Journal of Chitwan Medical College 2024;14(47):20-22
Available online at: www.jcmc.com.np

ORIGINAL RESEARCH ARTICLE

ASSESSMENT OF NUMBER AND LEVEL OF ATTACHMENT OF BUCCAL FRENUM IN THE EDENTULOUS OLD AGE PEOPLE IN A TERTIARY CARE CENTER OF NEPAL

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Received: 15 Feb, 2024
Accepted: 17 Mar, 2024
Published: 30 Mar, 2024

Key words: Buccal frenum; Complete Denture, Edentulous.

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*DOI:*https://doi.org/10.54530/jcmc.1480

Citation

Sapkota SM, Thakur SN, Chaulagain R. Assessment of number and level of attachment of buccal frenum in the edentulous old age people in a tertiary care center of Nepal. Journal of Chitwan Medical College.2024;14(47):20-22.

Peer Reviewed

ABSTRACT

Background: Frenum is a fold of mucous membrane that encase muscle fibers. Frenum are important anatomical structure during complete denture fabrication. There is paucity of data related to buccal frenum. This study aimed to assess the number and level of buccal frenal attachment among the edentulous age groups and genders in both the maxillary and mandibular arches.

Methods: A descriptive cross-sectional study was conducted in the Department of Prosthodontics & Maxillofacial Prosthetics of Chitwan Medical College. In total 97 patients of within the age of 55-85 years' old participated in the study. In this study demographic details of participants followed by level and number of buccal mucosa in the oral cavity were noted in a predesigned proforma. The collected data was then transferred into SPSS and was analyzed for descriptive statistics using SPSS version 26.

Results: In this study, in total 97 complete edentulous patients participated in which 59 (60.8%) were males and rest were females. Single buccal frenum was mostly observed in the maxillary arch. About 49(50.5%) of the participants showed single buccal frenum on right side of maxillary arch, while on the left side 40 (41.2%) of the participants had single buccal frenum. In the mandibular arch, 62 (63.9 %) on the right side and 68 (70.1%) on the left side had no frenum at all.

Conclusions: From this study it can be concluded that there is variation in the buccal frenum too. In order to provide proper retention, stability, and support with the least amount of post-placement corrections, a solid understanding of the morphological variation of frenum is thus necessary.

INTRODUCTION

Frenal attachments are tiny folds of mucous membranes with enclosed muscle fibers that connect the lips to the alveolar mucosa and underlying periosteum.[1] The frenum is an important structure as it also affects oral health of an individual.[2] When the frenum are too close to the gingival margin, either as a result of difficulty with plaque clearance or as a result of a muscular pull, the health of the gingiva is compromised.[2-4]

The frenum is typically given very little consideration by the dentist while undergoing the patient's oral examination. Studies have shown variations in morphology of maxillary labial freunm.[5-7] Most of the studies conducted on frenum are associated with the maxillary labial frenum.[8-10] There is paucity of information about buccal frenum. From a prosthodontic standpoint, it is important to assess the placement of the frenum in relation to denture border in order to allow the free movement of frenum during functional movement of oral cavity. Hence this study was conducted with the aim to assess the number and level of buccal frenal attachment among the edentulous age groups and genders in both the maxillary and mandibular arches.

METHODS

This descriptive cross-sectional study was conducted from June 2023 to Nov 2023, in the Department of Prosthodontics & Maxillofacial Prosthetics of Chitwan Medical College after the IRC committee approval (Reference no. CMC-IRC/079/080-238). The study included edentulous patients of both genders within the age of 55-85 years' old who wish to participate in the study. While patients with trauma or injuries in the buccal frenum region were excluded from the study. Apart from this, patient who had undergone surgical correction of buccal frenum and under any medication known to affect the gingiva were also excluded.

Before initiating study, the study objectives were well explained to the patients. They were also explained that there was no harm to the participants and a written consent was taken. Then after the demographic details of the subjects were taken into account in the predesigned proforma. This was followed by

clinical evaluation of the buccal frenum including the number and level of attachment. This was done in adequate light and in the dental chair. The site of attachment of the frenum and the number of buccal frenum was examined gently by distending the right and left cheek apart. All the required intraoral photographs of the buccal frenum were taken. The data thus obtained from the study was transferred into SPSS and was analyzed for descriptive statistics using SPSS version 26.

