

Residual Culture Positivity Before Reconstruction After Definitive Debridement in Periprosthetic Joint Infection



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TAKE-HOME

Residual positivity was common and usually concordant—yet was not associated with significantly different early-to-midterm outcomes.

44.7%

soak-fluid culture positive

90.8%

exact concordance

4.42

adjusted OR: sinus tract

0.328

grouped outcome p value

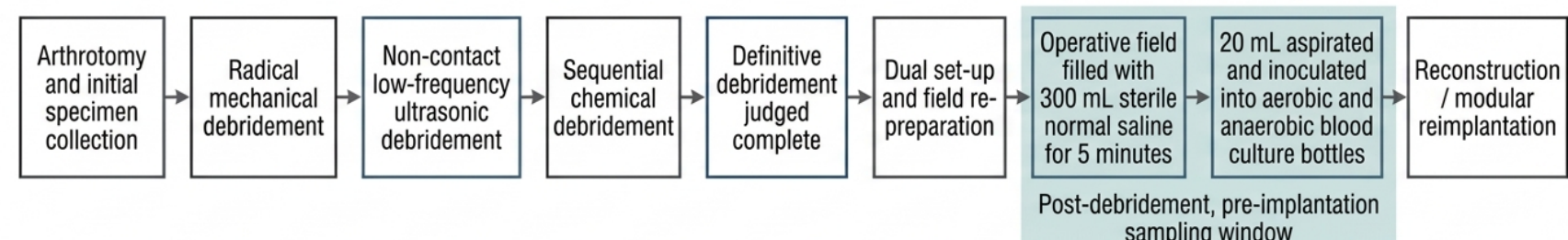
01 WHY SAMPLE AFTER DEBRIDEMENT?

The operative endpoint of debridement is judged macroscopically; microbiologic clearance is not routinely verified.
Aim: define residual cultivability before reconstruction and test its microbiologic and clinical meaning.

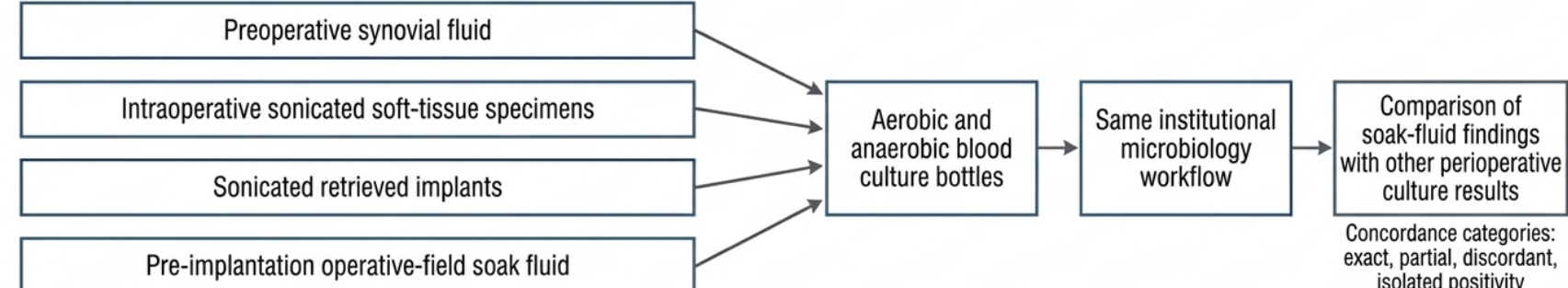
02 THE SAMPLING WINDOW

Operative Workflow, Sampling Window, and Microbiologic Processing of Perioperative Specimens

