

Eikenella corrodens Septic Hip Arthritis in a Healthy Adult Treated With Arthroscopic Irrigation and Debridement

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Abstract

We present the case of a seemingly spontaneous septic hip arthritis in a patient with no pertinent medical history. Our patient presented with persistent and worsening sharp lower back pain and underwent arthrocentesis of the hip joint, yielding purulent fluid positive for *Eikenella corrodens*. Our patient's treatment consisted of arthroscopic irrigation with debridement and limited synovectomy that used a supine 2-incision technique. To our knowledge, this is the first reported case of an *E corrodens* septic hip arthritis.

E *ikenella corrodens* is a well-known cause of dental and facial infections. It is a fastidious, facultative gram-negative organism commonly found in the flora of the human mouth. Septic hip arthritis in adults is rare. We present a patient with no pertinent medical history who had *E corrodens* septic hip arthritis. The patient provided written informed consent for print and electronic publication of this case report.

Case Report

A 66-year-old woman was admitted to our hospital with 5 days of persistent and worsening sharp lower back pain radiating to the left leg, resulting in her inability to walk. She denied any history of trauma, prior hip or back pain, surgical intervention to this hip, dental procedures within 8 months, insect bites, recent illness, or fever. Her medical history was unremarkable except for removal of a benign retroperitoneal mass 16 years earlier.

The patient's oral temperature was 97.7°F. She complained of lower back pain radiating to the left hip and anterior leg. Physical examination revealed limited passive and active range of motion in the back and hip secondary to pain. A white blood cell (WBC) count of $11.7 \times 10^9/L$ with 80.3% neutrophils was noted. The patient was neurovascularly intact with negative motor neuron signs. Magnetic resonance imaging (MRI) of the spine showed mild lumbar facet hypertrophy. The patient was admitted for pain control and further evaluation.

On hospital day 3, the patient's temperature increased to 101°F. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) were elevated at 104 mm/h and 31.24 nmol/L, respectively. After an orthopedic spine consultation and further review of the lumbosacral spine, an MRI showed a small fluid collection in the left hip; aspiration, but not antibiotics, was recommended, given the patient's hemodynamic stability and to improve culture sensitivity.

On hospital day 4, the patient underwent ultrasound-guided aspiration of the left hip, which yielded 3 mL of purulent fluid. Gram stain of the fluid showed gram-positive cocci and gram-negative bacilli. Blood cultures drawn prior to aspiration had revealed gram-positive cocci, identified as *Streptococcus viridans*, and gram-negative bacilli. After an infectious disease consultation, empiric vancomycin was started. On hospital day 5, the patient had WBC count of $23.0 \times 10^9/L$, and developed tachycardia as well as an altered mental status. She was transferred to the intensive care unit. Examination of synovial fluid culture taken on hospital day 4 showed *Streptococcus intermedius* and *E corrodens*. Because of the patient's hemodynamic status, she was unable to undergo immediate irrigation and debridement, and cefepime was added to the antibiotic regimen.

On hospital day 6, with the patient hemodynamically stable, arthroscopic irrigation with debridement and limited synovectomy using the supine 2-incision hip arthroscopic technique¹ was performed (Figures 1A-1C). Postoperatively, ampicillin/sulbactam was started and changed to penicillin G 3 million units 4 times daily, based on culture sensitivities and infectious disease recommendation. Pain and range of motion of the hip improved postoperatively. The patient was discharged on hospital day 14 with WBC count of $9.4 \times 10^9/L$ and prescribed ceftriaxone 2 g daily for 4 weeks delivered via peripherally inserted central catheter. When the catheter was removed, the patient received oral penicillin VK 500 mg 4 times daily for an additional 4 weeks.

At discharge, range of motion of the hip was limited to 90° flexion with 25° internal and external rotation. The patient was allowed to weight-bear as tolerated with the assistance of a walker. At 6-month follow-up, range of motion was 100° flexion, with 0° internal and 20° external rotation. The patient walked with a cane but had significant discomfort.

