

Extensively Drug-Resistant *Pseudomonas aeruginosa* Native Hip Septic Arthritis in an Immunocompromised Patient: A Case Report

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Background

Septic arthritis of a native joint demands prompt surgery and targeted therapy, and *Staphylococcus aureus* remains the organism most often responsible. Gram-negative involvement is uncommon, and *P. aeruginosa* resistant to all standard antipseudomonal agents is rarer again. Where susceptibility narrows to cefiderocol and colistin, neither of which is licensed for bone and joint infection, the surgical decision carries much of the therapeutic burden. Osteoarticular involvement may also remain silent for months after bacteraemia has apparently been cleared.

Case presentation

A 45-year-old man without comorbidity was diagnosed with Burkitt lymphoma in February 2025, with marrow infiltration of 95–98% and MYC rearranged in 61% of nuclei. He received Pola-R-CHP followed by R-CODOX-M/R-IVAC with intrathecal prophylaxis; measurable residual disease was undetectable from April 2025 onwards.

In August 2025 he developed severe sepsis with bilateral bronchopneumonia, respiratory and renal failure and confusion, with a C-reactive protein of 324 mg/L. MDR *P. aeruginosa* was isolated from peripheral blood, the implanted port chamber, an overlying wound abscess and, subsequently, the catheter tip. The port was excised on the seventh day; cefiderocol 2 g eight-hourly with intravenous colistin 9 MU daily ran to 10 September, by which time C-reactive protein had fallen to 16 mg/L.

