilize K-wires in a minimally invasive approach but found it challenging to create a functional angled fusion of the DIP joint because the angle would inadvertently straighten to some degree. He decided to proceed with the ArcPhix angled compression screw because the pre-bent design simplifies the construction of a clinically appropriate angle (18°) for functional flexion of the DIP joint and is accompanied by the additional benefits of improved finger dexterity and grip strength for daily activities.

Operative Findings and Approach

Dr. Yi removed the scar tissue and prepared the bone ends by decorticating them in a manner that allowed for good apposition at the desired angle. He aligned the distal and middle phalanges, in a manner typical for standard IM K-wire fixation, for IM guidewire placement through both the distal and middle phalanges in a retrograde fashion.

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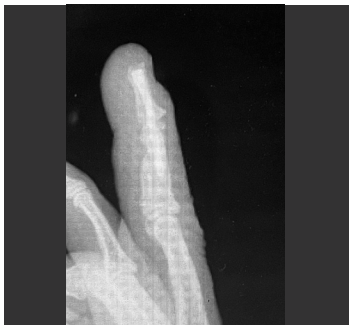
Post-op

Afterwards, Dr. Yi 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 then removed the drill and guidewire to insert the ArcPhix angled compression screw into the drill hole at the tip of the distal phalanx. Dr. Yi 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 with a total surgery time of approximately 10 minutes.



Follow-up

Immediately after surgery, Dr. Yi confirmed that the angled fusion eliminated the hyperextension that his patient suffered due to malunion and chronic mallet injury. At 2-weeks post-op, the patient experienced full range of motion at both the metacarpophalangeal and PIP joints and was pain free, allowing her to return to full activity without any complications.

Discussion

Dr. Yi has been pleased with the ArcPhix angled compression screw because the minimally invasive approach achieves excellent compression and stability and allows for immediate to early active mobilization. Most importantly, his patients are pleased with the functional flexion achieved with ArcPhix.