Bilateral Spontaneous Osteonecrosis of the knee (SPONK) in a young male: A Case Report

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Background

- Spontaneous osteonecrosis of the knee (SPONK) is a relatively uncommon disease consisting of a focal, subchondral lesion thought to be a subchondral insufficiency fracture that has progressed to collapse and may lead to end-stage osteoarthritis of the knee. There are several treatment options, including nonsurgical and surgical measures but almost 80% of cases end up requiring surgery, usually consisting of unicompartmental (UKA) or total knee arthroplasty (TKA). There have been good reported results for arthroplasty in SPONK, both UKA and TKA, with implants showing good survival and high patient reported outcomes . However, these are usually done for older patients who are less active and have lower likelihood of needing additional or revision surgeries later in life. There remains no good option for young patients who present with SPONK in large areas of their distal femur or disease in both medial and lateral condyles. These patients present a unique and complex problem to the treating orthopedic surgeon as they are usually healthy, active, and young enough to likely require at least one revision of arthroplasty components. Procedures for smaller lesions are not sufficient in treating larger lesions and arthroplasty in young patients leads to revision surgeries later in life. We present a case of using a matched osteochondral allograft for bilateral SPONK.

Case Description

A 25 year old male presented to clinic after referral with MRI demonstrating SPONK in both knees and being unable to ambulate without assistive devices. The left knee involved both medial and lateral femoral condyles and the right knee involved lateral condyle with widespread, severe disease in both. The patient was hardly able to ambulate and had constant pain, making it impossible for him to do daily activities or hobbies without severe pain. After negative medical workup, the patient underwent osteochondral allograft transplantations for his SPONK bilaterally in a staged fashion. With both knees, the patient was pain free at 3 months and is now back to daily life and playing recreational sports with no pain almost 2 years after surgery.

Results

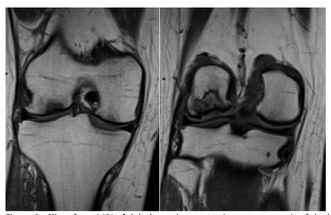

Figure 2. Slices from MRI of right knee demonstrating osteonecrosis of the lateral femoral condyle and possible involvement of the medial femoral condyle.

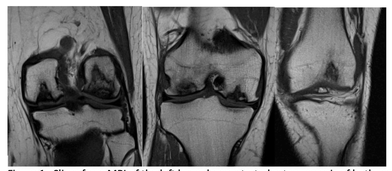

Figure 1. Slices from MRI of the left knee demonstrated osteonecrosis of both medial and lateral femoral condyles.

Figure 4. Bilateral lower extremity alignment films

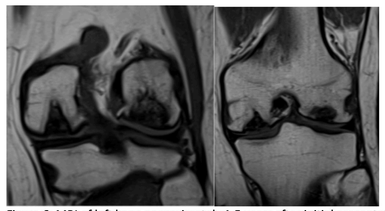

Figure 6: MRI of left knee approximately 1.5 years after initial presentation that again demonstrates extensive osteonecrosis of medial and lateral femoral condyles.

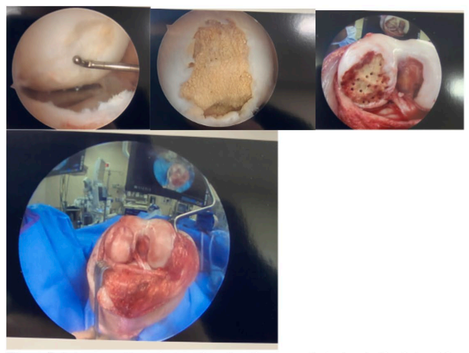

Figure 5: Intraoperative photos showing the necrotic lesion in the lateral femoral condyle of the right knee and coring out and subsequent placement of osteochondral allograft with secure press fit.

Figure 7: Intraoperative photos showing left knee, medial and lateral femoral condyles with well secured press fit osteochondral allografts.

Discussion

- This case report demonstrates a unique instance of a young, healthy male who developed spontaneous osteonecrosis of bilateral knees with involvement of both medial and lateral condyles of one knee. Our patient was successfully treated with osteochondral allograft transplantation bilaterally, including almost the full weight bearing portions of femoral condyles in one knee. Although we only have short term results, he has demonstrated excellent improvement and is very satisfied to this point and has returned to everyday life activities without pain. To our knowledge this is the first instance of a case of SPONK in a young patient treated with bilateral osteochondral allografts and more specifically, having undergone allograft transplantation for large areas of both the medial and femoral condyle in a single knee.

Conclusion

- Young patients who present with widespread SPONK can successfully be treated with large osteochondral allografts and has good outcomes in the short term. This can allow them to delay the need for unicompartmental and total knee arthroplasty, giving them better options for later in life.

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