



Isolation of Multiple Positive Cultures at Resection Arthroplasty is a Predictor of Failure Following Reimplantation

Collin L. Braithwaite, MD; M. Lane Moore, MD, MBA; Saad Tarabichi, MD; David G. Deckey, MD; Bryan D. Springer, MD; Cody C. Wyles, MD; Henry D. Clarke, MD; Mark J. Spangehl, MD; Joshua S. Bingham, MD
Mayo Clinic Department of Orthopedic Surgery

BACKGROUND

- Periprosthetic joint infection (PJI) is a major complication following total knee arthroplasty. Although organism type is an established risk factor for failure, the impact of the number of positive cultures on outcomes after two-stage exchange has not been examined.
- Multiple concordant cultures may reflect a greater infectious burden and could provide prognostic information at the time of resection arthroplasty.
- **Purpose: To determine the prognostic utility of multiple positive cultures at resection as a predictor of failure following reimplantation.**

METHODS

- Retrospective multicenter study of 437 patients with chronic knee PJI treated with two-stage exchange arthroplasty and ≥ 1 year follow-up following reimplantation.
- PJI was defined using the 2013 Musculoskeletal Infection Society (MSIS) criteria.
- Culture-negative PJI patients were excluded ($n=138$), leaving 299 patients for analysis.
- Treatment failure was defined as any reoperation for infection or PJI-related mortality.
- Multivariate regression controlled for risk factors for failure after two-stage exchange and evaluated whether ≥ 2 positive cultures at resection predicted failure compared with a single positive culture.

RESULTS

- 299 patients were included; mean follow-up was 6.2 ± 2.6 years.
- 48 patients (16.1%) experienced treatment failure.
- Patients who failed were more likely to have ≥ 2 positive cultures at resection (95.8% vs. 75.3%, $p=0.001$).
- ≥ 2 positive cultures was the only identified risk factor for failure in both univariate and multivariate regression analysis.

CONCLUSION

- The presence of ≥ 2 positive cultures at resection arthroplasty was a poor prognostic indicator following reimplantation.
- Patients with ≥ 2 positive cultures had a greater than 8-fold increased risk of treatment failure after two-stage exchange.
- The number of positive cultures at resection may provide useful prognostic information when assessing risk and counseling patients before reimplantation.