Does the SF-36 Mental Health Composite Score Predict Functional Outcome after Surgery in Patients with End Stage Ankle Arthritis?

Kennedy SA, Barske H, Penner M, Daniels T, Glazebrook M, Wing K, Dryden P, Wong H, and Younger A.
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Our disclosures are in the Final AOFAS Mobile App.

We have no potential conflict with this presentation.
Background:

- *Depression* may be the strongest predictor of health status across chronic health conditions across disease conditions and cultures. 
  
  Moussavi et al.  

- Treating depression in patients with knee OA significantly improves knee pain, function, and quality of life.

  Lin et al.  
  JAMA (2003) 2428-2434
Purpose:
To assess whether the MCS predicts change in AOS after surgery for End Stage Ankle Arthritis
Methods:

• Study type: Observational cohort from existing multicenter database
• Population: COFAS database. Average 5.1 years follow-up. Minimum 3.5 years.
• Instruments: SF-36 (PCS and MCS), Ankle Osteoarthritis Scale (AOS).
  – Higher MCS - Better mental health status
  – Higher AOS - Greater ankle disability
• Statistics: Regression analysis
Results:

- 351 ankles
  - 99 arthrodeses and 252 arthroplasties
- Mean follow-up of 5.3 +/- 1.2 years
- No significant correlation between preop MCS score and change in AOS score from baseline to final postop follow-up
  - \( R^2 = 0.005 \)
- Weak correlation between preoperative MCS and preoperative AOS scores
  - \( R^2=0.01, P<0.05 \).
Results:

<table>
<thead>
<tr>
<th></th>
<th>Total Cohort N=351</th>
<th>Arthrodesis N=99</th>
<th>Ankle replacement N=252</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD) followup, years</td>
<td>5.1 (1.4)</td>
<td>5.0 (1.2)</td>
<td>5.2 (1.5)</td>
</tr>
<tr>
<td>Male sex, n (%)</td>
<td>198 (56%)</td>
<td>61 (62%)</td>
<td>137 (54%)</td>
</tr>
<tr>
<td>Mean (SD) age, years</td>
<td>61 (12)</td>
<td>54 (12)</td>
<td>64 (11)</td>
</tr>
<tr>
<td>Mean (SD) BMI, kg/m²</td>
<td>28 (5)</td>
<td>29 (6)</td>
<td>28 (5)</td>
</tr>
<tr>
<td>Mean (SD) AOS total score</td>
<td>51.5 +/- 17.6</td>
<td>53.8 +/- 18.7</td>
<td>50.6 +/- 17.2</td>
</tr>
<tr>
<td>Mean (SD) MCS (SF-36) score</td>
<td>49.6 +/- 11.6</td>
<td>47.9 +/- 12.9</td>
<td>50.3 +/- 11.0</td>
</tr>
<tr>
<td>Mean (SD) PCS (SF-36) score</td>
<td>31.8 +/- 7.3</td>
<td>32.3 +/- 7.2</td>
<td>31.6 +/- 7.4</td>
</tr>
</tbody>
</table>

Poorer mental health status than hip and knee OA
Results:

There was no difference between patients who had MCS <50 or MCS >50, in terms of change in AOS after surgery

<table>
<thead>
<tr>
<th></th>
<th>MCS &lt; 50</th>
<th>MCS &gt; 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size:</td>
<td>159</td>
<td>192</td>
</tr>
<tr>
<td>Mean improvement in AOS total score</td>
<td>23.1</td>
<td>23.6</td>
</tr>
<tr>
<td>Mean improvement in AOS pain score</td>
<td>23.3</td>
<td>23.1</td>
</tr>
<tr>
<td>Mean improvement in AOS disability score</td>
<td>22.9</td>
<td>24.1</td>
</tr>
</tbody>
</table>
There was a small correlation between MCS and AOS for a given time period (i.e. at baseline or at follow-up).

Baseline association pre-op MCS and AOS was $R^2=0.01$, $p<0.05$
Post-operative association was $R^2=0.03$, $p<0.0005$
Conclusion:

• In patients with end-stage ankle arthritis preoperative mental-health status (as measured by MCS score) did not predict improvement of outcome at intermediate-term postoperative follow-up.
• AOS scores improved in all patients
• Consistent with other studies indicating that current mental-health status influences perception of outcome, there was a slight correlation between MCS and AOS scores prior to surgery
References:

• 1. Moussavi S; Chatterji S; Verdes E; Tandon A; Patel V; Ustun B. Depression, chronic diseases, and decrements in health: results from the World Health Surveys. Lancet. 2007 Sep 8;370(9590):851-8.


• 8. Madeley NJ; Wing KJ; Topliss C; Penner MJ; Glazebrook MA; Younger AS. Responsiveness and validity of the SF-36, Ankle Osteoarthritis Scale, AOFAS Ankle Hindfoot Score, and Foot Function Index in end stage ankle arthritis. Foot Ankle Int. 2012 Jan;33(1):57-63.