

## Ankyloglossia in Infancy: An Indian Experience

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**Objective:** To study the prevalence, clinical presentation and management of infants with ankyloglossia. **Methods:** A retrospective file review of infants less than 6 months of age with a diagnosis of ankyloglossia. **Results:** Of the 25786 babies born during the assessment period (2007-2015), 134 (0.52%) had ankyloglossia. Sixty-four (47.7%) infants who presented with breastfeeding difficulties were diagnosed significantly earlier than the asymptomatic group ( $P < 0.05$ ). Of the symptomatic group, 85.9% underwent frenotomy with satisfactory results. Seventy asymptomatic infants were managed conservatively with counselling. **Conclusions:** Frenotomy seems to be a safe and effective procedure in infants with symptomatic ankyloglossia.

**Keywords:** Breastfeeding, Frenotomy, Tongue tie.

Ankyloglossia or tongue tie is a congenital oral anomaly characterized by an abnormally short, thickened, or tight lingual frenulum that restricts mobility of the tongue [1]. Ankyloglossia can cause difficulties in breastfeeding as a result of poor latch and consequent maternal nipple pain. Several definitions and classification systems have been proposed based on anatomical characteristics or the functional impairment or a combination of both [2-6]. The opinion regarding the management of tongue tie in breastfeeding infants is divided amongst pediatricians, otolaryngologists and lactation consultants [7-9]. There have been no large studies from India regarding ankyloglossia in infancy and its management. In this study, we analyzed the clinical characteristics, outcome with regards to breastfeeding, and management of babies with ankyloglossia.

### METHODS

This is a retrospective study of all inborn babies who were clinically diagnosed as having ankyloglossia before 6 months of age. The study was approved by the Institutional ethics committee of Cloudnine Hospital, Bangalore, India. Babies born in 3 branches of a tertiary maternity hospital from January 2007 to September 2015 were included in the study. All babies with major congenital anomalies, chromosomal abnormalities and surgical problems were excluded from the study. Data were obtained from the case files and the hospital electronic patient record system.

The diagnosis of ankyloglossia was made by consultant

pediatricians either during the postnatal examination or during out-patient follow-up. The diagnosis was made in the presence of a sublingual frenulum that changed the appearance or function of the infant's tongue because of its decreased length, lack of elasticity, or attachment too distal beneath the tongue or too close to or onto the gingival ridge [10]. Lactation consultant of the hospital counselled the parents of these infants regarding anticipated problems in feeding. The infants were followed-up by the pediatric consultant in out-patient department within a week. The children were considered as being symptomatic if there were feeding difficulties such as poor latch, poor sucking, weight loss >15% from birth weight, poor weight gain, maternal nipple or breast pain. All the infants diagnosed with symptomatic ankyloglossia from all three centers, were referred to the clinics of two senior neonatal consultants trained in frenotomy. Frenotomy was performed after standard preoperative workup. Babies were breastfed immediately post-procedure and were advised to follow-up after a week. The improvement was assessed for re-establishment of breastfeeding, infant weight gain, subjective improvement in latch, and reduction in maternal pain.

For all the infants included in the study, birthweight, gestational age, mode of delivery, details of feeding mode, age at which ankyloglossia was diagnosed, symptoms, age at which frenotomy was done, improvement of symptoms post procedure and procedural complications (if any) were recorded.

Statistical analysis was carried out using R software (R Foundation for Statistical Computing, Vienna).

**WHAT THIS STUDY ADDS?**

- If ankyloglossia interferes with breastfeeding, frenotomy appears to be a safe and effective procedure when performed on an outpatient basis by trained neonatologists.

Comparison between all the above variables in the study population was done using breastfeeding difficulties as the grouping variable. Chi-square test was used for categorical variables and independent t-test for continuous variables. All tests were two tailed and *P* value <0.05 was considered significant.

**RESULTS**

The total number of deliveries during the study period was 25786. Before 6 months of age, 134 (0.52%) infants were diagnosed as having ankyloglossia.

