Variations in Hip and Knee Periprosthetic Joint Infection Microbiology: Experience of a Tertiary Referral Centre

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1 Introduction & Aim

- The microbiology and treatment of periprosthetic joint infection (PJI) vary by geographical location, population, and institutional practice.
- Management is complicated further when infection is polymicrobial.
- Understanding institutional variation in PJI is key to developing optimised, patient-specific treatment strategies.

Aim

To characterise the microbiological profile and treatment outcomes of all hip and knee PJI at our institution (2018–2025), focusing on differences between polymicrobial and monomicrobial infection.

2 Methods

Design & case ascertainment

Retrospective cohort of all hip and knee PJI managed January 2018 – October 2025, identified by cross-referencing coding data against culture results.

Data collected

Age, prior revisions, microbiology profile, treatment strategy, and outcome — compared across polymicrobial and monomicrobial PJI.

3 Cohort Characteristics

82 — **PJI cases** in 81 patients

69 — **median age** years

68% — **hip** 56 hip · 26 knee

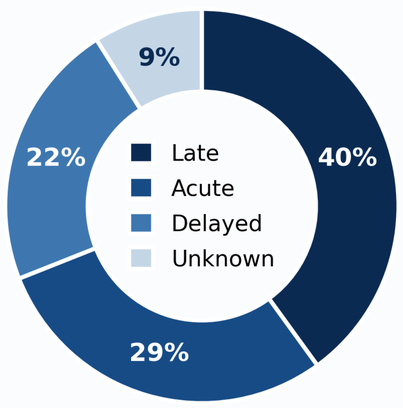
29% — **polymicrobial** 24 cases

18% — **prior revision** 15 cases

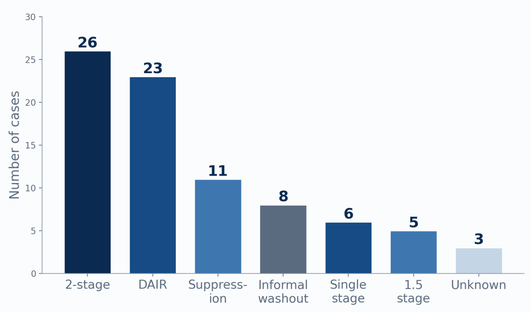
8.5% — **culture & PCR neg** 7 cases

4 Onset & Treatment Strategy

Timing of PJI onset



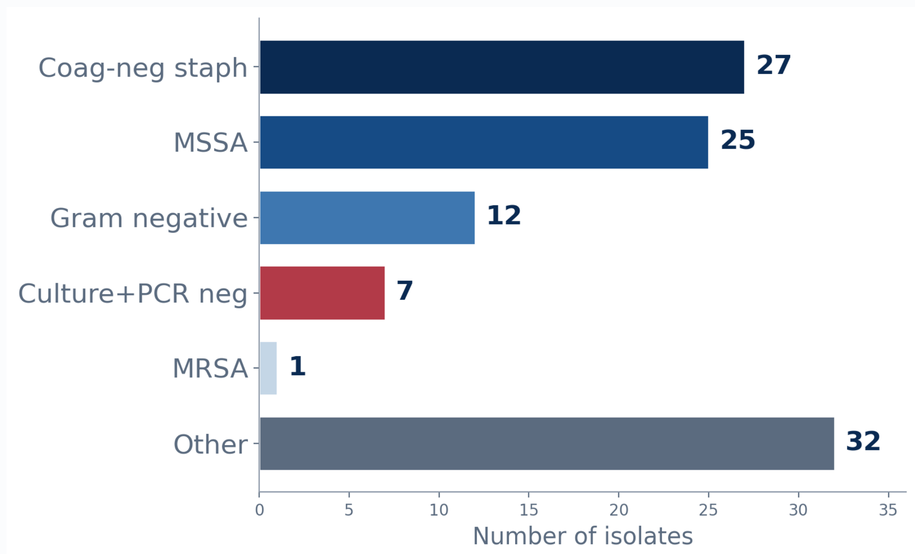
Primary treatment strategy



2-stage revision (26) and DAIR (23) were most frequent; 33/73 with follow-up needed long-term suppression.

