

Beyond bacteria

Candida non-albicans fungal Prosthetic Joint Infection: Outcomes and Treatment Strategies

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INTRODUCTION & AIM

Fungal prosthetic joint infections (PJIs) are rare but devastating complications following joint arthroplasty, accounting for 1–2% of cases. While *Candida albicans* remains the most common invasive fungal pathogen, non-*albicans* *Candida* infections are increasingly reported and often demonstrate resistance to commonly used azole antifungals. These infections are frequently missed or diagnosed late, posing significant therapeutic challenges. This study aimed to evaluate the microbiological spectrum, antifungal susceptibility patterns, and clinical management of non-*albicans* *Candida* PJIs at a tertiary arthroplasty center.

METHODOLOGY

A retrospective observational study included 12 patients (13 knees) with culture-proven non-*albicans* *Candida* PJIs. Diagnosis was established using synovial fluid analysis and intra-operative tissue cultures. Species identification was performed using germ tube testing and MALDI-TOF mass spectrometry. Patient demographics, prior procedures, duration from index surgery, infecting species, surgical management, antifungal therapy, and clinical outcomes were analyzed.

RESULTS

Twelve patients (13 knees) with a mean age of  $63 \pm 8$  years were included. All patients underwent Stage-1 revision with debridement, removal of prosthesis, and cement spacer placement at a mean duration of 340.2 days from the index procedure. *Candida parapsilosis* was the most common isolate (46%), followed by *Candida tropicalis* (23%), *Candida glabrata* (23%), and *Candida guilliermondii* (8%). Fluconazole susceptibility was observed in 69% of isolates, with resistance mainly associated with *Candida glabrata*. Seven patients received fluconazole, four caspofungin, and one anidulafungin. Four knees underwent Stage-2 revision at a mean duration of 198 days after stage-1 surgery, two underwent arthrodesis, and one had failure after Stage-1. Six knees remain on spacer awaiting second-stage revision.

KEY FINDINGS

12

Patients

13

Knees

63 ± 8

Mean age

340.2 days

Mean time to Stage-1

69%

Fluconazole susceptible

SPECIES DISTRIBUTION

- C. parapsilosis  
46%
- C. tropicalis  
23%
- C. glabrata  
23%
- C. guilliermondii  
8%

ANTIFUNGAL THERAPY

- Fluconazole  
7 patients
- Caspofungin  
4 patients
- Anidulafungin  
1 patient

SURGICAL OUTCOMES

- Stage-2 revision  
4 knees
- Arthrodesis  
2 knees
- Stage-1 failure  
1 knee
- Spacer awaiting Stage-2  
6 knees

TREATMENT STRATEGY / SURGICAL PATHWAY

Stage-1 revision → Debridement + prosthesis removal → Amphoterecin Cement spacer → Species identification & susceptibility testing → Targeted antifungal therapy → Stage-2 revision when appropriate

CONCLUSION

Non-*albicans* *Candida* PJIs represent chronic infections that are frequently diagnosed late and should not be considered contaminants. Most patients undergo multiple prior surgical procedures before definitive organism identification, highlighting the difficulty of early diagnosis. Early species identification and antifungal susceptibility testing are essential to guide targeted therapy and detect azole resistance. Two-stage revision arthroplasty remains the gold-standard surgical strategy. Echinocandins show promising efficacy in azole-resistant cases. However, recurrence may occur, necessitating vigilant follow-up and multidisciplinary management.