Is Patient Resilience a Predictor of Postoperative Success Following Total Ankle Arthroplasty?

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Introduction/Purpose: Resilience is defined as the ability to adapt well to adversity or a significant source of stress, such as surgery. The Brief Resilience Scale (BRS) is a commonly used 6-item Likert scoring system that has been validated in adult musculoskeletal literature. Prior studies have demonstrated that patients with higher resilience are successful at managing their perioperative circumstances leading to better functional outcomes postoperatively. However, no literature exists in patients who have undergone total ankle arthroplasty (TAA). The purpose of this study is to investigate whether patient resilience is a predictor of subjective and functional outcomes after TAA. We hypothesize that patients with higher resilience will have significantly improved pain, function, and satisfaction compared to patients with lower resilience.

Methods: This was a single institute, cross-sectional survey of patients who underwent primary TAA by one of four fellowship trained Foot and Ankle surgeons prior to June 2020. Concomitant procedures performed were tendoachilles lengthening or gastrocnemius recession, and/or medial malleolar osteotomy. Patients with pre- and postoperative visual analog scale (VAS) and Foot and Ankle Ability Measure (FAAM) scores were included. Patients without completed pre- or postoperative pain or functional scores or those who underwent revision arthroplasty and/or additional procedures other than those previously mentioned were excluded. A telephone survey was performed to obtain the included patients’ BRS scores and satisfaction. Statistical analysis was performed to compare outcomes in patients with either low, normal, or high resilience. Parametric continuous data was compared using T-tests while nonparametric data was compared using Mann-Whitney tests. Chi-square or Fisher’s Exact tests were performed to compare categorical data. Stats were done using R Studio (Vienna, Austria).

Results: A total of 65 patients were included. Patients were defined as having low, normal, or high resilience based on a BRS score of < 3, 3-4.30, and > 4.3, respectively. There was a total of 25, 38, and 2 patients in the low, normal, and high resilience groups, respectively. The high resilience group was excluded from statistical analysis secondary to low patient count. When comparing outcomes after TAA in patients with normal versus low resilience, we found no statistically significant difference in VAS pain scores, FAAM functional scores, or satisfaction (Table 1). Specifically, there was no statistically significant difference in postoperative VAS pain scores (p=0.422) or the change in scores from pre- to postop (p=0.773). Likewise, there was no statistically significant difference in postoperative FAAM scores (p=0.588) or the change in scores from pre- to postop (p=0.647). Over 84% of patients in both groups were either very satisfied or satisfied.

Conclusion: To our knowledge, this is the first study investigating the effect of patients’ resilience on outcomes following TAA. We were unable to prove that patients with higher resilience have significantly improved outcomes compared to those with lower resilience. Despite this, patients in all 3 cohorts (low, normal, and high resilience) on average experienced decreased pain and improved function postoperatively. In addition, the vast majority of patients were either very satisfied or satisfied with the surgery. Future studies should aim to increase the sample size as this may lead to results more consistent with previous orthopaedic literature regarding resilience.
Table 1: Patients with low vs normal resilience excluding those in the high resilience group secondary to low volume. Categorical data reported as a count (%) while continuous data reported as mean (SD).

|                      | Low       | Normal    | P Value |
|----------------------|-----------|-----------|---------|
|                      | N=25      | N=38      |         |
| Gender:              |           |           | 0.605   |
| Female               | 11 (44.0%)| 13 (34.2%)|         |
| Male                 | 14 (56.0%)| 25 (65.8%)|         |
| BRS Score            | 2.57 (0.28)| 3.40 (0.38)| <0.001 |
| Satisfaction         |           |           | 0.905   |
| Very satisfied       | 13 (52.0%)| 19 (50.0%)|         |
| Satisfied            | 10 (40.0%)| 13 (34.2%)|         |
| Dissatisfied         | 1 (4.00%) | 4 (10.5%) |         |
| Very dissatisfied    | 1 (4.00%) | 2 (5.26%) |         |
| VAS                  |           |           |         |
| VAS (pre op)         | 69.2 (18.8)| 71.2 (21.8)| 0.741   |
| VAS (postop)         | 24.8 (27.8)| 23.0 (29.4)| 0.422   |
| Delta VAS            | -44.41 (34.4)| -48.13 (32.6)| 0.773   |
| FAAM                 |           |           |         |
| FAAM (pre op)        | 36.5 (14.3)| 41.4 (13.5)| 0.181   |
| FAAM (postop)        | 65.2 (15.9)| 67.6 (18.9)| 0.588   |
| Delta FAAM           | 28.6 (20.6)| 26.1 (21.7)| 0.647   |