

Initial Local Hospital Treatment Is Not Associated with Worse Knee and Hip Periprosthetic Joint Infection Outcomes at Tertiary Centers

Sharik Khan, Poorani Sekar, Krit Petrachaianan, Silvana Mohr, Jill Corlette, Nicolas Noiseux

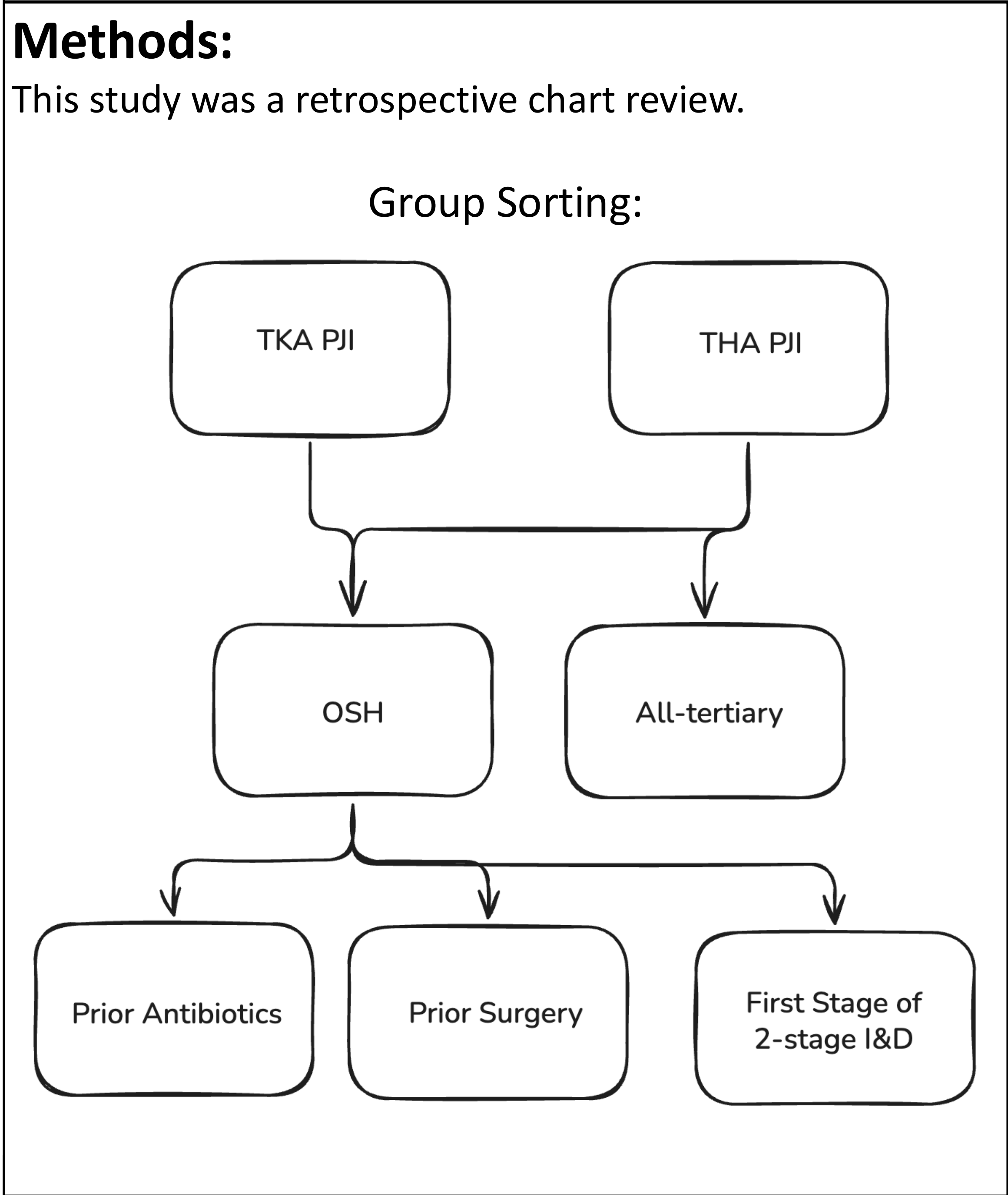
University of Iowa Hospitals and Clinics, Iowa City, IA, USA

Background:

Patients with PJI from rural areas usually present first to smaller/critical access hospitals where the full spectrum of treatment may not be available¹. Previous research recommends the totality of treatment be administered at specialized Centers of Excellence^{2,3}.

