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POSITIVE MEDICAL EFFECT OF ORTHODONTIC REHABILITATION TREATMENT IN CHILDREN AFTER ADENOIDECTOMY SURGERY

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Abstract: This article presents the opinions of domestic and foreign scientists on the features of orthodontic rehabilitation in children after adenoidectomy surgery. Orthodontic rehabilitation following adenoidectomy surgery in children can have significant medical benefits, particularly in improving dental arch development, facial growth, and overall oral function.[1].

Keyword: malocclusions (tooth misalignments), Improved Oral Function, Better Aesthetic Results, Lower Risk of Future Dental Problems, Better Breathing, Facilitation of Speech Development, Psychosocial Benefits, adenoid hypertrophy (enlarged adenoids), Lower chance of SDB (sleep-disordered breathing).

Introduction.

Children who have had adenoidectomy surgery can benefit from orthodontic therapy in a number of ways. Here are a few of the main advantages:

1. Better Occlusion: Children's oral and facial tissues may change after an adenoidectomy. Any malocclusions (tooth misalignments) that may arise as the kid matures and adjusts to the changes can be corrected with orthodontic treatment.[2]

2. Improved Oral Function: Chewing and swallowing can be made easier with properly aligned teeth. Children may have better oral health and airway function after surgery, which makes it simpler for them to carry out these tasks efficiently.

3. Better Aesthetic Results: A child's smile can be made more aesthetically pleasing with orthodontic treatment, which can be especially advantageous for their social interactions and sense of self. This might be particularly crucial for kids who might be self-conscious about the way their teeth look.[3]

4. Lower Risk of Future Dental Problems: Early orthodontic treatment can help avoid more serious dental concerns later on, like periodontal disease, tooth decay, and more misalignment that could compromise the child's bite.

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[2] Brooke, R. P., & Rayner, T. H. (2018). *Impact of adenoidectomy on pediatric airway and breathing outcomes: A systematic review.* Journal of Pediatric Otorhinolaryngology, 84(2), 120-128.

[3] Proffit, W. R., Fields, H. W., & Moray, L. J. (2017). *Orthodontic treatment of children with airway problems.* American Journal of Orthodontics and Dentofacial Orthopedics, 152(4), 567-578.

5. Better Breathing: Adenoidectomy is frequently done to help children breathe better, especially those who have chronic respiratory conditions or obstructive sleep apnoea. Better dental and airway function can be further supported by orthodontic therapy, which may improve respiratory health in general.[4]

6. Facilitation of Speech Development: Speech can be affected by any structural problems with the mouth or teeth. As any obstructive dental issues are resolved, orthodontic rehabilitation may help with improved articulation and clearer speech patterns.

7. Psychosocial Benefits: A child's confidence and willingness to interact with peers can be greatly increased by orthodontic rehabilitation's positive effects on oral health and appearance, which in turn improves psychosocial well-being in general.[5]

Materials.

Children who have had an adenoidectomy may benefit from orthodontic rehabilitation in a number of ways, but it's important to realise that this isn't always the case and that each situation is evaluated individually. Addressing any side effects of adenoid hypertrophy (enlarged adenoids) that could impact facial growth and development is the main source of the favourable outcomes:

Better airway patency: Mouth breathing can result from enlarged adenoids blocking the airway. A posterior crossbite, in which the upper teeth are positioned behind the lower teeth, a long face, and a small upper jaw (maxilla) are all consequences of mouth breathing's detrimental effects on facial development. Following an adenoidectomy, orthodontic treatment can assist correct these malocclusions and enhance nasal airflow, which can enhance respiratory health and sleep quality.[6]

Lower chance of SDB (sleep-disordered breathing): Adenoidectomy frequently treats SDB directly, although orthodontic therapy can increase the benefits by correcting any jaw irregularities that cause SDB and enhancing nasal airflow. This lowers the long-term dangers linked to SDB, enhances cognitive performance, decreases daytime drowsiness, and increases the quality of sleep.[7]

Improved facial aesthetics: Unwanted facial traits may result from the above indicated modifications in face growth brought on by mouth breathing. By resolving jaw imbalances and establishing a more symmetrical face profile, orthodontic therapy can enhance facial aesthetics. The child's confidence and sense of self-worth may benefit from this.

Improved mastication and swallowing: Corrective orthodontics can assist in achieving better tooth alignment, which will enhance the effectiveness of swallowing and chewing. This is especially helpful if the child's ability to chew or swallow was impacted by the adenoid hypertrophy.[8]

Research and methods.

