

Case Report

Malignant Fibrous Histiocytoma at the Site of an Alumina-on-Alumina-Bearing Total Hip Arthroplasty Mimicking Infected Trochanteric Bursitis

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Abstract: Although the incidence of malignant tumors in patients undergoing total hip arthroplasties (THAs) is known to be lower than the general population, there exist several reports on the development of malignant tumors at the site of THAs. We report another case of malignant fibrous histiocytoma at the site of a THA, which was developed in an older patient who presented a cystic mass around the total hip prosthesis using a ceramic-on-ceramic bearing system, even without evidence of osteolysis or loosening of implants. This is the second case associated with an aluminum oxide prosthesis in English literature. **Keywords:** malignant fibrous histiocytoma, total hip arthroplasty, tumor, aluminum oxide.

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Although the incidence of malignant tumors in patients undergoing total hip arthroplasties (THAs) is known to be lower than the general population, there exist several reports on the development of malignant tumors at the site of THAs. In fact, there have been 47 reported cases of malignant tumors associated with THAs [1-24]. Of these 47 cases, 30 were diagnosed as malignant fibrous histiocytomas (MFHs), mostly described as a pleomorphic tumor with numerous giant cells. Herein we have documented a case of MFH at the site of an alumina-on-alumina-bearing THA without evidence of osteolysis and loosening of the prostheses on plain radiographs, which was initially misdiagnosed as an infected trochanteric bursitis.

Case Report

An 80-year-old female patient was diagnosed with bilateral osteonecrosis of the femoral head. She agreed that the information concerning this case could be

submitted for publication. She had a left THA in 2002, followed by the same procedure on the right hip in 2004. An alumina-on-alumina combination (BIOLOX forte; CeramTec, Plochingen, Germany) was used in both hips. The acetabular component was a hemispherical titanium cup (PLASMACUP SC; Aesculap, Tuttlingen, Germany) with an outer coating of plasma-sprayed pure titanium (Plasmapore; Aesculap). The uncemented femoral component was a slightly tapered, rectangular, collarless titanium-alloy implant (BiCONTACT; Aesculap). A compression cerclage Gundolf (CCG) band made of pure titanium (Plus Endoprothetik, Rot Kreuz, Switzerland) was applied to the trochanteric area of the right hip due to an undisplaced linear crack that occurred at the time of stem insertion. The patient did not have any specific problems during the postoperative follow-up period. However, 5 years after the last surgical procedure, she sought care because of tingling sensations in the right lower extremity and a palpable mass in the right greater trochanteric area that had persisted for 1 month. The palpable mass was cystic in nature and seemed to increase in size. There was a skin lesion of impending rupture over the greater trochanter, which was suspected to be sinus drainage. However, she had no systemic or local signs of infection, such as generalized fever, local warmth, cutaneous erythema, or pain with motion. On plain radiographs, there was no evidence of osteolysis or loosening of the implants (Fig. 1).

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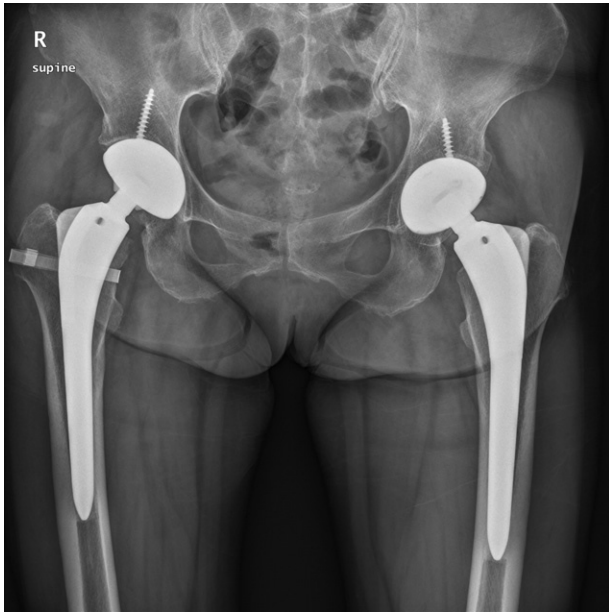


Fig. 1. There was no evidence of osteolysis or loosening of implants on a preoperative plain radiograph.

