

# Cephalometric Assessment of Craniofacial Structures in Patients with Cleft Lip and Palate

Metelmann P.H.<sup>1</sup>, Dannhauer K.-H.<sup>2</sup>, Mühler G.W.<sup>3</sup>, Nedrelow D.S.<sup>4</sup>, Hosten N.<sup>5</sup>, Krey K.-F.<sup>1</sup>

<sup>1</sup> Department of Orthodontics and Orofacial Orthopedics, Center for Dental, Oral and Craniomandibular Sciences, Greifswald University Medicine, Germany

<sup>2</sup> Department of Orthodontics and Orofacial Orthopedics, Center for Dental, Oral and Craniomandibular Sciences, Leipzig University Medicine, Germany

<sup>3</sup> former Wolfgang-Rosenthal-Klinik, Thallwitz, Germany

<sup>4</sup> Department of Biomedical Engineering, University of Minnesota, Minneapolis, USA

<sup>5</sup> Institute for Diagnostic Radiology und Neuroradiology, Greifswald University Medicine, Germany

## Is clefting of the palate exclusively a local defect? MOSS, 1956

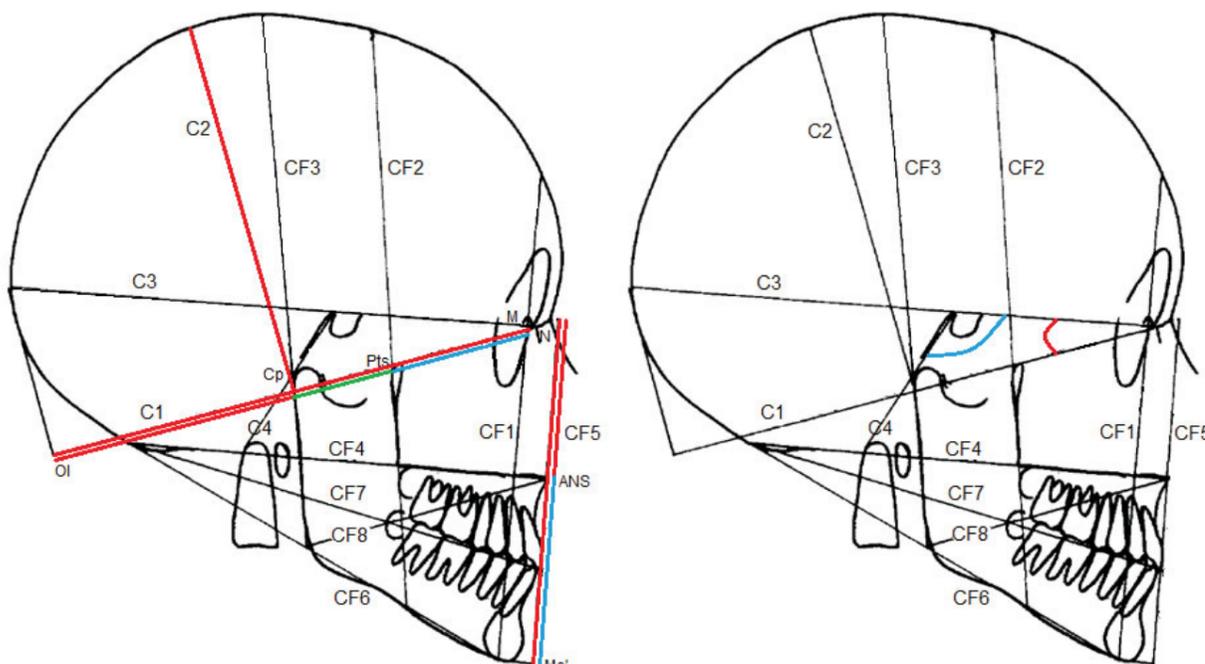
## Delaire Whole Skull Analysis not only studies the facial bony structures, but also the cranium and craniospinal articulation. DELAIRE et. al., 1981

**Aim:** The aim of this study is to describe the craniofacial architecture of post-pubertal patients with cleft lip and palate by using Delaire whole skull analysis along with the more commonly used analysis by Segner and Hasund.

**Materials and methods:** For this retrospective study, 177 cephalometric X-Ray films (focus film distance 4m, format 23.5x29.5cm) from a group of patients (114 male, 63 female) of the former Wolfgang Rosenthal Clinic Thallwitz were analyzed. Patients were treated according to the concept of late palate closure (hard palate closure at 4-7 years of age). The X-ray films were scanned with a VIDAR Diagnostic Pro Advantage (Vidar Systems, Herndon, United States) and evaluated in Onyx Ceph (Image Instruments, Chemnitz, Germany) with the cephalometric analyzes by 1) Segner and Hasund, and 2) Delaire (whole skull analysis).

**Results:** In patients with cleft lip and palate, changes of the viscerocranium were accompanied by statistically significant changes to different dimensions of the neurocranium.

**Discussion:** The Delaire analysis provides a comprehensive description of sagittal and vertical craniofacial proportions (HAYNES, CHAU, 1993). Since inaccuracies in analytical tracings of cephalometric radiographs are unavoidable, the results must always be seen in the context of clinical diagnostics (DELAIRE et al., 1981).



red	reduced in cleft patients
green	no statistical difference
blue	enlarged in cleft patients

### Analysis by Segner/Hasund:

retroposition of maxilla und mandibula  
vertical basal open relation

**SNA**  $76^\circ \pm 5.9$ , **SNB**  $76^\circ \pm 4.9$ ;

reference value:  $82^\circ / 80^\circ$

**ML-NSL**  $38^\circ \pm 7.7$ ;

reference value:  $28^\circ$

### Analysis by Delaire:

reduced cranial height  
short craniofacial baseline  
reduced anterior cranial base angle  
enlarged posterior cranial base angle  
vertical midface deficits

**C2**  $97\text{mm} \pm 5.3$ ;

reference value: 133mm

**C1**  $154\text{mm} \pm 6.9$ ;

reference value: 162mm

**C3C1**  $19.7^\circ \pm 2.9$ ;

reference value:  $21^\circ$

**C3C4**  $120.5^\circ \pm 6.1$ ;

reference value:  $117^\circ$

**N'-ANS/CF5**  $44\% \pm 2.7$

**ANS-Me'/CF5**  $56\% \pm 2.7$ ;

standard relation: 45% / 55%

**Conclusions:** Cleft lip and palate along with late-closure corrective surgery may cause complex effects on the entire craniofacial architecture including, but not limited to the facial region. In these patients, the use of a whole skull analysis could benefit clinical assessment.

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Moss, M L.: Malformations of the skull base associated with cleft palate deformity. *Plastic and Reconstructive Surgery* 1956, 17(3), pp. 226-234.

Haynes, S., Chau, M.: Inter-and intra-observer identification of landmarks used in the Delaire analysis. *The European Journal of Orthodontics* 1993, 15.(1), pp. 79-84.