

The Relationship Between Maxillary Frenum Attachment and Anterior Caries in Children aged 6mo-3yrs: a South Texas Oral Health Network Study Oonagh Coughlan, BDS (presenting), Carolyn A. Kerins DDS, PhD, Melanie Taverna MSDH, Elizabeth Goldman DDS**, Caitlin Sangdahl BS^.

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BACKGROUND

The oral cavity contains seven frenula that contribute to the stability and mobility of the upper lip, lower lip, and tongue. Dental practitioners and various other healthcare specialties such as otolaryngologists, speech pathologists, and lactation consultants are particularly concerned with restrictive frenulum attachments and their impact on oral motor function, feeding and speech. Dentists have suggested these frenula may increase caries risk. Restrictive frenulum attachments may be surgically altered by a frenotomy procedure. The number of maxillary labial frenotomies has exponentially increased over the last two decades particularly among patients with private insurance. A 2017 of pediatric inpatients in the United States demonstrated that between 2003 and 2012 there was a 5-fold increase in the number of frenotomies performed. Despite these concerns. there are no evidence-based studies establishing a direct correlation between anterior caries and maxillary frenum position or attachment. Given the paucity of scientific evidence on this topic, further research is critical to determining whether restrictive maxillary frenula contribute to increased caries risk.

OBJECTIVE

This study aimed to investigate the association between anterior maxillary caries and the frenum position and attachment.

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RESULTS

- Of the N=319 charts reviewed, 170 (53.9%) had no maxillary anterior caries (ICDAS score = 0).
- Higher caries grades were observed in older children (P = 0.0001).
- Most children had Medicaid (250, 78,3%), private insurance (45, 14.1%), with uninsured at (17, 5.3%).
- Several had Class III (94, 29,5%) or Class IV (91, 28,5%) frenum attachment.
- There was no association between maxillary frenum attachment and caries severity while controlling for age and payor source.

DISCUSSION

This study is unique as it investigated the relationship between presence and level of frenum attachment and the presence and grade of maxillary anterior caries. Additionally, it assessed the influence of insurance type on both frenum classification and caries incidence. The study used the Kotlow Classification Scale for a standardized assessment of frenum attachment and the ICDAS system to objectively measure caries severity.

As anticipated, most children exhibited lower ICDAS scores (0-3), with only 8% presenting with caries involving dentin (ICDAS 4-6). Given that both caries incidence and frenum position evolve with age, a secondary analysis was conducted for patients aged 20 months and older. Disparities in access to specialized care, particularly among different socioeconomic groups, were also examined. Previous research (Walsh et al., 2017) indicates that children with private insurance undergo frenectomies at a significantly higher rate than Medicaid patients, potentially due to greater access to lactation consultants, myofunctional therapists, or other specialists who might advocate for the procedure. Meanwhile, dental caries disproportionately affects lower-income children (Schwendicke et al., 2015). This study stratified patients by payor source to explore whether insurance type influenced caries risk. Interestingly, only 8.3% of Medicaid-enrolled children exhibited an ICDAS score ≥4, and among patients with restrictive frenum attachments (III, IV), only 18 developed high-severity caries. While insurance status had no direct effect on frenum classification, it may influence the likelihood of undergoing frenectomy procedures, an area requiring further investigation.

CONCLUSIONS

1. In this pilot study, no significant relationship was found between maxillary frenum attachment, caries and insurance status.

2. Maxillary labial frenum surgery for caries prevention is not recommended.

3. Future studies with longitudinal designs, larger populations, and socioeconomic considerations are needed to validate these findings and inform evidencebased guidelines for pediatric dental care

Grade 3-Papillarv

MATERIALS AND METHODS

their patients of record.

craniofacial anomalies

Grade 1-Gingival

n=69 (21.6%)

n=93 (29.4%)

forms

type

Five dental practitioners of the South Texas Oral Health

Network (STOHN) performed routine dental exams on

Inclusion criteria included: 6months-3 years of age, no

Each patient's frenum attachment and stage of decay

Additional variables included age and insurance type

Data was analyzed for correlations between frenum

Practitioners were calibrated on standardized reporting

attachment, presence of maxillary caries, and insurance

Maxillary Frenum

Classification

Frenums were evaluated by the Kotlow scale and caries

pre-existing restorations on anterior teeth and no

by the International Caries Classification.

Grade 4 Papillary-penetrating n=90 (28.4%)

Grade 2-Mucosal

n=66 (20.6%)

This study conformed to the United States Federal Policy for the Protection of Human Subjects by obtaining Institutional Review Board (IRB) Approval (HSC 2023-0114E).

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