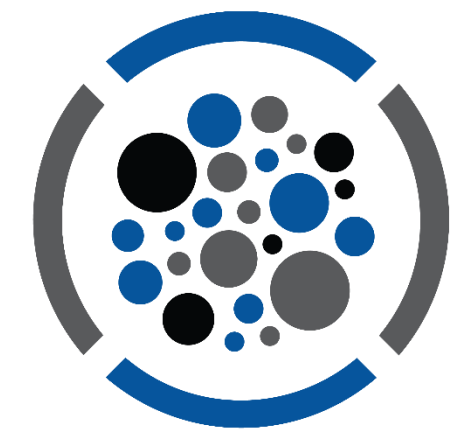


Rising Incidence of *Finnegoldia magna* among Prosthetic Joint Infections



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Abstract

Background: *Finnegoldia magna* is an anaerobic, Gram-positive coccus infrequently associated with osteoarticular infections. Since the adoption of matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF), *F. magna* has been increasingly reported as a cause of osteoarticular infections. Our objective was to determine the incidence of *F. magna* prosthetic joint infections (PJIs) within our institution.

Methods: We conducted a retrospective longitudinal survey from 1 January 2016 - 31 December 2020 at an academic tertiary care referral center. We constructed two Poisson count models to assess the incidence of *Finnegoldia magna* PJIs: one consisting of a clinical microbiology database of synovial fluid and surgical tissue cultures and one using a PJI registry. Time served as the covariate of interest. We used number of cultures as an offset term in the clinical microbiology model, and number of PJI cases as the offset term in the prosthetic joint registry model –reflecting the relevant denominator for each dataset. The microbiology database was limited to synovial fluid aspirates and surgical tissue cultures to minimize risk of confounding by contaminants.

Results: The PJI registry included 44 *F. magna* infections occurring among 4,706 (0.9%) PJIs. The microbiology survey included 99 *F. magna* isolates from 43,940 (0.2%) cultures sent from joint aspirates or surgical tissue cultures. Among overall synovial and surgical tissue cultures, we found no significant increase in *F. magna* over time (incidence rate ratio [IRR] 1.0, 95% CI: 0.9-1.2, Figure 1A). Within the PJI registry, however, we observed a 40% per-year increase in *F. magna* incidence (IRR 1.4, 95% CI: 1.1-1.8, Figure 1B).

Conclusions: Adoption of MALDI-TOF has expanded the clinical microbiology laboratory's capacity for rapid speciation, sometimes revealing previously unseen epidemiologic trends. While we saw no significant change in overall incidence of *F. magna* among synovial and surgical tissue cultures, we did detect a significant increase specifically among PJI cases. *F. magna* warrants attention as an emerging pathogen among PJIs.

Background

- *Finnegoldia magna* is a rare cause of orthopaedic implant associated infections.
- We have noted an increase in osteoarticular infections attributed to *Finnegoldia magna* since the introduction of MALDI-TOF

Methods

- Retrospective longitudinal study from 1/1/16-12/31/20 using microbiology database of synovial fluid and surgical tissue cultures and prosthetic joint infection (PJI) database
- Poisson regression models to assess incidence of *F. magna* PJIs

Results

- 31 *F. magna* PJIs among 1,481 (2.1%) PJIs (Table 1)
- 99 *F. magna* isolates from 43,940 (0.2%) synovial fluid or surgical tissue cultures
- No significant increase in synovial and surgical tissue cultures over time: incidence rate ratio (IRR) 1.0, 95% CI: 0.9-1.2, Figure 1A
- Significant increase in *F. magna* within PJI database IRR 1.4, 95% CI 1.1-1.8, Figure 1B

