

Frenulectomy of Short Frenulums of the Upper Lip in the Treatment of Diastemas in Children

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ABSTRACT

Objective: This study examines the relevance and necessity of addressing upper lip frenulum abnormalities in pediatric patients, given the increasing incidence due to environmental factors, dietary additives, and structural predispositions affecting periodontal health. **Methods:** Clinical studies and literature systematizations were reviewed to classify frenulum abnormalities and evaluate frenuloplasty techniques. Notable classifications include the morphological and attachment-based categorization by Nenashev and Kulikov and the density differentiation by Obraztsov and Larionov. Methods from Khoroshilkina, particularly the Limberg and Popovich techniques, are discussed for their effectiveness in managing frenulum-related diastemas. **Results:** The study highlights the efficacy of these frenuloplasty techniques, which involve either triangular flap repositioning (Limberg) or frenulum edge relocation to the transitional fold (Popovich). These methods have been demonstrated to effectively prevent and manage dentoalveolar deformities in outpatient settings. **Novelty:** This research underscores the need for an algorithm to guide treatment selection and optimize surgical outcomes based on individual frenulum morphology and attachment. **Implications:** The findings inform pediatric surgical dentistry, suggesting a structured approach to frenulum treatment to prevent progressive periodontal issues, speech impediments, and developmental irregularities in the dentofacial system. Further research should explore standardized protocols for surgical intervention selection in pediatric patients.

INTRODUCTION

Every year, malformations of the frenulum of the upper and lower lips are gaining relevance and increasing as a result of environmental disturbances, a large number of chemical additives in everyday foods, and the functional state of the periodontium largely depends on the anatomical features of the structure of the dental system and the soft tissue formations of the vestibule of the oral cavity. Predisposing factors, which include a small vestibule, the level of attachment of the labial frenulum, and dentoalveolar anomalies, confirm the fact that they influence the development of periodontal pathology. [Elizarova V.M., 1982; Ivanov B.S., 1981; Kuzmina E.M., 1995; Kolesov A.A., Zhilina V.V., 1991; Persia L.S., 1995, etc.] In most cases, the main prerequisites for expanding the gum zone and plastic surgery of the oral vestibule are registered facts of the initial manifestation of pathological changes in the periodontium, speech and in the development of the dentofacial system. There is an opinion that "low attachment of the frenulum of the upper lip, short frenulum of the tongue, and lower lip are inherited." Consequently, they are formed in the prenatal period, and their abnormal conditions are diagnosed in the postnatal period, from the first days of the child's life.

Purpose of the study. Clinical studies and a large number of systematizations of the frenulum of the upper and lower lips show the high significance of the problem in

pediatric surgical dentistry. Thus, the development of an algorithm as well as the improvement of existing methods based on modern trends in surgical treatment is a pressing topic today. Therefore, the elimination or prevention of the listed functional disorders is an important indication for medical rehabilitation of patients with anomalies and deformations of the dental system.



Figure 1

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RESEARCH METHOD

Normal frenulums of the upper lip are systematized by a number of authors such as A. N. Nenashev, S. S. Kulikov, who considered the morphological conditions of the frenulum taking into account their attachment; according to F. Y. Khoroshilkina, the frequency of anomalies of the upper lip is 15.5% - 20.9%, with a low-attached combined frenulum of the upper lip with a diastema in 49% of children; G. Yu. Pakalns highlighted the differences in the attachment of the frenulum, dividing them into “strong”, “medium”, “weak”; M. Yu. Obratsov and S. N. Larionov noted three signs of frenulum density.

Of all the available methods of frenuloplasty, F. Ya. Khoroshilkina recommended two types of optimal methods of frenuloplasty according to Limberg (1974) and Popovich (1982). Frenuloplasty using the Limberg method is based on cutting out and moving triangular flaps, using the Popovich method by moving the lower edge of the frenulum to the area of the transitional fold.



Figure 2

RESULTS AND DISCUSSION

Thus, surgical methods aimed at eliminating factors that promote and aggravate dentoalveolar deformities are the primary tasks of both the orthodontist and the dental surgeon. The technique of surgical interventions for the listed pathology is not complicated and is usually performed by a doctor at an outpatient surgical appointment. However, the variety of surgical intervention techniques makes it difficult to choose them for a particular pathology of the frenulum or vestibule of the oral cavity.



Figure 3

CONCLUSION

Fundamental Finding: This study underscores the significance of addressing frenulum abnormalities, particularly in pediatric patients, to prevent dentoalveolar deformities and periodontal issues. The application of techniques such as the Limberg and Popovich methods has shown effectiveness in reducing diastemas and mitigating associated periodontal and speech complications. **Implication:** These findings highlight

the need for a structured approach to frenuloplasty, suggesting that developing a standardized treatment algorithm based on frenulum morphology and attachment type could improve outcomes in pediatric patients. **Limitation:** However, this study is limited by its reliance on existing literature and lacks longitudinal clinical trials to confirm the efficacy of specific techniques over time. **Further Research:** Future studies should focus on clinical trials comparing frenuloplasty outcomes across different patient demographics and anatomical variations to establish evidence-based guidelines and enhance the precision of treatment protocols for frenulum abnormalities.

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