RESULTS

In this study, 97 complete edentulous patients participated. Among them 59 (60.8%) were males and rest were females (Table 1).

Table 1: Demographic characteristics of the edentulous patients

Gender	Frequency (%)
Male	59 (60.8)
Female	38 (39.2)
Age (Mean ± S.D)	70.90 ± 8.59

Single buccal frenum was most prevalent in the maxillary arch. Nearly half of the participants 49(50.5%) showed single buccal frenum on right side of maxillary arch, while on the left side 40 (41.2%) of the participants had single buccal frenum. In the mandibular arch, 62 (63.9 %) on the right side and 68 (70.1%) on the left side had no frenum at all. One patient had 3 buccal frenum on right side in the mandibular arch (Table 2).

Table 2: Number of buccal frenum on maxillary and mandibular arch

Number	Maxillary buccal frenum		Mandibular buccal frenum	
	Right side n(%)	Left side n(%)	Right side n(%)	Left side n(%)
0	19 (19.6)	34 (35.1)	62 (63.9)	68 (70.1)
1	49 (50.5)	40 (41.2)	30 (30.9)	25 (25.8)
2	29 (29.9)	23 (23.7)	4 (4.1)	4 (4.1)
3	0	0	1 (1.0)	0.0

The level of attachment of the buccal frenum was found to be mucosal in all 97 cases (Table 3).

Table 3: Level of buccal frenum on maxillary and mandibular arch

Level	Maxillary n(%)	Mandibular n(%)
Mucosal	97 (100)	97 (100)
Papillary	0.0	0.0

DISCUSSION

The success of any denture is primarily dependent upon a good impression and fabrication of cast. Thus, the quality of denture relies on the quality of impressions made. In denture fabrication steps, the border moulding is a crucial step and hence attention should be paid in each and every detail of the impression for a good clinical outcome.[11] During border molding procedure, lips and cheek movements are constrained by the frenum. Due to the varied muscles and connective tissues that support the mucosae on either side of the buccal frenulum, their mobility and extension direction might cause variation in impression.[11-13] In turn, a properly fabricated dentures, acquiring all the fine details provide adequate retention and stability of the dentures. Adequately relieved frenal notches, will thus provide proper seating of the denture base and will also have less chances of fracture of dentures due to stress accumulation.[11-13]

Majority of the studies published till date have been focused on labial frenum. All these studies reflect only one thing, the morphological variation of the labial frenum.[4,5] Few studies have also been conducted on children.[6, 10, 14, 15] However, there have been insufficient morphological studies of the frenula of the oral vestibule, especially the buccal frenulum. Therefore, this study was conducted. However, the investigators in this study were more interested on the edentulous patients.

In this study, in total 97 complete edentulous patients participated in which about 59 (60.8%) were males. In the maxillary arch, single buccal frenum was most predominant. On the right side of maxillary arch, 49(50.5%) participants had single buccal frenum on right side and 40 (41.2%) of the participants had single buccal freunm on the left side. Two buccal frenum were observed on 29.9 % of patients in right side while 23.7 % of participants had two buccal frenum in left side. In contradiction to our study a study done in India showed 36% of the participants with single maxillary arch buccal frenum.[12] This also justifies the variation in the number of the buccal frenum.

In the mandibular arch, the buccal frenum was completely absent in 62 (63.9 %) of population on the right side and 68 (70.1%) on the left side. One patient had 3 buccal frenum on right side in the mandibular arch. 30.9 % of patients showed one buccal frenum in right side and 25.8 % showed one buccal frenum in left side. The present findings in the mandibular arch was also not inconsistent with the study of Sorte et al. In their study the author identified 87% of participants with single buccal frenum in mandibular arch.[12]

This study found all the participants with mucosal type of both maxillary and mandibular arch level of buccal frenum. Sorte et al in their study reported the mixed type of frenal attachment (both gingival and mucosal type).[12]

In order to avoid pain and denture dislodging, the movement of the frenum should be adequately relieved throughout the final imprint technique and in the final prosthesis. The cheek should be adequately reflected both laterally and posteriorly throughout the impression taking. Thus, the quantity and degree of buccal frenum attachment are very important, especially when making full dentures and doing border molding.[1, 13, 16-18]

The present study also has limitations. The first limitation is the small sample size. The other limitation is that the study was done in Chitwan so the results obtained cannot be the representation of whole Nepal. Hence additional study is required.

