

Case Report

Chondral lesion of the patella in a junior football player: chondral-only fragment fixation

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ABSTRACT

Chondral lesions of the patella are a relatively common pathology that can cause pain and impairment in active young individuals. These lesions can have lifelong consequences, with increased risk of osteoarthritis in some cases. Surgical excision of medium to large fragments is associated with poor long-term outcomes. There is a general belief that fixation of purely chondral lesions in the absence of subchondral bone is associated with low integration rates, however recent case reports and basic science studies have been challenging this belief. In this case report, we describe a young patient with a chondral lesion of the patella and a fragment without subchondral bone, who underwent open fragment reduction and fixation using bioabsorbable pins. The patient had a successful outcome with significant fast improvement in pain and function and full return to practice. This case highlights the potential benefits of conservative surgical management with preservation of the native cartilage, even in the absence of subchondral bone, especially in the young active patient.

Keywords: Chondral lesion, Patella, Knee, Young active, Fixation, ORIF

INTRODUCTION

Chondral lesions of the patella are a common cause of knee pain in young individuals. These lesions can have lifelong consequences, with impairment of daily life activities and increased risk of osteoarthritis in some specific cases. In the young active patients, these lesions usually result from either a traumatic event or in the setting of osteochondritis dissecans (OCD).^{1,2} Chondral lesions can be further differentiated into osteochondral or chondral only lesions, with the latter being more uncommon. Fixation of osteochondral lesions is associated with high rates of fragment healing and re-integration.³⁻⁵ In contrast, if subchondral bone is absent, there is limited healing potential due to the avascular nature of cartilage and has been associated to bad outcomes in literature.^{6,7}

Treatment options may include non-operative management, such as physical therapy and bracing, however these are associated with high clinical failure rates.⁸ And surgical interventions such as microfracture, mosaicplasty, and autologous chondrocyte implantation (restorative or reconstruction procedures).

Surgical excision of medium to large fragments is associated with poor long-term outcomes.^{3,4,7} Chondral restorative or reconstruction are usually performed in these cases, with acceptable results.⁹⁻¹² Nevertheless, recently there is increasing evidence that cartilage may have the ability to integrate and heal by itself.¹³⁻¹⁵ Fragment fixation has some advantages over excision or restorative and reconstructive procedures. It restores the native hyaline cartilage, isn't associated with donor-site morbidity, can

be performed in one time procedure, and restoration procedures can still be performed if fixation fails.¹⁶

While recent case reports show promising evidence supporting fixation of chondral-only fragments, they are few in total number. The purpose of this case report was to add to this growing body of evidence. We present a case of a junior athlete, with a fast fragment integration and return to practice (RTP) following fixation of a large chondral fragment, with no osteochondral bone and partial fragment reabsorption. We therefore hypothesize that surgical fixation of sole chondral fragments can have acceptable rates of healing with improvement in functional outcome scores in the young active patient.

CASE REPORT

A 16-year-old male presented to our clinic with a two-week history of anterior knee pain that had progressively worsened. The patient was a junior league football player, he reported one early episode of significant trauma to the knee during one practice. On examination, he had tenderness over the inferior pole of the patella and a positive patellar grind test. Magnetic resonance imaging (MRI) showed a chondral lesion of the patella measuring 1.8×1.3 cm, with a loose articular body composed of sole cartilage (chondral fragment). Preoperatively, functional outcome scores were performed: 62,9%, in the “knee outcome survey activities of daily living scale” (KOSADLS); 51,2% in the “lower extremity functional score” (LEFS); 60% in the “Kujala score (anterior knee pain scale - AKPS)”.

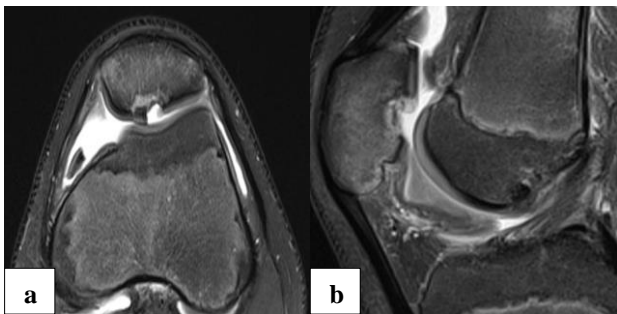


Figure 1: MRI showing the chondral defect and the loose fragment.

The patient underwent open fragment reduction and fixation using bioabsorbable pins. The surgery was performed under general anaesthesia, and a standard lateral incision was made over the patella. The chondral lesion was identified, and the fragment was reduced and stabilized using two 3.5 mm bioabsorbable pins. The fragment had no subchondral bone attached and had been partially reabsorbed. The knee was immobilized in an articulated brace for 6 weeks postoperatively, followed by a progressive rehabilitation program.

