

Rudimentary Tongue Tie-A Challenge to the Periodontist: Case Report

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ABSTRACT

Tongue as an orofacial structure in the oral cavity plays a very important role in eliciting a variety of functions which includes clarity of speech, nursing, maintenance of oral hygiene and swallowing. Ankyloglossia is a congenital deformity which is characterized by the presence open abnormally short and thick lingual frenum which untowardly affects the movement of the tongue. In this case elaborated below a 28-year-old patient reported with a rudimentary tongue tie and complaint of communication gap due to slurred speech. Treatment protocol followed in this particular case was frenectomy with muscle repositioning procedure.

Key words: Ankyloglossia, Orofacial, tongue tie, Lingual frenum, Rudimentary tongue tie

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INTRODUCTION

Ankyloglossia is also known sometimes as a congenital deformity which is characterized by the presence of a short lingual frenum. The major concern associated with tongue tie is the condition being asymptomatic. The infant or adolescent and adult may present with several factors such as difficulty in breast feeding and impaired speech. There can be problems associated with articulating explosive words such as l, t, r, d. The person may also present with difficulties in licking ice cream, play wind instruments such as trumpet flutes and orthodontically related problems such as open bite. The individual may also present with low self-esteem and confidence. The individual may face communication gap with his family and friends. The individual may also present with isolation and anxiety. Such individuals may also face obstacles in finding job opportunities as at some point they require articulation and expression of one's ideas with confidence. Search individuals may also face issues such as bullying and ragging.

Different classifications associated with ankyloglossia may include.

Kotlow's classification

Type of movement of tongue which is clinically

acceptable the normal range of free tongue movement should be greater than 16 mm. Class 1 mild ankyloglossia 12 to 16. Class 2 moderate ankyloglossia 8 to 11 mm. Class 3 severe ankyloglossia 3 to 7 mm. Class 4 complete ankyloglossia less than 3.

Ankyloglossia can be associated with other syndromes namely; the Pierre Robin Syndrome, the Oral -Facial -Syndrome, Meckel's syndrome, Down's syndrome, the Robinow syndrome, the Short rib syndrome, the ATR-X Syndrome, Fraser's Syndrome, the Wiedemann-Beckwith syndrome, Van der Woude's syndrome and Gloss palatine syndrome.

Various treatment modalities include surgical or non-surgical approaches. Surgical modalities include frenotomy, frenectomy and frenuloplasty. These interventions involve undermining or incision of the lingual frenum. Laser frenectomy or frenotomy has also been described and proponents argue that its use is more exact and provides better hemostasis than standard frenectomy or frenotomy. Frenuloplasty, more technically involved than frenotomy or frenectomy, generally refers to rearranging tissue or adding grafts after making incisions and closing the resultant wound in a specific pattern to lengthen the anterior tongue [1-5].

CASE REPORT

Patient 28 years old reported to the Department of Periodontology with a chief complaint of slurring and impaired speech. Patient further complaint about pronouncing explosive words such as L, R, T, D. patient complaint about low self confidence and self-esteem while conversing. Patient stated his medical history

Table 1: Hazel baker’s assessment tools for appearance and function of the tongue.

Appearance	Function
Appearance of tongue when lifted	Laterization
2: Round or square	2: Complete
1: Slight cleft in tip apparent	1: Body or tongue but ni tongue tip
0: Heart or V-shaped	0: None
Elasticity of frenulum	Lif of tongue
2: Very elastic	2: Tip to mid-mouth
1: Moderately ealstic	1: Only edges to mid-mouth
0: Little or no elasticity	0: tip stays at lower alveolar ridge or rises to mid-mouth only with jaw closure
Length of lingual frenulum when tongue lifted	Extension of tongue
2: >1 cm	2: Tip over lower lip
1: 1 cm	1: Tip over lower gun only
0: <1 cm	0: Neither of the above, or anterior or mid-tongue humps
Attachment of lingual frenulum to tongue	Spread of antiero tongue
2: Poateriro tot tip	2: Complete
1: At tip	1: Moderate of partial
0: Notched tip	0: Little or none
Attachment of lingual frenulum to inferiro alveolar ridge	Cupping
2: Attached to floor of mouth or well below ridge	2: Entire edge, firm cup
1: Attached just below ridge	1: Side edges only, moderate cup
0: Attached at rif=dge	0: Poor or no cup
	Peristalsis
	2: Complete, anterior or posterior
	1: Partial, originating posteriro to tip
	0: None or reverse

that he suffered an epileptic seizure when he was five years old. The patient did not complain of any episode thereafter.

