CURRENT RESEARCH JOURNAL OF PEDAGOGICS
(ISSN –2767-3278)
VOLUME 03 ISSUE 02 Pages: 34-41
SJIF IMPACT FACTOR (2021: 5. 714)
OCLC – 1242041055 METADATA IF – 8.145
Publisher: Master Journals

Journal Website: https://masterjournals.com/index.php/crjp

Research Article

FORMATION OF SPEECH SOUND OF CHILDREN WITH RHINOLALIA AFTER URANOPLASTY

Submission Date: February 10, 2022, **Accepted Date:** February 20, 2022,
Published Date: February 27, 2022
Crossref doi: https://doi.org/10.37547/pedagogics-crjp-03-02-07

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ABSTRACT

This article is devoted to the methodology of organizing speech therapy stages for the formation of the children speech pronunciation after uranoplastics. It also reveals the principles of organizing the work of children speech therapy.

KEYWORDS

Rhinolalia, preschool, speech disorders, voice, education, correction, rehabilitation, breathing, speech breathing, special education, organic, functional, rhinophonia, speech, principle, kinesthesia.

INTRODUCTION

In terms of the severity of anatomical and functional problems of the facial and jaw area, congenital cleft lip and palate is a form of severe disease.

The most frequent abnormality is the congenital cleft lip and palate. According to data, it accounts for roughly 86 percent of facial-jaw deformities, with 20–30% of these human illnesses occurring at a frequency of 0.6 to 4.0 per 1000 infants.

Congenital cleft lip and palate is a developmental abnormality that occurs as a result of morphogenesis

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in the fetus. Exogenous and endogenous impacts on the fetus at 7-8 weeks of embryonic development are the causes of this disorder. The pathophysiology of labial and paranoid congenital fractures is determined by a hereditary component in 5–25% of cases, and the fracture is caused by multifactorial factors in the remaining instances, according to an analysis of the causes of delivery in infants with labial and paranoid congenital fractures [4,5].

THE MAIN RESULTS AND FINDINGS

The classification of congenital clefts of the labia and palate is critical in the development and improvement of face and maxillofacial defect diagnosis and therapy.

Due to the rising impact of harmful substances on the body and the intensive expansion of the chemical industry over the last 100 years, this developmental abnormality has tripled.

Cleft lip or palate is more prevalent (60–80%) for boys and occurs in more severe forms, whilst an isolated cleft palate is more common among girls.

Various external and internal effects on the fetus cause congenital abnormalities of the face and palate. Due to insufficient differentiation or incompatibility, these results are accompanied by disruptions in the development of the jaw apparatus, particularly parts of its face, mouth, and nasal cavity, which result in congenital thickenings [7]. Exogenous (chemical, physical, biological, and mental effects) and endogenous (hereditary) factors can both be cited as causes of congenital abnormalities of the face, upper lip, and palate.

These children are helped in two ways: medically, psychologically, and educationally. Surgical treatment is frequently conducted in medicine, although surgeons have had significant success in treating anatomical problems in the mouth cavity, none of them has been successful in improving the phonetic side of speech through surgical intervention.

Unfortunately, even a perfectly executed operation cannot form normal speech in a child with rhinorrhea without the assistance of a speech therapist, because children adopt articulatory stereotypes [8]. In spite of the fact that palate is totally restored after plastic surgery, the root of the tongue remains retracted, and air exits the nasal cavity. The wrong posture of the speech apparatus organs, excessive articulation of face muscles, and erroneous articulation of speech sounds harden in youngsters, forming a dynamic stereotype that needs correction.

All actions are based on the following:

- leading didactic principles: scientific, systematic and sequential, open, consistent, conscious and active, repetitive and taking into account individual features, developing in reading, demonstrativeness;
- special principles arising from the nature of the defect:

a) a combination of pronunciation correction and sound analysis skills;
b) working with sounds from the same phonetic group in a specific sequence;
c) selecting spoken material for lessons; and
d) working simultaneously with sounds from different phonetic groups. This is because the background of all noises is distorted in children with a cleft lip and palate. It is recommended to start the correction with several sounds taken from different phonetic groups.
e) the use of the interval in the absorption of sounds with comparable articulation and acoustics. This principle states that sounds from closely related phonetic groups (especially those

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from the same group) should be investigated at separate times and at larger distances from one another.

f) rely on terms that have been saved.