**Table I** describes the clinical profile and characteristics of babies with ankyloglossia. The male female ratio was almost similar. Majority were born by Caesarean section (72.4%), and to primiparous women. Sixty-four (47.7%) presented with feeding difficulties. Breastfeeding was the commonest mode of feeding in both groups.

**TABLE I** CLINICAL CHARACTERISTICS OF INFANTS WITH ANKYLOGLOSSIA

	<i>Asymptomatic</i> ( <i>n</i> =70)	<i>Symptomatic</i> ( <i>n</i> =64)	<i>P</i> <i>value</i>
Male gender	34 (48.6%)	36 (56.3%)	0.374
<i>Mode of delivery*</i>			
Caesarean	52 (74.3%)	45 (70.3%)	
Normal	8 (11.4%)	17 (26.6%)	
Instrumental	10 (14.3%)	2 (3.1%)	
<i>Parity</i>			
Primiparous	50 (71.4%)	46 (71.9%)	0.848
Multiparous	20 (28.6%)	18 (28.1%)	
<i>Feeding mode*</i>			
Breastfeeding	70 (100%)	59 (92%)	
Breastfeed + expressed milk	0	3(4.6%)	
Breastfeed+ top feed	0	2 (3.1%)	
#Gestational age (wks)	38.01 (1.4)	37.9 (1.5)	0.961
#Birthweight (kg)	2.96 (0.51)	2.9 (0.52)	0.727
#Age at diagnosis (d)	25.15 (42.5)	12.3 (17.4)	0.024

\*Chi square test was not done as some cells have frequencies less than 5; #Mean (SD).

The mean age at diagnosis of ankyloglossia in the symptomatic group was significantly earlier. In infants with symptomatic ankyloglossia, latching difficulty was the commonest symptom of impaired breastfeeding (94%). The other symptoms were sore nipple (3.3%) and weight loss (1.7%). Frenotomy was performed for 55 (85.9%) symptomatic infants and five (7.1%) asymptomatic infants.

The mean (SD) age of frenotomy was 23.3 (28.7) days. Frenotomy was performed in the first month of life in 75%. Frenotomy resulted in improved latching, feeding and pain relief in 100% of the symptomatic mother-infant dyads with no post-operative complications. Although all the asymptomatic babies had no problems in breastfeeding and good weight gain, five underwent frenotomy, owing to parental insistence as the mothers' perceived discomfort during feeding.

**DISCUSSION**

In this study among infants (<6 months) delivered at one of the three private hospitals in Bengaluru, India, the prevalence of ankyloglossia in was 0.52 %, of whom about half were asymptomatic. Symptomatic ankyloglossia presented significantly earlier than the asymptomatic group. Breastfeeding was achieved in all the symptomatic babies who underwent frenotomy.

The study was limited by the retrospective design and subjective outcomes. There is also the possibility of a referral bias for frenotomy.

Previous studies have reported a prevalence rate over a wide range of 0.5% to 10.7% depending on the study population and the diagnostic criteria used [2,3,7,11]. The mean age of diagnosis of ankyloglossia in our series was similar to that in previous studies [7-9]. In previous studies, the asymptomatic rates reported are between 19% to 80% [2,3,7,12]. It is postulated that in asymptomatic babies, the tongue tie gets stretched, and the babies adapt, are able to feed well and consequently achieve good weight gain [13]. The mean age of frenotomy in our babies was comparable to other studies which have opined the optimal timing of frenotomy to be between 1 to 3 weeks [12,14]. All symptomatic mother-infant dyads had improvement without complications following frenotomy, as also reported in literature [2,7,15].

We conclude that ankyloglossia is asymptomatic in a substantial proportion of infants. Frenotomy appears to be a safe and effective procedure if performed on an outpatient basis by adequately trained neonatologists.

*Contributors:* RKK: conceptualized, designed the study, critically reviewed the manuscript, approved the final draft and will act as guarantor of the paper; NP: analysed the data, reviewed literature wrote the first draft and final draft; PK: acquired the data, participated in the analysis and critically reviewed the manuscript; RNRP: participated in the study design, data collection and approved the final draft; NN: interpreted the data, critically reviewed the manuscript and approved the final draft.

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