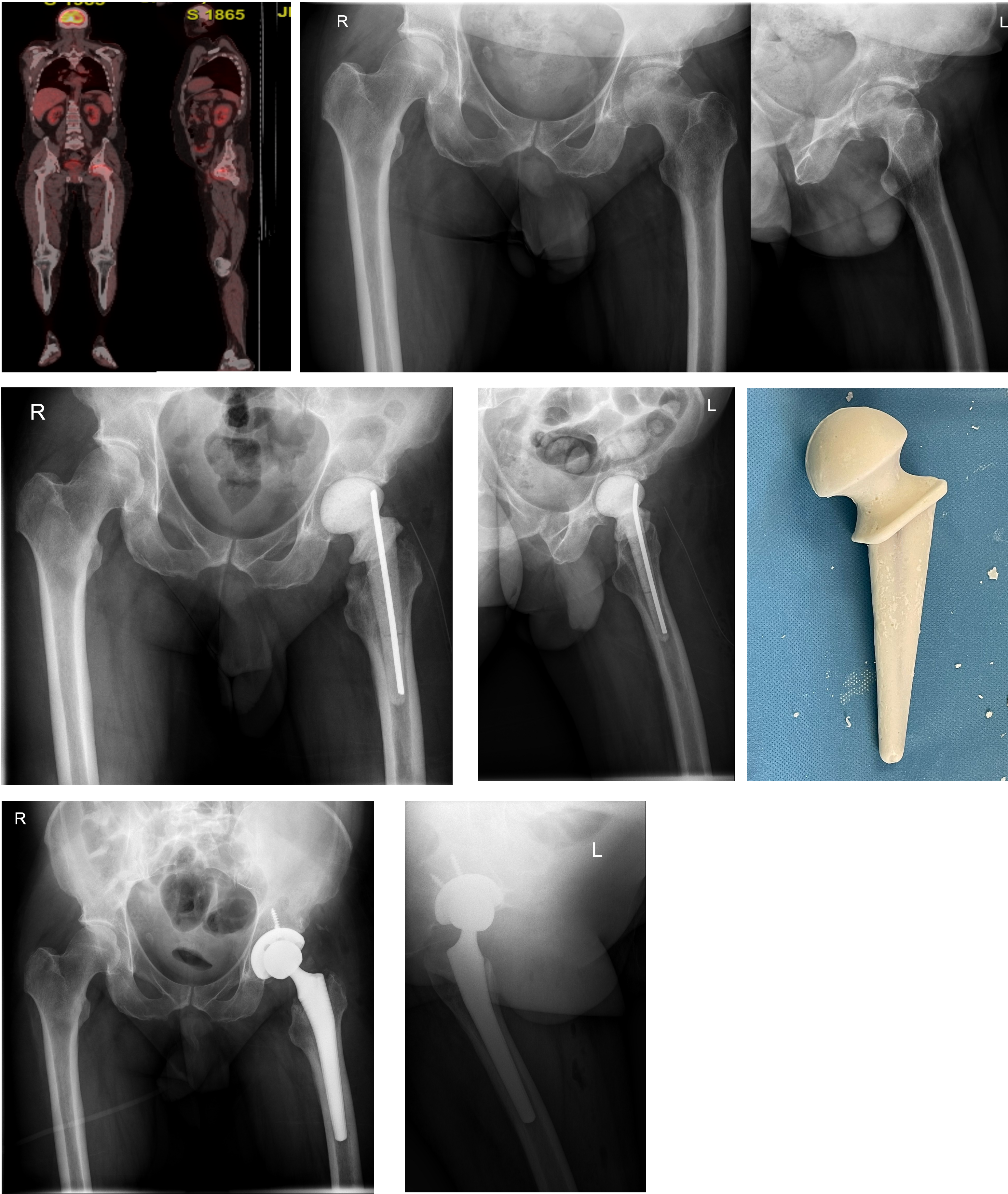
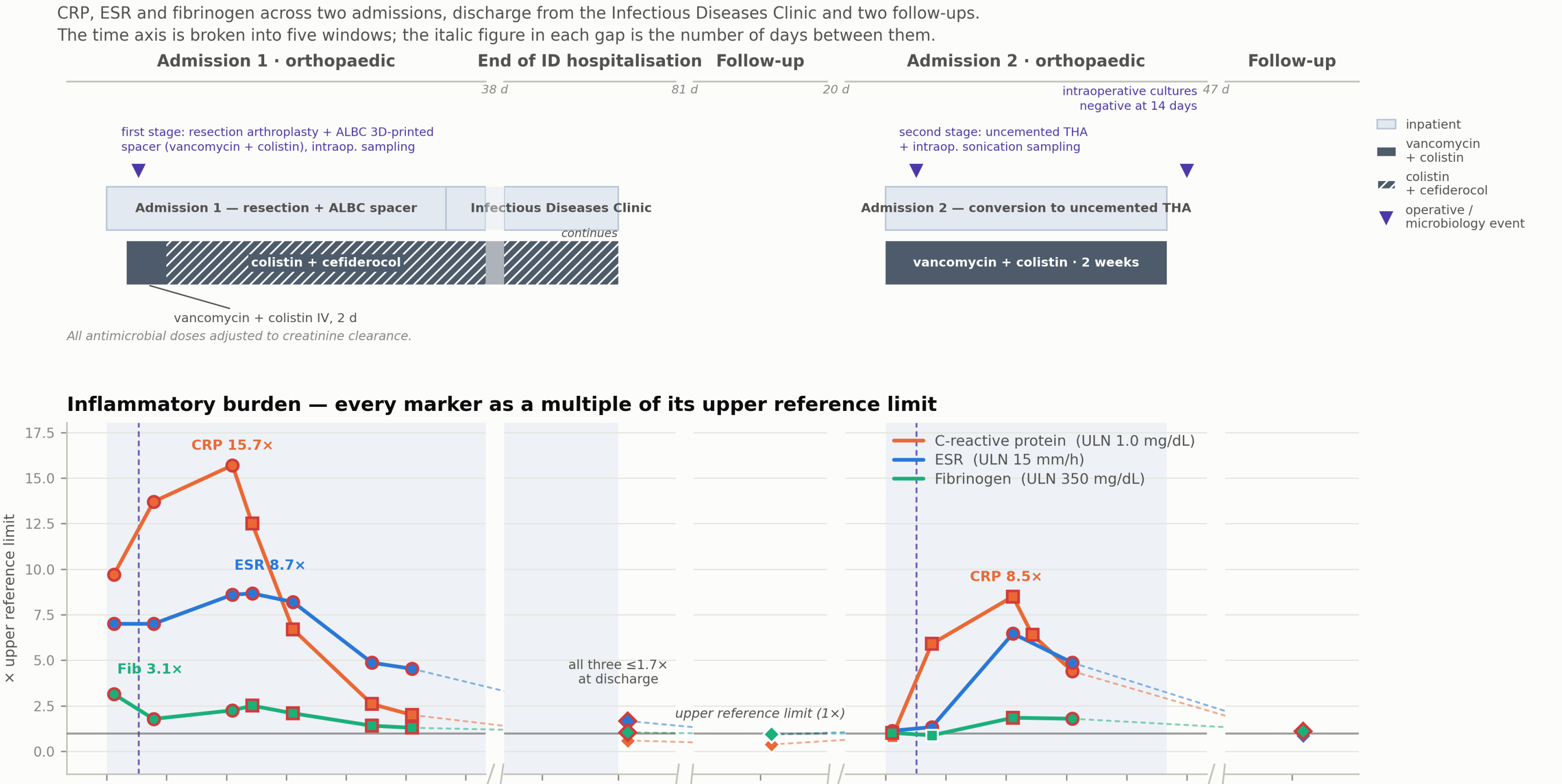
Lumbosacral and left hip pain with gait disturbance began on 31 December 2025 and was attributed to lumbosciatica. On reassessment on 19 January 2026, C-reactive protein was 105.4 mg/L and creatinine 1.20 mg/dL, blood cultures were sterile, and haematological remission was sustained.

