

Microbial causes of prosthetic joint infections at a Swedish secondary hospital, 2010 to 2022

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Conclusion

The spectrum of bacteria causing prosthetic joint infection (PJI) has not changed significantly over the twelve years study period despite changes in culturing techniques. Current empiric antibiotic therapy with cefotaxime and vancomycin remains adequate.

Aim

To describe microbiological causes of primary prosthetic joint infections at a Swedish regional referral centre for PJI.

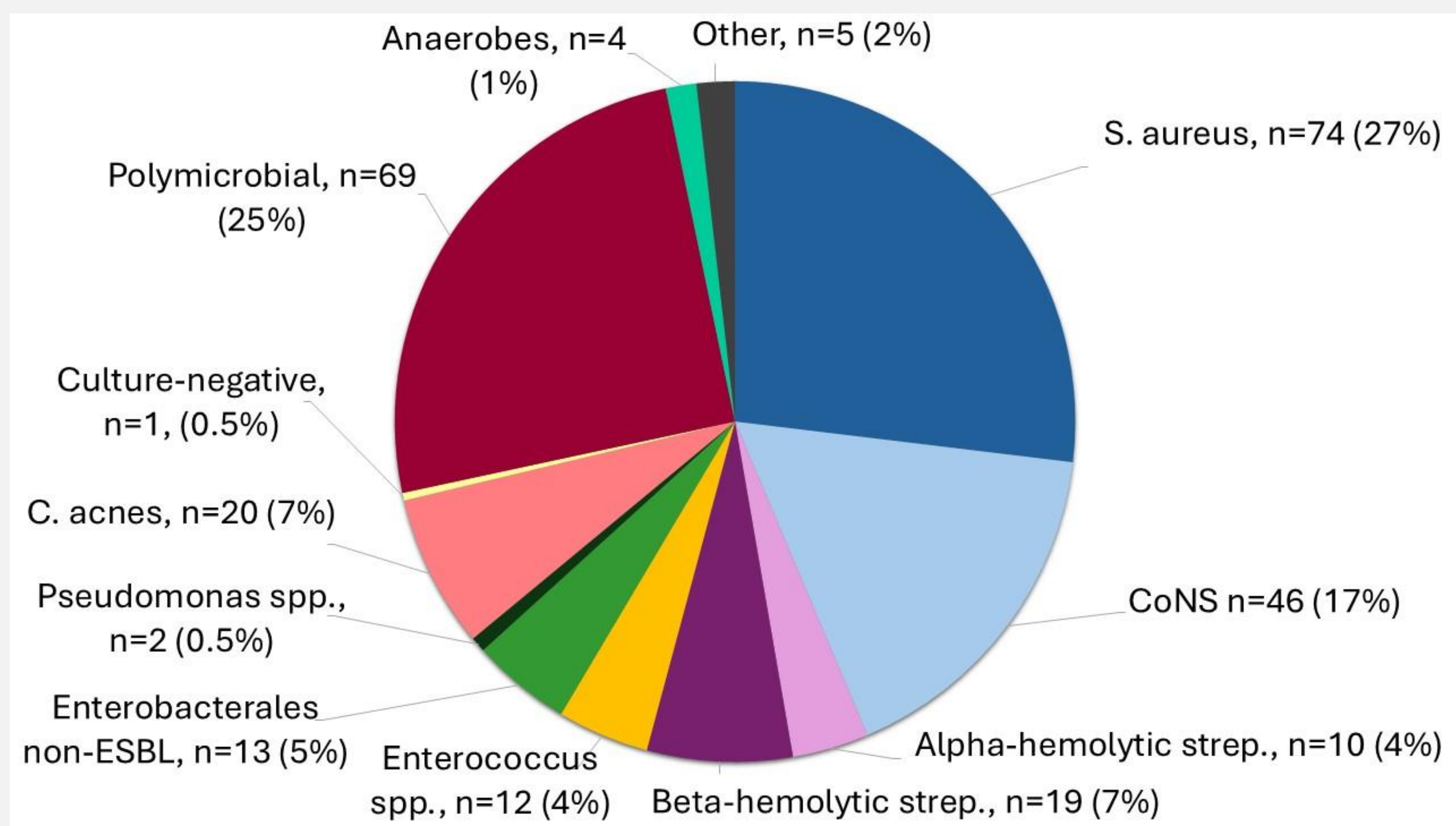
Methods

Retrospective cohort study conducted at Danderyd hospital in Stockholm, Sweden 2010-2022.

Inclusion criteria

- PJI in hip, knee or shoulder (EBJIS criteria)
- primary PJI, defined as infection in joint which had been infection free for ≥ 2 years
- age ≥ 18 years

The associations between sex, age, BMI, year of infection, site and type of infection, and causative organisms were assessed using logistic regression.

