

Early bracing may beat casting for JOCD

By Peter Pollack

40 percent of patients still require surgery

Nonsurgical treatment is appropriate for many patients who have juvenile osteochondritis dissecans (JOCD) of the knee, especially if the disease is in an early stage, according to the results of a prospective cohort study presented by **Robert K. Fullick, MD**, at the AAOS 2010 Annual Meeting. Furthermore, of nonsurgical treatments, the data suggest that unloader bracing followed by physical therapy may have the greatest efficacy.

"JOCD of the knee is a relatively common condition in pediatric and adolescent athletes," explained **Mininder S. Kocher, MD, MPH**, the senior author on the study. "As time goes on, the emphasis on higher intensity in youth sports is increasing, and children are tending to focus on a single sport earlier and earlier. This leads to a lot of repetitive impact and force on the knee, and so we're starting to see JOCD more frequently.

"If JOCD is diagnosed while the articular cartilage is intact and the growth plate is open," continued Dr. Kocher, "the mainstay treatment has been nonsurgical. A variety of nonsurgical treatments have been recommended, however, and previous retrospective studies have shown a wide variability in results. In addition, some recent literature suggests that outcomes from nonsurgical treatment may be less favorable than previously thought."

A prospective approach

The research team prospectively followed 112 knees (103 patients) who presented with JOCD at two pediatric sports medicine centers—Children's Hospital Boston and Children's Hospital of Philadelphia. The patients were treated according to the protocol recommended by their attending orthopaedists. The treatment groups consisted of physical therapy and activity modification (37 knees), unloader bracing plus physical therapy and activity modification (45 knees), or casting plus physical therapy and activity modification (30 knees). The physical therapy and activity restriction regimens in all groups were similar.

Overall, 94 knees involved the medial femoral chondyle, 13 involved the lateral femoral chondyle, 4 had bicondylar involvement, and 1 had a patellar lesion. The authors were able to

classify lesions using magnetic resonance imaging (MRI) in 76 knees, and found 27 Hefti stage I (articular cartilage intact, not well demarcated), 47 stage II (articular cartilage intact, well demarcated), and 2 stage III (articular cartilage fissure but not unstable) lesions. The casted group had a significantly higher percentage of stage II and stage III lesions ($p = 0.009$), and a significantly greater number of patients with missing MRI data ($p = 0.005$).

None of the groups varied significantly with respect to age, symptom duration, gender, lesion side, or lesion location.

Younger patients do better with conservative treatment

After patients completed nonsurgical treatment, 62.5 percent ($n = 70$) of the lesions were determined to have healed. Of patients treated with physical therapy and activity modification, 22 lesions (59.5 percent) healed. In the unloader bracing group, 32 lesions healed (71 percent), and in the casting group, 16 lesions healed (53 percent).

The following factors were significantly associated with healing:

- Mean patient age—11.0 years in the healed group, 12.4 years in the unhealed group ($p = 0.0004$)
- Median lesion size—healed lesions had a median size of 168 mm²; unhealed lesions had a median size of 232 mm² ($p = 0.002$)
- Lesion advancement—Hefti stage I lesions healed at an 81.5 percent rate, but only 53.2 percent of stage II lesions and 0 percent of stage III lesions healed

Dr. Kocher pointed out that the study data seem to support nonsurgical treatment of JOCD, especially among younger patients with smaller lesions at an early MRI stage. If patients are older, the lesion is large, or the lesion is at a more advanced stage, he suggested that more aggressive treatment may be necessary.

“If you have an older patient with a larger lesion, even if the articular surface is intact, if the lesion is at a more advanced stage on the MRI and the patient had a longer chronicity of healing, those would all be suggestive that this lesion will not heal with nonsurgical treatment,” he said. “Conversely, if the patient is younger, with a smaller lesion, in an earlier stage, and a shorter duration of symptoms, the lesion is more likely to heal with a conservative approach.”

One of the study’s most surprising findings, according to Dr. Kocher, was that patients treated with unloader bracing trended to heal at a greater rate than those in the other groups.

“I think that may be the data’s most provocative point,” he said, “that we saw a trend to higher healing rates with unloader bracing and physical therapy compared to the other two treatments. I think that’s fascinating and worthy of further study in a larger series that would have sufficient power to tease that difference out.”

Coauthors for "Comparison of Three Non-operative Treatments for Juvenile Osteochondritis

*Dissecans of the Knee” include **Theodore J. Ganley, MD, John M. Flynn, MD, David Shearer, MD**, Eric McFeely, and Nina Agrawal. The authors report the following conflicts: Dr. Kocher—Biomet, CONMED Linvatec, Smith & Nephew, Covidien, OrthoPediatrics, Gerson Lehrman Group, Pivot Medical; Dr. Ganley—OrthoPediatrics Corp.; Dr. Flynn—Orthopedics Today, Biomet, Medtronic Sofamor Danek, Synthes; Drs. Fullick and Shearer—no conflicts.*

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Bottom line

- Nonsurgical treatment of JOCD is warranted for younger patients with smaller lesions and early MRI stage.
- Patients treated with unloader bracing trended to heal at a greater rate than those who received other nonsurgical treatments.

AAOS Now

April 2010 Issue

<http://www.aaos.org/news/aaosnow/apr10/clinical5.asp>

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