Investigations and diagnosis

PET–CT on 22 January 2026 showed an FDG-avid osteolytic lesion of the left femoral head, compatible with either lymphomatous involvement or infection. Magnetic resonance imaging four days later demonstrated bilateral avascular necrosis of the femoral heads, Mitchell grade B on the right and grade C on the left, without cortical collapse, together with multiple chronic bone infarcts surrounded by a vascularised reactive rim. Serial marrow examinations remained free of measurable residual disease, rendering lymphomatous involvement improbable. Synovial fluid contained more than 30,000 leucocytes/mL with 95% polymorphonuclear cells. SF and intraoperative tissue grew *P. aeruginosa* susceptible only to cefiderocol and colistin, the phenotype isolated from blood five months earlier.

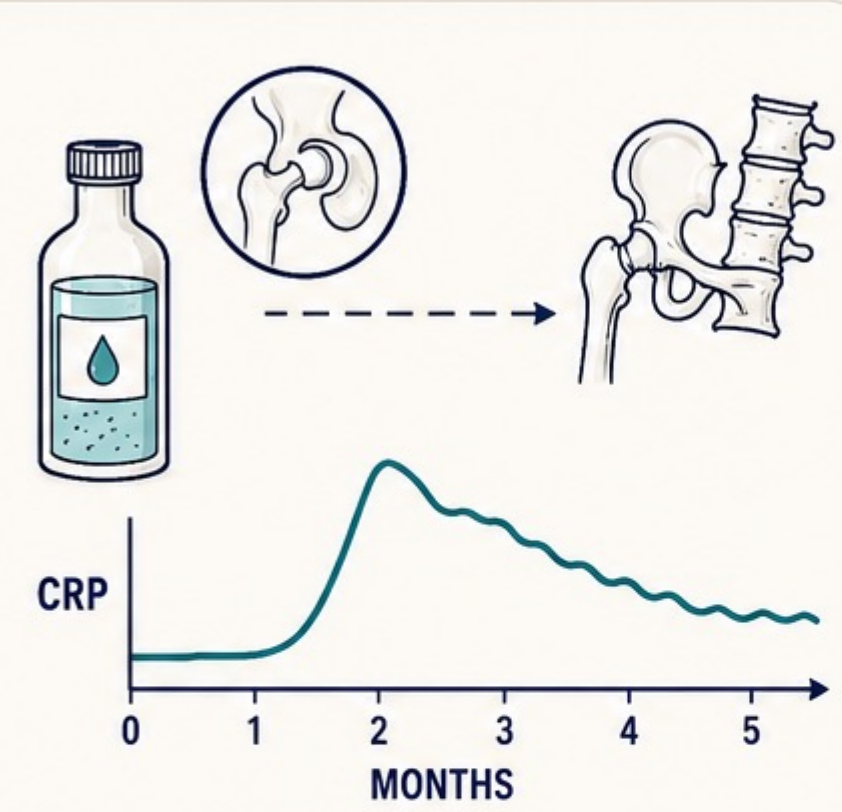
Treatment and clinical course

Surgery on 4 February 2026 comprised debridement, resection arthroplasty and extensive lavage, with implantation of an antibiotic-loaded spacer produced in house from a CT-guided three-dimensional mould and containing 80g of BC with 4g of vancomycin, and with 4.8g colistin. Empirical vancomycin, colistin and fluconazole were begun postoperatively for 2 days; vancomycin was withdrawn once cultures were reported and cefiderocol substituted. Cefiderocol with colistin, at renally adjusted dosage, was continued for approximately eight weeks under infectious diseases care. Moderate acute kidney injury developed, creatinine rising from 1.20 to 2.09 mg/dL and settling between 1.80 and 1.93 mg/dL without return to baseline. At the second stage on 7 July 2026 the spacer was removed and a hip endoprosthesis was implanted; intraoperative cultures were sterile and normal mobility was regained within 3 weeks after surgery.



