BIOLOGICALLY ORIENTED PROSTHESES
BIOPRO

Low-Profile Staple Successful in Small Bone Fusion

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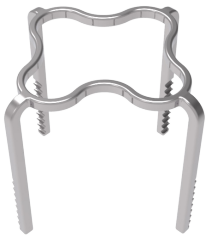
3-Leg
Clover Staple

Purpose
Achieving union in limited intercarpal arthrodesis without complications is technically challenging using current implants. Revision rates as high a twenty two percent have been reported. Use of a device with constant compression should encourage osseous union. Additionally, low-profile staples allow the most bone to remain to achieve such union.

Method
A retrospective case series from two surgeons in different facilities compiled over a 6 year period with 32 patients. Inclusion criteria: all patients with limited small bone arthrodesis using the NiTiNOL memory metal staple. None were excluded. Union was assessed with plain radiographs and clinical exam. Grip and pinch measurements were obtained as well as the QuickDASH score.



4-Leg
Clover Staple

Results
All fusions united, usually within 6 weeks. Average follow up was 13 months. Four staples were removed, two were early in the study from a manufacturing defect. Once corrected there were no more broken staples. One was removed during conversion to a total wrist arthrodesis. One was removed in a work comp patient where a second opinion surgeon not familiar with the device thought it had backed out; at surgery the staple was in good position below the level of the subchondral bone. Where pre and post grip strength was measured, no patient lost strength.

Conclusions
Use of a low-profile, constant compression NiTiNOL memory metal staple for limited small bone fusions achieves a high rate of fusion and low complication rate. This study has limitations with some incomplete data collection and it is a small series. Work Comp patients had worse QuickDASH scores but there were too few data points for statistical analysis. A large scale multi-center prospective study is recommended with historical controls.

Data also provided by Dr. Steve Boyea.

Presented at:
72nd Annual Meeting of the ASSH in San Francisco, CA. September, 2017
AASH Annual Meeting in Phoenix, AZ. January 2018