

Limited Carpal Fusion Using Novel Memory Wire Staple

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Objectives:

While multiple techniques have been used to salvage degenerative wrists, partial wrist fusions maintain carpal height, preserve functional motion and reliably improve pain. Partial wrist fusions have been achieved using a variety of techniques, with more recent techniques offering less violation of articulating surfaces. We retrospectively reviewed our early experience and learning curve with a dorsally impacted memory wire staple.

Methods:

A retrospective review of a single surgeon series was conducted for patients with SLAC or SNAC degenerative wrist arthritis. Patients who underwent partial wrist fusions with a nitinol wire memory staple between 2011 and 2014 were eligible for inclusion. Review of medical records and radiographs for VAS, ROM, radiographic outcomes, and revision operations were assessed.

Post Op Xrays:



Lateral



AP

Results:

25 patients with an average age of 55 years \pm 8.9 years were included with an average follow up of one year \pm 7 months. All patients (5) with less than one year follow up had radiographic evidence of fusion at final follow up. Overall 10/25 (40 %) of staples backed up from the original insertion. 7/25 (28 %) underwent repeat intervention with staple removal. 3 patients returned to operating room prior to 6 weeks. 4 patients returned to the operating room on average one year after the index operation. 3/25 (12 %) patients failed to maintain radiographic reduction.

Complication Xrays:



Asymptomatic Back up



Required Removal

Conclusion:

Although nitinol provides a unique memory characteristic which offers continuous compression across partial wrist fusions, there is a learning curve and back up rate to be considered when using the implant. Avoiding staple back up requires careful attention by the surgeon and a modification of the insertion technique. All patients within the study cohort achieved a painless wrist at final follow up. One patient was converted to cannulated screws after early back up of the staple. One patient went on to a painless nonunion.