The purpose of this study was to compare treatment outcomes between patients with knee or hip PJI who were entirely treated at a tertiary care center and patients who were partially treated at a smaller local hospital before completing treatment at a tertiary center.

We hypothesized that patients with PJI exclusively treated at a tertiary center would have better outcomes.



- Outcomes measured:**
- Clinical Outcomes
 - Number of surgical procedures
 - MSIS treatment tier classification
 - Tiers 1, 2 = success
 - Tiers 3, 3E, 4 = failure
 - Tier 3E, 4 = catastrophic
 - PROs
 - KOOS
 - PROMIS
 - Global Physical Health
 - Global Mental Health
 - PASS

Statistical Analyses:

Logistic and multiple linear regressions were used, including BMI, active smoking status, and diabetes status as covariates. The statistical significance threshold was set at an overall alpha level of 0.05 and adjusted for multiple comparisons using the Bonferroni correction. All analyses were performed using R Statistical Software.

References:

1. Cyr ME, et al. BMC Health Serv Res. 2019;19:974.
2. Williams AA, et al. J Arthroplasty. 2025;40:S481–S486.
3. Dombrowsky AR, et al. J Arthroplasty. 2024;39:2887–92.

This work was supported by a T32 grant from the NIH.

Results:

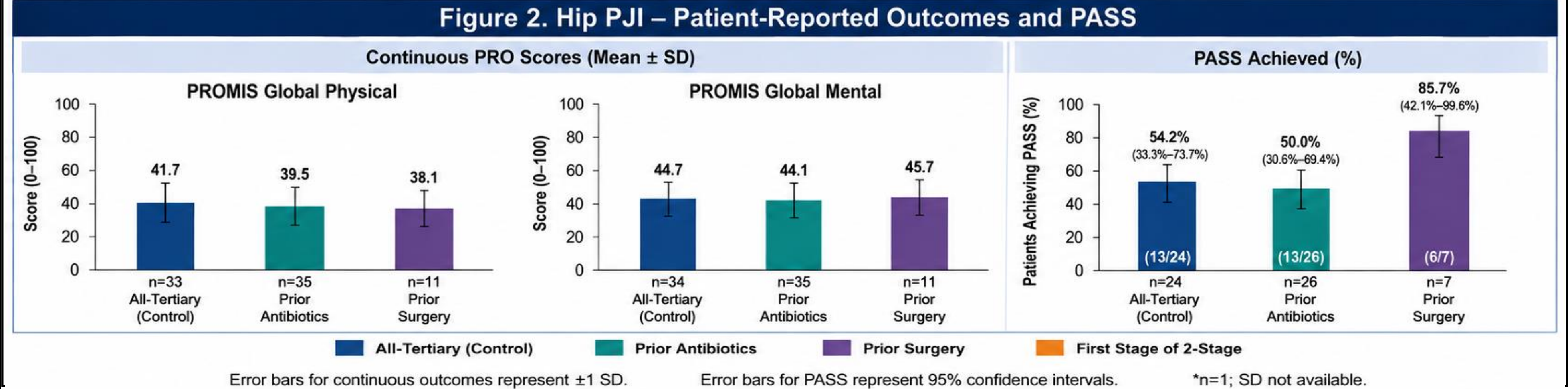
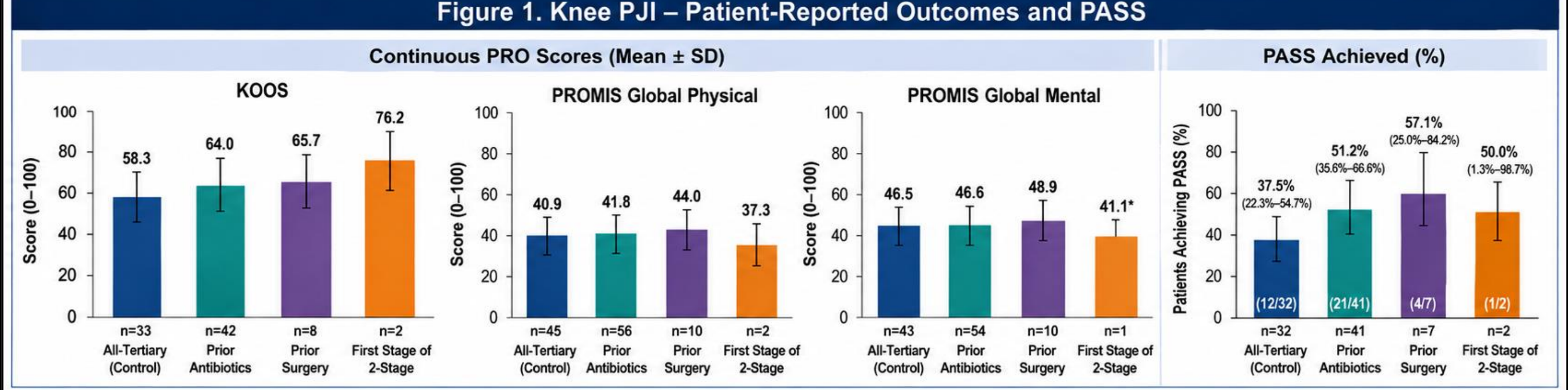
Table 1: Knee PJI - Clinical outcomes