The patient was asthenic built. He walked to the Periodontology OPD with a normal gait, there was no disability observed. The patient was well aware of time, place and person. The vitals of the patient were normal (Table 1).

ENT consultation

Laryngoscopy findings suggested normal bilateral aryepiglottic fold. Normal bilateral mobile vocal cords. Adequate Glottic Chink. Normal palatal movement, Normal palate.

Speech therapy consultation:

Speech therapy consultation wherein the speech therapy was initiated 2 weeks prior to the surgery. There were a few exercises which were advised which included Retraction- Hold the smile for 10 seconds. Relax and repeat. Put pressure on lip by pressing them together for 5 seconds. Relax and repeat. Fill the cheeks with air and hold for 15 seconds. Tongue –Stick out the tongue as far as you can and hold for 5 seconds and relax. Depress the tongue downwards and put force in opposite direction. Lip Protrusion-Make a pout, hold for 5 seconds. Straw –Blow in a straw after taking deep breath. Blow air on the candle by keeping it at 2 different distances. Repeat after 3 times. Breathing –Abdominal breathing. Practice for 10 times.

Extra-oral examination

The face of the patient was bilaterally symmetrical. On TMJ examination, the interincisal opening was 35 mm,

there was no deviation observed. There was no clicking or popping sound produced, patient did not complain of any pain on opening or closing of the mouth. There was no crepitus present. The lymph nodes were non tender and non-palpable on examination. There was no complaint of nasal obstruction, discharge or any history of persistent bleeding. The patient did not complain of any specific visual disturbances ocular pain or oedema of the eyelid. There was no history of impaired hearing, loss of hearing, discharge from ears or tinnitus. There was no obstruction in movement of the neck; there was no enlargement which was absorbed.

Intraoral findings

Volume of the tongue was normal, the distribution of papilla observed for normal. The appearance of the tongue was heart shaped or v shape. No lateralization was present. Elasticity of the freedom was little or non-elastic. Lift of the tongue tie stays at the lower alveolar Ridge or rises mid mouth only with job closure. Length of lingual frenum when tongue is lifted is less than 1 cm. Extension of the tongue tip over the lower gums only. Attachment of the lingual frenum to the tongue is neither or above or anterior or mid tongue humps. Attachment of the lingual frenum to the tongue-notched tip. Spread of the anterior tongue is little or none. Attachment of lingual frenulum to the inferior alveolar ridge is attached to the floor of the mouth or well below the ridge. Poor cupping was observed. Peristalsis was complete which was anterior or posterior. The shape of the palate was U shaped. The lips were potentially competent. There was no abnormality observed in the floor of the mouth, buccal mucosa and labial mucosa. There was Angles’ Class I Dewey’s Type II malocclusion was observed.

Diagnosis

The patient was diagnosed on the basis of MRI Scan, Complete Hemogram, Liver function test, Urine analysis, ENT therapy and Speech therapy. Relevance of performing MRI Scan was to rule out any chances of any brain lesions or syndromes which could be associated with tongue tie. The scan also helped us to determine the safety of the procedure which was to be performed that is there should not breach any of the underlying important nerves. The Complete hemogram was done as a safety intervention to be performed before every surgery. The liver and urine analysis were performed, as it is a pre-requisite to be done prior the insertion of the contrasting dye done before the MRI Scan. The ENT analysis was done to rule out the cause of speech deformity due to an abnormal palate, inadequate palate movement to produce certain phonetics or the presence of any immobile vocal cords through laryngoscopy. The speech therapy was done in order to help the patients to achieve clarity of speech while working in conjunction of the interventional surgical procedure.

Assessment

MRI Scan -The reports were normal. There are no relevant findings. The MRI Scans of the patient were normal. No relevant radiographical findings were observed. The consultant neurologist further concluded that ipsilateral lingual nerve palsy in this case even if a possibility is extremely rare.

