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.

Results:

25 patients with an average age of 55 years ±8.9 years were included with an average follow up of one year ±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.

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.