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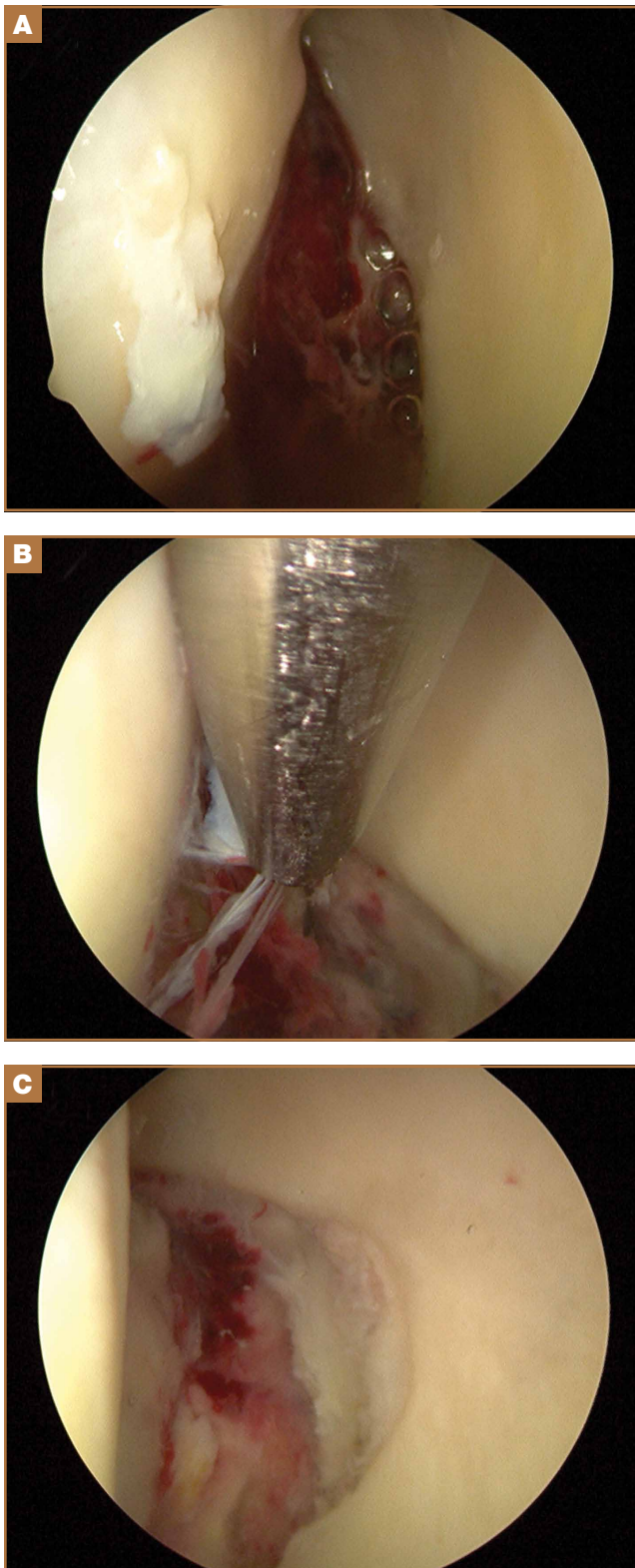


Figure 1. Arthroscopic view of the hip joint using the 2-portal technique. (A) Arthroscope is placed through the lateral portal. Femoral head (left) and acetabulum with labrum (right). Note purulence and infected hematoma in the image center. (B) The shaver is introduced through the anterolateral portal for debridement. (C) Thorough debridement of the capsule and labrum with no remaining infected tissue.