1. Operative workflow and study sampling window

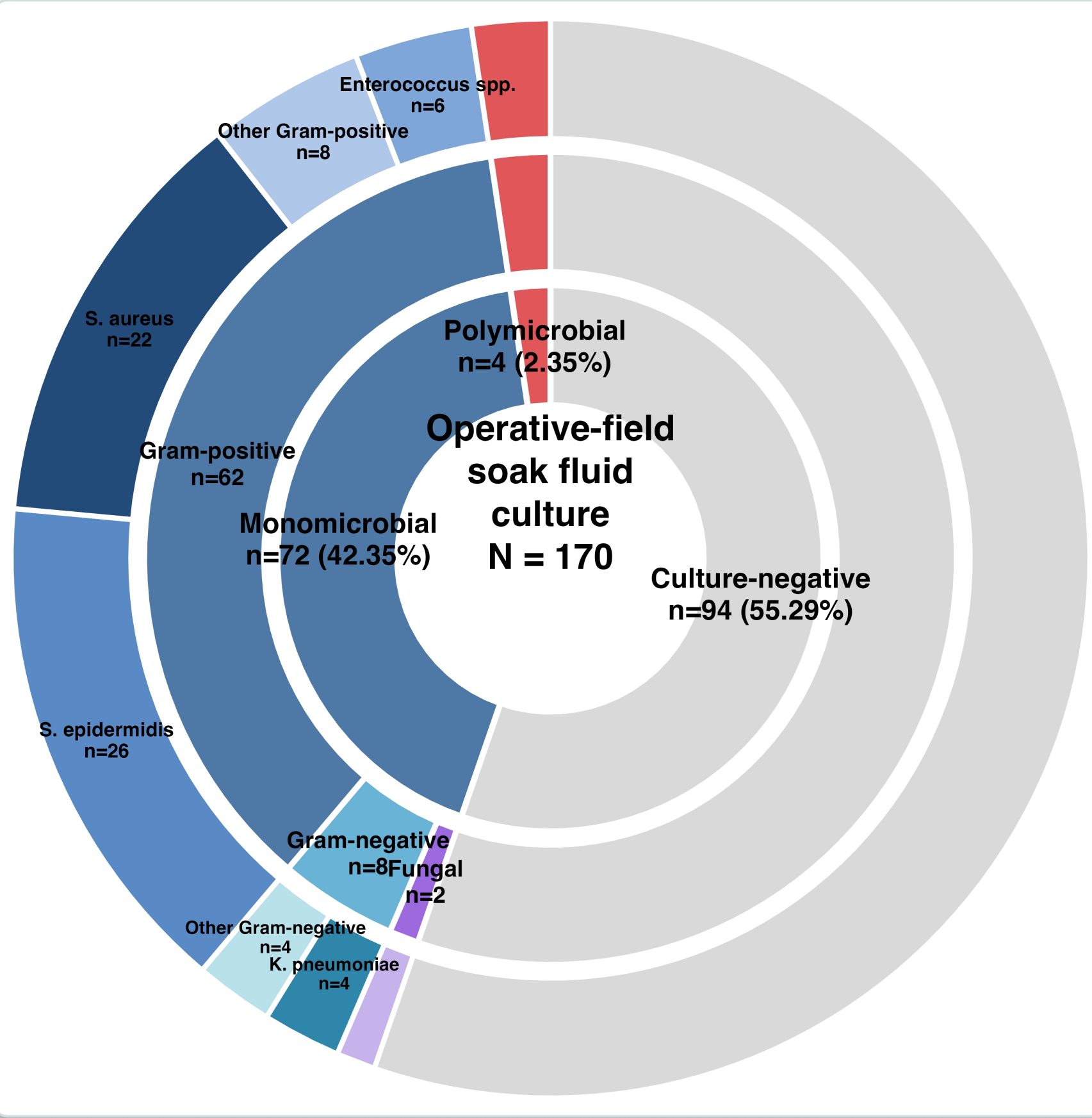


2. Perioperative specimen types and common microbiology workflow



After field re-preparation: 300 mL sterile saline · 5-minute soak · 20 mL aspirated into aerobic and anaerobic blood-culture bottles.

