Congress of Neurological Surgeons Systematic Review and Evidence-Based Guideline for the Management of Patients With Positional Plagiocephaly: The Role of Physical Therapy

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ABSTRACT

Background: Evidence-based guidelines are not currently available for the treatment of positional plagiocephaly and in particular, for the use of physical therapy for treatment.

Objective: The objective of this systematic review is to answer the question: “Does physical therapy provide effective treatment for positional plagiocephaly?” Treatment recommendations are created based on the available evidence.

Methods: The PubMed and the Cochrane Library were queried using MeSH headings and key words relevant to the objective of this systematic review. Abstracts were reviewed, after which studies meeting the inclusion criteria were selected and graded according to their quality of evidence (Classes I–III). Evidentiary tables were constructed that summarized pertinent study results, and recommendations were made based on the quality of the literature (Levels I–III).

Results: Three studies met criteria for inclusion. Two randomized controlled trials (Class I and Class II) and one prospective study assessing plagiocephaly as a secondary outcome measure (Class III) were included.

Conclusions: Within the limits of this systematic review, physical therapy is significantly more effective than repositioning education as a treatment for positional plagiocephaly. There is no significant difference between physical therapy and a positioning pillow as a treatment for positional plagiocephaly. However, given the American Academy of Pediatrics’ (AAP) recommendation against soft pillows in cribs to ensure a safe sleeping environment for infants, physical therapy must be recommended over the use of a positioning pillow.

Running Title: Physical therapy for plagiocephaly

Key Words: infants; physical therapy; physiotherapy; plagiocephaly, non-synostotic; positional plagiocephaly

INTRODUCTION

Infantile positional plagiocephaly occurs as a result of persistent mechanical forces on the malleable bones of the neonatal cranium. Asymmetric parietooccipital flattening with ipsilateral frontal bossing will result in a parallelogram deformity of the head. Alternatively, central bioccipital flattening with an anterior-posterior foreshortened head is characteristic of deformational brachycephaly. Both shapes are a manifestation of
the same process, and the appearance of an individual child will often be along a
continuum from one type to the other. Facial asymmetry with misalignment of the eyes
and/or ears, and postural congenital torticollis with restricted range of cervical and head
motion may accompany this condition.

A rise in the prevalence of positional plagiocephaly occurred after widespread
implementation of the American Academy of Pediatrics’ (AAP) “Back to Sleep”
recommendation that healthy term infants be positioned on their sides or backs during
sleep. While the optimal timing and modality of intervention has yet to be clearly
established, primary treatments for plagiocephaly are non-operative, and include
observation, counter-positioning, physical therapy, and orthotic devices.

The purpose of this systematic review is to address the question: Does physical
therapy provide effective treatment for positional plagiocephaly.

METHODS
The Congress of Neurological Surgeons (CNS) and the Section on Pediatric
Neurosurgery initiated a systematic review of the literature and evidence-based guideline
relevant to the management of positional plagiocephaly.

Literature Search
The task force collaborated with medical librarians to search PubMed and the
Cochrane Library for the period from 1966 to October 2014 using the MeSH subject
headings and PubMed search strategies. Manual searches of bibliographies were also
conducted. The search returned 47 unique articles. Thirty-four were excluded based on a
review of the abstract. Thirteen full text papers were reviewed. Three articles satisfied
the inclusion criteria for inclusion.

RECOMMENDATIONS
1. Physical therapy is recommended over repositioning education alone for
   reducing prevalence of infantile positional plagiocephaly in infants 7 weeks of
   age.
   Strength of recommendation: Level I (high clinical certainty)

2. Physical therapy is as effective for the treatment of positional plagiocephaly
   and recommended over the use of a positioning pillow in order to ensure a safe
CONCLUSION

This systemic review demonstrates physical therapy to be an effective treatment option for positional plagiocephaly. Class II evidence suggests physical therapy (PT) to be a superior treatment modality to repositioning in cases of severe plagiocephaly, and an equivalent treatment modality to a positioning pillow. *The AAP’s recommends against the use of soft positioning pillows in the sleeping environment of an infant, therefore the plagiocephaly guidelines committee recommends using physical therapy over positioning devices.* Class III evidence suggests that PT performed by a professional physical therapist can lead to more results over a shorter treatment time, and thus be more appropriate in the setting of severe plagiocephaly.

Limited data is available to fully assess the efficacy of physical therapy as a primary treatment for positional plagiocephaly. The ideal timing for initiation of therapy, duration of treatment and type of physical therapy stretches and/or exercises cannot be determined from the available literature. Additional prospective studies evaluating the timing of initiation of physical therapy, duration of treatment, and specific type of physical therapy are needed.

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REFERENCES