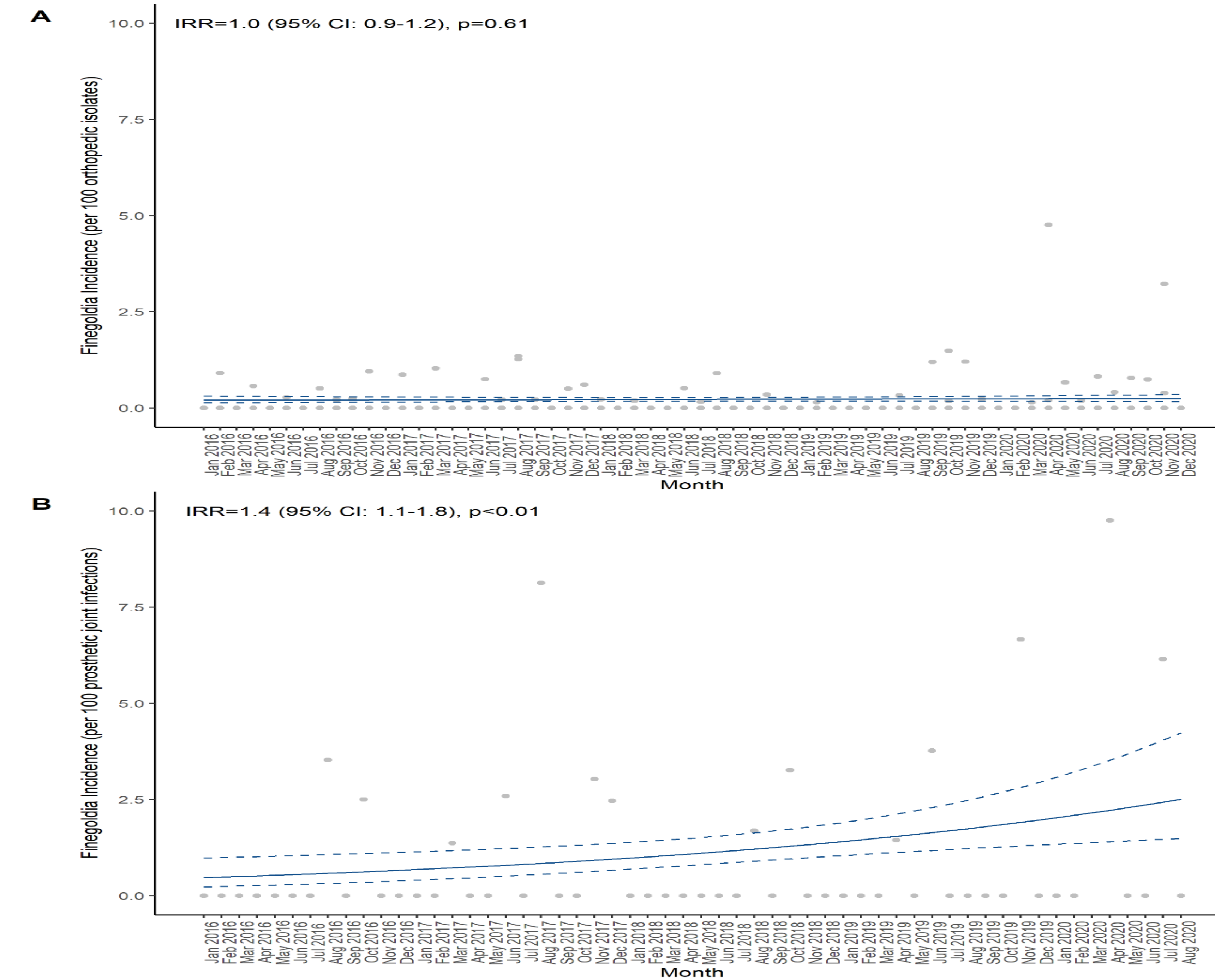


Table 1. Demographic characteristics of PJI Infections. (N=1,481)

Covariates	Finnegoldia magna	Finnegoldia (plus others)	CoNS	Enterobacteriaceae	Enterococcus	Other	Polymicrobial (excluding Finnegoldia)	Pseudomonas	Staphylococcus aureus	Streptococcus spp
	N=8 (0.5%)	N=23 (1.6%)	N=230 (15.5%)	N=86 (5.8%)	N=63 (4.3%)	N=201 (13.6%)	N=395 (26.7%)	N=35 (2.4%)	N=379 (25.6%)	N=61 (4.1%)
Age in years, median [IQR]	69 [63-74]	56 [35-79]	64 [56-70]	67 [52-72]	68 [63-74]	65 [58-73]	66 [57-73]	73 [68-79]	65 [54-73]	67 [64-76]
Gender, male	2 (33)	17 (81)	109 (51)	31 (40)	21 (35)	111 (58)	173 (47)	9 (28)	191 (53)	34 (67)
Elixhauser index, median [IQR]*	0 [0-4.5]	3 [-2-3]	0 [-3-5]	0 [-4-14]	2 [-1-13]	1 [-2-9]	2 [-3-12]	5 [-2-18]	2 [-3-10]	5 [-2-11]

*Elixhauser calculated using AHRQ method. Values in parentheses are % unless otherwise specified.

Conclusions

- We found no significant change in incidence among *F. magna* among synovial and surgical tissue cultures.
- However, *F. magna* may be a significant emerging pathogen among PJIs