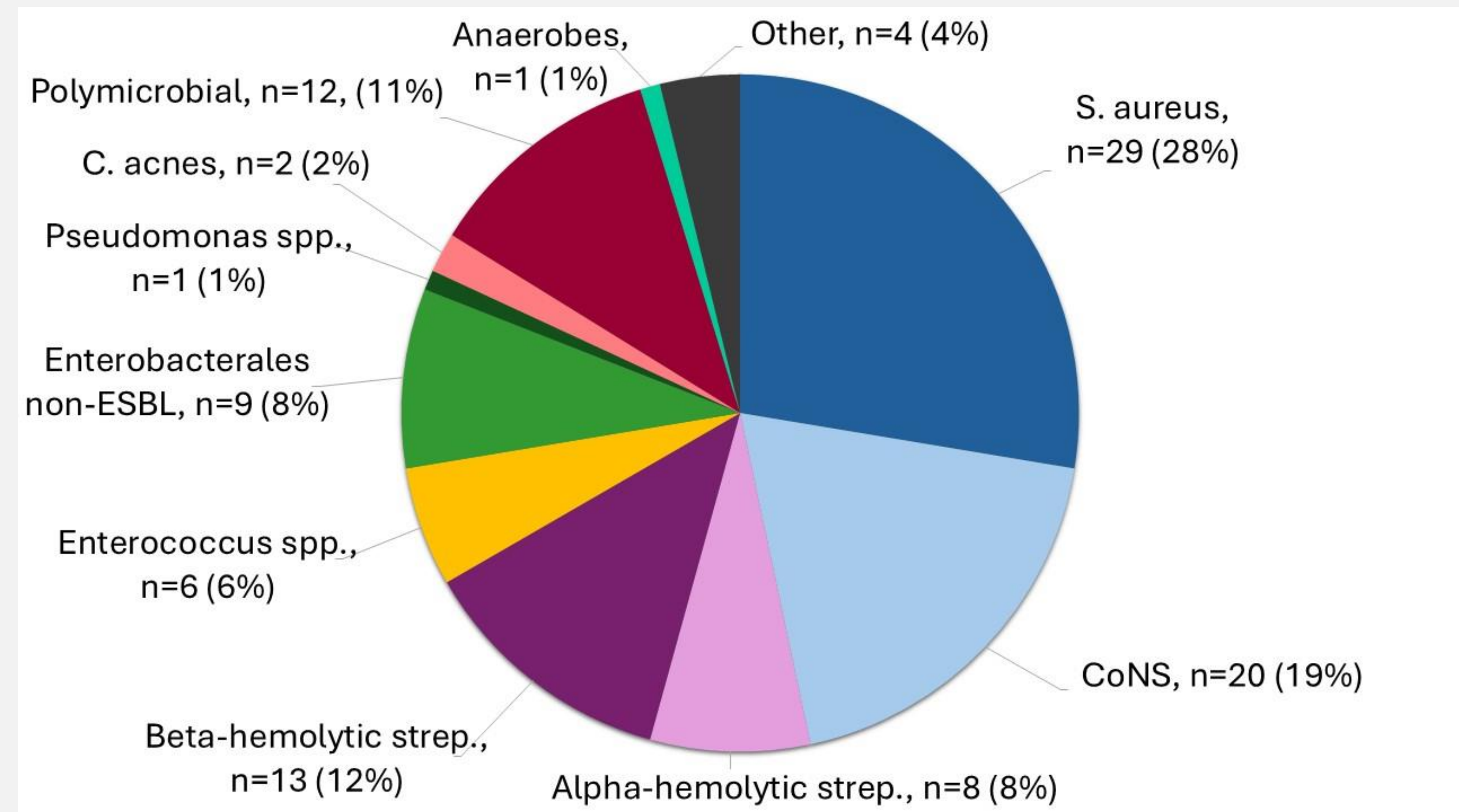


Pathogens causing primary PJI in hip joints (n=275).

Results

There were 403 primary PJIs in the study cohort. *S. aureus* was the most common cause (26%), followed by polymicrobial infections (21%), coagulase-negative staphylococci (CoNS) (18%), *C. acnes* (8%) and beta-hemolytic streptococci (8%). One case (0.2%) was culture-negative. Gram-negative rods caused 6% of all PJIs, but no case of PJI in shoulders.

