INTERNAL FIXATION OF OSTEOCHONDRAL FRAGMENT ORIGINATED FROM DISSECTING KNEE OSTEOCHONDRITIS

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SUMMARY

The treatment of dissecting knee osteochondritis with crater-like lesion associated to intra-articular loose body can be provided by fixating the osteochondral fragment on its original site. However, there is some concern about the efficacy of this approach, since some reports have shown that the cartilage layer in osteochondral loose bodies that have been detached for a long time becomes deteriorated. We report a case where while the osteochondral loose body was detached for as long as five weeks, the fixation to the osteochondral defect was uneventful and resulted in a completely healed lesion. We concluded that, especially in cases in which the lesion involves a weight-bearing area of the knee with a detached osteochondral fragment, when the prognosis is usually worse if the fragment is discarded, potential complications of the fixation are offset by the benefits achieved by reducing the osteochondral fragment at the crater-like lesion, resulting in better joint congruence, and potentially avoiding an early joint degeneration process.

Keywords: *Osteochondritis dissecans; Knee injuries; Cartilage injuries; Cartilage surgery; Absorbable implants.*

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INTRODUCTION

The treatment of dissecting knee osteochondritis with crater-like lesion associated to intra-articular loose body can be provided by fixating the osteochondral fragment on its original site The treatment of dissecting knee osteochondritis with crater-like lesion associated to intra-articular loose body, graded as Grade IV on the classification by Ewing and Voto[1], usually involves fixation of the loose body on its original site[2]. However, this procedure has generated controversies, especially when the osteochondral fragment is loose in the joint for long periods of time. Milgram[3] showed that a full deterioration of the chondral layer of free bodies after its fixation on the original site can occur, this being directly proportional to the time in which the osteochondral fragment has remained loose in the joint. On the other hand, once the worst prognosis occurs when an osteochondral fragment originated from the load area of the femoral condyle is ruled out, it seems consistent that its fixation is provided even if it has remained loose in the joint for a long period of time, provided its gross appearance seems to be appropriate. Here, we describe a case where, despite the osteochondral had remained loose in the joint for approximately 5 weeks, its fixation resulted on total healing of the lesion and remission of patient's symptoms, who was able to return to sports activities four months postoperatively.

CASE REPORT

A 14 year-old female patient was admitted in other service reporting diffuse pain on her left knee and repeated joint effusion, the onset of which was 4 months before. She reported no previous local trauma. The patient was a recreational basketball player in a frequency of two times a week. Pain was worsened with mid-distance walks and when climbing up and down stairs. Knee X-ray images at frontal and lateral plane taken at that time revealed dissecting knee osteochondritis on lateral femoral condyle, with outlined osteochondral fragment ¨in situ¨. A conservative treatment was prescribed, with partial load discharge with the use of axillary crutches. After one week, the patient reported a short-lasting joint blockage episode and a sensation of loose body in the knee, which could be palpable on suprapatellar region. She sought the original service again, being guided to avoid load on the affected limb and anti-inflammatory agents. She reported new joint blockage episodes since then, and sought care in our service for baseline evaluation after five weeks of the first blockage episode. In the baseline physical examination, she reported pain on inferolateral parapatellar region, subtle joint effusion, and a palpable and movable loose body on lateral synovial recess. Joint range of motion and knee ligament stability were normal. X-ray images of the knee at frontal and lateral planes revealed a typical appearance of dissecting knee osteochondritis with grade IV inferocentral lesion (crater), which was better outlined by magnetic resonance imaging. An osteochondral loose body was identified at the lateral recess, both on X-ray and magnetic resonance images (Figure 1).

Then, knee arthroscopy was provided where we could identify the lesion on lateral femoral condyle and view an osteochondral loose body measuring approximately 2cm X 1.5cm X 1.5 cm. An anteromedial 3-cm arthrotomy enabled the osteochondral fragment removal and the direct inspection of the crater at lateral femoral condyle, with the knee flexed at 120°. Macroscopically, the osteochondral fragment was shown to be appropriate in terms of color, integrity and outline of its cartilaginous layer. Crater base was submitted to debridement for removing fibrous tissue and the

Study conducted at the Orthopaedics and Traumatology Institute, Hospital das Clínicas, University of São Paulo Medical School, and at the Discipline of Orthopaedics and Traumatology, Londrina State University (PR)

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avascular bone, and the osteochondral fragment was modeled and fixated at its original site with four straight bioabsorbable pins (Orthosorb®, Depuy) (Figure 2). Postoperatively, the patient was recommended to not to place load on the operated limb for six weeks, with partial load being later allowed. Physiotherapeutic follow-up was provided on a daily basis, five times a week. On the first four weeks, joint motion between 0° and 90° was allowed, and full range of motion was later released. After eight weeks, the patient was totally asymptomatic, being allowed to place full load on the operated limb. A magnetic arthro-resonance with gadolinium was performed at the end of the eighth postoperative week, where an intact cartilaginous layer and no sign of dye penetration behind the fixated fragment were found (Figure 3). The patient returned to her sports activities four months after surgery, with no complaints.

