Patient Expectation and Satisfaction as Measures of Surgical Outcome in End-Stage Ankle Arthritis: A Prospective Cohort Study of Ankle Joint Replacement versus Ankle Fusion

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Background:
Currently, the most common measures used to determine the success of a surgical intervention are outcome scales based on pain and function, such as the Ankle Osteoarthritis Scale (AOS). However, outcomes based on patient expectation and satisfaction may be more useful in assessing the success of surgery. While expectation and satisfaction have been quantified for surgical procedures involving other joints and the spine, to our knowledge this is the first such study for surgical treatment of ankle arthritis (ankle fusion or ankle replacement).
The purpose of this study was to quantify patient expectation, satisfaction, and outcome scores for ankle fusion and ankle replacement utilizing the American Academy of Orthopaedic surgeons (AAOS) MODEMS questionnaire, and to record AOS and to evaluate any associations between these scores.

Methods:
654 joints in 622 patients were compared for 204 ankle fusions and 450 ankle replacements followed an average of 61 months. The preoperative ‘expectation’ score was based on questions regarding what patients expected their outcome to be in five areas, on a scale from 0 to 100. (A high preoperative ‘expectation’ score indicates high expectations and a low postoperative ‘expectations met’ score indicates that expectations were well met.) Patient satisfaction scores were based on the MODEMS satisfaction questionnaire, which asks patients how satisfied they would be if they had to live the rest of their life with their current symptoms, on a five-point scale.

Results:
Patients undergoing ankle replacement had a higher mean preoperative ‘expectation’ score (79, 95% CI 77 to 81) compared to those undergoing ankle fusion (72, CI 68 to 75). Regression analysis showed no change of expectation from 2002 to 2010 for ankle replacement, but showed a slight reduction for ankle fusion (R^2 = 0.02, p<0.05). Expectations were more likely to have been met for ankle replacement (mean score 30; CI 27 to33) than for ankle fusion (mean score 35; CI 31 to 40). However, this difference disappeared after using a linear effects model to adjust for baseline variables (diabetes, BMI, inflammatory arthritis, preoperative scores) and surgeon.

Preoperative AOS scores correlated weakly with expectation (R^2 = 0.02). As in prior expectation studies, preoperative ‘expectation’ scores were weakly related to ‘expectations met’ scores for ankle fusion (R^2 = 0.07, p<0.001). This was not the case for ankle replacement (R^2 = 0.001, P>0.05).

Satisfaction scores were similar for ankle fusion and ankle replacement at final followup, with a greater number of ankle replacement patients improving in score compared to those undergoing ankle fusion (84% vs. 74%). Higher satisfaction was associated with better ‘expectations met’ and better AOS outcome scores, with no difference between ankle fusion and ankle replacement. ‘Expectations met’ and AOS scores at followup were better correlated for ankle fusion (R^2 = 0.38) than for ankle replacement (R^2 = 0.31). The highest correlation was for ‘expectations met’ vs. AOS score at follow up for ankle fusion.

Conclusions:
Patients undergoing total ankle replacement had significantly higher ‘expectation’ scores prior to surgery than those undergoing ankle fusion, but had similar ‘expectations met’ scores. Ankle replacement patients were more likely to report improved ‘satisfaction with symptoms’ scores after surgery. Otherwise, all other preoperative and postoperative scores were similar for total ankle replacement and ankle fusion. Preoperative ‘expectation’ scores showed little correlation with preoperative AOS score, indicating that expectation is poorly related to pain and function. On the other hand, postoperative ‘expectation met’ and ‘satisfaction’ scores were strongly associated with AOS scores at followup, indicating that these followup scores are more closely related to pain and function. In the future, preoperative patient education may need to be evaluated in order to determine how educational interventions affect preoperative patient expectations.