03 RESIDUAL POSITIVITY WAS COMMON

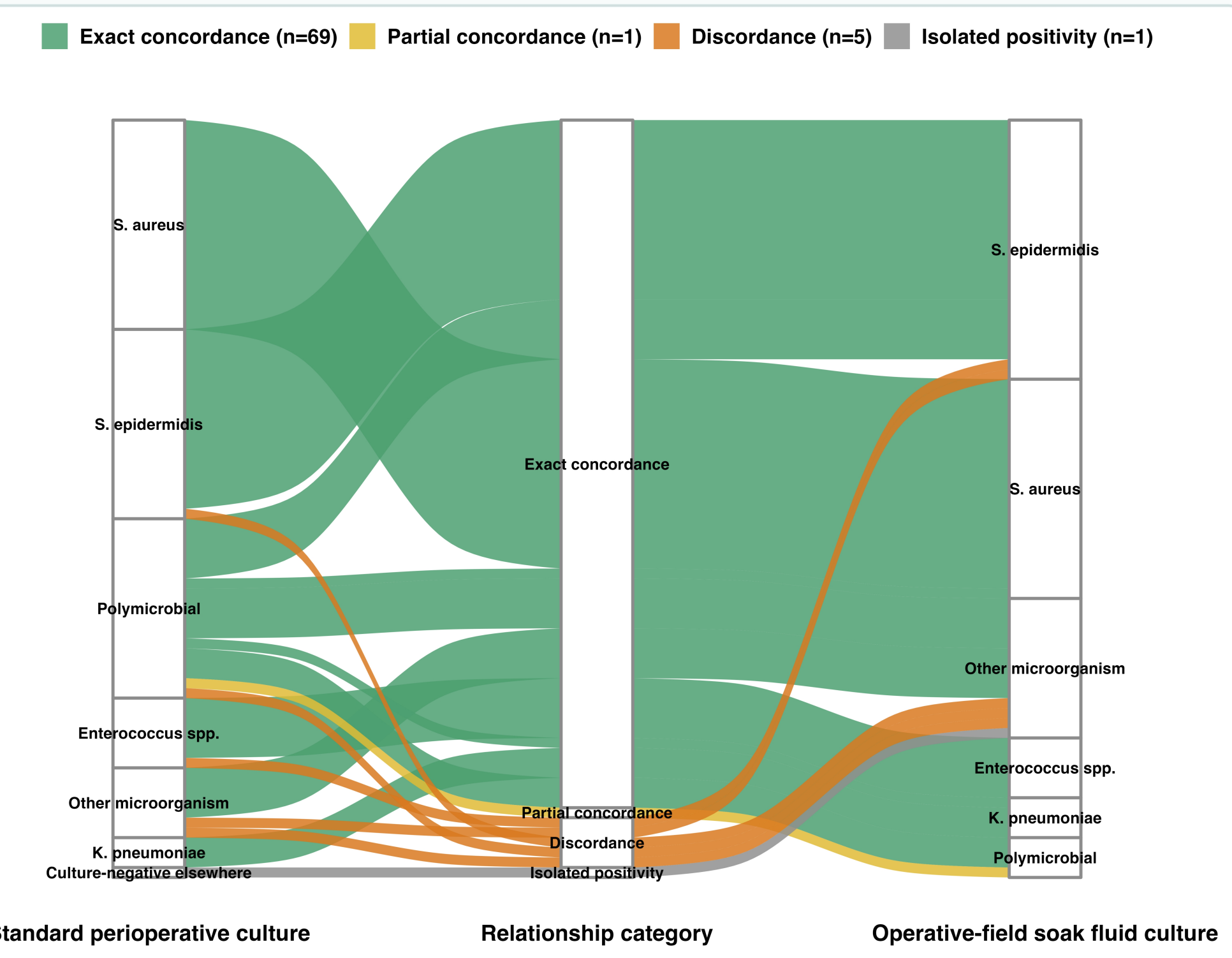


76/170 cultures were positive: 72 monomicrobial and 4 polymicrobial. Gram-positive organisms predominated (62 cases); *S. epidermidis* was most common.

04 STUDY SNAPSHOT

Consecutive PJI cases at one tertiary referral center, February 2023–February 2025.
PJI defined by 2011 MSIS criteria; 45 DAIR and 125 single-stage revisions.
Culture-negative n=94; culture-positive n=76.
Median follow-up: 26 vs 27 months in the negative and positive groups.

