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Case Report

Ankyloglossia: Treatment By Electrosurgery – A Case Series

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ABSTRACT

Background - Tongue tie is the condition of tongue tip which restricts the movements of the tongue, leads to difficulty in phonation and other problems like maintenance of the oral hygiene. For that the minor surgical procedure is required to fix this abnormal lingual frenal attachment. There are various treatment modalities available for the treatment of lingual frenectomy. **Basic procedure -** A total of 12 patients were selected in the case series with class II and III ankyloglossia according to Kotlow's classification. All the patients were treated with electrocautry under local anesthesia and evaluated for free tongue length pre operatively, immediate post operatively and at 24 months. **Main findings -** On statistical analysis, the baseline (7.08 ± 2.46) and immediate post operative (11.75 ± 1.54) mean values were significant. Also the baseline (7.08 ± 2.46) and post operative 24 months (11.08 ± 1.31) mean values were statistically significant. **Principal conclusion -** The use of electrocautry for the lingual frenectomy is a good option for the patient. Electrocautry reduces the intra and post operative pain.

INTRODUCTION

The term "Ankyloglossia" was used for the first time in the medical literature way back in 1960s, when Wallace (1963)1 defined tongue-tie as a condition in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of a short frenulum linguae, often containing scar tissue". Etymologically, "ankyloglossia" originates from the Greek words "agkilos" (curved) and "glossa" (tongue)2. An abnormally short lingual frenum leads to of problems like infant feeding, difficulties in speech and oral hygiene maintenance, development of gingival recession on the tension side (mostly on the lingual side of the lower front teeth), also interferes with the stability of mandibular prosthesis and various mechanical and social issues related to the inability of the tongue to protrude. Social issue is like hesitation due to improper or blurriness of the pronunciation. Many published cases of tongue-tie and impaired speech are based on the observation that established speech difficulties can be associated with tongue tie as it restricts mobility of the tongue tip rather than definite evidence which actually causes speech impairment3. Certainly tongue-tie does not seem to be the cause of speech prevention or delay; however, many clinicians believe that it can cause articulation difficulties of the sounds like 't', 'd', 'l', 'n', and 's'. Lingual frenectomy is advised for the management of Ankyloglossia. It's easy to evaluate ankyloglosia based on measurement of free tongue that is measured from the insertion of lingual frenum from the base of the tongue to the tip of the tongue.

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Ankyloglossia is classified on the basis of free tongue - given by Kotlow in 19994

Ranges of free tongues	Class of Ankyloglossia	
Greater than 16 mm	Normal	
12 to 16 mm	Mild ankyloglossia	Class I
8 to 11 mm	Moderate ankyloglossia	Class II
3 to 7 mm	Severe ankyloglossia	Class III
Less than 3 mm.	Complete ankyloglossia	Class IV

MATERIALS AND METHODS

A total of 12 patients between the age ranges from 16 to 28 years (mean age 22.33 ± 3.86) reported to the department of Periodontics with the chief complain of tongue tie. Patients with systemic involvement, bleeding disorders, previous history of periodontal surgery, autoimmune diseases were excluded from the study. Mainly the patients with class II and III ankyloglossia according to the Kotlow's classification were included. These patients were treated with Electrocautery device. Before proceeding, the procedure was explained to the patients. The verbal and written consents were obtained from the patients. The ethics and research committee of Datta Meghe Institution of Medical Sciences (DU), Sawangi (Meghe), Wardha approved the study protocol, whether

At baseline (on the day of surgical procedure) following criterions were assessed

1. The tongue is able to lick the lips or clean the palate
2. Tongue is easily able to extend over, lower anterior teeth and outside the mouth.
3. The abrasion to the underside of the tongue is present
4. The backward tipping of lower anterior teeth is possible

Pre-operative view

While frenectomy by electrosurgery

Immediate post operative view

Post operative view after 24 months

5. The presence of severe blanching lingual to lower anterior teeth is present

The speech assessment was done in context of improper and blurry pronunciation (Speech defects include defects in the letter t,d,n,l and s in sound and words such as ta, te, time, water, cat)

Also the pain was assessed during and after the procedure. The range of severity of pain response for the patient was classified as no pain, slight pain, moderate (discomfort) and severe pain as per the patient's reaction. The intensity of pain was assessed

by closing of eyelid, facial expression or head movements.

After the surgical procedure all the patients were kept on the periodic follow up of 1 week, 1 month, 3 months, 6 months, 1 year and 2 years post operatively.

After the administration of local anesthesia (2% Lignox- lignocain: adrenalin 1:80,000) subjective symptoms were checked; then, the tongue was retracted with mouth mirror. From the tip of the lingual frenum to base of the tongue was cut off and the treatment was given to the patient by electrocautery device (Servotome™ classic system). In that, the 140CA blue colored electrode was used. It has a cutting edge of 0.40 mm, called as excutting. It has a power of 6/7 watts with a resistance of 2 K Ω and 4/5 cutting medium coagulation. The attachment of the frenum nearby apex of the tongue was relieved with an electrode in intermittent operation of 10s/30s.

After the excision of lingual frenum, other areas were checked in context of any tension over the surrounding gingival tissue/muscles and were relieved. Just after that patient was asked to do some tongue movements like protrusion of tongue and uplifting towards palate to asses whether the complete frenal attachment has been excised or not. No suturing was done.