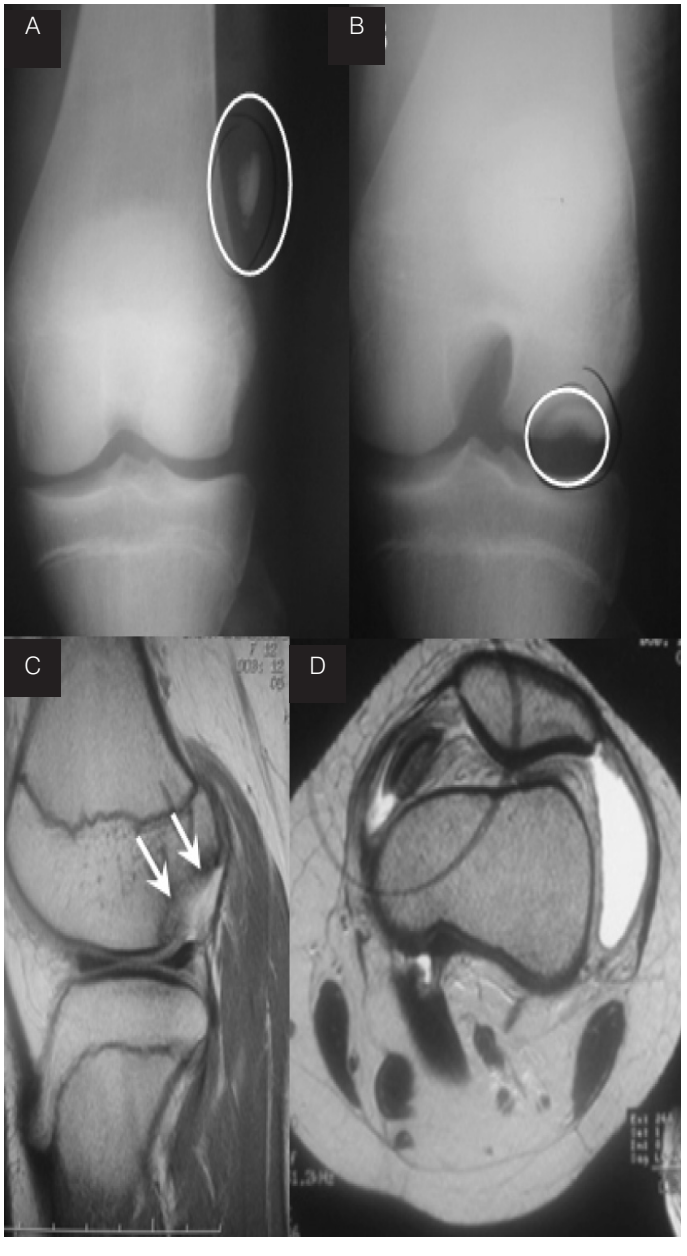


Figure 1 - *A) X-ray image of the knee at anteroposterior plane, showing the loose osteochondral body. B) X-ray image of the knee at sulcus plane where the dissecting osteochondritis lesion can be seen at the lateral femoral condyle. C) Magnetic resonance image of the knee showing a dissecting osteochondritis lesion at the lateral femoral condyle. D) Magnetic resonance image of the knee showing an osteochondral loose body at medial synovial recess.*

