

Orthopedics, Osteoporosis, Rheumatology & Trauma Care

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Does K-wire fixation improve outcomes in children with a Seymour fracture?

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Scenario: A 12-year-old boy presents to the emergency department with a painful and deformed right ring finger after jamming it in a door. The distal interphalangeal joint appears to be in slight flexion at rest, the nail plate appears longer than those of the other fingers with signs of bleeding from the nailbed, and plain films demonstrate a physeal fracture of the distal phalanx with volar angulation. The diagnosis of a Seymour fracture is made.

Aim: To determine whether in children with a Seymour fracture (patient), K-wire fixation (intervention) compared with no K-wire fixation (comparison) influences clinical findings, radiographic findings, and complication rates (outcomes).

Method: The research was carried out as a Best Evidence Topic. The search was conducted on 28th December 2021 in PubMed and the Cochrane library. Search strategies generated 69 references, of which eight were relevant to the question.

Results: A total of 206 Seymour fractures were included: 75 initially underwent K-wire fixation, 131 did not. K-wire fixation appears to be associated with a higher rate of physeal disturbance, but lower rates of infection, fracture re-displacement, and flexion deformity. However, only one study performed statistical analyses; these did not control for other factors such as severity of initial injury, administration of antibiotics, wound debridement, nor nailbed suture, all of which may have influenced outcomes.

Conclusions: Further research for Seymour fracture management is needed in the form of randomised controlled trials. Such a study will likely involve debridement, open reduction, nailbed repair, nail plate fixation and the administration of antibiotics for all Seymour fractures. In those that do not demonstrate instability after open reduction, a position of equipoise could be argued (risk of physeal disturbance with K-wire, risk of re-displacement without, and unclear association of infection), and such patients be entered into a randomised controlled trial.

Biography

Houlden is on an orthopaedic-themed Core Surgical Training post at East & North Hertfordshire NHS Trust. He has a particular interest in paediatric orthopaedics and in medical education.

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