Training should be based on the following:

1) Visual awareness of the oral picture of sound, which aids the infant in mastering particular articulatory organ motions (tongue, jaw, soft palate). When pronouncing explosive and sliding sounds, children carefully monitor the nature of the expelled breath flow (for example, sliding a paper line brought to the speaker's mouth).
2) Tactile-vibration sensation: the youngster places his palm on his throat and feels the vibration of the vocal cords, allowing him to differentiate between spoken and deaf noises;
3) Listening: the child notices the acoustic characteristics of the sound being adjusted with its assistance. As a result, the speech therapist's speech should serve as a model for the youngster.

All of the work was completed in stages and on an individual basis. Children are shy, timid, and introverted at first. Make sure you don't make contact too rapidly. The first few sessions involve the elements of fairy tale treatment and isotherapy to structure them. Parents' attendance in the sessions is preferable [5].

Areas of work:

1. Forming the pharyngeal barrier. The laryngeal muscles are recruited and the soft palate is prepped for closure during the preoperative phase. A full closure of the palate is produced in the postoperative period, and palate mobility is developed with the help of soft palate gymnastics.

The exercises listed below are suggested:

a) Imitating the act of swallowing or drinking water. Juice is served to children in a tiny glass or bowl. A few drops of water can be pipetted. When modest amounts of food are consumed, the soft palate is elevated to a reasonably high level.

b) Yawning with an open mouth.

c) Rinsing the mouth with warm water in small portions.

d) Coughing. Energy contractions are provided by the muscles in the back of the throat. The distance between the nasal cavity and the mouth cavity is entirely closed in coughing. The child can feel the palate elevation by touching the throat under the chin. In one exhalation it should be repeated for 2-3 times, or as many times as necessary. The movement of air via the mouth must be observed. It's preferable to begin with a cough of child's tongue protruding. The technique of actively pushing the soft palate upward and guiding airflow through the mouth is taught to children in this practice.

d) In the postoperative period, it is vital to stretch the palate and develop its maximum mobility. As a result, adding a formed palate to phonation is critical, as it speeds up and simplifies the introduction of the oral vowel resonance and speech skill.

e) Vocal exercises should be included. With a shawl and a high tone, vowel sounds are clearly pronounced. It improves oral resonance and relieves nasal congestion. In the beginning the sounds [ʌ], [e] are pronounced shortly, then [ɔ:], [u:] sounds are pronounced with long articulation.

f) Further the sounds [ʌ], [e], [ɔ:], [u:] are pronounced clearly in different sequences maintaining the accumulated exhalation in the mouth. When this skill is consolidated, the transition to the fluent

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pronunciation of sounds shifts. For example, [ʌ][e][ɔ:][u:]_____, [ʌ] [u:] [ɔ:] [e] _____.

g) Increasing the sound-to-sound pause to 1-3 seconds.

The massage helps to restore the sensitivity of the palate after surgery. This should be done in the presence of parents, as they must make sure that it is done at home as well. The massage is performed by the child himself. For this purpose, he with his wet thumb pad rubs his entire palate along the midline in the direction from the alveoli to the edge of the soft palate, then along the right and left. The massage is carried out once a day for 1–5 minutes (the palate is rubbed and massaged once) or is increased to 10 times with 3 minutes a day (the palate is rubbed and massaged three times in an hour with 3 minutes interval).

2. Work on physiological breathing at the same time. When working with a child, it is critical to follow the work principles for the formation of physiological breathing:

a) Before each meal, the room must be ventilated three times for 5-8 minutes.

b) At the beginning of the training one exercise is learned, and another is added every day.

c) The youngster should not get tired, i.e., the number and rate of exercises must be strictly followed. In case of any problem or fatigue it is advisable to postpone exercising.

d) The child shouldn't breathe deeply.

e) The main thing is not to allow the strain of child's neck and shoulders.

f) The child should be able to feel the diaphragm, intercostal muscles, and lower abdominal muscles moving.

g) Actions should be done slowly and calmly under the counting.

h) When the child can correctly and completely perform all the exercises at this stage, the next one starts.