05 THE SIGNAL WAS USUALLY CONCORDANT



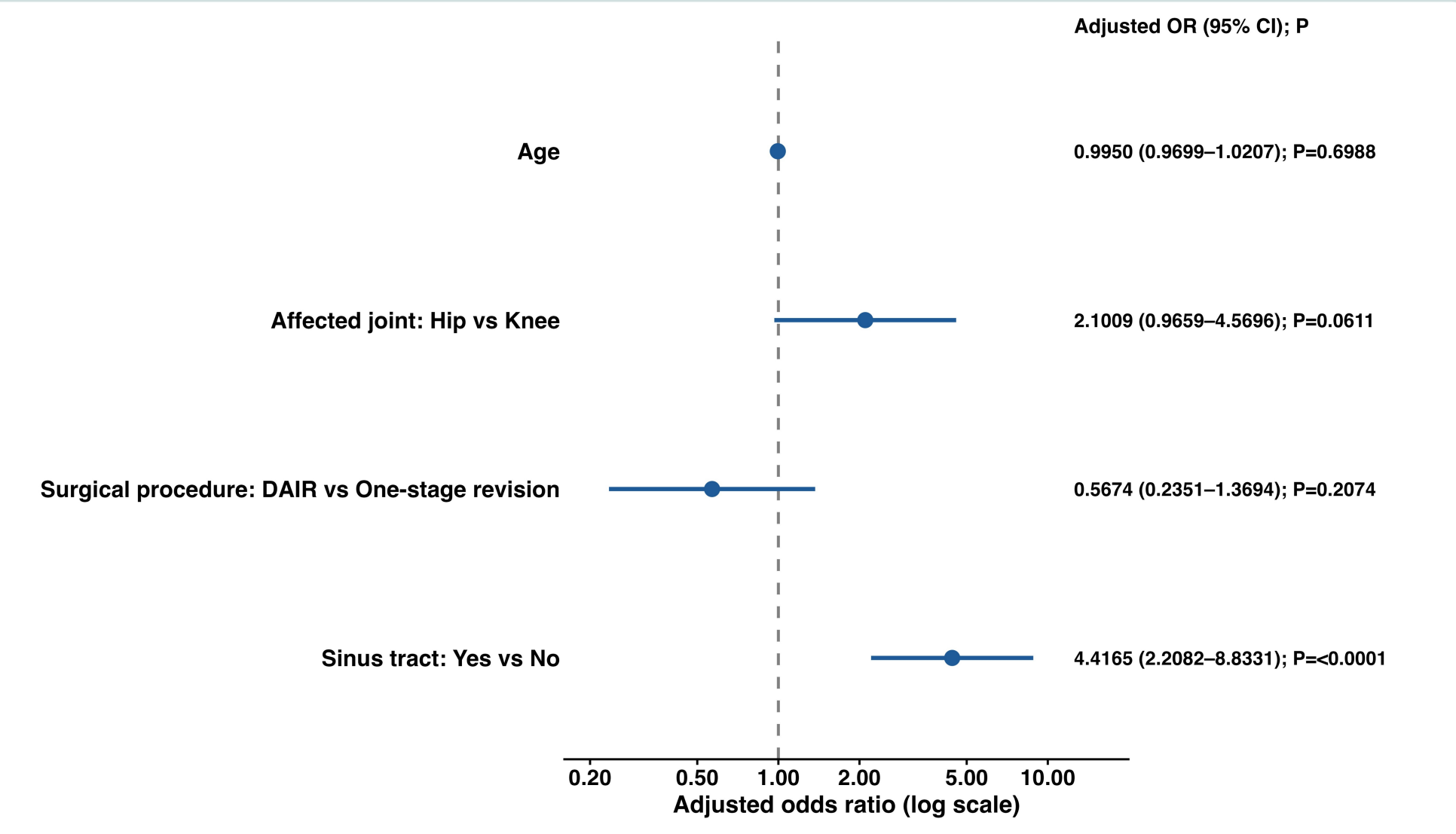
69/76

exactly concordant; only 1 isolated positive result

06 WHO WAS MORE OFTEN POSITIVE?

Culture-positive vs culture-negative · unadjusted	
Hip 52.6% vs 28.7% p = 0.0015	Sinus tract 61.8% vs 25.5% p < 0.0001
Infection duration 4.5 vs 1.5 months p = 0.0158	Single-stage revision 84.2% vs 64.9% p = 0.0045

07 ONLY SINUS TRACT REMAINED INDEPENDENT



Adjusted OR 4.42 (95% CI 2.21–8.83), p<0.0001. Hip and procedure no longer reached significance after adjustment.

WHAT DOES A POSITIVE RESULT MEAN?

The surgical endpoint of debridement did not always equal microbiologic clearance.

The high concordance argues against predominantly random contamination.
Negative soak-fluid culture still did not exclude pathogens elsewhere (60/94 had other positive cultures).