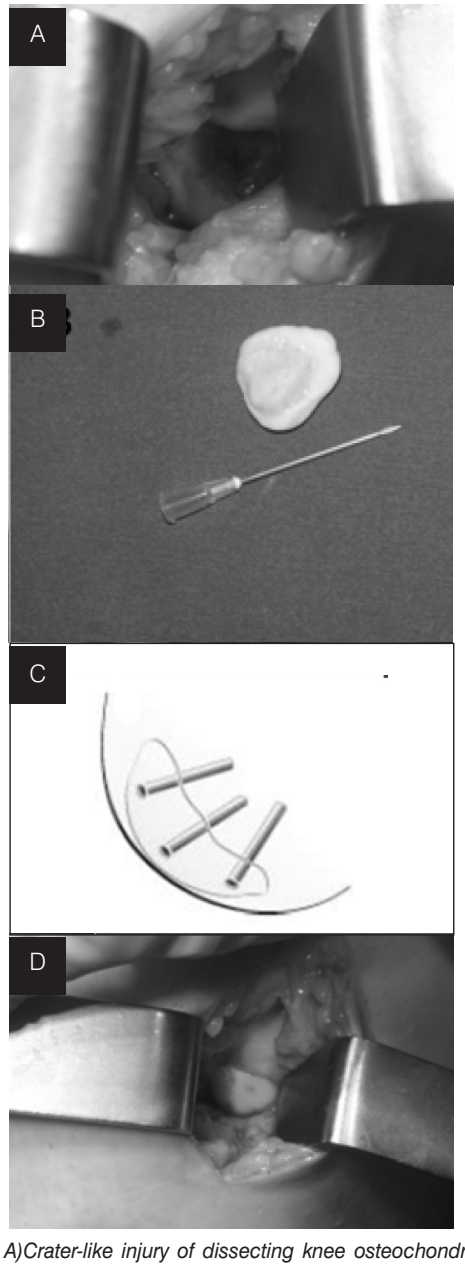
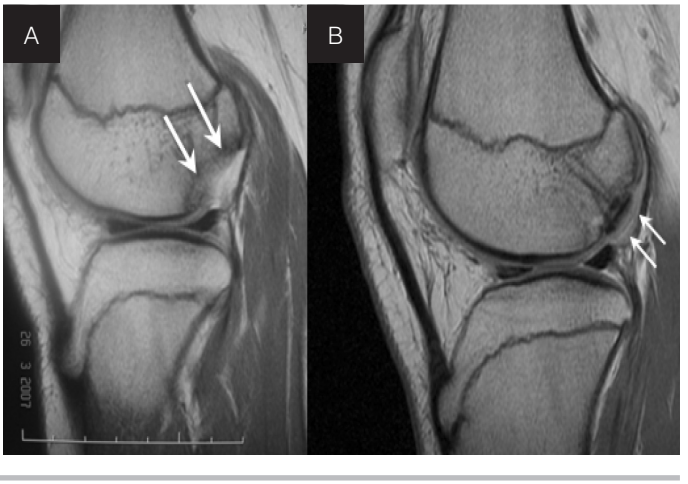


Figure 2 - *A)Crater-like injury of dissecting knee osteochondritis at lateral femoral condyle. B) Osteochondral loose body with good macroscopic appearance.C) Scheme of the osteochondral fragment fixation method with straight absorbable pins.D) Osteochondral fragment fixated on its original site.*



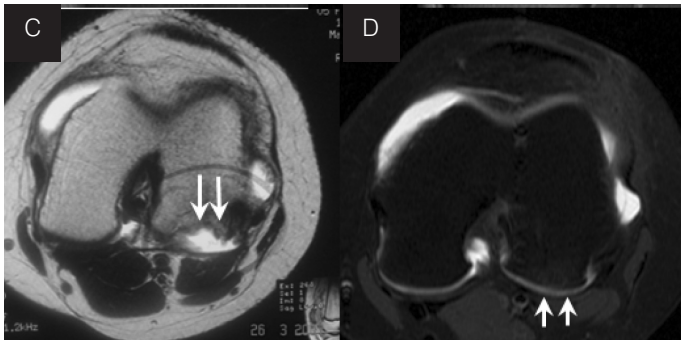


Figure 3 - *A)Magnetic resonance image at saggital plane T1 showing a crater-like lesion of dissecting knee osteochondritis at lateral femoral condyle.B) Magnetic resonance image at saggital plane T1 showing the osteochondral fragment fixated on its original site, where the integrity of its cartilaginous layer (arrows) and absence of dye penetration between fragment and crater can be seen. C) Magnetic resonance image at axial plane T1 showing crater-like lesion of dissecting knee osteochondritis at lateral femoral condyle.D) Magnetic resonance image at axial plane T2 showing the osteochondral fragment fixated on its original site, where the integrity of its cartilaginous layer (arrows) and absence of dye penetration between fragment and crater can be seen.*

DISCUSSION

Dissecting osteochondritis usually causes knee pain and dysfunction, especially when the injury involves the load area of the femoral condyles, and the osteochondral fragment is loose in the joint. In this situation, prognosis is usually worse and irreversible sequels may occur[4]. Thus, despite of the studies advocating against fixation of osteochondral fragments that remained loose in the joint for prolonged period of time, we think that this procedure should always be performed, provided the macroscopic image of the loose body is satisfactory. Recently, Touten et al.[5] concluded that, although reduction and fixation of loose bodies originated from dissecting knee osteochondritis should be performed as soon as possible, this approach should be applied even in later cases, once it was shown to potentially provide regeneration of the cartilaginous layer of those loose bodies after fixation. We conclude that the chances of complications occurring as a result of the fixation of long-term loose osteochondral fragments is offset by the benefits achieved by its reduction and fixation at the original site, allowing for a good joint congruence and possibly avoiding an early joint degeneration.

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