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Pre-surgical orthopedics in newborns affected by clefts of the lip, alveolus and palate. Report of two cases

ABSTRACT

Aim *Clefts of the lip and/or palate are common birth defects of complex aetiology affecting many functions (mastication, speech, etc.). Several approaches have been published on early management of the alveolar segments and the dislocated premaxilla and nowadays we are more and more confronted with a world-wide tendency in favour of the all-in-one operation to close clefts of the lip, alveolus and palate. Nonetheless, it is well-known that all types and timings of surgical repair of facial clefts are detrimental to maxillary growth. The effect of infant orthopaedics on maxillary arch has been a subject of debate for many years, but controversy regarding its effect still exists. The aim of this work is to describe an orthopaedic, pre-surgical approach in the newborn to improve final outcome.*

Method *Palatal plate project has been integrated with the application of guide planes and elastic bands aimed at controlling the position of the premaxilla and the width of the cleft.*

Results *Two cases are illustrated with the step-by-step management of the palatal plate. Clinical data are discussed.*

Conclusion *The palatal plate molds the alveolar segments into a better arch form and prevents the tongue from positioning in the cleft, improving so dentomaxillary development. This will result in better pre-surgical control of the soft tissues with better aesthetic and functional results.*

Keywords *Cleft lip and palate; Infant orthopaedics; Treatment outcome.*

Introduction

Orofacial clefts are the most common orofacial anomalies in newborn infants and the second commonest congenital abnormality, affecting approximately one in every 800 births worldwide. They are non "life-threatening" abnormalities, which can have significant effect on maternal bonding and include cleft lip with or without cleft palate (CL/P) or isolated cleft palate (CP), the former being more frequent than the latter. Submucous clefts are more rare (1/1200 births). These defects differ with respect to embryology, aetiology, candidate genes, associated abnormalities, and recurrence risk; they can occur in isolation or as a part of a broad range of syndromes [Murray, 2002]. Depending on their exact location, these growth disturbances result in different cleft defects. Clefts can be either on one or both sides, except for the soft palate cleft which is always in the middle.

As far as epidemiology is concerned, for clefts affecting the lip only or lip and palate, males are more commonly affected than females (approximately 2:1). Clefts palate alone is found in approximately 1/2000 newborns, with females being more affected than males [Hagberg et al., 1998].

The exact causes of these cleft defects are unknown: the scientific theory which is currently given greatest credence attributes the cause to a combination of genetic background and negative environmental influence. CL/P and CP are developmentally and genetically different: hereditary factors appear to play a more important role in the occurrence of CL/P and environmental factors in that of CP. In prevalence CL/P is more common than CP and varies by ethnicity, being high in American Indians and Asians (1/500 newborns), low in American blacks (1/2000 newborns) and intermediate in Caucasians (1/1000 newborns). Isolated CP occurs in only 1/2500 newborns and does not display variation by ethnicity which could be explained by the more important role in occurrence played by environmental factors [Hagberg et al., 1998]. In non-syndromic forms inheritance is multifactorial: if one parent and/or one or more siblings are affected the risk for the children to have the same kind of damage increases proportionally [Murray, 2002].

Epidemiological and experimental data suggest that environmental risk factors might be important. Exposure to tobacco smoke, alcohol, viral infection, medical drugs