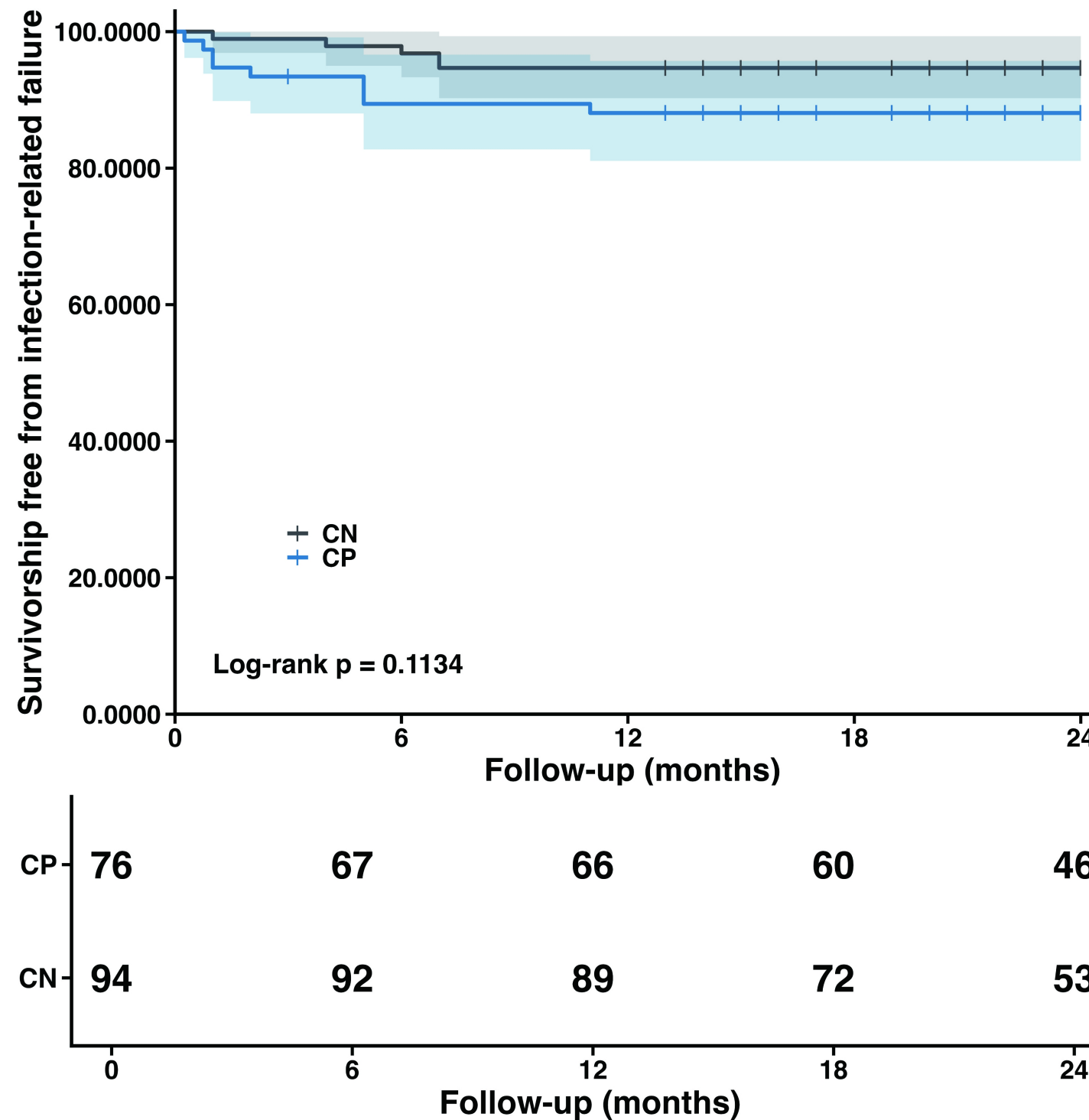
08 INFECTION-CONTROL OUTCOMES

p = 0.328

Grouped MSIS outcome distribution did not differ significantly.

