

The Knee

Internal Fixation Techniques for Osteochondritis Dissecans

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KEYWORDS

- Osteochondritis dissecans • Knee • Sports medicine • Fixation
- Skeletally immature

KEY POINTS

- The “stability” of an osteochondritis dissecans (OCD) lesion refers to the mechanical integrity of the lesion and an unstable lesion typically warrants surgical planning.
- Determining the physeal patency and stability of an OCD lesion is paramount to determining surgical intervention versus nonoperative, conservative treatment.
- The theoretical advantage of variable-pitch screw fixation for OCD lesions is decreased soft-tissue morbidity seen with the exiting Kirschner wire and articular cartilage morbidity seen with the head of a cannulated screw.
- Bioabsorbable products obviate a second surgery for hardware removal. However, there is a risk of device breakage, backing out, and elicitation of unwanted immune response.

INTRODUCTION

The decision to pursue surgical management of osteochondritis dissecans (OCD) in the athlete depends on multiple variables and should be a shared decision between the patient and surgeon. First and foremost, the patient’s current quality of life, level of activity, sport, and goals should be assessed so that expectations are met for both parties. Following this, determining the stability of the OCD lesion is paramount.

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Having an understanding of how stable the lesion is will help direct the surgeon down a path of conservative management versus surgical management.

The term “stability,” in regards to OCD lesions, has been referred to as the mechanical integrity of the subchondral OCD lesion.¹ More specifically, an OCD lesion that is mobile, fragmented, or ex situ is thought to be unstable, and a lesion, which is immobile and in situ, is considered to be stable. The importance of this distinction is that it will help the surgeon and athletes avoid a potentially unnecessary or inappropriate surgery. Perhaps equally as important is the patency of the physis. Despite having an increased rate of OCD in young athletes,² it is well understood that juvenile osteochondritis dissecans (JOCD) typically has better outcomes than adult OCD. In 1985 Bernard Cahill³ writes, “JOCD and OCD are distinct conditions. The former has a much more favorable prognosis than the latter.”

Multiple classifications for predicting the stability of OCD lesions have been devised based on radiograph,^{4,5} magnetic resonance imaging,^{6–8} and arthroscopy.^{7,9–12} The utility of classifications lies in their ability to predict whether a lesion is or will become unstable. This information is again useful for surgical decision-making and planning. It is important to remember that when planning surgical intervention of an OCD lesion the 4 key precepts described by Cahill³ be considered: whenever possible restore the joint surface, enhance blood supply of the fragment, use rigid fixation where instability exists, and begin joint motion as soon as possible postoperatively.

The purpose of this article is to provide a detailed overview of the surgical options for internal fixation of OCD lesions (**Table 1**). The surgical techniques for internal fixation of OCD of the knee can be extrapolated to the treatment of OCD in other joints. In

Table 1		
Methods of internal fixation for unstable OCD of the knee^a		
Method	Advantages	Disadvantages
Metallic devices		
Kirschner wire	Cost, availability, ease of placement	Exit site morbidity, lack of compression, need for removal, bending
Cannulated screws	Good fixation, multiple size options	Increased damage to articular surface from screw head, need for removal, backing out
Variable-pitch screws	Good fixation, “headless” counter-sinking	Possible need for removal
Bioabsorbable devices		
Pins/rods/pins	Size, planes of fixation, less stress shielding	Breakage, loss of fixation, foreign-body immune response
Screws	Good fixation, obviate hardware removal	Breakage, loss of fixation, foreign-body immune response
Biologic devices		
Mosaicplasty	Native tissue, graft across interface, obviate hardware removal	Possible donor site fracture, bone peg loosening, technically more challenging
Bone sticks	Native tissue, graft across interface, obviate hardware removal	Donor site morbidity, loss of fixation, technique in its infancy, technically more challenging

^a Note: This list is not exhaustive and only includes those devices that historically have been used and studied most frequently.

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