

# Management of positional plagiocephaly—helmet or no helmet?

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Dear Editor:

The “Back to Sleep Campaign” to prevent sudden infant death syndrome has led to a significant increase in the incidence of positional plagiocephaly. This clinical entity with an abnormal head shape is not the result of craniosynostosis, which represents a premature closure of cranial sutures, but rather a purely cosmetic problem caused by persistent occipital pressure during sleep [1]. A prospective cohort study from New Zealand showed a distinct age-dependent prevalence of 16 % at 6 weeks, 19.7 % at 4 months, 6.8 % at 12 months, and 3.3 % at 2 years [2]. Although it is generally accepted that high rates of up to 70 % improve spontaneously, several conservative treatment options have been established including regular changes of head position, physiotherapy, osteopathy, and also cranial remodeling helmets for moderate to severe asymmetry [3].

There is, however, a dearth of evidence-based recommendations in the international literature for the management of patients with positional plagiocephaly [4]. In the absence of a radiologically diagnosed craniosynostosis, parents should be advised that a positional plagiocephaly is essentially a cosmetic problem that does not cause potentially life-threatening or disabling neurological deficits. The information that the natural history, also without treatment, is mostly favorable, is equally of paramount importance. In the case of moderate or very severe skull asymmetry, where positional exercises,

physiotherapy, and osteopathy do not lead to a satisfactory result, a cranial helmet might be considered [5]. The latter is a generally well-tolerated method to correct positional head deformity. Most of the rarely occurring complications are minor and self-limited [6]. Therefore, minor forms do usually not necessitate helmet treatment, whereas it is generally recommended for severe forms.

Despite efforts to introduce three-dimensional analysis to clinical practice, there are no standardized well-established objective measurements of skull asymmetry from which to decide on the initiation of therapy [7–10]. Without measurements of symmetry, naturally there have been no prospective randomized studies investigating the effectiveness of helmet treatment, noting the high rates of spontaneous “self-healing”. Thus, in the face of significant socioeconomic impact on the healthcare system and distress to parents and caregivers, the use of such helmets should be guarded.

Therefore, we strongly believe that further randomized controlled trials, using, e.g., the severity ratings suggested by Looman and Flannery [11], are mandatory in order to answer the question if, when, and for how long cranial remodeling helmets should be recommended.

## References

1. de Ribaupierre S, Vernet O, Rilliet B, Cavin B, Kalina D et al (2007) Posterior positional plagiocephaly treated with cranial remodeling orthosis. *Swiss Med Wkly* 137:368–372
2. Hutchison BL, Hutchison LA, Thompson JM, Mitchell EA (2004) Plagiocephaly and brachycephaly in the first two years of life: a prospective cohort study. *Pediatrics* 114:970–980
3. Kluba S, Kraut W, Calgeer B, Reinert S, Krimmel M (2013) Treatment of positional plagiocephaly—helmet or no helmet? *J Craniomaxillofac Surg*. doi:10.1016/j.jcms.2013.09.015

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4. Flannery AB, Looman WS, Kemper K (2012) Evidence-based care of the child with deformational plagiocephaly, part II: management. *J Pediatr Health Care* 26:320–331
5. Kim SY, Park MS, Yang JI, Yim SY (2013) Comparison of helmet therapy and counter positioning for deformational plagiocephaly. *Ann Rehabil Med* 37:785–795
6. Gump WC, Mutchnick IS, Moriarty TM (2013) Complications associated with molding helmet therapy for positional plagiocephaly: a review. *Neurosurg Focus* 35:E3
7. Lipira AB, Gordon S, Darvann TA, Hermann NV, Van Pelt AE et al (2010) Helmet versus active repositioning for plagiocephaly: a three-dimensional analysis. *Pediatrics* 126:e936–e945
8. Moghaddam MB, Brown TM, Clausen A, DaSilva T, Ho E et al (2014) Outcome analysis after helmet therapy using 3D photogrammetry in patients with deformational plagiocephaly: the role of root mean square. *J Plast Reconstr Aesthet Surg* 67:159–165
9. Schweitzer T, Bohm H, Linz C, Jager B, Gerstl L, et al. (2013) Three-dimensional analysis of positional plagiocephaly before and after molding helmet therapy in comparison to normal head growth. *Childs Nerv Syst* 29:1155–1161
10. Thompson JT, David LR, Wood B, Argenta A, Simpson J et al (2009) Outcome analysis of helmet therapy for positional plagiocephaly using a three-dimensional surface scanning laser. *J Craniofac Surg* 20:362–365
11. Looman WS, Flannery AB (2012) Evidence-based care of the child with deformational plagiocephaly, Part I: assessment and diagnosis. *J Pediatr Health Care* 26:242–250, quiz 251-243