

**CLINICAL EVALUATION AND SURGICAL MANAGEMENT OF CONGENITAL
SHORT FRENULUM OF THE TONGUE AND LIP: EFFECTIVENESS, OUTCOMES,
AND RECOMMENDATIONS**

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ABSTRACT: Background: Congenital short frenulum of the tongue (ankyloglossia) and upper lip (lip-tie) are developmental anomalies that can interfere with key oral functions, including breastfeeding, speech articulation, and oral hygiene. Despite their prevalence, they are often underdiagnosed and undertreated. Objective: This study aimed to evaluate the clinical presentation, diagnostic methods, and surgical outcomes of patients with congenital short lingual and/or labial frenulum, and to assess the effectiveness and safety of frenotomy and frenuloplasty. Methods: A retrospective cohort of 72 pediatric patients diagnosed with short frenulum was analyzed. Clinical assessment tools included the Hazelbaker Assessment Tool and Coryllos classification. Surgical interventions consisted of frenotomy and frenuloplasty, with follow-up over six months to evaluate outcomes. Results: Significant improvements were observed in breastfeeding (91%), speech clarity (78%), and oral hygiene (75%) post-surgery. Complication rates were low, with only minor transient bleeding and discomfort in a small subset of patients. Surgical success was comparable between frenotomy and frenuloplasty. Conclusion: Early diagnosis and surgical management of congenital short frenulum in the tongue and lip yield high functional success and low complication rates. Multidisciplinary evaluation and standardized assessment tools enhance outcomes and patient care.

Keywords: ankyloglossia, lip-tie, short frenulum, tongue-tie, frenotomy, frenuloplasty, breastfeeding, pediatric surgery

INTRODUCTION

Congenital anomalies of the oral cavity, particularly involving the frenulum of the tongue (ankyloglossia) and upper lip (lip-tie), can significantly affect oral functions such as breastfeeding, articulation, swallowing, and overall oral development. These conditions are often underdiagnosed, especially in neonates and infants, due to limited awareness and the subtlety of clinical signs [1,2].

Ankyloglossia is defined as a congenital condition where the lingual frenulum is abnormally short, thick, or tight, restricting tongue mobility. Similarly, a short upper labial frenulum may cause poor lip mobility, which can interfere with suction during breastfeeding and oral hygiene in later life. The prevalence of ankyloglossia ranges from 4% to 10% in newborns, with a higher incidence in males.

Early diagnosis and appropriate intervention can prevent a range of complications, including speech delays, breastfeeding difficulties, and dental issues such as malocclusion. Surgical procedures like frenulotomy and frenuloplasty are the mainstays of treatment and have shown

high effectiveness when performed under proper indications [3].

This paper aims to evaluate the clinical presentation, diagnostic approaches, and surgical outcomes of patients with congenital short frenulum of the tongue and/or lip, and to assess the efficacy and safety of various management strategies.

MATERIALS AND METHODS

Study Design and Population - A retrospective cohort study was conducted at the Department of Orthopedic Dentistry and Orthodontics, involving 72 patients aged between 1 month and 8 years diagnosed with either short lingual or labial frenulum between 2020 and 2024.

Inclusion Criteria: Diagnosed with short frenulum based on Coryllos and Hazelbaker Assessment Tools. No prior surgical intervention. Age under 10 years

Exclusion Criteria: Syndromic patients (e.g., Down syndrome). Neurological conditions affecting speech or feeding. Recurrent frenulum scarring

Diagnostic Approach - All patients underwent a detailed clinical examination. Assessment tools included: Hazelbaker Assessment Tool for Lingual Frenulum Function (HATLFF). Coryllos classification system for tongue-tie. Speech-language evaluations (for patients >2 years)

Table 1:

Diagnostic Criteria for Lingual and Labial Frenulum Shortness

Tool	Criteria	Score Interpretation
HATLFF	Appearance (5 items), Function (7 items)	≤11 indicates surgical need
Coryllos Classification	Type I to IV based on frenulum location	Types I–II require surgery

Surgical Techniques - Two main procedures were performed: Frenulotomy: Simple snipping of the frenulum under local anesthesia. Frenuloplasty: Z-plasty or V-Y technique under general anesthesia for thicker frenula.

All procedures were performed by the same surgical team. Post-operative follow-up lasted 6 months, including assessment of functional outcomes (breastfeeding, speech, oral hygiene).

RESULTS

Patient Demographics and Clinical Findings - Out of 72 patients: 46 (63.9%) had short lingual frenulum (ankyloglossia). 18 (25%) had upper labial frenulum shortening (lip-tie). 8 (11.1%) had both anomalies

The male-to-female ratio was 2.1:1. Most cases (57%) were diagnosed before the age of 12 months.

Preoperative Symptoms: Breastfeeding difficulties (56%). Speech articulation issues (28%). Oral hygiene problems (16%).

Post-Surgical Outcomes - Patients showed significant improvements following surgical interventions. Breastfeeding improved in over 90% of infants, and speech clarity improved in

78% of children aged ≥ 2 years.

Table 2:

Pre- and Postoperative Functional Improvements

Function Affected	Preoperative Cases (n)	Postoperative Improvement (%)
Breastfeeding (infants)	40	91%
Speech articulation	20	78%
Oral hygiene (older kids)	12	75%

Complications: Mild bleeding (3 patients, 4.2%). Transient pain/discomfort (10 patients, 13.9%). No infections or wound dehiscence were reported.

No case required revision surgery during the 6-month follow-up.

Table 3:

Surgical Technique vs Outcome Comparison

Procedure	No. of Patients	Mean Age (months)	Complication Rate	Functional Success (%)
Frenulotomy	54	8.2	5.5%	87%
Frenuloplasty	18	19.4	11%	89%

DISCUSSION

This study underscores the importance of early identification and timely surgical management of congenital short frenulum in both the tongue and upper lip. Our findings align with previous literature indicating that frenulotomy is a safe, effective, and well-tolerated procedure in infants and young children [6].

The use of structured diagnostic tools such as HATLFF and Coryllos classification facilitated consistent and objective diagnosis. In infants, improved breastfeeding mechanics were rapidly observed, supporting early intervention in symptomatic cases. In older children, improvements in articulation and oral hygiene suggest lasting functional benefits post-surgery [7].

Notably, frenuloplasty was reserved for patients with thick or fibrotic frenula, often requiring general anesthesia. Though slightly more prone to complications, outcomes remained favorable [8].

While non-surgical interventions such as lactation consultant support or speech therapy may help in mild cases, our data shows that surgical correction yields rapid and measurable improvement in moderate-to-severe cases.

CONCLUSION

Congenital short frenulum of the tongue and upper lip presents a manageable condition with significant implications for oral function. Surgical intervention—especially when guided by clinical scoring systems—demonstrates high success rates with minimal complications. Early

screening in neonates and timely management can significantly reduce feeding and speech-related morbidities [9].

Pediatricians, ENT specialists, and dentists should be trained to recognize and refer these anomalies early. A multidisciplinary approach involving surgeons, speech-language pathologists, and lactation consultants is recommended for optimal care.

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