

# Pediatric Knee Osteochondritis Dissecans: A Systematic Review Comparing Treatments and Surgical Indications

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## Background

- Osteochondritis dissecans (OCD) is the sterile osteonecrosis of the subchondral bone where a small piece of bone near the surface of the joint detaches [1].
- Causes activity-related pain and joint stiffness. Can lead to osteoarthritis if untreated.
- Prevalence of 15 to 29/100 000 in the general population [2].
- Annual incidence of 11.5/100 000 (95% C.I. 10.7-12.2) in people under 19 years of age [3].
- Various non-invasive and surgical treatments are available, but previous systematic reviews failed to find a treatment that is definitely superior to the others and no guidelines are available.

**PURPOSE:** Identify indicators favoring a shift from non-surgical to surgical treatment and compare outcomes of non-surgical and surgical treatments in pediatric knee OCD

## Methods

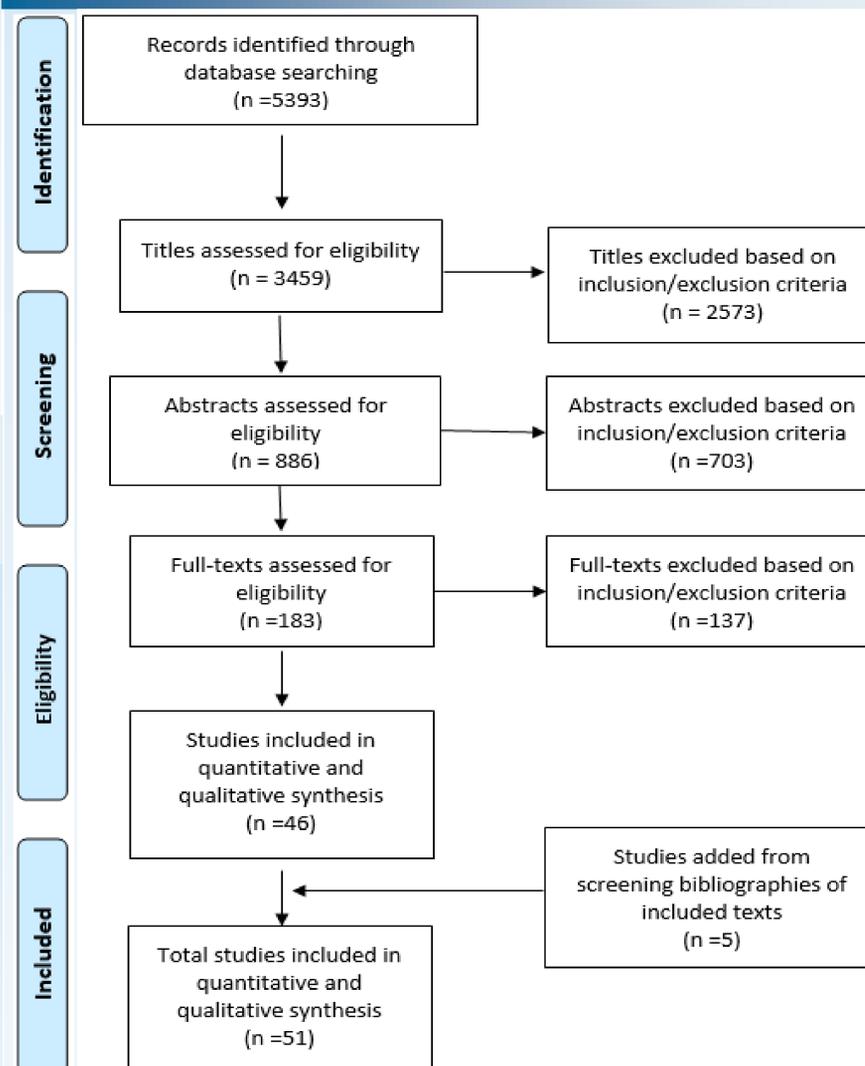
- The systematic review was done using the preferred reporting items for systematic review and meta-analysis (PRISMA) flowchart and checklist to facilitate data reporting
- The search was done in Embase, Medline and CINAHL
- Screening was conducted separately by two independent observers through Rayyan QRCI, with disagreements resolved by a third observer

- Inclusion criteria:
  - Published between January 1<sup>st</sup> 2000 and June 2019
  - Stable or unstable OCD lesions of the human knee
  - Traumatic or non-traumatic OCD lesions
  - Males or females with a mean age between 6 and 18 years
  - Written in English

- Exclusion criteria:
  - Non-clinical studies
  - Non-human studies
  - Review papers
  - Case reports
- Relevant data extracted:
  - Type of study and level of evidence
  - Number of patients
  - Age of patient
  - Site and size of lesion
  - Type and duration of treatment
  - Healing rates and complications

- Failure of conservative treatment and instability of the lesion are the 2 most common surgical indicators used by surgeons
- Fixation and drilling were most often associated with the need for revision surgery
- Osteochondral autologous transplantation (OAT) yields better and more stable healing results throughout the years compared to microfracture
- Cell-based regeneration techniques are indicated when the fragment is non-salvageable or upon failure of initial surgical intervention.
- MACI has a lower rate of graft hypertrophy compared to ACI while maintaining good clinical results.

## Results



- 1 RCT, 2 prospective and 48 retrospective studies were included
- Patient reported outcomes (IKDC score, KOOS score or personalised questionnaire) were assessed in only 16/51 (31.37%) studies
- Return to sports or Tegner score were assessed in only 28/51 (54.90%) studies

## Conclusions

- The prognostic value of age, lesion size, duration of preoperative symptoms or lesion location is still unclear
- Lesion stability and negative response to conservative treatment are the most common indicators for a surgical intervention
- There is no consensus on the optimal surgical treatment of knee OCD
- Due to the heterogeneity of studies and the lack of agreement, our ability to recommend a specific course of treatment is limited
- OAT is a superior treatment option compared to microfracture for long term results. There are no other direct high-level comparisons with other treatment options
- Even with the limited results, this review shed light on the lack of knowledge on this disease and showed potential future research questions that could be explored

## References

- [1]Edmonds EW, Polousky J. A review of knowledge in osteochondritis dissecans: 123 years of minimal evolution from König to the ROCK study group. Clin Orthop Relat Res. 2013;471(4):1118-26.
- [2]Andriolo L, Candrian C, Papio T, Cavicchioli A, Perdisa F, Filardo G. Osteochondritis Dissecans of the Knee - Conservative Treatment Strategies: A Systematic Review. Cartilage. 2019;10(3):267-277.
- [3]Ananthaharan A, Randsborg P. Epidemiology and patient-reported outcome after juvenile osteochondritis dissecans in the knee The Knee. 2018; 25(4):595-601.