Intramedullary Scaffold Fixation of Distal Radius Fractures Compared to Volar Locking Plate

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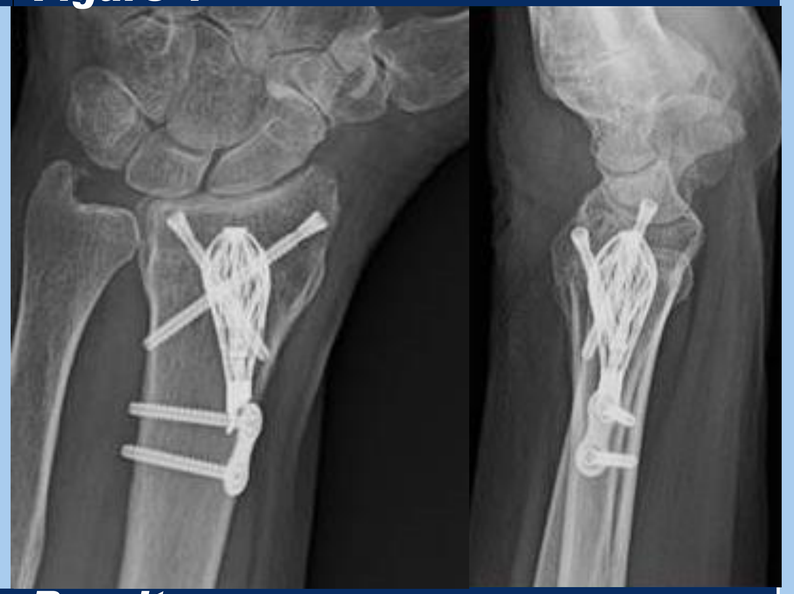
Background/Objectives

- The Conventus DRS system (Conventus Orthopaedics, Maple Grove MN) is a nickel-titanium intraosseous device that allows for stabilization of distal radius fractures with an intramedullary scaffold (IMS) and percutaneous cannulated screws (Figure1).
- The purpose of this study is to report our early results with the Conventus implant compared to volar locking plate fixation of distal radius fractures.

Methods

- Two groups of 11 patients each were retrospectively identified
- Patients treated with the IMS device for isolated distal radius fractures from 2014-2015, and patients treated with volar locking plate fixation (Acumed, Beaverton OR) who were matched to the IMS patients based on AO fracture classification and age.
- Measurements were obtained from postoperative and 4-week radiographs.
- Subjective outcomes were measured by reviewing Disabilities of the Arm, Shoulder, and Hand (DASH) scores calculated at the first postoperative visit, 4 weeks and 8-12 weeks.
- Total active motion (TAM) was measured at 4 weeks and again at 8-12 weeks. Variables were compared between the two groups using independent T-tests.

Figure 1



Results

- Mean operative time was slightly increased in the IMS group (112 min ± 38) compared to the volar plate group (98 min ± 37, p=0.39).
- Volar plated fractures achieved better volar inclination on postop radiographs (7.6º ± 5.2) compared to the IMS group (3.0º ± 7.8, p=0.12) and maintained volar inclination at 4 weeks compared to the IMS group, which lost on average 1.6º of volar tilt, however this was not statistically significant (p=0.2).

Results

- Mean DASH scores were lower for the volar plate group compared to the IMS group at initial postop (66 vs 75), 4 week (43 vs 55), and 8-12 week visits (24 vs 30), however this difference was not statistically significant.
- TAM was similar between the volar plate and IMS groups at 4-week (63º vs 59º) and 8-12 week visits (106º vs 101º).
- Two patients experienced EPL tendon rupture – one in each group.

Conclusions

- IMS fixation provides a less-invasive method of distal radius fracture stabilization.
- This study found no statistically significant difference between IMS compared to standard volar locking plate fixation with respect to radiographic parameters, postoperative DASH scores, or total range of motion.
- This study is limited by small sample size, and larger prospective studies are needed to prove equivalence between the two fixation systems.