Is there an Association between Psychological Factors and Developing Complex Regional Pain Syndrome after an Ankle Fracture?

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**Category:** Ankle, Trauma, Mental Health

**Keywords:** Ankle fracture; Complex regional pain syndrome; Mental health; Psychological disorder

**Introduction/Purpose:** Recognizing psychological risk factors for developing Complex Regional Pain Syndrome (CRPS) may facilitate the diagnosis of CRPS and can be critical in its prevention and treatment. The purpose of this study was to evaluate the association between psychological dysfunction and developing CRPS after sustaining an ankle fracture.

**Methods:** The PearlDiver patient record database was used to identify patients who sustained an ankle fracture between 2005 and 2015. These patients were screened for development of CRPS based on the presence or absence of psychological disorders including anxiety disorder, bipolar disorder, delirium, psychosis, depression, chronic pain syndrome, and fibromyalgia. A substratification analysis was performed assessing the additional risk of developing CRPS by undergoing operative versus nonoperative management.

**Results:** 163,529 patients were identified who sustained an ankle fracture and CRPS was identified in 10,127 (6.2%) of these patients. The risk of developing CRPS after sustaining an ankle fracture was significantly elevated with an OR of 5.44 (P<0.001) in patients with a psychological disorder. The psychological disorders that were most predictive of developing CRPS included delirium (OR 5.60, P<0.001), bipolar disorder (OR 5.64, P<0.001), and anxiety disorder (OR 5.08, P<0.001) (Table I). The OR for developing CRPS in patients with a psychological disorder was 5.57 (P<0.001) for patients who received operative treatment and 5.30 (P<0.001) for patients who received closed treatment. There was no additional risk (OR 0.98, P=0.31) for developing CRPS in patients with a psychological disorder who underwent operative management.

**Conclusion:** Patients with a known psychological disorder were five times more likely to develop CRPS after sustaining an ankle fracture. There was no additional risk due to operative management. This information may be useful in the diagnosis and treatment of patients with mental health disorders who sustain an ankle fracture and subsequently develop CRPS.

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**Table 1. Analysis with Odds Ratios of Complex Regional Pain Syndrome in all Ankle Fracture Patients**

<table>
<thead>
<tr>
<th>Independent</th>
<th>OR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Disorder</td>
<td>5.44</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Anxiety Disorder</td>
<td>5.08</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Depression</td>
<td>2.39</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>5.64</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>2.80</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Chronic Pain Syndrome</td>
<td>3.34</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Psychosis</td>
<td>4.17</td>
<td>p&lt;0.0001</td>
</tr>
<tr>
<td>Delirium</td>
<td>5.60</td>
<td>p&lt;0.0001</td>
</tr>
</tbody>
</table>

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