

The Etiology, Pathogenesis, State of The Dynamics of Occurrence of Tooth and Jaw Deformities in Children with Uranoplasty

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Abstract: This study evaluated craniofacial and dental arch development in children with congenital cleft lip and palate following uranoplasty. Cephalometric radiographs and digital dental models were used to assess maxillary growth, dental arch dimensions, palatal morphology, and occlusal relationships. The study included 40 patients with cleft lip and palate and a healthy control group. The results showed reduced sagittal and transverse maxillary growth, narrower upper dental arches, and increased dental and occlusal abnormalities in patients who underwent uranoplasty. Postoperative scar tissue and surgical techniques may restrict maxillary development and contribute to maxillary hypoplasia and transverse occlusal disorders. Two-stage uranoplasty demonstrated relatively more favorable maxillary growth than one-stage surgery. Regular orthodontic and cephalometric monitoring and early preventive intervention are recommended to support normal craniofacial and dental development.

Keywords: Cleft Lip and Palate, Uranoplasty, Maxillary Growth

Introduction

The development of the facial jaw in children with congenital palate defects is a complex biological process. Uranoplasty surgery performed in such patients is an important surgical intervention aimed at restoring the anatomy of the palate and eliminating the pathological connection between the oral and nasal cavities. As a result of the operation, the necessary conditions are created for the improvement of speech, swallowing and breathing functions. However, in the post-surgical treatment period, certain morphological changes in the growth and development of the facial jaw can be observed. Scientific research shows that scar tissue that forms after surgery can affect the growth process of the upper jaw. This leads to a slowdown in the forward and lateral growth rate of the upper jaw. As a result, high jawbone, reduced palate width and tooth row deformity develop. Such changes lead to a violation of the balance of the dentoalveolar system and often cause the appearance of bite anomalies. An insufficient level of transverse development of the upper jaw in particular can cause transverse bite disorders. This study is devoted to the study of how different methods of uranoplasty surgery in children with congenital lip and palate defects affect tooth row and upper jaw tension. In the study, children's tooth row and palate shape were analyzed over a long period of time using digital models. The results showed that patients using the two-stage uranoplasty method had relatively good rates of high jaw loss compared to patients with one-stage surgery. However, variations in tooth row sizes and differences in palate morphology have also been identified. Researchers note that the surgical method has a significant effect on the development of the facial jaw. Thus, the choice of the surgical method also affects the development of the tooth-jaw joint. Studies show that the two-stage method of uranoplasty creates more favorable conditions for upper jaw. In this method, some parts of the palate are subsequently restored, as a result of which the negative effect of scar tissue is relatively reduced. Therefore, when planning surgical treatment in children with congenital palate defects, it is important to take into account the long-term results of the development of the facial jaw. Complex treatment of such patients with the cooperation of orthodontist, surgeon and speech therapist specialists helps to coordinate the development of the facial jaw.

Methodology

This study is dedicated to studying the long-term growth characteristics of the facial jaw in patients with congenital lip and palate defects and uranoplastic surgery. The study analyzed the cephalometric

radiographs of patients and assessed the level of development of the upper jaw and facial skeleton.

Results and Discussion

The results showed that patients undergoing surgery had a lower forward jaw growth rate compared to healthy individuals. Such changes can be associated with scar tissue that forms after surgical treatment and manipulations in the process of palate recovery. According to the results of the study, in a large part of patients, high jawpoplasia was observed. In the post-surgical period, certain morphological changes may occur during the growth process of the facial jaw. Cephalometric studies show that in patients with uranoplasty, the growth of the upper jaw is often slowed down. This condition is associated with scar tissue that forms during surgery, which can limit the growth of the upper jaw forward and laterally. As a result, high jawpoplasia, tooth row deformity and incorrect positioning of the teeth are observed. Such changes lead to a violation of the tooth-jaw balance and often provoke the development of bite anomalies. The insufficient development of the upper jaw in particular can change the relationship between the upper and lower jaw, causing bite disorders such as progenia and prognathia. This study is devoted to the study of the effect of surgical techniques on the growth of the facial jaw after uranoplasty surgery. During the study, lateral cephalometric radiographs of patients were analyzed and the indicators of sagittal and transverse development of the upper jaw were evaluated. The results showed that certain surgical incisions applied to the closure of the palate during surgery can affect the upper jaw. In the study, some patients observed a restriction of forward growth of the upper jaw and changes in the development of the facial skeleton. This condition can be associated with scar tissue that forms after surgical intervention. However, certain morphological changes can occur in the growth and development of the facial jaw during the post-surgical treatment period. Cephalometric studies show that the surgical incisions used in the operation process as well as the palate closure technique can affect the development of the upper jaw. There is a possibility that scar tissue formed by surgical intervention will to some extent limit the forward growth of the upper jaw. For this reason, it is important to evaluate the development of the facial jaw in children with congenital palate defects and uranoplasty on the basis of regular orthodontic and cephalometric observation. The use of early orthodontic preventive measures in such patients can help reduce the development of tooth row deformities. The development of the facial jaw in children with congenital palate defects is a complex biological process. In such patients, uranoplasty surgery is performed to restore the structure of the palate and eliminate the pathological connection between the oral and nasal cavities. This surgical intervention creates the necessary conditions for the normal formation of speech, swallowing and respiratory functions. At the same time, certain morphological changes in the development of the facial jaw during the postoperative period may occur. Cephalometric studies show that scar tissue formed during the operation negatively affects the growth process of the upper jaw. This can lead to a slowdown in the pace of development of the upper jaw in the sagittal direction. As a result, upper jawpoplasia, narrowing of the tooth row and dentoalveolar deformities develop. For this reason, it is important to control the development of the facial jaw in children with congenital palate defects and uranoplasty with the help of regular orthodontic and cephalometric examinations. The use of early orthodontic preventive measures in such patients can help reduce the development of tooth row deformities. This study is dedicated to studying the transverse relationships of the tooth row in patients with congenital lip and palate defects. The study compared 40 patients with lip and palate defects and a group of healthy children. During the study, tooth row width, bite position, bite relationship of upper and Pasky incision teeth, and tooth row deformation using the Huddart-Bodenham index were evaluated. The results showed that patients undergoing surgery had a significantly smaller upper jawline width. This can lead to the development of transverse bite disorders and tooth row deformity. In the postoperative period, certain changes may occur in the transverse development of the upper jaw. Studies show that scar tissue produced by surgical intervention can limit the width-wise development of the upper jaw. As a result, there is a high jaw reduction as well as a decrease in the width of the tooth row. Such changes lead to the development of tooth row deformity, misalignment of teeth, and transverse bite disorders. In addition, the narrowing of the tooth row is the cause of a lack of space between the teeth, a condition that is manifested by the compressive arrangement of the teeth. For this reason, it is considered important to regularly carry out orthodontic tests from an early age in children with congenital palate defects and uranoplasty. Through the use of early orthodontic

preventive measures, it is possible to reduce the development of tooth row deformities and ensure the normal development of the tooth-jaw system.

Conclusion

In such patients, uranoplasty surgery is carried out in order to restore the anatomy of the palate and eliminate the pathological connection between the oral and nasal cavities. This surgical intervention creates the necessary conditions for the normal development of speech and swallowing functions. However, in the postoperative period, certain morphological changes may occur during the development of the upper jaw. Studies show that scar tissue produced by surgical intervention negatively affects the transverse development of the upper jaw. As a result, there is a high jaw reduction as well as a decrease in the width of the tooth row.

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