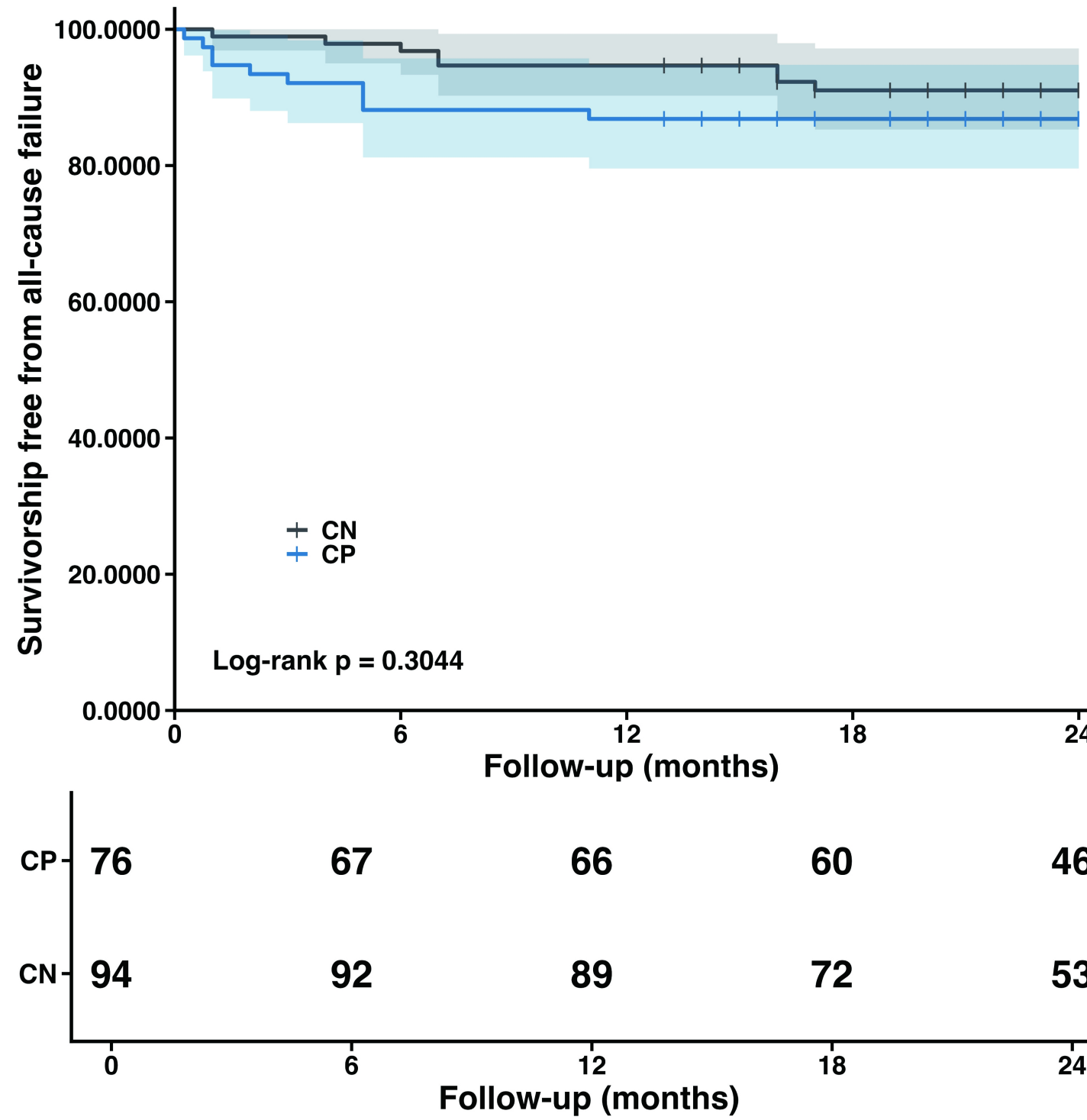
Infection-related failure endpoint

log-rank p = 0.1134



All-cause failure endpoint

log-rank p = 0.3044



Success: 86/94 culture-negative vs 65/76 culture-positive. PJI-related failures were numerically higher with positivity (9/76 vs 5/94), so absence of statistical significance should not be read as equivalence.

09 CLINICAL INTERPRETATION

Do not treat positivity alone as evidence of inadequate surgery.
Do not use it as a stand-alone reason to abandon DAIR or single-stage reconstruction.
Use it as a warning signal alongside anatomy, complete microbiology, host, surgery, and antimicrobial strategy.

LIMITATIONS

Single high-volume center · observational design · culture-based signal · standardized multimodal protocol · early-to-midterm follow-up