
Nonsurgical treatment of deformational plagiocephaly: a systematic review

Xia J J, Kennedy K A, Teichgraber J F, Wu K Q, Baumgartner J B, Gateno J

CRD summary

The authors concluded that there was considerable evidence that molding therapy may more effectively reduce skull asymmetry than repositioning therapy in infants with deformational plagiocephaly. However, studies were potentially biased and more research was required. The conclusion regarding considerable evidence appeared inconsistent with the subsequent statement about potential biases and a more cautious initial conclusion may have been more appropriate.

Authors' objectives

To compare molding helmet therapy with head repositioning therapy for infants with deformational plagiocephaly.

Searching

The Cochrane Library and MEDLINE (1978 to August 2007) were searched using reported terms. Electronic searches were conducted of ISI Web of Science, Science Direct, Journals@Ovid and conference proceedings were screened.

Study selection

Studies that compared molding helmet therapy with head repositioning therapy for otherwise healthy infants with deformational plagiocephaly with or without torticollis were eligible for inclusion. Infants had to have received no prior treatment. Reasons for exclusion of identified studies included insufficient information about recruitment of samples and methods used to measure outcomes. The review assessed treatment success.

Included studies compared molding with repositioning with and without physiotherapy or neck stretching. In most studies, the duration of treatment ranged from three to five months. All infants were under 12 months when treatment started; in most studies treatment started at five to eight months.

Two reviewers independently selected studies.

Assessment of study quality

Two reviewers independently assessed validity using the Critical Appraisal Skills Programme form. Criteria included items about study validity (clearly focused research question with an appropriate study design, acceptable recruitment method, accurate measurement of exposure and outcome, all important confounders identified, accounting for confounders and sufficient long and complete follow-up), results (data presented and believable results) and usefulness of results to local situation.

Data extraction

The authors did not state how data were extracted for the review, or how many reviewers performed the data extraction. Where possible, for each study, numbers of infants with successful and unsuccessful outcomes of treatment were reported with p values, relative risks, efficacy (percentage difference) and number needed to treat (NNT).

Methods of synthesis

The studies were combined in a narrative synthesis.

Results of the review

Seven cohort studies were included (n=881). The number of children in each treatment group ranged from 10 to 176. Five prospective, one retrospective and one study with a prospective repositioning group and a retrospective molding group were included.

All studies included consecutive infants. Flaws included allocation based on physician or patient preference, cross-over from repositioning to molding, inadequate details of co-interventions, lack of reporting of masked outcome assessment, molding offered to older or more severely affected infants and a high drop-out rate.

Five studies with comparable data reported that success rates were higher in infants treated with molding compared to repositioning therapy. Of the other two studies, the average treatment time for repositioning was much greater than the duration of molding time and the other did not use the same anatomical landmarks to assess outcomes in both groups.

The only study (n=335) for which the author felt able to calculate the magnitude to treatment effect reported that treatment success was significantly more common in the molding compared to the repositioning group; RR 1.3 (95% CI: 1.2, 1.4); NNT 5 (95% CI: 4, 7). Reasons for exclusion of other studies included inadequate data or information about treatments, significant measurement bias and recruitment only of children who failed repositioning.

Authors' conclusions

There was considerable evidence that molding therapy may be more effective at reducing skull asymmetry than repositioning therapy in infants with deformational plagiocephaly. However, studies were potentially biased and more research was required.

CRD commentary

The review question was clearly stated. Inclusion criteria were specified for intervention and participants and criteria for study design and outcomes were broad. Several relevant sources were searched, but it was not clear if any language restrictions were applied and if unpublished studies were eligible. Appropriate methods were used to minimise reviewer error and bias during study selection and validity assessment, but it was not clear whether similar steps were taken during data extraction. Validity was assessed using defined criteria and results were reported in full. In view of the diversity among studies, a narrative synthesis in which methodological flaws were taken into account was appropriate. However, no information was provided about methods in individual studies to determine treatment success. This was a generally well-conducted and clearly reported review. The conclusion that there was considerable evidence appeared inconsistent with the subsequent statement about potential biases in the included studies and a more cautious initial statement would appear to have been more appropriate.

Implications of the review for practice and research

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

Research: The authors stated that further research, perhaps using a multicentre randomised controlled trial, was required to compare initial treatment with molding versus repositioning followed by molding if required and to assess the cost effectiveness of molding therapy. Studies should use standardised outcome measures and consider using a three-dimensional cranial imaging system. Prospective studies were also required to evaluate the efficacy of nonsurgical treatment for children aged one year or more.

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