

# Letter to the Editor: “Fixation of Unstable Osteochondritis Dissecans Lesions and Displaced Osteochondral Fragments Using New Biodegradable Magnesium Pins in Adolescents”

CARTILAGE  
July-September 2022: 1–2  
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DOI: 10.1177/19476035221098874  
journals.sagepub.com/home/CAR  


Andreas Rehm<sup>1</sup>, Luke Granger<sup>1</sup>, Tamás Kobezda<sup>1</sup>,  
and Joshua C.Y. Ong<sup>1</sup>

We read with interest the publication by Jungesblut and colleagues,<sup>1</sup> which is 1 of 4 studies reporting on the use of MAGNEZIX® implants in children and adolescents.<sup>1–4</sup> Jungesblut *et al.*<sup>1</sup> reported that complete radiographic healing of an osteochondral defect (OCD) had occurred in 12 of 19 children, but none of the provided images shows a healed defect. In contrary, the authors’<sup>1</sup> third figure shows extensive destruction of the normal trabecular bone structure with increased irregularity of a talar OCD fragment at 12 months after surgery, the fifth figure shows enlargement of a femoral OCD defect at 11 weeks with breakage of one pin and joint protrusion of 2 other pins, and the sixth figure shows non-union at 6 months, with a clear demarcation line between the femoral OCD fragment and the main bone after MAGNEZIX® pin fixation. Stürznickel *et al.*,<sup>2</sup> from the same unit as Jungesblut *et al.*,<sup>1</sup> presented one case showing partial disintegration of a lateral condyle fracture with MAGNEZIX® screw breakage at 20 weeks. Seitz *et al.*<sup>5</sup> reported on the MAGNEZIX® screw and stated, “we are able to say with certainty that the screw disappears within 12 months,” without providing any supporting radiographic evidence. The former is also not supported by Kose *et al.*<sup>6</sup> who provided imaging of 3 adults where the screws were still visible at 16, 21, and 24 months follow-up. Jungesblut *et al.*<sup>1</sup> stated that all children developed a radiolucent area around the pins and quoted Kose *et al.*<sup>6</sup> who stated that the mild radiolucent zones seen around the implants should not be discriminated with osteolysis. The Greek translation of osteolysis is bone degradation or resorption and is generally used in association with pathological processes related to a disease, joint degeneration, or implants which can be progressive or non-progressive. All publications reporting on the use of MAGNEZIX® implants in children and adolescents<sup>1–4</sup> show what we would describe as up to extensive bone resorption around the implants. To describe these changes as mild and to suggest that they should not be

called “osteolysis” distracts from the potentially serious risk of children sustaining stress fractures because of the reduced bone strength associated with the bone loss and will result in children not being able to participate in sport for extended periods to reduce such fracture risk until the bone has reformed. None of the 4 studies including children and adolescents<sup>1–4</sup> reported that the patients were able to return to sportive activities and did not provide data from functional outcome scores and patient-reported outcome scores (PROMS).

In conclusion, we are concerned about the use of magnesium-based implants in children and adolescents because of the up to extensive bone resorption seen around these implants, which might not be reversed up to 6 to 12 months after surgery and could potentially result in partial destruction and non-union of OCD fragments, with none of the imaging provided by Jungesblut *et al.*<sup>1</sup> showing complete OCD healing as it was reported. The weakened bone seen around magnesium implants used for fixation of osteotomies and fractures would stop children from returning to sport for extended periods, which could cause undue stress to children and parents. We therefore think that titanium and stainless steel screws are a better implant choice for fixation of children and adolescent fractures and osteotomies, which would probably not need to be removed in the majority of cases and would allow earlier recovery of normal activities, as they are usually not associated with reduced bone strength because of bone resorption.

<sup>1</sup>Cambridge University Hospitals NHS Foundation Trust Ringgold Standard Institution—Paediatric Orthopaedics, Cambridge, UK

**Corresponding Author:**

Andreas Rehm, Cambridge University Hospitals NHS Foundation Trust Ringgold Standard Institution—Paediatric Orthopaedics, Hills Road, Cambridge CB3 9JG, UK.  
Email: leoreporting@yahoo.co.uk



### Acknowledgments and Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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