March 2024

Tendon Rupture and Tendonitis in Low-Profile Dorsal versus Volar Plating for Distal Radius Fractures: A Systematic Review and Meta-Analysis

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Background:

Dorsal plating of distal radius fractures has historically been associated with high rates of hardware removal, tendonitis, and tendon rupture. Newer generation low-profile dorsal plates are thinner (<1.6mm thick) with improved characteristics. We examine whether low-profile dorsal plates still have higher rates of tendon complications than volar locking plates.

Methods:

We searched Ovid MEDLINE, Web of Science, and EMBASE for published literature describing tendon complications in association with plating of distal radius fractures. Inclusion criteria encompasses any primary study of low-profile dorsal plates that included data on tendon complications. Studies that included both low-profile dorsal and volar plating arms were included in the meta-analysis.

Results:

Nine studies were selected for inclusion. All studies were retrospective cohorts or case series with a total of 446 low-profile dorsal plates. Five studies were included in the meta-analysis with a total of 806 subjects; 584 received volar plates and 222 received low-profile dorsal plates. Meta-analysis showed no significant difference in rates of tendonitis or tendon rupture.

Discussion:

The included studies were all of level III or IV evidence. To our knowledge, this review provides the largest comparison of low-profile dorsal and volar locked distal radius plates to date. Pooled analysis results provide further comparison of low-profile dorsal versus volar plating.

Figure 1: Meta-Analysis results for Tendon Rupture

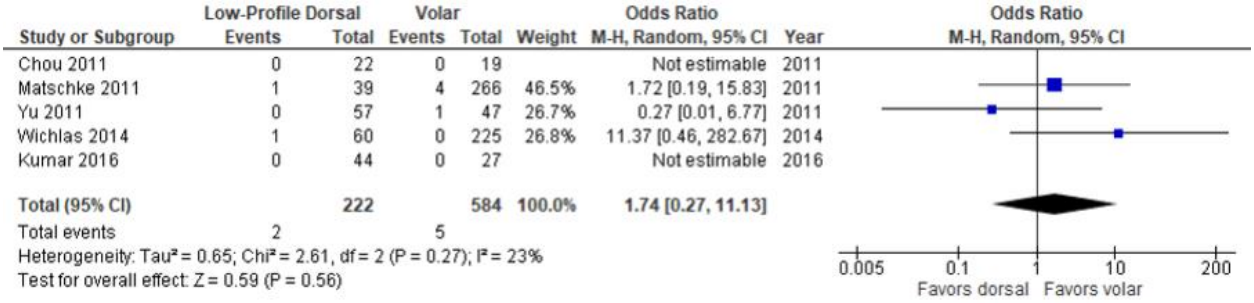

Figure 2: Meta-Analysis results for Tendonitis

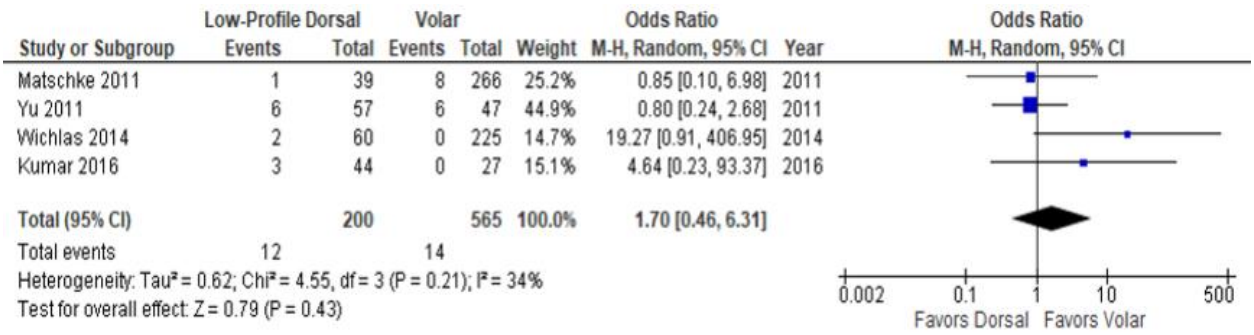

Figure 3: Dorsal Plating Pooled Complications

Study	Tendonitis	Tendon Rupture	Hardware Removal	Infection	Carpal Tunnel Syndrome	Complex Regional Pain Syndrome
Simic et al. 2006	0/50 (0%)	0/50 (0%)	1/50 (2.0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
Kamath et al. 2006	NR	0/30 (0%)	2/30 (6.67%)	0/30 (0%)	0/30 (0%)	0/30 (0%)
Chou et al. 2011	NR	0/22 (0%)	NR	0/22 (0%)	NR	1/22 (4.5%)
Matschke et al. 2011	1/39 (2.56%)	1/39 (2.56%)	NR	NR	0/39 (0%)	0/39 (0%)
Yu et al. 2011	6/57 (10.5%)	0/57 (0%)	6/57 (10.5%)	0/57 (0%)	0/57 (0%)	0/57 (0%)
Wichlas et al. 2014	2/60 (3.33%)	1/60 (1.67%)	10/60 (16.67%)	NR	0/60 (0%)	1/60 (1.7%)
Kumar et al. 2016	3/44 (6.82%)	0/44 (0%)	2/44 (4.55%)	NR	0/44 (0%)	0/44 (0%)
Matzon et al. 2014	8/110 (7.27%)	0/110 (0%)	9/110 (8.18%)	1/110 (0.91%)	0/110 (0%)	1/110 (0.9%)
Pakisma et al. 2020	5/34 (14.71%)	1/34 (2.94%)	8/34 (23.53%)	0/34 (0%)	0/34 (0%)	0/34 (0%)
Overall	6.2%	0.7%	9.6%	0.4%	0.0%	0.7%