Outcome	All-tertiary	Prior antibiotics	Prior surgery	First stage of 2-stage
Patients, n	60	100	21	8
Clinical outcomes				
MSIS success, n (%)	36 (60.0)	57 (57.0)	16 (76.2)	6 (75.0)
Adjusted OR (95% CI)	Ref.	1.05 (0.53–2.10)	3.00 (0.97–10.74)	2.03 (0.41–15.02)
P value	—	.884	.070	.418
MSIS non-catastrophic, n (%)	56 (93.3)	85 (85.0)	19 (90.5)	7 (87.5)
Adjusted OR (95% CI)	Ref.	0.48 (0.13–1.46)	0.88 (0.15–7.00)	0.46 (0.05–9.85)
P value	—	.225	.894	.518
≥2 surgeries, n (%)	21 (35.0)	30 (30.0)	3 (14.3)	1 (12.5)
Adjusted OR (95% CI)	Ref.	0.62 (0.30–1.29)	0.20 (0.04–0.74)	0.25 (0.01–1.58)
P value	—	.204	.026	.211

Table 2: Hip PJI – Clinical Outcomes

Outcome	All-tertiary	Prior antibiotics	Prior surgery	First stage of 2-stage
Patients, n	61	63	13	1
Clinical outcomes				
MSIS success, n (%)	36 (59.0)	38 (60.3)	7 (53.8)	1 (100)*
Adjusted OR (95% CI)	Ref.	1.05 (0.50–2.22)	0.84 (0.25–2.91)	—
P value	—	.896	.776	—
MSIS non-catastrophic, n (%)	57 (93.4)	52 (82.5)	13 (100)	1 (100)*
Adjusted OR (95% CI)	Ref.	0.29 (0.07–0.96)	—	—
P value	—	.055	—	—
≥2 surgeries, n (%)	37 (60.7)	45 (71.4)	9 (69.2)	1 (100)*
Adjusted OR (95% CI)	Ref.	0.65 (0.30–1.42)	0.69 (0.17–2.42)	—
P value	—	.282	.581	—

*Only 1 patient within this subgroup, so please interpret findings with caution



- Key Takeaways:**
- For most clinical outcomes and for all PROs, we could not establish significant differences between OSH subgroups and the all-tertiary group.
 - Among TKA patients, OSH patients with prior surgical treatment were less likely to have multiple procedures than all-tertiary patients (OR=0.2, p=0.03). MSIS treatment success within this group also trended toward significance (OR=3.0, p=0.07).
 - Among THA patients, the odds of an OSH patient with prior antibiotic treatment having a lower likelihood of non-catastrophic outcomes trended toward significance (OR=0.3, p=0.06).

Discussion and Conclusions:

Overall, we could not declare a difference in clinical outcomes or PRO measurements between patients partially treated at an OSH and patients fully treated at a tertiary center.

Improved outcomes among TKA patients with prior OSH surgical treatment may be due to prior surgeries reducing overall pathogen burden. Although not significant, the trend of THA patients with prior antibiotic treatment having a lower likelihood of non-catastrophic outcomes signals caution regarding OSH treatment.

Limitations of this study include the retrospective design, one-institution cohort, and inconsistent follow-up of PROs.

We recommend PJI care be done at tertiary centers when feasible, but further research is warranted to investigate the role smaller hospitals may play in caring for local symptomatic patients