Before surgery, this is called diaphragmatic-costal breathing (physiological), and in the postoperative period, it is called correction and automation of physiological breathing.

The following technique is based on the respiratory gymnastics developed by A. N. Strelnikova. The whole complex consists of 11 exercises.

3. Forming exhalation through the mouth. Exercises aimed at improving the directed breath from mouth and differentiation the exhalation from mouth and nose:

- breathing in and out through an open mouth, with the tongue out and resting on the lower lip (as a puppy does);

- breathing in and out through the nose;

- breathing in through the nose and out through the mouth. This exercise can be done in a variety of ways, including having the youngster exhale with his mouth wide open or pull his lips forward;

- breathing in and out from one nostril by closing with index or middle finger;

- breathing in from right nostril by closing with index or middle finger the left one, and breathing out from

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left nostril by replacing index or middle finger on the right nostril. Repeating this exercise in turns;

- breathing in from nose and out with right or left nostril closed with finger;

-breathing in from nostrils in turn and out from wide open mouth;

- breathing in from nose and trying to raise the piece of cotton on the nose as high as possible with the breath out.

Systematic implementation of these exercises provides the child to feel the difference in the direction of the airflow and learns to direct it correctly. It also assists to create proper kinesthetic feelings for gentle palate movements.

It is essential to control the child throughout these activities because it is difficult for them to feel the air coming out of their nostrils. Glass, cotton wool, or small sheets of paper can be placed next to the nose.

Puff exercises also aid in the appropriate flow of air. They can be done in a fun way by incorporating competitive components between a speech therapist and a child or a speech therapist and a parent.

Butterflies, petals, and other paper creations made together with the kid can be used to increase vocabulary and focus on the development of finger motor skills. Paper clips tied to wooden poles, cotton balls, simple origami paper shapes, and so on can also be used.

Blowing out candles is a favorite activity of children. This work is first done at a distance of 15-20 cm, then a bit further. A cotton swab can be used to feel the correct direction of air flow from the child's nose. Blowing water-floating lightweight plastic toys or blowing through the straw the water in the glass is also effective. The straw's diameter should be 5-6 mm at the start and 2-3 mm at the completion of the activity. When it is blown, the water starts to slosh, which is enjoyable for the kid. One may simply determine the power and duration of exhaling based on the movement of water. It should be demonstrated to the child that breathing should be enduring. Playing "football" through inflating and rolling balls or pencils on a flat surface, "soap bubbles", and so on make the exercises diverse. The above-mentioned activities prevent sameness and getting the child tired of them (as well as feeling dizzy).

4. A sequence of exercises aimed at normalizing verbal motor skills is conducted at the same time. Their regular training reduces the high rise of the tongue's root, insufficient lip articulation, and promotes the mobility of the tongue's tip. As a result, the root of the tongue and the pharynx play a less role in sound generation.

Gymnastics for lips and cheeks:

- Inflating of two cheeks at the same time.

- Inflating of cheeks in turn.

- Retracting of the cheeks into the oral cavity between the teeth.

- The act sucking: closed lips are pushed forward and then returned to their normal position. The jaws are in the closed position.

- Grinning: the lips are widely parted to the sides, up, down, both rows of teeth open.

- Pursing the lips forward and smiling with closed mouths.

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- Wide smiling with an open and closed mouth and closing lips.

- Wide smiling with an open mouth, and then closing both rows of teeth with your lips (p, b, m).

- Pushing the lips forward in the form of a wide funnel with open jaws.

- Forming thin funnel with lips (imitation of a whistle).

- with wide open jaws, retracting the lips into the mouth and fitting snugly against the teeth.

- Raising up and lowering down the tightly closed lips with closed jaws.

- Raising the upper lip and opening the upper teeth.

- Lowering the lower lip and opening the lower teeth.

- Imitating rinsing of teeth (air exerts strong pressure on the lips).

- Vibrating the lips.

- Moving lips to the right and left with pursing lips.

- Rotating pursed lips in a circular motion.

- Swelling the cheeks severely (the air in the mouth is retained by the lips, the pressure inside the mouth increases).

