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Epidemiology and patient-reported outcome after juvenile osteochondritis dissecans in the knee

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ABSTRACT

Background: This study describes the epidemiology and patient reported outcomes following juvenile osteochondritis dissecans (JOCD) of the knee.

Methods: Medical records and radiographs of patients aged 10–18 years diagnosed with JOCD between 2010 and 2016 were retrospectively reviewed. The lesions were classified according to the International Cartilage Repair Society's classification. The results were evaluated with the Knee injury and Osteoarthritis Outcome Score (KOOS), the Lysholm score and a Visual Analogue Scale (VAS) for pain.

Results: Seventy patients with 87 JOCDs were identified. The annual incidence was 11.5 (95% confidence interval 10.7–12.2) per 100,000 inhabitants younger than 19 years. Fifty-two (74.3%) of the 70 patients returned the questionnaires on average 48 months (five to 117) after diagnosis. The median Lysholm score was 84 for patients with grade I–II lesions and 80 for patients with grade III–IV lesions. The median Lysholm score was 84.5 for patients who were treated conservatively and 79.5 for patients who were treated operatively. The median VAS score was 2.0 for all groups, except for patients treated conservatively (median score 1.5). Conservative treatment was successful in 78% of grade I–II lesions. There was a fivefold increased risk of failing conservative treatment with a stage III–IV lesion, compared to stage I–II (Odds ratio = 5.5, $p = 0.02$).

Conclusions: The results following JOCD are good to excellent for the majority of patients. Grade I–II lesions are successfully treated conservatively in 78% of cases. Grade III–IV lesions have a high failure rate.

Level of evidence: Level III, retrospective cohort.

1. Introduction

Osteochondritis dissecans (OCD) is a relatively rare, but well recognized condition that affects children and adolescents. It is characterized by sterile osteonecrosis of the subchondral bone which can secondarily lead to instability in the overlaying cartilage [1]. The cause is largely unknown, but repetitive microtrauma is believed to play a central role [2]. The medial femoral condyle of the knee is most often affected. OCD is divided into adult and juvenile forms, depending on whether the physis is closed or open at the time of diagnosis. Juvenile OCDs (JOCD) have better prognosis than adult OCD [3]. Conservative treatment has been the gold standard for stable JOCD of the knee [4]. However, lesions that fail to heal require surgical treatment [5].

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The precise occurrence of OCD is unknown. An annual incidence of OCD between 15 and 29 per 100,000 has been reported and males seem to be at higher risk [6]. Lindén studied the incidence of OCD in the city of Malmö, Sweden, between 1965 and 1974, and found that the incidence increased during the last years of the study period, which he ascribed to increased participation in sports [4,7]. A recent population based study from the United States found the highest incidence of JOCD occurring between ages 11 and 15 years, and that the incidence is increasing [8].

Despite recent development in medical imaging and improved arthroscopic techniques, surgeons have limited knowledge of the effect of the disease and the results of the treatment. The outcome after JOCD is often evaluated based on healing rates, either by reviewing radiographs or magnetic resonance images (MRIs), or by second look arthroscopies. To quantify the results that matter to the patients, patient reported outcome measures (PROMs) have been developed. The increased use of PROMs in clinical

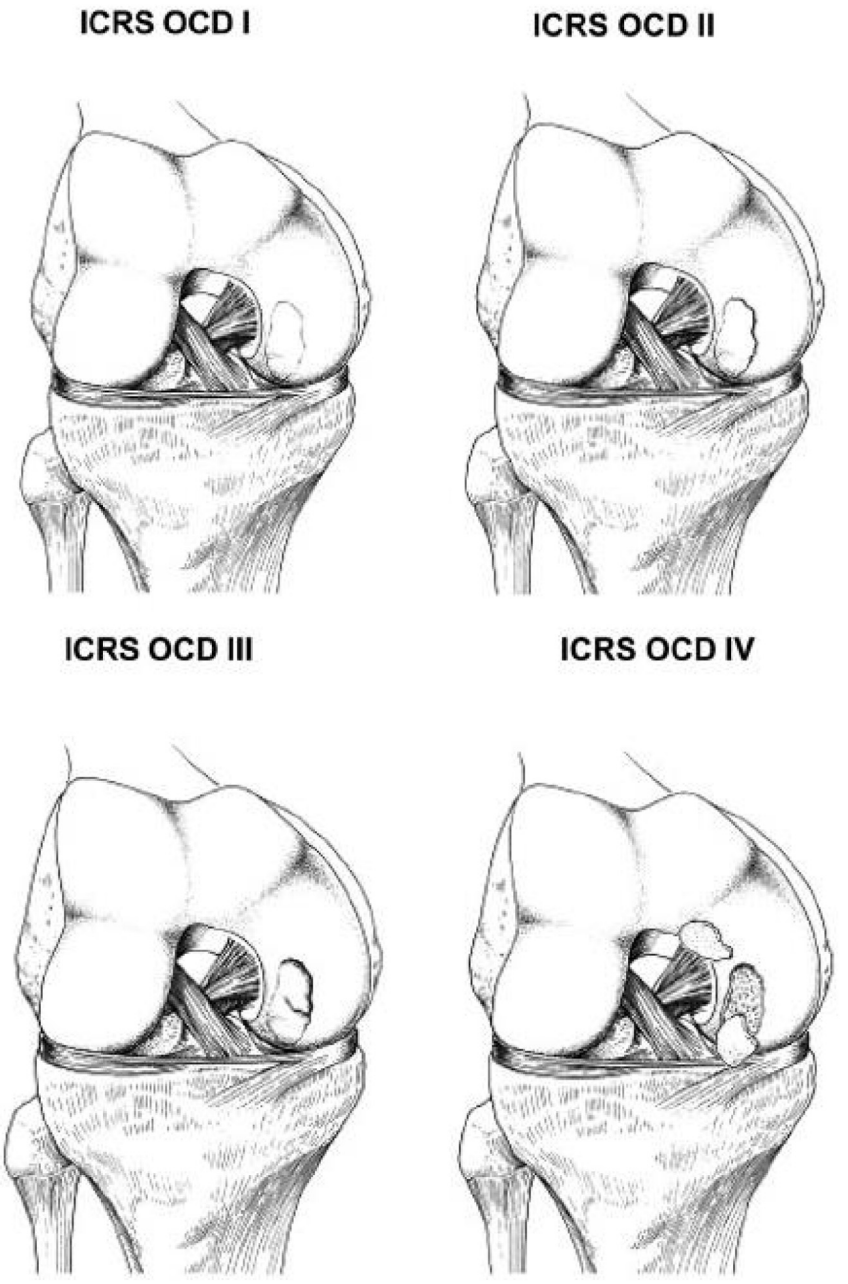

Figure 1. International Cartilage Repair Society's classification of osteochondritis dissecans. Grade I: Stable lesion with a continuous but softened area covered by intact articular cartilage. Grade II: Stable lesion with partial articular cartilage discontinuity. Grade III: Unstable lesion with complete articular cartilage discontinuity, but no dislocation ("dead in situ"). Grade IV: Empty defect, or defect with a dislocated fragment or loose fragment within the bed. Reprinted with kind permission by ICRS.

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