5 Results — Microbiology

Distribution of causative organisms



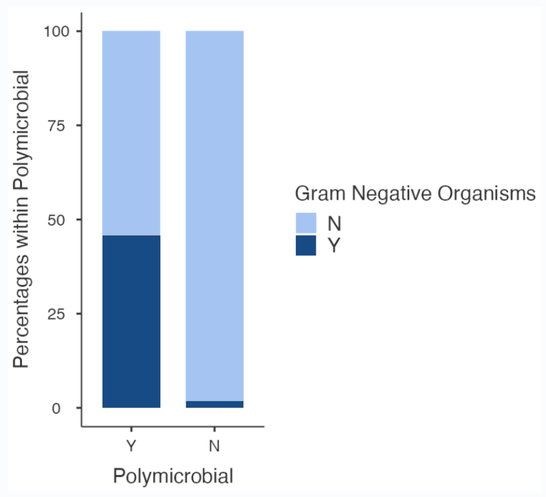
Coagulase-negative staphylococcus (32.9%) and **MSSA (30.5%)** predominated. MSSA or CoNS accounted for 60.1% of hip and 52.4% of knee PJI. Gram-negative organisms were seen in 14.6% of cases.

6 Polymicrobial vs Monomicrobial

Percentage of each subgroup by polymicrobial status, with χ^2 significance for each comparison.

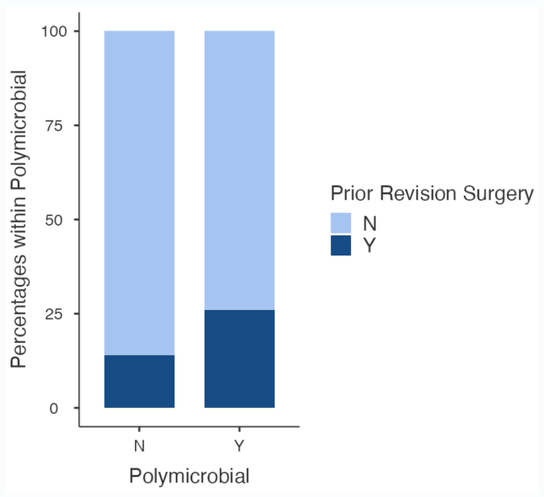
Gram-negative organisms p < 0.001

OR 0.021 (0.003–0.178)



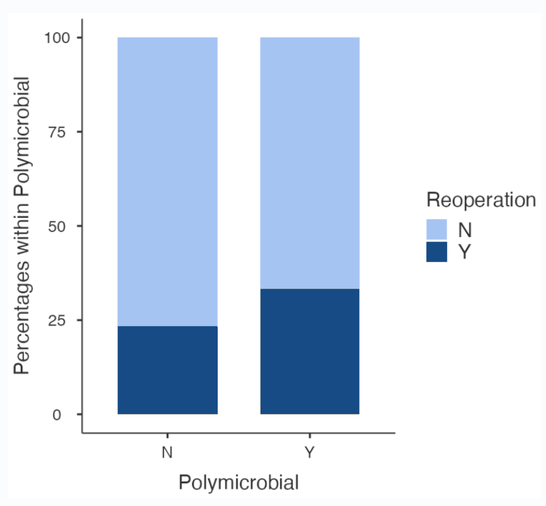
Prior revision surgery p = 0.210

OR 2.17 (0.636–7.39)



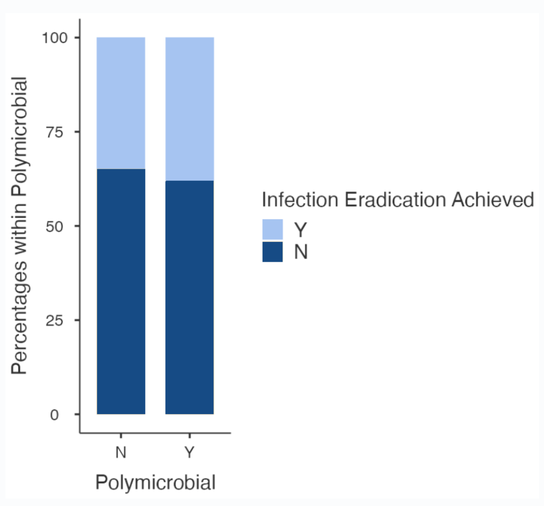
Reoperation p = 0.391

OR 1.65 (0.522–5.21)



Infection eradication p = 0.801

OR 0.871 (0.295–2.57)



7 Conclusions

- Gram-negative isolation is a strong marker of polymicrobial infection **(OR 0.021, 95% CI 0.003–0.178, p < 0.001).**
- Prior revision, reoperation, and infection eradication showed trends by polymicrobial status but did not reach statistical significance.
- PJI is microbiologically heterogeneous, with pathogen profiles varying by joint and institution — underscoring the value of local surveillance.
- **The complexity of polymicrobial PJI warrants dedicated tertiary referral centres delivering optimised, individualised treatment for all patients.**

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