

Does Heredity Influence the Risk of Prosthetic Joint Infection?

Nationwide matched case-control study · 8,486 surgically treated PJIs
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MAIN FINDING

OR 1.96

95% CI 1.37–2.82

Having a first-degree relative treated for PJI after THA was associated with almost twice the odds of PJI after THA.
Primary data: 44/4,585 cases vs 90/18,340 controls.

CLINICAL QUESTION

Is PJI clustered among first-degree relatives after THA or TKA?

EXPOSURE

Parent, child or sibling treated surgically for PJI.

RATIONALE

Familial clustering may indicate inherited susceptibility; nationwide PJI data are scarce.

NATIONWIDE LINKED-REGISTER DESIGN

- 1 ARTHROPLASTY REGISTER THA 1999–2024 · TKA 1982–2024
- 2 SURGICALLY TREATED PJI 4,585 THA · 3,901 TKA
- 3 MULTI-GENERATION REGISTER Biological parents, children and siblings
- 4 MATCHED CONTROLS — 4:1 Sex · 10-year age interval · diagnosis · surgery type · year of index surgery
- 5 ODDS-RATIO ANALYSIS Same-joint and cross-joint familial associations

JOINT-SPECIFIC FAMILIAL ASSOCIATIONS

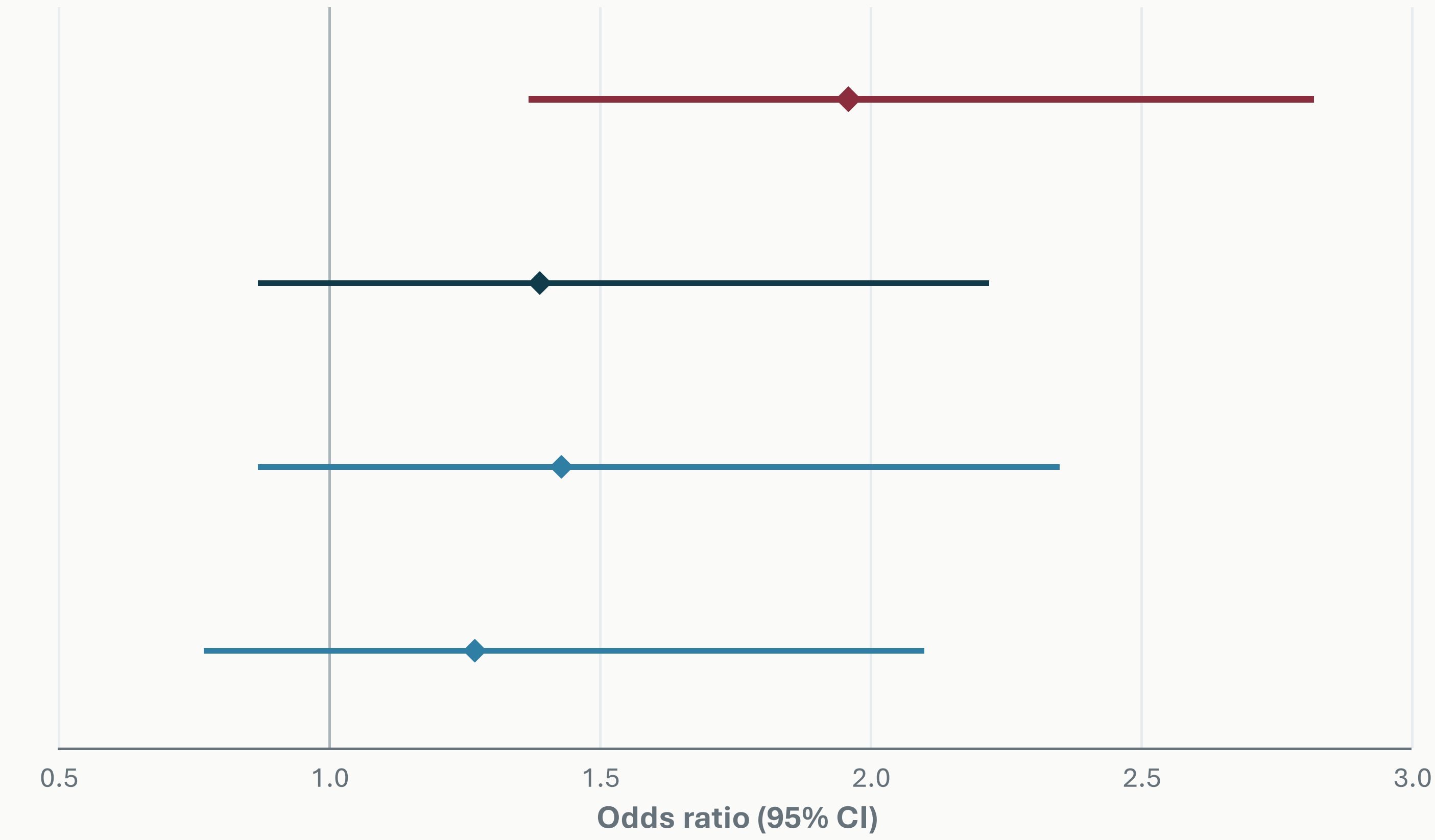
Index PJI → affected relative’s joint · odds ratio with 95% confidence interval

THA → THA
OR 1.96 (1.37–2.82)

TKA → TKA
OR 1.39 (0.87–2.22)

THA → TKA
OR 1.43 (0.87–2.35)

TKA → THA
OR 1.27 (0.77–2.10)



Only the same-joint THA estimate excludes the null value of 1.0.

WHAT THE DATA SHOW

Nationwide linked registry data demonstrated a joint-specific familial pattern of prosthetic joint infection. A significant association was observed only for same-joint THA, whereas TKA and cross-joint comparisons were not statistically significant. Familial exposure was uncommon, indicating that hereditary factors contribute to susceptibility but are unlikely to account for most PJIs.

STUDY STRENGTHS

8,486

surgically treated PJIs

4:1

matched controls

NATIONWIDE · 98%

linked clinical and family data · arthroplasty-register completeness

INTERPRETATION & CLINICAL RELEVANCE

CONSIDER family history alongside established risk factors before THA.

AVOID using family history as a stand-alone predictor until externally validated.

LIMITATIONS Surgically treated PJI only · no record-level obesity/diabetes data · Swedish setting may limit generalisability

ETHICS Swedish Ethical Review Authority 2023-03291-01 · **FUNDING** None

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SELECTED REFERENCES Kapadia et al. Lancet. 2016;387:386–394 · Anderson et al. J Bone Joint Surg Am. 2017;99:905–913 · Lenguerrand et al. Lancet Infect Dis. 2018;18:1004–1014; 2019;19:589–600

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