- Holding a pencil or rubber tube with lips.

Gymnastics for the tongue.

- Sticking out the tongue like a shovel or a bayonet.

- Sticking out and in the tongue in a straightened and pointed position.

- Turning the fully stuck out tongue to the right and left.

- Raising and lowering the back of the tongue so that the tip of the tongue rests on the lower jaw, and the root of the tongue rises and falls.

- Putting the tongue to the palate, first with the jaws closed and then with the jaws open.

- The protruding wide tongue is pressed against the upper lip, then the upper teeth and palate are touched with the middle part and the tip is pulled up to the mouth with the tip up.

- Sticking of the tongue to the upper alveoli when opening and closing the mouth.

- Pushing the tongue between the teeth, the upper teeth should “scratch” the middle of the tongue.

- Licking the lips in a circular motion with the tongue tip.

- Raising and lowering the widely protruding tongue to the upper and lower lip with the mouth open.

- Bending the tip of the tongue in the form of spikes, respectively, to the nose, chin, upper and lower lip, upper and lower teeth, hard palate, and bottom of the mouth.

-Touching with the tip of the tongue the upper and lower teeth with a wide-open mouth.

- Keeping the sticked out tongue in the form of boat, cup.

- Holding the tongue in the form of a cup in the mouth.

- Biting the edges of your tongue with your teeth.

- Raising and lowering the tip of the tongue, touching the upper and lower gums, with the sides of the tongue tilted towards the upper lateral teeth.

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- Touching the upper alveoli with the tip of the tongue in the same position as the tongue (t-t-t-t-t).

- Sequential movements - pinching the tongue, lifting up with a cup.

- Thus, the movements necessary for the correct pronunciation of sounds are practiced.

By maintaining the tongue in a high posture for 1-2 seconds, the resonance of voice sounds is normalized. The vowels a, o, u, and e are taught through a series of exercises that progressively become a regular (daily) practice. Vowels are muffled first, then articulated in hushed tones. This is especially beneficial for youngsters who need to compensate for their facial movements (shooting near the wings of the nose). Only the letters a, e, and o are used in the first few days of exercise.

It is very important that the child pronounce sounds with open articulations, stretching and adding. The tongue is pressed against the lower teeth. The mouth is wide open. The attention of the child is focused on the wide opening of the throat and the open pronunciation of vowels.

When forming sounds, the following sequence is recommended:

- vowels: [ʌ], [e], [ɔ:], [u:]

- consonant sliding consonants: [f], [s], [ʃ], [h];

- Quiet explosive consonants: [p], [t], [k];

- Vowel sliding consonants: [v], [z], [dʒ];

- Explosive consonants: [b], [d], [g];

- Explosives: [tʃ]

- Sonora: [m], [n], [l], [r], [ŋ].

Children pronounce the words in syllables at first. The words should consist only from appropriately pronounced sounds. It can be controlled by blowing a cotton swab near the child's mouth.

CONCLUSION

As a homework it is recommended to practice or learn rhymes, proverbs, tongue twisters.

Children should not be punished for mispronounce a phoneme, which irritates them and creates unpleasant reactions. In such cases, it is good to compile a list of relatively often used words in which the learned sound is involved (children are happy to participate in this type of activity). The words are gradually adopted into speech after that. In this situation, both the youngster and the adult are urged to focus on the quality of only 10 selected words per week. After 5-7 days, 10 new words are added, and the consolidation and distinction of this phoneme must be presented through poems, fairy tales, and stories. After about two weeks, the pronunciation is usually automated.

For pupils of the 2nd -3rd grades, new curriculum materials are added to the sessions. As a result, the initial work on the vocabulary for the forthcoming sessions is completed, and the student is convinced of the importance of reading and speaking the educational material assigned as homework. This preparation ensures that class responses are of the highest phonetic quality possible. Furthermore, the inclusion of a huge amount of lexical data from a variety of academic areas hastens sound automation and the introduction of spontaneous speech.

The child's activities in the lesson can be video recorded during sessions. After uranoplastic, the duration of corrective work up to pure speech might

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range from six months to three years, depending on frequent attendance at lessons and careful completion of all responsibilities.

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