COMPARISON OF FRENULOTOMY VERSUS FRENULECTOMY IN CASES OF ANKYLOGLOSSIA

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Date Received: April 01, 2017
Date Revised: May 06, 2018
Date Accepted: May 13, 2018

ABSTRACT

Objective: To compare frenulotomy versus frenulectomy in cases of ankyloglossia in terms of post operative improvement in speech and feeding difficulties in children.

Methodology: This study was carried out in Combined Military Hospital (CMH), Bahawalpur. Total 64 cases of tongue tie were selected from outpatient department. The cases were randomly divided into two groups. In group A, children underwent frenulectomy via Z-plasty and in group B they had frenulotomy i.e. release of tongue tie with bipolar diathermy. Postoperative improvement in speech and feeding problems was assessed in both groups.

Results: Mean age of children in the study was 2.79 ±1.01 years. There were 45 (70.3%) males and 19 (29.7%) females. Group A, had significantly better improvement in speech as compared to group B (p =0.000). regarding breast feeding, both procedures showed almost similar improvement (p =0.224).

Conclusion: Frenulectomy was superior to frenulotomy as far as post operative speech is concerned; however, both procedures were almost equally effective in improving feeding problems (breast feeding) in babies with tongue ties.

Key Words: Ankyloglossia, frenulum, frenulotomy, frenulectomy, Z-plasty

This article may be cited as: **Khan MA, Akram S, Usman HB, Ali G. Comparison of frenulotomy versus frenulectomy in cases of ankyloglossia. J Postgrad Med Inst 2018; 32(2): 198-200.**

INTRODUCTION

Ankyloglossia or tongue tie is a condition in which the tip of the tongue cannot be protruded beyond the lower incisor teeth because of short frenulum[1]. Typically, the lingual frenulum separates before birth, allowing the tongue to move freely. With tongue-tie, the lingual frenulum remains attached to the ventral surface of tongue. Its cause is unknown, although some cases of tongue-tie have been associated with certain genetic factors[2]. Tongue-tie is more common in boys than girls. Breast feeding difficulties have been reported as the earliest complications associated with tongue tie[3]. Restriction of tongue movement in an infant may prevent the infant from taking enough breast tissue into the mouth/difficulty in latching onto the nipples and hence result in breast feeding problems such as painful nipples and poor milk supply for the mother, leading to frequent feeding and poor weight gain for the baby despite frequent feeding. Other problems associated with tongue tie include difficulties with articulation of sounds, dental problems and inability to lick an ice cream or play wind instruments later in life. The sounds which are affected and difficult to pronounce because of tongue tie are "t, d, n"[4]. However, in many children it is asymptomatic. Most of the children present at 1 to 3 years of life. The prevalence of ankyloglossia is around 3-4% varying from 0.02-10.7%[3-6].

In ancient times, tongue tie has been reported to be released with finger nails of mid-wives[7]. Nowadays, there are different modalities for treating tongue tie including simple release i.e. frenulotomy and frenulectomy (Z-plasty, V-Y plasty), release with electrocautery or lasers8-10. We have carried out this research to find the best method of treating ankyloglossia. This will help the treating physicians to manage such cases in best optimum way and to choose wisely the modality which has better outcome for the patients.

METHODOLOGY

The study was carried out in CMH, Bahawalpur from August 2014 to February 2016. It was a randomized controlled trial. Sample size was calculated using online Raosoft Sample Size Calculator. Prevalence was taken as 4% from the study of Segal et al[6]. Confidence interval was taken at 95% and margin of error as 5%. Sample size came out to be 59. To account for non-response and design effect, sample size was increased to 64. The sample of 64 cases was divided randomly in two groups

of 32 patients in each group (Group A and Group B) using random number tables. Non-probability convenient sampling technique was used. In Group A, patients underwent frenulectomy by Z-plasty and Group B patients had frenulotomy (simple release) by bipolar electrocautery. All those children with short frenulum which caused restriction of tongue movements were included in this study. Children with liver and renal diseases; those with any bleeding disorders and tongue tie along with other congenital anomalies i.e. cleft palate were excluded from the study.