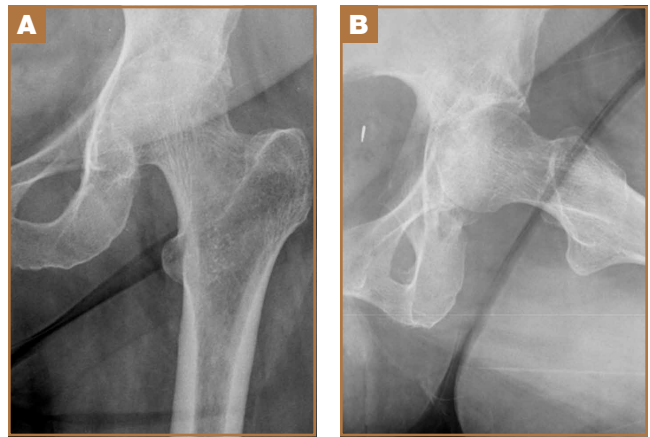


Figure 2. (A) Anteroposterior image of pelvis and (B) lateral image of hip at 6 months after surgery show joint-space destruction and arthritic changes.

Discussion

Although septic arthritis of the hip is a relatively common diagnosis in the pediatric patient, it is rare in a healthy adult. Causes of septic arthritis in an adult include hematogenous spread and joint capsule violation caused by intra-articular injections, surgical exposure, or trauma. A review of the literature reveals 1 case of seemingly spontaneous *E corrodens* sacroiliac joint arthritis in an adult patient.² In addition to the classic “fight-bite” infection, *E corrodens* has been associated with culture-negative endocarditis, and dental, head and neck, and musculoskeletal infections.³

Identification of *E corrodens* requires awareness among laboratory personnel because it is often missed in aerobic cultures from overgrowth of other isolates. Characteristically, pitting or corrosion of the surface of a solid culture media will be noted. Isolation and sensitivity is imperative because the sensitivity of *E corrodens* differs from that of organisms commonly targeted with empiric antibiotics. Stoloff and Gillies⁴ found 28 of 28 *Eikenella* cultures were sensitive to ampicillin; 19 of 19 to cefoxitin; 3 of 3 to chloramphenicol; 14 of 22 to erythromycin; 4 of 8 to gentamycin; and 32 of 32 to tetracycline. In addition, 25 of 32 isolates were resistant to penicillin, 7 of 7 to clindamycin, and 2 of 2 to metronidazole.⁴ Penicillin G, ceftriaxone, ampicillin, amoxicillin/clavulanic acid, trimethoprim/sulfamethoxazole, and fluoroquinolones are commonly initiated antibiotics, often depending upon culture sensitivity. The use of clavulanate or sulbactam can inhibit the rare production of β -lactamase.³

Culture contamination is a concern with the isolation of an unusual organism. In this case, an experienced interventional radiologist performed drainage under ultrasound guidance. The purulence of the aspirate strongly suggested a bacterial etiology. In addition, blood cultures drawn on hospital day 4, prior to joint aspiration, were found to be positive for gram-negative bacilli. Our patient was discharged about 2 weeks after surgery. The incision sites were without drainage or erythema. Initially, the patient received home physical therapy for

3 weeks followed by outpatient therapy, transitioning from a walker to no assistive devices. In the immediate postoperative period, our patient achieved a Harris Hip Score of 93 (excellent); however, at 6-month follow-up, her score was 53 (poor; range: excellent, 100-90; good, 89-80; fair, 79-70; poor < 70). Radiographic evaluation at 6 months showed deterioration of femoroacetabular articulation with evidence of osteoarthritic changes (Figures 2A, 2B). The incisions remained benign.

Septic arthritis is known to cause destruction of articular cartilage and/or resorption of subarticular bone. In this case, articular destruction from delayed recognition and treatment contributed to secondary osteoarthritis and poor late outcome. A recent systematic review article reported infection rates of 2.5% after primary total hip arthroplasty of all etiologies.⁵ With 2-stage implantation treatment for septic arthritis, reinfection rates of 5% to 14% have been reported.^{6,7} The patient will undergo a total hip arthroplasty, which is now indicated, with the awareness of the increased risk for recurrent infection.

In conclusion, although late recognition of sepsis contributed to articular destruction, proper identification of a rare organism—the first known case of *E. corrodens* septic arthritis of the hip—and the utilization of arthroscopic lavage and culture-specific antibiotics prevented further complications.

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This paper will be judged for the Resident Writer's Award.