At a 3 and 6-month follow-up, the patient reported significant improvement in pain and function. MRI was

repeated at 3-month follow-up, to document the chondral fragment integration, and to help guide the RTP and progress to contact sports. At 3-months, the MRI already showed complete healing of the chondral lesion, with restoration of the joint surface; at this follow-up, the patient resumed training. At 6-months, examination revealed no tenderness over the patella, and the patellar grind test was negative, the patient had successfully participated in all training schedules, with no limitations whatsoever, having returned to his previous level of activity.

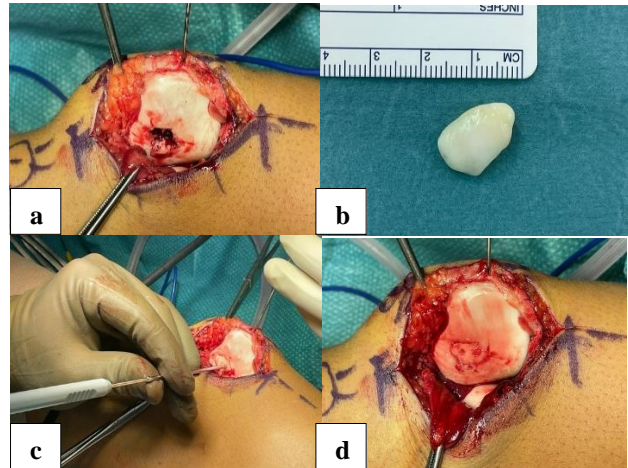


Figure 2: Intraoperative images, (a) chondral defect of the patella, (b) chondral fragment measuring 1.8×1.3 cm, (c) performing the fragment fixation with bioabsorbable pins, and (d) final view before wound closure, with the fragment fixation in place.

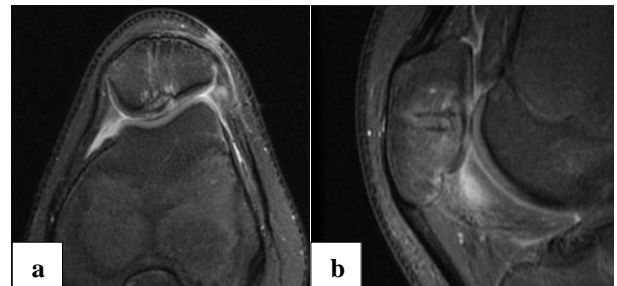


Figure 3: MRI at 3-month showing fragment incorporation.

Table 1: Patient’s functional outcomes scores at a preoperative, 3-month and 6-month postoperative evaluation.

Functional outcomes scores	Preoperative (%)	3 months postoperative (%)	6 months postoperative (%)
KOSADLS	62.9	88.6	100
LEFS	51.2	87.5	100
AKPS	60	93	100

KOSADLS: Knee outcome survey activities of daily living scale; LEFS: lower extremity functional score; AKPS: anterior knee pain scale (Kujala score)

Table 1 summarizes the patient's functional outcomes scores at a preoperative, 3-month and 6-month postoperative evaluation.

DISCUSSION

Open reduction and fixation of a chondral-only fragment may offer several potential advantages over other surgical options, including a low risk of hardware-related complications, excellent stability, and the ability to promote healing of the joint surface, with its' preservation.

Despite the belief that direct cartilage-to-bone healing may lead to a biomechanically inferior repair, a slowly growing number of cases have reported successful outcomes after fragment fixation in both OCD lesions and traumatic shear injuries.^{13,16} A recent case series of 3 patients who underwent fragment fixation, reported a full integration on postoperative MRI scans and "second look" arthroscopy.¹⁷ A relevant publication by Fabricant et al reported a 7% loss of fixation rate and a 33% of full integration rate, however the study population consisted of patients with OCD.¹⁸ Other series reported full healing of the chondral fragment.¹⁹

CONCLUSION

In this case report, we describe the successful use of open reduction and fixation of a chondral-only fragment using bioabsorbable pins in a young patient. The discussion highlights the potential advantages of open reduction and fixation of chondral-only fragments, particularly with the utilization of bioabsorbable pins. Despite concerns regarding biomechanical inferiority, emerging evidence, including recent case series, suggests successful outcomes with fragment fixation, showcasing full integration of chondral only fragments on postoperative imaging and arthroscopic evaluation. Specifically, in the case of patellar chondral lesions, bioabsorbable pin fixation emerges as a promising treatment option, offering stability, preservation of joint surface, and potentially lower risk of hardware-related complications. In summary, bioabsorbable pin fixation may be a useful option for the treatment of chondral lesions of the patella in select patients.

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