All patients were selected from outpatient department of CMH, Bahawalpur. The main parental concerns of bringing the babies to outpatient department were noted along with their age and gender. Classic Z-plasty was carried out in Group A, dividing the frenulum with scissors and stitching the upper and lower bands with vicryl. In Z-plasty, a releasing incision was made on superior border and other on the inferior border of lingual frenulum. Two flaps were raised, interchanged and stitched to increase the length of frenulum. Bipolar electrocautery was used in Group B, to cut the frenulum and hemostasis was achieved automatically by cauterization. Both the groups were compared postoperatively for functional assessment. Functional assessment was carried out through effect on phonation and breast feeding as described by parents. Functional assessment was carried out at first postoperative week using Hazelbaker Assessment Tool[11]. Effect on breast feeding was assessed according to improvement in breast feeding, less frequent feeds, decrease in pain and soreness of nipples. Effect on phonation was categorized into mild improvement, moderate improvement and best result/improvement. Similarly effect on breast feeding was categorized into mild improvement, moderate improvement and best result/improvement.

Data had been analyzed using statistical package for social sciences (SPSS) version 19. Frequency and percentage were calculated for qualitative variables while mean and standard deviation (SD) were calculated for quantitative variables. Chi square test was used to compare qualitative variables between the two groups. A p value < 0.05 was considered significant.

RESULTS

There were 64 cases of tongue tie in the present study. The main concerns of parents for bringing their children were difficulty in articulation (speech problems) and feeding difficulty, as shown in Table 1.

The age range of children was from 1 to 5 years with mean age of 2.79 ±1.01 years. There were 45 (70.3%) males and 19 (29.7%) females. In Group A, 23 showed maximum improvement of speech. However, in Group B, only 04 showed maximum improvements after surgery, as shown in Table 2. As far as effect on breast feeding was concerned, both procedures showed almost similar improvement, as shown in Table 3.

Table 1: Main parental concerns in children with tongue tie

S. No.	Main Complaints of Parents	Frequency
1	Speech Problems	64 (100%)
2	Speech & Feeding Difficulty	25 (39.06%)

Table 2. Postoperative improvement in speech

Improvement in Speech	Frenulectomy (Z-Plasty Technique)	Frenulotomy (Release)	P value
Mild	0	6	0.000
Moderate	9	22	
Maximum/Best	23	4	
Total	32	32	

Table 3. Postoperative improvement in breast feeding

Improvement in Breast Feeding	Frenulectomy (Z-Plasty Technique)	Frenulotomy (Release)	P value
Mild	0	2	0.224
Moderate	5	9	
Maximum/Best	6	3	
Total	11	14	

DISCUSSION

Majority of the parents in this study were aware of the subject of tongue tie. The major adverse effects of tongue tie as perceived by mothers included speech difficulties. Breast feeding difficulties which have been reported in literature as the earliest problem associated with the tongue-tie, was not seen as the main concern of parents in the subject study. Breast feeding problems were expressed/narrated by very few mothers as shown above. It may be possible that even if breast feeding problems exist, mothers do not link them with tongue ties because breast feeding is a key child care practice in our society, reporting difficulties may be a reflection of failure on the mothers' part[12]. Secondly, many children were old enough and had grown out of breast feeding age so main complaint of respondents was articulation difficulty. Because of social factors, usually, mothers do not express the feeding problems in the outpatient departments, especially to the male doctors. Furthermore, obvious disabilities like speech difficulties may be more readily identified by mothers. However, it is a well-known fact that most babies with ankyloglossia are asymptomatic.

We have compared two common surgical methods of treating ankyloglossia i.e. frenulotomy versus frenulectomy. Frenulotomy by bipolar diathermy is a quick, safe and conservative procedure; however, frenulectomy (Z-plasty) is a more complicated, sophisticated, time requiring surgical procedure. Z-plasty has an advantage of increasing length of the scar which has a direct positive effect on postoperative tongue mobility. In our study, we found Z-plasty a superior method to simple release, as assessed by post operative functional outcome i.e. effect on speech. Our results are in accordance with the work of Yousefi et al[13]. However as far as effect on breast feeding is concerned, there was no significant difference between the two groups; similar to that seen in Yousefi et al[13]. Almost similar effect of both surgical techniques on breast feeding improvement might be because of less number of cases i.e. 25 who were in breast feeding age. Heller et al[14] also have shown Z-plasty to be a superior procedure.

CONCLUSION

Frenulectomy (Z-plasty) was superior to frenulotomy (release of tongue tie) as far as post operative speech was concerned; however, frenulotomy and frenulectomy were almost equally effective in improving feeding problems (breast feeding) in babies with tongue ties.

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CONTRIBUTORS

MAK conceived the idea, planned the study, and drafted the manuscript. SA and GA helped in acquisition and interpretation of data and did literature search. HBU helped in manuscript writing. All authors contributed significantly to the submitted manuscript.