Discussion

Fundamentals of Studying Orthognathic Surgery and Speech

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This study reports on speech outcomes after maxillary advancements of cleft cases compared with non-cleft cases. Suggestions for further study and for helping with case management were introduced as well. Our society has produced few studies on this topic. Therefore, the authors' results have advanced our knowledge to the benefit of our plastic and maxillofacial surgeons.

There are many important factors in studying orthognathic surgery, velopharyngeal function, and their relationships. Among them, adequate case study selection, defining cephalometric analysis for structural evaluation, and optimal evaluation of velopharyngeal function should be well designed to produce acceptable results.

Considering the complexity of oral and maxillofacial structures, orthognathic surgery is a complicated procedure. The nature of the skin and subcutaneous tissue, muscles, ligaments, and hard tissue resilience differ a little in each case. In addition, cleft cases are far different from non-cleft cases because of operative scars, structural asymmetry of hard and soft tissues, and growth deformity. Most cleft maxillary movement vectors are three dimensional, and that results in frequent misdiagnosis. Therefore, adequate case selection is the most important factor in orthognathic surgery study, especially in cleft cases. Cases involving simple jaw movement such as pure advancement, those with simple definitions such as unilateral cleft lip and palate, and those involving one surgeon make the best subjects of study [1].

Delicate structural analysis can be made by defining cephalometric analysis because cephalometric analysis with a cephalogram has been evaluated for ninety years and many analytical methods and prediction mechanisms have been developed. However, mis-tracing as well as inter-observer and intra-observer biases can occur in assessing cephalograms. To reduce mis-tracing and biases, these studies would be better performed in conjunction with dental specialists such as orthodontists or oral surgeons. Two or more specialists trace the cephalograms and perform the trace at least twice with a time interval of at least one week. Special caution should be applied to cleft cases because of anatomical differences. For example, a posterior nasal spine is defined as the process formed by the united projecting ends of the posterior borders of the palatal process of the palatal bone. In cleft palate cases, both of the posterior borders of the palatal process make hardly unification. Therefore, a researcher should find that point using a pterygomaxillary fissure, which is the contour of the fissure projected onto the palatal plane. In addition, an A-point is widely used. An A-point is the point of greatest concavity on the anterior border of the maxilla. However, it is difficult to identify in cleft cases because of anterior nasal spine deviation and dentoalveolar abnormality. Therefore, a new A-point should be made for cleft cases. Follow-up cephalograms should be taken after at least a year to confirm the results [2,3].

Optimal evaluation of velopharyngeal function is essential for producing acceptable results. A recent review of speech outcomes recommends at least one instrumental measure such as naso-endoscopy, multiview videofluoroscopy, nasometry, pressure-flow analysis, and perceptional speech analysis. A follow-up of at least 6 months is essential [4,5].

In conclusion, stable and reproducible surgery, reliable cephalogram analysis after at least one year, and at least 6 months follow-up using multiple measurements of speech outcomes can produce acceptable results for orthognathic-velopharyngeal function research.

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