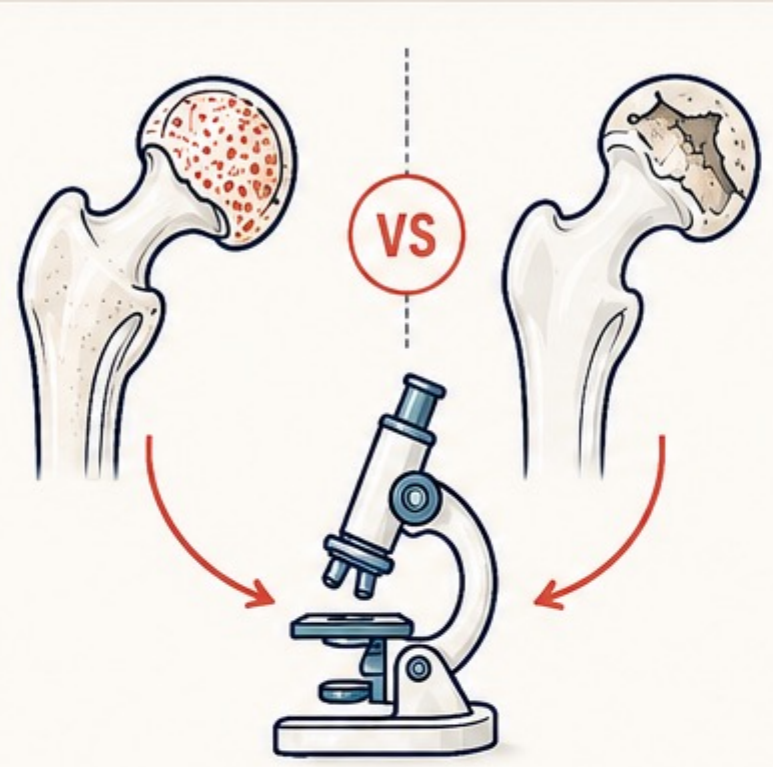
DISCUSSION

THREE FEATURES DESERVE EMPHASIS



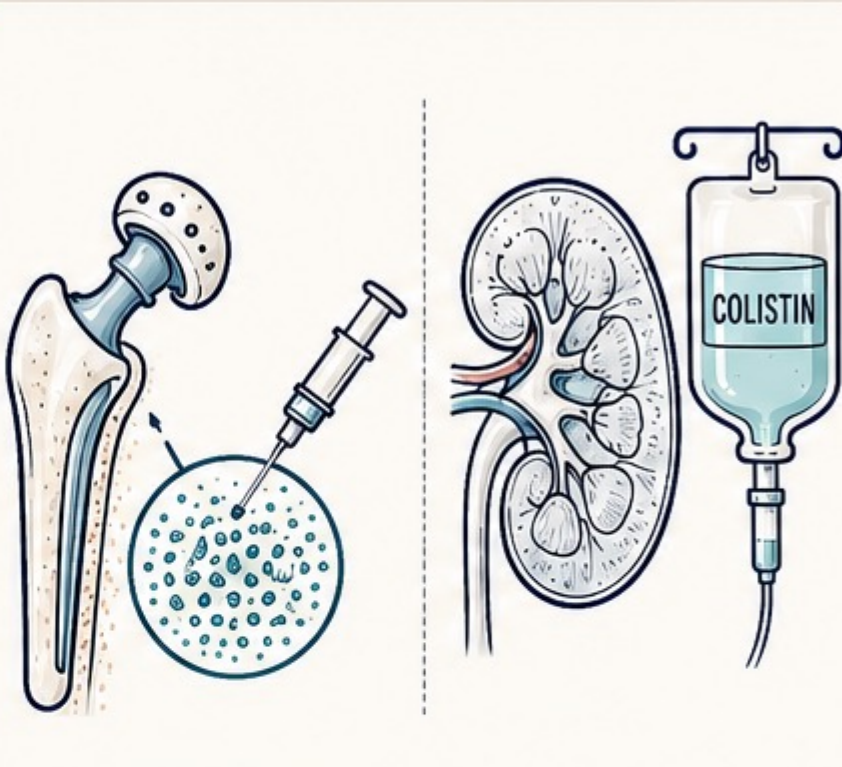
1 DELAYED METASTATIC FOCUS

The osteoarticular focus declared itself five months after bacteraemia that appeared to have been successfully treated, and did so with sterile blood cultures. An isolated rise in C-reactive protein was the only laboratory signal, and five weeks elapsed under a diagnosis of lumbosciatica.



