

**Are We Evidence-Based? The Effect of Level I Evidence on Surgical Decision-Making**

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**Background/Purpose:** With limited resources available for patient care, surgeons are being called on to make cost-conscious decisions. Comparative analysis is being utilized to determine which procedures are most effective in improving patients' outcomes and should be supported by payers. However, surgeons also rely on their past experience in making decisions, particularly as it relates to surgical indications. We sought to examine the effect of two types of randomized trials on surgeons' indications for surgery. One trial favored surgery, and the other did not. Our hypothesis was that a high-quality study favoring surgery would shift practice toward more surgery and that a trial that did not favor surgery would shift practice towards nonoperative care.

**Methods:** Two Level I studies served as the basis of this study. One was a randomized trial comparing operative and nonoperative treatment of displaced clavicle fractures and the other, operative versus accelerated rehabilitation for complete Achilles tendon ruptures. These trials were chosen as they were both multicenter studies published in the same journal over a year prior to our survey. Both studies were of high methodological quality (5 on the Jadad scale and 6 on the Guyatt scale) and both scored highly on the Detsky and CONSORT (Consolidated Standards of Reporting Trials) reporting criteria (clavicle 16 and 28, Achilles 19 and 28). Thus, both studies are objectively high quality and should have an equal effect on practice patterns. We used e-mail to survey US orthopaedic surgeons regarding their operative indications for displaced clavicle fractures and complete Achilles tendon ruptures. Each surgeon received either the clavicle or the Achilles survey, but not both, and if they did not respond, they were sent two reminders. Each survey asked how the surgeon would treat 5 sample patients (all of whom met the inclusion criteria of their respective study), whether the surgeon was aware of the Level I trial, whether they had changed their indications based on the trial, and also how their operative indications had changed over the prior 5 years. The sample patients were similar for both surveys with respect to age and activity level.

**Results:** Our data are based on 1430 clavicle and 1009 Achilles surveys that were returned. Surgeons strongly favored surgery for 4 of the 5 scenarios presented in the Achilles survey, choosing operative management in 68% to 96%. The only scenario in which nonoperative management was favored was a 65-year-old community ambulator. Additionally, only 27% of respondents operate on fewer ruptures than they did 5 years ago. Surgery was favored for 3 of the 5 clavicle scenarios (54%-79%) and 64% of surgeons operate on more clavicle fractures than 5 years ago. 71% of survey respondents were aware of the clavicle trial and 77% the Achilles trial. Table 1 demonstrates a statistically greater effect of the trial favoring surgery on practice than the trial that did not,  $P = 0.0001$  (Fisher's exact).

**Table 1. Effect of Level I Evidence on Practice ( $P = 0.0001$ )**

	Change in Practice	No Change in Practice
Clavicle trial	61%	39%
Achilles trial	43%	57%

**Conclusion:** We surveyed surgeons regarding their practices related to two equally high-quality multicenter Level I trials of surgical versus nonsurgical care, one favoring surgery and one that did not. Surgeons' practices were more influenced when the trial favors surgery than when it demonstrated no advantage to surgery. Surgeons strongly favored surgery for 4 of the 5 scenarios of Achilles rupture patients presented to them, despite the trial demonstrating no advantage of operative management (including one case of a 50-year-old orthopaedic surgeon whose activities included only golf). In conclusion, surgeons seem more willing to alter their practice to evidence-based indications based on a trial that favors surgery than one that does not.

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