Post operatively patient was advised to have analgesics and recalled after 1 week, 1 month, 3 months, 6 months, 1 year (12 months) and 2 years (24 months) for the follow up visit. Patient was also advised to train the tongue by following tongue movements like

i. Stretching of tongue, up towards nose, down towards chin and repeat.

ii. Opening up the wide mouth and protruding the tongue for longer time.

iii. Closing the mouth poking the tongue to left and right direction towards cheek.

iv. Making the tongue fold in the ring like fashion inside the close mouth for 3-5 minutes twice daily for 3-4 weeks.

RESULTS

A total of 12 systematically healthy patients in the age range of 16 to 28 (22.33 ± 3.86) years were with class II and III ankyloglossia were treated with electrosurgery. Six patients were of class II (moderate 8-11 mm) and another 6 patients were of class III (severe 3-7 mm) ankyloglossia with 8 male and 4 female patients. The healing of the operated area was uneventful and patient could hardly notice the post operative pain in the operated area.

At baseline the pre-operative measurement of protrusion of tongue was measured and then post-operatively at periodic intervals up to at 24 months it was measured. Also the pronunciation of the alphabets like “t, d, n, l and s” were checked pre and post operatively. All the patients were tested for pain assessment where they did not report with post operative discomfort or pain.

On statistical analysis, the baseline (7.08 ± 2.46) and immediate post operative (11.75 ± 1.54) mean values were significant. Also the baseline (7.08 ± 2.46) and post operative 24 months (11.08 ± 1.31) mean values were statistically significant; however, when the baseline (7.08 ± 2.46) and post operative 24 months (11.08 ± 1.31) mean values were compared that did not show significant result ($p = 0.05$). Hence, there was no recurrence in 24 months period of the time.

DISCUSSION

Ankyloglossia is a rare and congenital oral anomaly which causes difficulty in functions like phonation and breast feeding. This particular deformity of tongue is characterized by the attachment of tongue to the floor of the mouth by means of the muscular attachments. This anomaly resulted due to cellular degeneration leading to much longer anchor between the tongue and the floor of the mouth5. The optimal management of ankyloglossia at an early age by appropriate surgical intervention delivers the pleasing and acceptable results. This correction may reduce the risk of latent complications; therefore, surgery should be planned at any age as per the patient's history of speech or mechanical/social difficulties. Mainly the three surgical approaches have been given in the literature which includes conventional method by surgical blade, laser and electrosurgery. There is no enough evidence in favor of any of the treatment options noted in the literature but manipulation of the tissue in cases of laser and electrosurgery are better compared to the conventional one3. There are two types of electrosurgery units are available which can be used in dentistry. One is monopolar and another one is bipolar. Monopolar consist of single electrode while bipolar consist of two electrodes The advantages of use of electrosurgery over the lasers that they don't require any safety eye wears and can remove more amount of tissue in less time. Electrosurgery does not require sutures after the procedure and reduces the chance of post operative infection unlike in conventional treatment6. Post operative exercise for tongue such as oral kinesthesia (ability to feel the part and how they are moving) and DDK (diadochokinesis – ability to perform rapid, alternating movements) must be performed3. The use of the electrosurgery needle seems to be ideal tool for adhesiolysis of superficial tissues7. The pathogenesis of ankyloglossia is unknown but it can be a part of certain syndromes like X linked cleft palate and van der Woude syndrome8.

Therefore, the identification of the general health along with its clinical picture should co-relate for the better assessment and treatment plan. The use of electrosurgery in the management of anlyloglossia seems to be additive benefits over the conventional method. Use of electrosurgery offers minimum trauma to the surgical site with minimum pain. Post operatively no swelling was encountered. So the

Sr No.	Age of patients	At baseline	Immediate post operative	At 24 months
1	22	7	11	10
2	16	11	14	13
3	23	3	9	9
4	20	4	11	10
5	19	8	12	11
6	26	9	13	12
7	28	6	10	10
8	24	4	12	11
9	27	8	10	10
10	25	7	13	13
11	21	8	13	12
12	17	10	13	12
Mean ± SD	**22.33 ± 3.86**	**7.08 ± 2.46**	**11.75 ± 1.54**	**11.08 ± 1.31**

Table – 1 : Free tongue length at baseline, immediate post operative and at 24 months

Period of evaluation	Protrusion of the tongue in mm (Mean ± SD)	*p* value
At baseline	7.08 ± 2.46	< 0.01
Immediate post op.	11.75 ± 1.54	*p* = 0.05 **Significant (S)**
At baseline	7.08 ± 2.46	< 0.01
At 24 months	11.08 ± 1.31	*p* = 0.05 **Significant (S)**
Immediate post op.	11.75 ± 1.54	2.07
At 24 months	11.08 ± 1.31	*p* = 0.05 **Non significant (NS)**

Table 2 – Comparative evaluation of the free tongue length at baseline, immediate post operative and 24 months post operative

electrosurgery can be considered as the beneficial and comfortable method for the management of anlyloglossia.

CONCLUSION

The use of Electrosurgery in the treatment of ankyloglossia is one of the best treatment modality. It offers bloodless field at surgical site with no or minimal discomfort. It also reduces the chair side time. No recurrences of the treated cases were found with the period of 24 months. It seems to be the reliable and relatively easy method to perform.

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