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

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

<table>
<thead>
<tr>
<th>Study</th>
<th>Tendonitis</th>
<th>Tendon Rupture</th>
<th>Hardware Removal</th>
<th>Infection</th>
<th>Carpal Tunnel Syndrome</th>
<th>Complex Regional Pain Syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simic et al. 2006</td>
<td>0/50 (0%)</td>
<td>0/50 (0%)</td>
<td>1/50 (2.0%)</td>
<td>0/50 (0%)</td>
<td>0/50 (0%)</td>
<td>0/50 (0%)</td>
</tr>
<tr>
<td>Kamath et al. 2006</td>
<td>NR</td>
<td>0/50 (0%)</td>
<td>2/30 (6.7%)</td>
<td>0/30 (0%)</td>
<td>0/30 (0%)</td>
<td>0/30 (0%)</td>
</tr>
<tr>
<td>Chou et al. 2011</td>
<td>NR</td>
<td>0/22 (0%)</td>
<td>NR</td>
<td>0/22 (0%)</td>
<td>NR</td>
<td>1/22 (4.5%)</td>
</tr>
<tr>
<td>Matschke et al. 2011</td>
<td>1/39 (2.5%)</td>
<td>1/39 (2.5%)</td>
<td>NR</td>
<td>NR</td>
<td>0/29 (0%)</td>
<td>0/29 (0%)</td>
</tr>
<tr>
<td>Yu et al. 2011</td>
<td>6/57 (10.5%)</td>
<td>0/57 (0%)</td>
<td>6/57 (10.5%)</td>
<td>0/57 (0%)</td>
<td>0/57 (0%)</td>
<td>0/57 (0%)</td>
</tr>
<tr>
<td>Wichman et al. 2014</td>
<td>2/60 (3.3%)</td>
<td>1/60 (1.7%)</td>
<td>15/60 (25.0%)</td>
<td>NR</td>
<td>0/60 (0%)</td>
<td>1/60 (1.7%)</td>
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<tr>
<td>Kumar et al. 2016</td>
<td>3/44 (6.8%)</td>
<td>0/44 (0%)</td>
<td>2/44 (4.5%)</td>
<td>NR</td>
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<td>0/44 (0%)</td>
</tr>
<tr>
<td>Matson et al. 2014</td>
<td>8/110 (7.3%)</td>
<td>0/110 (0%)</td>
<td>9/110 (8.2%)</td>
<td>3/110 (2.7%)</td>
<td>0/110 (0%)</td>
<td>1/110 (0.9%)</td>
</tr>
<tr>
<td>Pakizada et al. 2020</td>
<td>5/34 (14.7%)</td>
<td>1/34 (2.9%)</td>
<td>8/34 (23.5%)</td>
<td>0/34 (0%)</td>
<td>0/34 (0%)</td>
<td>0/34 (0%)</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>6.2%</td>
<td>0.7%</td>
<td>9.6%</td>
<td>0.4%</td>
<td>0.0%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>