CONCLUSION

From a prosthodontic point of view, buccal frenum serves as a clinical guideline for border molding and secondary impression during complete denture fabrication. From this study it can be concluded that there is variation in the buccal frenum too. In order to provide proper retention, stability, and support with the least amount of post-placement corrections, a solid understanding of the morphological variation of frenum is thus necessary.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

REFERENCES:

1. Baxter R, Merkel-Walsh R, Lahey L, Knutsen C, Zaghi S. The buccal frenum: Trends in diagnosis and indications for treatment of buccalties among 466 healthcare professionals. Journal of oral rehabilitation. 2024;51(2):369-79. [DOI]
2. Shrestha E, Kafle S, Chaulagain R. Assessment of labial frenal attachment and its association with oral hygiene status. Journal of Chitwan Medical College 2023;13(3):72-74. [DOI]
3. Lakhani N, Vandana K. Association of Labial and Buccal Frenal Attachment with Gingival Recession-A Clinical Perspective. Sch. J. Dent. Sci., 2017; 4(3):93-5. [DOI]
4. Sagar S, Heraldsherlin J, Moses S. Morphological variation of abnormal maxillary labial frenum in South Indian population. International Journal of Pharmaceutical Sciences and Research 2016;7(5):2142.
5. Chaulagain R, Khanal N, Singh AK. Morphology of maxillary labial frenum in Chepang community of Chitwan. J Nepal Health Res Counc. 2021 Apr 23;19(1):185-8. [DOI]
6. Joshi U, Pradhan M, Lawaju N, Khadka N, Chaulagain R. Variations in maxillary frenal morphology in a sample of Newari children of Bhaktapur. Journal of Nepalese Society of Periodontology and Oral Implantology 2021;5(1):34-38.[DOI]
7. Dasgupta P, Kamath G, Hs S, Babshet M, Doddamani L. Morphological variations of median maxillary labial frenum: A clinical study. J Stomatol Oral Maxillofac Surg 2017;118(6):337-41. [DOI]
8. Thosar N, Murarka P, Baliga S, Rathi N. Assessment of maxillary labial frenum morphology in primary, mixed, and permanent dentitions in Wardha district. European Journal of General Dentistry 2021;6(01):14-17. [DOI]
9. Jonathan PT, Thakur H, Galhotra A, Galhotra V, Gupta N. Maxillary labial frenum morphology and midline diastema among 3 to 12-year-old schoolgoing children in Sri Ganganagar city: A cross-sectional study. J Indian Soc Pedod Prev Dent 2018;36(3):234-39. [DOI]
10. Iwanaga J, Takeuchi N, Oskouian RJ, Tubbs RS. Clinical Anatomy of the Frenulum of the Oral Vestibule. Cureus 2017;9(6):e1410. [DOI]
11. Katari A, Rao S, Swetha MU, Eshwar P, Jyothi S, Anil A. Clinical guide to border moulding and secondary impression in complete dentures. International Journal of Oral Health Dentistry 2021;7(4):231-37. [DOI]
12. Sorte N, Bhat V, Hegde C. A survey to assess the Number, shape and attachment of the freni in the maxillary and mandibular arches in south Indian population. Journal of Health and Allied Sciences NU 2018;8(02):019-24. [DOI]
13. Khalili M, Segal AG, Weinstein G. Clinical guidelines for digital complete denture workflows. Clinical Dentistry Reviewed 2023;7(1):2. [DOI]
14. Townsend JA, Brannon RB, Cheramie T, Hagan J. Prevalence and variations of the median maxillary labial frenum in children, adolescents, and adults in a diverse population. General dentistry 2013;61(2):57-60; quiz 61. [PMID]
15. Boutsi EA, Tatakis DN. Maxillary labial frenum attachment in children. Int J Paediatr Dent 2011;21(4):284-8. [DOI]
16. Christabel SL. Prevalence of type of frenal attachment and morphology of frenum in children, Chennai, Tamil Nadu. World journal of dentistry 2017;6:203-07. [DOI]
17. Critchlow SB, Ellis JS, Field JC. Reducing the risk of failure in complete denture patients. Dental update 2012;39(6):427-36. [DOI]
18. Hitge M, Vrijhoef M. Influence of border moulding on the dimensional stability of complete denture impression trays. Journal of Dentistry 1988;16(6):282-85. [DOI]