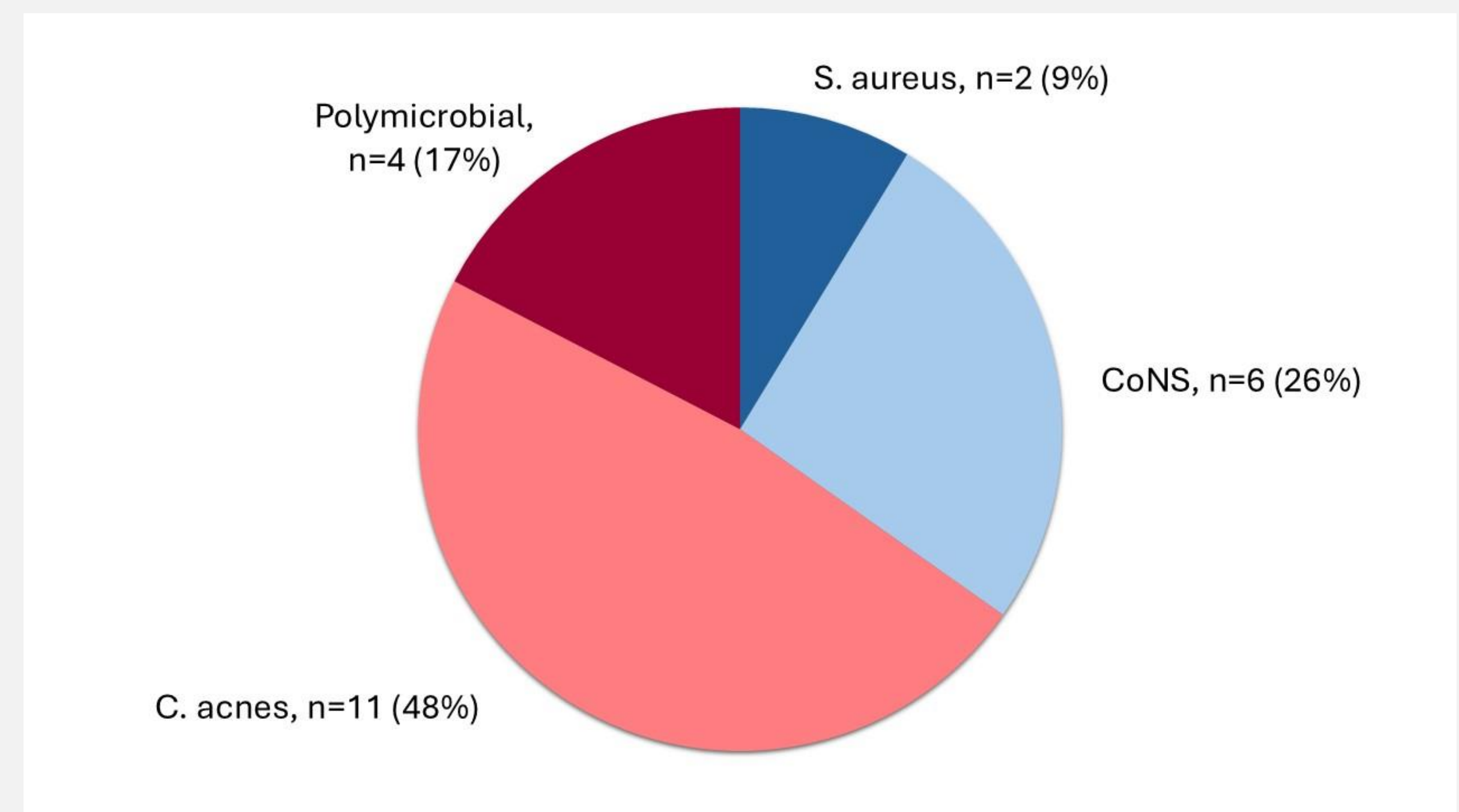
S. aureus was also the most common pathogen in hip (27%) and knee joints (28%), whereas *C. acnes* was most frequent in shoulders 11/23 (48%). Polymicrobial infections were more common in hip than knee joints (25% vs. 11%, $p=0.003$). The distribution of other pathogens did not differ significantly between hips and knees.



Pathogens causing primary PJI in knee joints (n=105).

Acute hematogenous or early postoperative infections as opposed to chronic infections were associated with *S. aureus* (OR 2.68 [1.51-4.76], $p=0.001$). *C. acnes* was associated with shoulder infections (OR 10.32 [3.78-28.23], $p<0.001$). CoNS and *C. acnes* were associated with chronic as opposed to acute hematogenous or early postoperative infection (OR 2.30 [1.34-3.91], $p=0.002$ and 3.28 [1.41-7.62], $p=0.006$, respectively).

Proportions of causative bacteria did not change significantly over time despite the introduction of sonication and homogenization of tissue biopsies during the study period.



Pathogens causing primary PJI in shoulder joints (n=23).

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