

Is It Time to Stop Routine Cultures in Low-Risk Nonunion Surgeries?

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Purpose: Nonunions continue to be a challenging problem associated with high morbidity and health-care cost. Ruling out infection with preoperative lab tests is the standard of care; unequivocal results, however, make future treatment decisions less clear. In the setting of nonobvious infection, obtaining intraoperative cultures during nonunion surgery is typically guided by surgeon preference. Additional diagnostic tests in patients with low pre-test probability may provide temporary peace of mind but also carry the risk of false-positive and negative results. This may unintentionally bring harm upon such patients. The goal of this study is to evaluate the utility of routine cultures during nonunion surgery in patients at low risk for infection.

Methods: We retrospectively reviewed patients (age ≥ 18 years) treated for long bone nonunion between 2015-2017 in 2 large health-care systems, involving multiple surgeons. Patients without a previous infection at their nonunion site, elevated preoperative inflammatory markers, or clinical signs of infection were presumed aseptic and included. Demographics, injury characteristics, lab tests, culture results, and postoperative outcomes were compared between patients with and without intraoperative cultures obtained.

Results: 274 long-bone nonunions were presumed aseptic. 151 (55.1%) received routine intraoperative cultures. There were no significant differences in demographics between groups. 13 of 151 cultures (8.61%) resulted positive. After nonunion surgery, a deep infection occurred in 11 patients (4.01%)—9 with cultures obtained but only 1 with a positive result. 31 patients (11.3%) received antibiotics postoperatively—22 with cultures taken and 9 without. Two of these patients (6.5%) experienced an antibiotic complication. Union rate was similar between groups, 68.9% in patients with and 64.2% in patients without, cultures obtained ($P = 0.33$).

Conclusion: In patients with low pre-test probability for infection, the value of intraoperative cultures is questionable. The second order consequences from inaccurate culture results must be weighed against the test's perceived benefit. Treating low-risk patients for infection based on clinical suspicion and lab values alone may help clear up the ambiguity stemming from routine culture results.