2 UNRESOLVED PATHOGENESIS

The femoral head lesion cannot be resolved on the available evidence into a primarily septic process or a corticosteroid-associated avascular lesion subsequently infected. Histopathology of the resected femoral head would be decisive.



3 SOURCE CONTROL AND TOXICITY

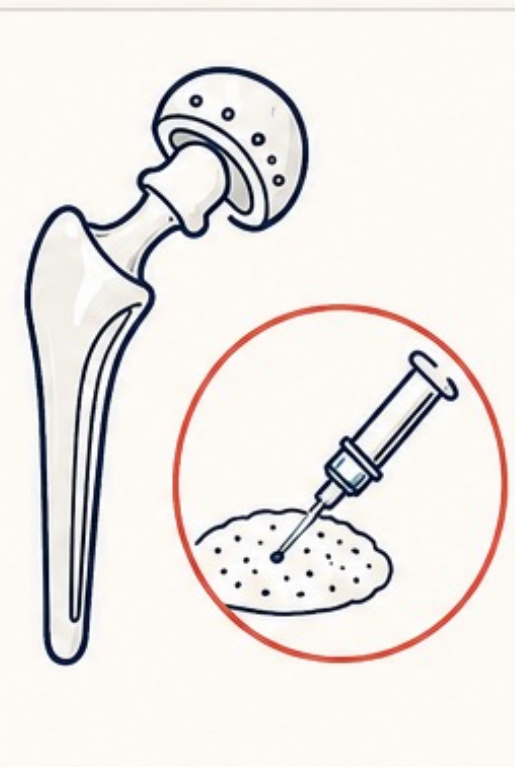
With susceptibility confined to two agents, source control and local antibiotic delivery assumed the greater part of the therapeutic effort, while prolonged colistin exposure left renal function impaired against a background of pre-existing CKD.

LEARNING POINTS



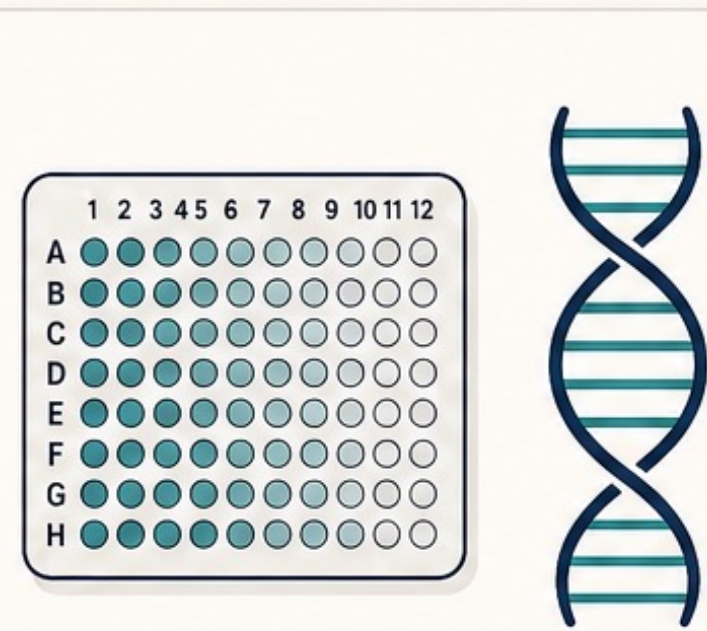
1 | DIAGNOSTIC VIGILANCE

Sterile blood cultures exclude ongoing bacteraemia but say nothing about a walled-off metastatic focus. New hip or axial pain with a disproportionate C-reactive protein after Gram-negative bloodstream infection warrants dedicated imaging and deep sampling.



2 | SOURCE CONTROL

Where only cefiderocol and colistin retain activity, surgical source control and local antibiotic delivery become decisive. Cefiderocol remains off-label in bone and joint infection.



3 | MICs AND MOLECULAR TYPING

The cefiderocol and colistin MICs were both 0.125 mg/L and were interpreted according to EUCAST criteria. MIC values, testing methodology, and molecular typing should be reported routinely; without them, the resistance category cannot be defended and relapse cannot be distinguished from reinfection.