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The Knee

Case report

Large tibial geode, which developed several years after a left medial Oxford unicondylar knee arthroplasty, treated with curettage and bone grafting

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ABSTRACT

Background: Tibial geodes are rare, and usually reported in association with rheumatoid arthritis. This case study reported the rare occurrence of a tibial geode in association with a left unicondylar knee arthroplasty (UKA). The patient, a 55-year-old male, was initially pleased with his UKA, which was performed at another institution. However, just over one year after the operation he began experiencing pain and discomfort. He did not present to the current institution until he was six years after UKA. This pain was movement and weight bearing related, although he still managed to maintain an active lifestyle working as a builder. After several years of follow-up, a computed tomography (CT) scan showed a significant increase in size of the geode.

Methods: The patient initially did not want to undergo further surgery, as he was self-employed, but it was decided, in conjunction with the patient, that it was time to operate because the stability of the prothesis was in question. Transcortical and retrograde curettage of the geode was performed and one and a half femoral head allografts were used to fill the geode.

Results: Follow-up since the operation showed good infilling of the geode and bone remodelling, with resolution of symptoms at 12 months.

Conclusions: This case report was the first to report a symptomatic tibial geode in close association with UKA, which did not lead to revision surgery to total knee arthroplasty (TKA), but instead was successfully treated with currettage and bone grafting.

1. Background

Unicondylar knee arthroplasty (UKA) is a commonly performed and successful treatment option for medial compartment osteoarthritis (OA). Just over 75,000 were performed in the UK between 2003 and 2015 [1], and they represent nine percent of the knee arthroplasty sector in the 14th national joint registry (NJR) [2]. Geodes or large subchondral cysts are a very rare complication following a unicondylar prosthesis. There are only three previous case reports where large geodes near UKAs have been reported [3–5]. Geodes are a rare complication, but they can undermine the stability of prostheses, which can necessitate revision surgery to a total knee arthroplasty (TKA). This happened in the three case reports mentioned above. Therefore, there must be a high index of suspicion for patients with ongoing or progressive knee pain and/or swelling after knee athroplasty.

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2. Case presentation and investigations

A 55-year-old male builder was seen in the outpatient department six years after a unicompartmental, Oxford, single-peg, cemented, left medial knee arthroplasty. The patient originally had a traumatic skiing injury, for which he had subsequent arthroscopic meniscal surgery. He eventually needed to have a left medial UKA around 15 years after the initial incident. This was performed at another institution and was recorded as uneventful. Pre-UKA radiographs were hardcopy "wet radiographs" and have unfortunately been destroyed. The patient was initially happy with the result, and initial postoperative radiographs taken in December 2006 looked excellent with no geode present (Figure 1A and 1B).

However, when he presented to the current institution just over one-year post UKA he was complaining of pain in his left knee. Radiographs in January 2008 showed a very minor area of lucency around the lateral margin of the tibial component (Figure 1C and 1D). At the first outpatient consultation at the current institution, six years after UKA, the patient reiterated that he had been experiencing ongoing pain in his left knee for approximately the last four years.

On examination, there was slight varus alignment, which was fully correctable, and tenderness over the medial joint line and his medial collateral ligament (MCL) (although the MCL was not tender on valgus stressing of the knee). His anterior cruciate ligament (ACL), posterior cruciate ligament (PCL) and lateral collateral ligament were intact. Range of movement was 0° extension/0° hyperextension/110° active flexion, with some crepitus in his patellofemoral joint. The pain was activity related, with intermittent swelling, although he was still able to work as a builder. The patient also described start-up pain over the proximal tibia on the medial side.

Plain radiographs in January 2013 (Figure 1E and 1F) showed a small cystic area in the proximal tibia. As the patient was a self-employed builder he was reluctant to undergo further surgery. He was therefore followed-up every six to 12 months over the following three years. Over this time, he noted that the pain was worse during cold weather, exacerbating the medial pain. Plain radiographs in August 2014 (Figure 1G and 1H) showed the area of lucency was increasing in size.

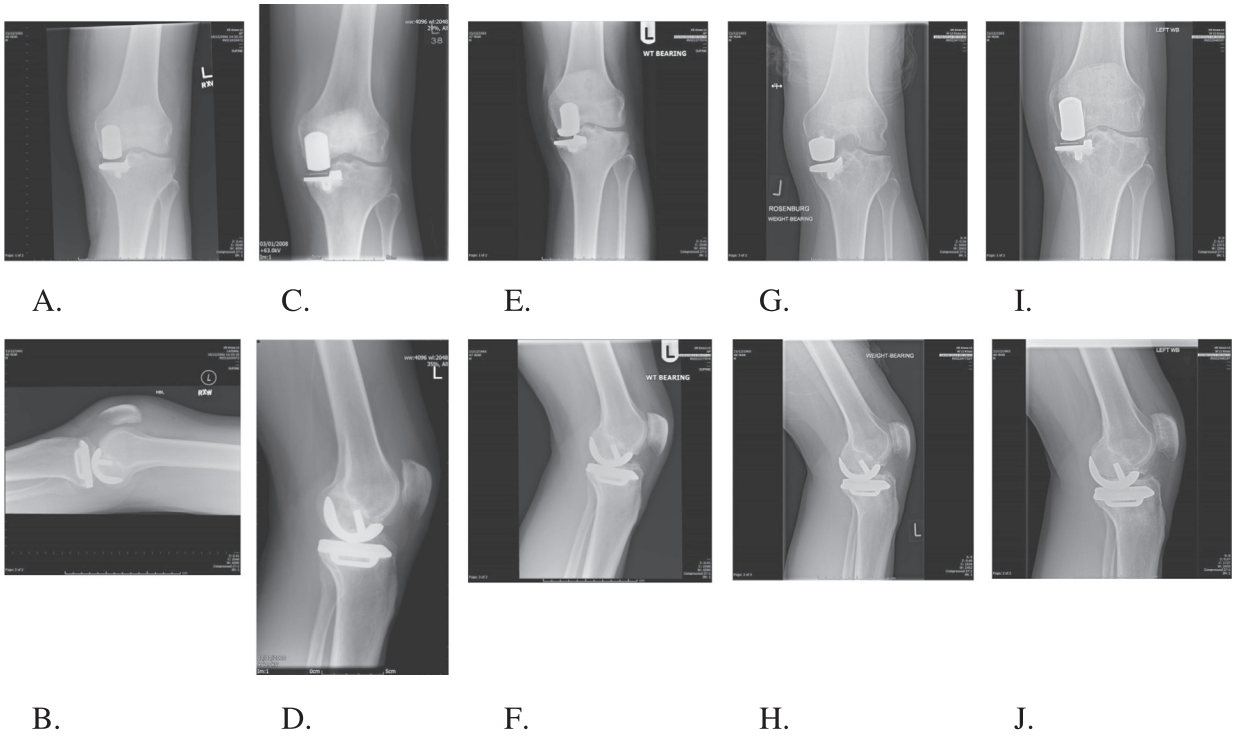

Figure 1. Pre-operative serial radiographs showing progression of the tibial geode over several years.

A. Anterior–posterior 18/12/2006: no geode.
B. Lateral 18/12/2006.
C. Anterior–posterior 03/01/2008: a very minor area of radiolucency.
D. Lateral 03/01/2008.
E. Anterior–Posterior 21/01/2013: increase in the size of the geode.
F. Lateral 21/01/2013.
G. Anterior–posterior 18/08/2014: large increase in the size of the geode.
H. Lateral 18/08/2014.
I. Anterior–posterior 10/08/2015: significant increase in the size of geode.
J. Lateral 10/08/2015.