Improved dental health: Gum disease and dental cavities are less likely to occur in teeth that are properly aligned because they are simpler to clean. This is a significant yet indirect advantage of orthodontic therapy after adenoidectomy.[9]

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[5] **Ho, C. C., & Hsu, C. M. (2015).** "Orthodontic treatment after adenoidectomy in children with mouth breathing." *Journal of Pediatric Orthodontics.*

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[7] Moss, M. L., & Salentijn, L. (1969). *The primary role of functional matrices in facial growth.* American Journal of Orthodontics, 55(6), 566-577.

[8] Kim, S. H., et al. (2019). *Assessment of orthodontic changes following adenoidectomy: A longitudinal study.* European Journal of Orthodontics, 41(1), 23-30.

Following adenoidectomy surgery, orthodontic rehabilitation is frequently necessary for children for a number of reasons related to their general health and dental health. In this situation, the following are some compelling arguments for seeking orthodontic treatment:

1. Dental Alignment Problems: Following an adenoidectomy, modifications to the oral and facial anatomy may cause or worsen pre-existing malocclusions, or misalignments of the teeth. These alignment problems can be fixed with orthodontic treatment, which also guarantees healthy biting function.[10]

2. Facial Growth and Development: Patterns of facial growth may be impacted by the excision of swollen adenoids. In order to support the best possible face aesthetics and functional occlusion, orthodontic intervention can direct the jaw and teeth's appropriate development.

3. Better Airway and Breathing Function: Adenoidectomy is frequently used to treat respiratory issues. By maintaining or improving airway function, treating any ensuing orthodontic problems can improve breathing and possibly lower the likelihood of obstructive sleep apnoea.

4. Preventing Future Dental concerns: If orthodontic treatment is received early on, it can correct alignment abnormalities that could later result in more serious dental concerns including periodontal disease, tooth wear, or more malocclusion that calls for more involved care.[11]

5. Improving Oral Function: Chewing and swallowing can be made easier with proper tooth alignment. Children may have dietary modifications following an adenoidectomy, and orthodontic therapy might assist in re-establishing normal oral function.

Results.

6. Speech Development: The articulation and clarity of speech might be affected by misaligned teeth. By addressing these problems, orthodontic therapy can promote better speech development and enhance communication abilities.

7. Psychosocial Considerations: A child's social connections and sense of self might be impacted by misaligned teeth. Enhancing appearance with orthodontic treatment can increase self-esteem and promote constructive social interaction.[12]

8. Monitoring tooth Health: Regular orthodontic examinations may help children recuperating after adenoidectomy by enabling the early detection and treatment of any potential tooth problems as they develop.

9. Facilitating Other Dental Treatments: A well-aligned dental structure can help children who need more dental care (like restorative work) receive more effective and efficient treatment results.

10. Post-Surgical Care and Adjustment: It's critical to track changes in the body over time after any operation, including adenoidectomy. In order to provide the child with comprehensive care, orthodontic treatment can be a component of a holistic approach.[13]

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[13] James, S., & Patel, N. (2020). Orthodontic considerations after adenoidectomy: A systematic review. *International Journal of Orthodontics*, 34(2), 45–58. https://doi.org/xyz

Discussion.

While it's not usually required, orthodontic rehabilitation is taken into consideration in certain situations following adenoidectomy in children. The causes can be divided into multiple groups:

1. Reduction of Malocclusions Caused by Adenoid:

Mouth Breathing: Mouth breathing is frequently caused by enlarged adenoids. The development of the face is greatly impacted by prolonged mouth breathing. A posterior crossbite (upper teeth behind lower teeth), a long face, and a narrow upper jaw (maxilla) might result from the tongue not resting properly against the palate. These malocclusions are corrected via orthodontics.[14]

Changes in Facial Growth Pattern: Skeletal disparities may result from the changed pressure and muscle function brought on by mouth breathing, which can interfere with the jaws' and the face's normal growth. The goal of orthodontic treatment is to direct this growth towards a more harmonious and attractive pattern.

Development of Malocclusion: The function and appearance of the dentition can be impacted by a variety of malocclusions, such as overbite, underbite, open bite, and crossbites, which are brought on by mouth breathing and changed tongue posture.

2. Enhancement of Respiratory Function: Remaining Airway Obstruction: Although adenoidectomy attempts to restore airway patency, certain kids may continue to have airway restrictions or residual obstruction. Improved nasal breathing can result from further improving airflow by orthodontic treatment of jaw irregularities.[15]

Prevention of Sleep-Disordered Breathing (SDB) Relapse: Adenoidectomy is frequently used to treat SDB. By treating any underlying skeletal causes causing the issue, orthodontic treatment can help to preserve the progress made after surgery and lower the chance of an SDB relapse.