Surgical intervention

The patient was advised surgical intervention which includes the frenectomy with respect to the lingual frenum along with the muscle repositioning which would help in the mobilization of the tongue. The patient was further explained that the surgery might not lead to the clarity of the words which created a hindrance in speaking for the patient before. The patient was further explained that speech therapy is more beneficial at a younger age because as we age, we develop a certain was of producing the required phonetics. The patient was briefed about the required procedure and with his consent the surgical intervention was preceded.

Procedure

Antibiotic prophylaxis was given before the procedure. Extra-oral and intra-oral antisepsis was done with 5% povidone-iodine solution. Lingual nerve block was achieved using 2% lidocaine hydrochloride with 1:80,000 adrenalin and local infiltration in the frenum was done. To attain tongue traction 3-0 silk suture was passed through the dorsum of the tongue. Two curved artery forceps were placed over the upper and lower attachments of the frenum. For incising the triangular tissue of frenum a 980 nm diode laser was used in contact mode with a power setting of 3 Watts. Protective eyewear was worn by both the operators and the patient while operating with lasers. Tip of the Optical fibres was used to remove the tissue from apex to the base of frenum and to excise the alveolar attachment. The surgical field was wiped with wet gauze to prevent excess thermal damage.

The remaining fibres were excised using number 15 blade. Genioglossus muscle was bluntly dissected with dissecting scissors. The tongue was mobilized during the procedure to check for movements of tongue. Epithelium was sutured using 3-0 silk sutures for approximation. Post-operative instructions were given. Amoxicillin and Zerodol P were prescribed twice a day for 3 days. Patient was recalled after 10 days for suture removal.

DISCUSSION

The incidence rate of ankyloglossia ranges from 0.1%-10 %. The prevalence rate in males to females is present in the ratio of 24:12. The prevalence rate seen in individuals of varying ethnic origin are Hispanic 18%, White 8%, Pacific Islander 5%, Asian 4% and American-African 1 %. Tongue tie is the most commonly found in infants when there is a problem in breastfeeding for the infant [4]. The tongue plays an important role in nursing. It helps to pull the breast to a position where it is easy for the infant, as it grooves along its length to make a channel to keep the breast in place in the mouth and to catch the milk and to hold it at the back of the tongue in preparation for swallowing. The back of the tongue drops to the floor of the mouth, the milk is expelled from the breast by the combination of positive and negative pressure. Hence the immobility of tongue interferes with the latching on to the mammary gland. This further causes fatigue to the infant leading to frustration and low weight seen among infants due to lack of proper nutrition. Other maternal symptoms included are sore nipples and mastitis. When ankyloglossia persists well in adolescence and adulthood, the issues related to oral hygiene maintenance, speech problems and psychological inadequacies. The tongue serves as an important orofacial structure which helps in maintaining oral hygiene especially in the lingual aspect of the mandibular anterior. Lingual mobility further causes messy eating habits, incorrect position of the tongue while swallowing. The food debris remaining on the teeth and lips further leads to rampant tooth decay. In some cases, orthodontic problems such as malocclusion can be seen due to inadequate mandibular development. Our tongue plays a significant role in oral stereo gnosis that helps in the perception of different shapes and objects. It also helps in detecting harmful objects within food such as uncooked pieces of rice. Interdental clogging of fibrous food can be detected and removed by the tongue. Due to restriction of the lateral movement of the tongue, oral hygiene as well as protection is hampered. It plays a crucial role in expressing human emotion and a variety of social activities. Due to restriction in protrusion, elevation and rotation of the tongue, licking of ice cream or playing wind instruments becomes a difficult task [5].

CONCLUSION

The diagnosis of tongue tie is based on medical record of the patient and the clinical examination, the presence of AG may be either asymptomatic or leading in several

complications. It is upon the clinician to select a treatment plan according to age, degree of difficulty of the case and the approach that he wants to use regarding a specific case. The cases of ankyloglossia pose a great difficulty to the clinician in terms of being multifactorial, however it is done with the use of the latest technology can yield exemplary results. Post the surgical intervention in the given case, the patient felt immense increase in his self-esteem and confidence while speaking. As a clinician the happiness and satisfaction of the patient always remains our topmost priority.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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