Physical Therapy Management of Patients with Osteochondritis Dissecans: A Comprehensive Review

Mark V. Paterno, PT, PhD, SCS, ATC[a,b,c,d,*],
Tricia R. Prokop, PT, MS, CSCS[e,f], Laura C. Schmitt, PT, PhD[a,b,g]

KEYWORDS

- Osteochondritis dissecans • Rehabilitation • Return to activity
- Non-operative management • Post-operative management

KEY POINTS

- Physical therapy management of osteochondritis dissecans can incorporate a full spectrum of conservative, nonoperative, and postoperative care.
- Rehabilitation interventions can vary based on factors such as the lesion characteristics, lesion location, articular cartilage involvement, skeletal maturity of the patient, presenting impairments at the time of evaluation, and concomitant injury.
- It is the responsibility of the rehabilitation professional to address all corresponding factors and mindfully advance the patient with a systematic and evidence-based progression to protect healing tissue and optimize outcome.

INTRODUCTION

Osteochondritis dissecans (OCD) refers to a lesion or injury of the subchondral bone, which may or may not involve the integrity of articular cartilage.[1–4] It has most recently been defined as a focal idiopathic alteration of subchondral bone with risk for

[a] Cincinnati Children's Hospital Medical Center, 3333 Burnet Avenue, MLC 10001, Cincinnati, OH 45229, USA; [b] Division of Sports Medicine, Cincinnati Children's Hospital Medical Center, 3333 Burnet Avenue, Cincinnati, OH 45229, USA; [c] Division of Occupational Therapy and Physical Therapy, Cincinnati Children's Hospital Medical Center, 3333 Burnet Avenue, Cincinnati, OH, USA; [d] Department of Pediatrics, College of Medicine, University of Cincinnati, Cincinnati, OH, USA; [e] Connecticut Children's Medical Center, Department of Physical Therapy, Division of Sports Medicine, Hartford, CT 06106, USA; [f] Department of Rehabilitation Sciences, College of Education, Nursing, and Health Professionals, University of Hartford, West Hartford, CT 06117, USA; [g] Division of Physical Therapy, School of Health and Rehabilitation Sciences, The Ohio State University, Columbus, OH 43210, USA
* Corresponding author. Cincinnati Children's Hospital, 3333 Burnet Avenue, MLC 10001, Cincinnati, OH 45229.
E-mail address: mark.paterno@cchmc.org

Clin Sports Med 33 (2014) 353–374
http://dx.doi.org/10.1016/j.csm.2014.01.001 **sportsmed.theclinics.com**
0278-5919/14/$ – see front matter

instability and disruption of adjacent articular cartilage that may result in premature osteoarthritis. OCD lesions are most commonly reported in the knee joint, but they are also known to occur in other joints including the ankle and elbow. Physical therapy has a key role in the management of OCD lesions across the spectrum of nonoperative, preoperative, or postoperative phases of care. This article provides an overview of the role of physical therapy throughout the spectrum of care for patients with OCD lesions.

Role of Physical Therapy in Nonoperative Management of OCD

OCD is an increasingly common cause of joint pain and dysfunction among children, adolescents, and young adults.[4] The long-term sequelae of juvenile OCD may be further joint damage and premature development of osteoarthritis.[2,4–6] In skeletally immature patients, management of OCD lesions of the knee, elbow, and ankle may include a course of nonoperative care if the surrounding articular cartilage is intact and there are no signs of fragmentation or instability of the progeny bone.[4,7,8] Such lesions often present with an insidious onset of activity-related pain, swelling, and tenderness to palpation.[7–12] These lesions may also present with loss of range of motion (ROM), which is likely attributed to pain or swelling as opposed to a loose body resulting in a mechanical block. It is not common for these patients to experience locking of the joint.[8] Various studies suggest a healing rate between 26% and 66%,[1,13,14] with much of the variability attributed to size, location, and severity of the lesion.[14] If a nonoperative course is appropriate, a phased progression toward the previous level of function is recommended to allow for protection of healing tissues while addressing potential impairments present in these patients. These potential impairments include pain, effusion, weakness and altered joint mechanics and movement patterns with activity. Coinciding with these impairments, altered functional capacity and activity tolerance may result. Modifications to this phased rehabilitation progression are indicated depending on the lesion characteristics (ie, size and location), integrity of the surrounding articular cartilage surfaces, and severity of associated impairments.[15,16]

Because of the high risk of progression of OCD, patient and family education regarding activity restrictions are important immediate interventions in the nonoperative management. Mihara and colleagues[8] in 2009 evaluated the nonoperative management of 39 youth baseball players. On follow-up at an average of 14.4 months it was determined that 3 of the 4 patients who showed radiographic evidence of lesion progression had gone against medical advice and continued to throw. A second study by Takahara and colleagues[17] in 2007 found that patients treated nonoperatively for elbow OCD who continued to stress the affected elbow had significantly worse radiographic findings. Therefore, a period of rest and activity restriction is indicated to promote optimal outcomes with nonoperative management; however, there is a lack of consensus as to the appropriate duration. Restrictions are reported in the literature anywhere from 6 to 16 weeks.[6,8,11,14,18] Furthermore, a nonoperative management trial in patients with stable lesions, open growth plates, and no significant loss of ROM may been recommended in the literature for up to 6 months.[7,8,17–19]

Progression of the young individual through phases of treatment, from initial presentation to return to activity, are based on the characteristics of the lesion (ie, size, location, status of surrounding tissue), the understanding of joint biomechanics, and the tissue properties that contribute to the healing of the lesion and surrounding tissues. Criteria for progression as well as a general timeline have been provided but should