Effects of surgical adductor releases for hip subluxation in cerebral palsy: an AACPDM evidence report

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CRD summary
This review evaluated the effects of surgical adductor release for hip subluxation in people with cerebral palsy. The authors concluded that young children with mild hip subluxation may benefit from adductor release; however, this result may reflect a more favourable natural history of this group. Considering the paucity of the evidence reviewed and the lack of methodological detail reported, the conservative conclusions seem appropriate.

Authors' objectives
To determine the effects of surgical adductor release for hip subluxation in people with cerebral palsy.

Searching
MEDLINE (1966 to 2003), HealthSTAR (1975 to 2001), CINAHL (1982 to 2002), Best Evidence (1991 to 2001), EBM Reviews (Issue 3, 2002) and the Cochrane Library were searched; the search terms were reported. The reference lists of retrieved articles were also checked. Only studies reported in the English language were included in the review.

Study selection
Study designs of evaluations included in the review
There were no specific inclusion criteria relating to the study design. In the included studies, where reported, the mean length of follow-up ranged from 3 months to 19 years (range: 3 months to 40 years).

Specific interventions included in the review
Studies of adductor release treatments, with or without other soft tissue releases around the hip joint, were eligible for inclusion. Studies of bony surgery in addition to soft tissue releases were excluded from the review. A broad range of interventions and cointerventions were evaluated in the included studies.

Participants included in the review
Studies of people with cerebral palsy with hip subluxation were eligible for inclusion. The studies included children (mean age 3 to 15 years, where reported) with cerebral palsy, spastic quadriplegia, spastic paraplegia, spastic diplegia, spastic triplegia, paraplegia, hemiplegia, athetosis, athertosis/spastic, dystonic quadriplegia and mixed quadriplegia.

Outcomes assessed in the review
There were no specific inclusion criteria relating to the outcomes. The included studies used a range of outcome measures relating to the range of movement of the hip, number of hips subluxated or dislocated during follow-up, migration, balance, brace use, gait, pain and function. Adverse effects and complications were also evaluated.

How were decisions on the relevance of primary studies made?
The authors did not state how the studies were selected for the review, or how many reviewers performed the study selection.

Assessment of study quality
There was no formal assessment of study quality. The authors rated the study designs using the level of evidence, and classed the evidence as strong, moderate or weak.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. For each study, the difference between mean pre-adductor surgery status and mean post-adductor surgery status, or the difference in post-adductor surgery status between treatment and controls, was classified as better post-operatively/with treatment, worse post-operatively/with treatment or unchanged/no difference.

**Methods of synthesis**

How were the studies combined?
The studies were combined in a narrative, grouped by outcome.

How were differences between studies investigated?
Study details and results were tabulated, and differences between the studies were discussed in the text. The authors discussed the effect of adductor surgery in subgroups of patients (e.g. age at time of surgery, type and severity of disability).

**Results of the review**

Twenty-seven studies (n=1,612) were included in the review. Of these, two were cohort studies with historical controls (n=165), 20 were before-and-after case series (n=783), two were anecdotal case series (n=642), one was a descriptive case series (n=19), one was a descriptive case report (n=2), and one was a case report (n=1).

All the studies were deemed to be weak regarding the level of evidence (level III or below).

**Hip subluxation.**

Five studies reported the number of hips subluxated or dislocated at final follow-up, of which two reported an improvement, one a deterioration and one no change with hip adductor release. The fifth study reported an adverse effect of adductor release on the contralateral hip.

Eight studies reported the uniformity of effect of adductor surgery on the number of hips subluxated or dislocated at final follow-up. Across the eight studies, there was an overall improvement in 32% of hips, worsening in 10% and no change in 58%.

Across five studies, 22% of hips required further surgery due to failure of the initial operation. Three of four studies reported an overall improvement in the centre edge angle following adductor surgery, with a total of 50% showing improvement, 25% deterioration and 25% no change across the four studies.

**Range of motion.**

An improvement was reported in hip abduction (6 studies), a decrease in hip flexion contractures (2 studies), an improvement in popliteal angle (1 study), and no change in hip extension (1 study), or hip internal rotation or hip external rotation (1 study) post-surgery.

**Pelvic obliquity and scoliosis.**

Scoliosis worsened in children with spastic quadriplegia with adductor surgery (1 study), pelvic symmetry improved (1 study), and pelvic obliquity occurred in 50% of cases (1 study).

**Pain.**

Two studies investigated hip pain. One reported that pain was just as likely post-surgery as in untreated controls; the other provided anecdotal evidence of a reduction in pain after soft tissue adductor releases compared with historical controls.

**Functional limitation and activity.**
Four studies investigated the effect of surgery on sitting stability and ability to transfer. One reported an improvement in standing in 50% of children, sitting in 36%, and walking in 23%. Another reported an improvement in sitting balance in 37% of children and standing balance in 56%. Two further studies provided anecdotal evidence of an improvement in sitting ability in a small number of children.

Societal limitation and context factors.

One study reported an improved ability to use nappies in 44% of children, and no change in 28%, with the outcome not being applicable to the remaining 28% of children studied.

Subgroups.

Three studies reported that younger children (under 3 or 4 years of age) had a better outcome, whereas eight studies did not report a difference in relation to age at surgery. Two studies reported children with spastic diplegia had better outcomes than children with quadriplegia, whereas one study reported no difference between ambulatory and non-ambulatory children. Six studies reported that low migration percentages were associated with better post-operative outcomes.

Authors’ conclusions

Young children with mild hip subluxation may benefit from adductor release to prevent further subluxation. However, these results may reflect a more favourable natural history of this group compared with children with a severely subluxated hip.

CRD commentary

The review question was clear in terms of the participants and intervention, but no inclusion criteria were stated for the outcomes or study design. Several relevant databases were searched, but language bias might have been introduced as only studies in English were included. There were no details of the methods used to select studies or extract the data, and study quality was not formally assessed. The decision to combine the studies in a narrative was appropriate. Considering the low level of evidence studies included in the review, the lack of methodological detail, and the possibility of studies being missed due to language restrictions, the authors’ conservative conclusions seem appropriate.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors suggested that multicentre studies with a control group were ethically possible. They also stated that studies of inter- and intra-observer reliability and correlation to 'gold' standard assessments of femoral head coverage are required.

Bibliographic details


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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.