Laboratory tests were performed to rule out inflammatory or infected bursitis. The white blood cell count was $10\,290/\text{mm}^3$, the erythrocyte sedimentation rate was 120 mm/h , and the C-reactive protein was 4.03 mg/dL . Greater than 50 mL of serosanguinous fluid was aspirated from the cystic mass, and the fluid white blood cell count was $36\,400/\text{mm}^3$ with more than 75% polymorphonuclear cells. Although the gram stain and culture of the aspirated fluid were negative, it was decided that the patient be admitted for operative treatment because computed tomography (CT) scans showed a huge cystic mass around the greater trochanter of the right hip (Fig. 2). The patient remained afebrile after admission; however, the overlying skin lesion initially thought to be a sinus drainage impending rupture was subsequently shown to be a solid, lobulating

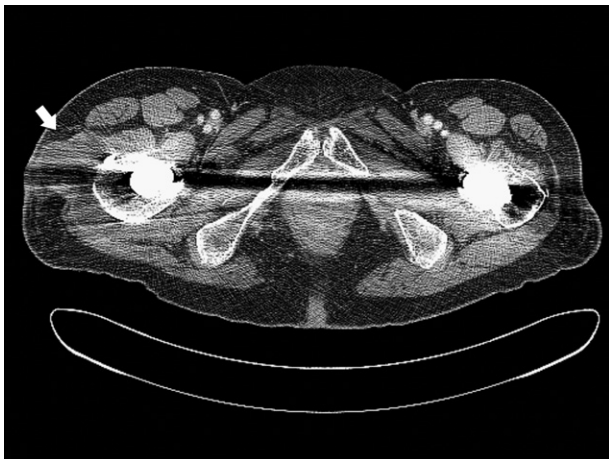


Fig. 2. Bursitis of the right greater trochanter was seen on axial view of the hip CT (arrow).

mass lesion just 1 week after her first visit. She was taken to the operating room for debridement and hardware removal. With incision of the tensor fascia lata, brown, serosanguinous fluid was emitted, and culture samples were obtained. Multiple necrotic tissues and inflammatory debris were noted around the hip joint. During exploration, anterior to the pseudocapsule in the anterior aspect of the joint, a $6.5 \times 5 \times 1.5\text{-cm}$ masslike lesion was encountered and excised, from which a frozen biopsy was performed. The frozen section disclosed a malignant neoplasm with atypical spindle cells. Intralesional debulking of all abnormal tissues suspected to be part of the tumor was done after hip dislocation; the loosened CCG band was removed, but the decision was made to retain the implants in situ. The excised masses were homogenous, white, dense, and fibrous in nature. The sinus tract, including the nodular skin lesion, was also excised for biopsy.

Histologically, a diagnosis of MFH was established, and there was also involvement of a malignant spindle cell neoplasm with chronic active inflammation in the sinus tract, including the nodular skin lesion. Immediately after the operation, a chest CT, positron emission tomography–CT, and bone scan were obtained to detect metastatic lesions, and a contrast-enhanced pelvic magnetic resonance imaging was performed to evaluate suspected residual tumors (Fig. 3). The chest CT and positron emission tomography–CT scans showed suspicious metastatic nodules in both lungs with multiple axillary lymph node enlargements. Postoperatively, the patient refused further surgical treatment and began radiotherapy for palliative treatment; however, she died 3 months later from multiple lung metastases.



Fig. 3. Postoperative magnetic resonance imaging shows residual malignancy around the hip joint and the pelvic area (arrow).

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