Study protocol for the Gothenburg long-term follow-up study of late diagnosed hip dislocations

Wenger, Daniel; Romanus, Bertil

2024

Document Version:
Other version

Study protocol for the Gothenburg Long-term Follow-up Study of Late Diagnosed Hip Dislocations

Daniel Wenger, MD, PhD[1,2], Bertil Romanus, MD, PhD[3]

[1] Dept. of Orthopaedics, Skåne University Hospital, Malmö, Sweden
[2] Dept. of Clinical Sciences, Lund University, Lund, Sweden
[3] Dept. of Orthopaedics, Sahlgrenska Academy, Gothenburg, Sweden

Introduction

Before clinical screening of neonates was instituted in Sweden, hip dislocations affected roughly 1 per every 1,000 live born children. [1] Today, the number is estimated to 0.12 per 1,000 live births, and the majority of cases are discovered before walking age. [2] Nevertheless, late diagnosed hip dislocations occur and need to be treated, often surgically. As the aim of such treatment is not only to improve function in the young child, but also to prevent secondary hip joint disease such as osteoarthritis, long-term follow-up studies are warranted.

Two previous cohorts have been studied with enough follow-up time to assess osteoarthritis and conversion to arthroplasty. The studies both reported better outcomes in patients where treatment was initiated before 1.5 years age. [3, 4] Neither of them reported on patient reported outcomes.

We now plan to study a consecutive cohort of patients treated in Gothenburg, by the same surgeon (BR) and using the same treatment protocol. They were treated from 1982 through 2000, and will thus be aged between 25 and 45 years at follow-up. One previous publication has reported results at age 11 years after the same treatment as we plan to study. [5]

Methods

Study subjects
Patients were both born within the catchment area of Östra Sjukhuset, Gothenburg, and referred there from most parts of Sweden, during the study period. The inclusion criteria were that they were treated as per the protocol described below, starting in 1982, and including only children born before 2000-01-01 (when registration of late diagnosed cases on a national scale was instituted by the Swedish Paediatric Orthopaedic Society).

Subjects will be divided in three groups:

1. Patients with DDH where the dislocated hip could be reduced by closed means after an initial period of traction.
2. Patients with DDH where the dislocated hip was reduced by open surgery.
3. Patients with hip dislocation associated with syndromatic disease.

Treatment protocol
Patients where initially treated in traction for a period of 2–3 weeks. Thereafter, attempted closed reduction was performed in anaesthesia, aided by hip arthrography. If the hip could not be reduced without force, open reduction was performed as previously described. [6, 7] Postoperatively, a hip spica was used for 3 months in most cases, followed by abduction orthosis.

List of outcomes

1. The patient reported outcome measure iHOT-12*
2. Radiographic outcomes†
3. The frequency of hip arthroplasty‡
4. The frequency of surgical treatments, including osteotomies

* The iHOT-12 will also be collected from age- and sex-matched controls from the Swedish population, randomly assigned by the Swedish state personal address register (SPAR).
† Radiographs will be obtained from consenting subjects unless there are recently taken radiographs (within one year). They will be assessed for signs of osteoarthritis, avascular necrosis of the femoral head, hip dysplasia, joint congruency, and a global DDH assessment according to the Severin classification. [8]
‡ Data on hip arthroplasty will be obtained from the Swedish Arthroplasty Register.

Ethics
The study will be performed in accordance with the Declaration of Helsinki and has been approved by the Swedish Ethical Review Authority (2023-03741-01).

Time plan and reporting of results
Data will be collected during 2024 and 2025. We aim to report our findings, including "negative results", by publication in peer reviewed journals, and per oral presentation at scientific meetings. Hopefully, communication of study findings can begin in 2025.

References

1. Severin E. [The frequency of congenital hip dislocation and congenital equinovarus in Sweden]. Nordisk medicin. 1956;55(7):221-3.
2. Wenger D, Duppe H, Nilsson JA, Tiderius CJ. Incidence of Late-Diagnosed Hip Dislocation After Universal Clinical Screening in Sweden. JAMA network open. 2019;2(11):e1914779.
3. Terjesen T. Long-term outcome of closed reduction in late-detected hip dislocation: 60 patients aged six to 36 months at diagnosis followed to a mean age of 58 years. J Child Orthop. 2018;12(4):369-74.
4. Thomas SR. A review of long-term outcomes for late presenting developmental hip dysplasia. Bone Joint J. 2015;97-B(6):729-33.
5. Morcuende JA, Meyer MD, Dolan LA, Weinstein SL. Long-term outcome after open reduction through an anteromedial approach for congenital dislocation of the hip. The Journal of bone and joint surgery American volume. 1997;79(6):810-7.
6. Weinstein SL. Operative technique for anteromedial approach to reduction for developmental dysplasia of the hip. Operative Techniques in Orthopaedics. 1993;3(2):134-40.
7. Weinstein SL. Anteromedial Approach to Reduction for Congenital Hip Dysplasia. Strategies in Orthopaedic Surgery. 1987;6(2).
8. Severin E. Contribution to the knowledge of congenital dislocation of the hip joint : Late results of closed reduction and arthrographic studies of recent cases. Stockholm1941.