Hidden Persistent Prosthetic Joint Infection in Popliteal Cyst in Total Knee Arthroplasty: A Case Report

Introduction:

Infected Baker's cysts are rare, with only 21 cases reported in the literature, nearly all in immunosuppressed patients. This case uniquely identifies a popliteal cyst as a bacterial reservoir perpetuating recurrent prosthetic joint infection (PJI) that was unresolved by multiple standard surgical interventions and demonstrates that posterior cyst excision may be necessary for definitive infection eradication.

Case Presentation:

A 53-year-old male with severe rheumatoid arthritis on immunosuppressive therapy presented with persistent left knee pain, swelling, and functional limitation following a 2019 primary total knee arthroplasty (TKA). Despite four prior surgical interventions including irrigation and debridement, two-stage revision with antibiotic spacer exchange, and reimplantation, infection persisted with several organisms including: Pseudomonas aeruginosa, coagulase-negative Staphylococcus, MSSA, Finegoldia magna, and Candida albicans. Preoperative MRI identified a large popliteal cyst communicating with the joint, extending proximally and distally, raising concern for a sequestered infectious reservoir inaccessible via standard anterior approaches.

Diagnoses, Interventions, and Outcomes

The patient underwent same-day staged surgery: posterior excision of the popliteal cyst, which yielded copious purulent material, followed by anterior TKA explantation and knee arthrodesis with an antibiotic-loaded fusion nail. Postoperative inflammatory markers progressively normalized, with CRP declining from 51.6 to 6.0 and ESR from 98 to 31 at three months. Incisions were fully healed at four months.

Conclusion

In patients with recurrent or refractory PJI, a communicating popliteal cyst should be considered a potential occult infectious reservoir. MRI evaluation of the posterior knee and surgical excision of any identified cyst may be critical for definitive infection control when standard anterior debridement has failed.