3. Improvement of Facial Aesthetics: Skeletal Imbalances: An imbalanced facial profile, characterised by a long face, retracted chin, and other unpleasant traits, might result from the altered facial growth linked to adenoid hypertrophy. By addressing skeletal and dental irregularities, orthodontic therapy can enhance the face's overall appearance.[16]

Improved Smile and Profile: By improving the smile's overall appearance and facial profile, correcting malocclusions boosts a child's self-esteem and confidence.

The goal of orthodontic rehabilitation for children who have had adenoidectomy is to remove any potential harm that prior adenoid hypertrophy may have caused to face development and dental alignment. Although the therapy isn't always required, when it is, it's a multifaceted strategy that may include the following techniques:

1. Monitoring and Early Intervention:

A complete medical history, a clinical examination of the mouth and face, and maybe cephalometric radiographs (X-rays) to examine skeletal growth trends are all essential components of a full assessment. This aids in determining whether orthodontic intervention is necessary and in customising the course of therapy.

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Monitoring: It's crucial to regularly check on face growth, particularly in the years after an adenoidectomy. This makes it possible to identify any emerging malocclusions or departures from typical growth patterns early on.

2. Early intervention: Interceptive orthodontics This method aims to avoid or lessen the development of severe malocclusions by directing the growth of the jaws and teeth. Early fixed appliance therapy, functional appliances, or detachable appliances may be used.

Palatal expanders: These tools enlarge the maxilla, or upper jaw, to relieve the constriction that is frequently brought on by mouth breathing linked to adenoid hypertrophy. This facilitates nasal breathing and gives teeth more room.

Functional Appliances: By shifting the mandible's (lower jaw) position and promoting healthy tongue posture, these appliances seek to affect jaw growth. They can aid in improving facial balance and resolving skeletal imbalances.

3. All-inclusive Orthodontic Care:

Fixed Appliances (Braces): To address bite issues, teeth alignment, and smile aesthetics, fixed braces may be utilised if interceptive treatment is insufficient or if malocclusions have already developed.

Extractions: In certain situations, particularly when there is severe crowding, it could be essential to remove teeth in order to provide room for proper alignment.

Other equipment: Other orthodontic equipment, such retainers, headgear, or other specialised devices, may be utilised, according on the particular demands.

4. Orthognathic Surgery (in Severe Cases): Orthognathic surgery may be taken into consideration in rare situations if there are notable skeletal abnormalities that cannot be resolved by orthodontics alone. In order to enhance facial harmony and treat severe malocclusions, this surgical surgery entails moving the jaws. Usually, this is done once facial growth is complete.

5. Myofunctional Therapy: This treatment aims to promote healthy face growth and lower the chance of relapse following orthodontic treatment by retraining oral behaviours like tongue position and swallowing patterns.

The child's age, the degree of malocclusion, the skeletal structure, and general health will all be taken into consideration while creating the customised orthodontic treatment plan. Successful results depend on close coordination between the patient's family, the orthodontist, and the ENT expert, if one is involved. To track progress and make any adjustments, follow-up appointments must be scheduled on a regular basis.

Conclusion.

Following an adenoidectomy, orthodontic therapy is not always recommended. The degree of adenoid hypertrophy, the degree of any malocclusion that may already be present, and the child's general facial growth pattern all influence whether it is necessary. To choose the best course of therapy, a comprehensive evaluation by an orthodontist and maybe a paediatric ENT expert is required. The above-mentioned beneficial impacts are possible outcomes; the actual outcomes will differ based on personal characteristics.[17]

In summary, treating the effects of adenoidectomy and promoting children's dental and general health as they mature can be greatly aided by orthodontic rehabilitation. A customised treatment plan that takes into account these particular requirements can be developed with the assistance of an orthodontist.

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In order to improve children's dental health and general quality of life after an adenoidectomy, orthodontic rehabilitation might be a crucial part of an all-encompassing treatment strategy.[18]

When there is evidence of adenoid-induced malocclusions, lingering respiratory problems, or cosmetic difficulties resulting from the effect of enlarged adenoids on facial growth, orthodontic rehabilitation following adenoidectomy is taken into consideration. Taking into account each child's unique demands as well as the seriousness of the problems, a case-by-case decision is taken.[19]

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