

Prevalence of Oral Normal Variants: A Observational Study

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Abstract

Introduction- Normal variants are physiological or para-physiological changes in the normal anatomy of the oral cavity that can be easily misdiagnosed as diseased conditions, including potentially malignant lesions, infective and immune diseases, or neoplasms. Thus identifying them and differentiating them from the diseased condition has become crucial. Treatment for such lesions is not indicated until it is symptomatic.

Objective- To describe the prevalence of oral normal variants in Healthy Male and Female patients.

Methods- An observational descriptive study with a cross-sectional design with total sampling conducted from November 2022 to March 2024.

Results- From those subjects, there were 200 cases of normal variance in the oral mucosa. The three most prevalent issues were Fissured Tongue (61.5%), Linea Alba Buccalis (25%), and Racial Pigmentation(11.5%).

Conclusion- Fissured tongue is a most common Normal Variance of the oral mucosa found mostly in all ages

Keywords- Normal variants, fissured tongue; oral mucosa

Introduction

A Normal Variant is defined as an incidental, often asymptomatic, sometimes may be imaging finding that might be confused as a true pathologic condition[1] Normal variants can also be called as pseudopathology/pseudolesions of oral mucosa. Pseudo lesions are defined as physiological or Para physiological changes of the oral normal anatomy of the mucosa that can easily be misdiagnosed for various pathological conditions as potentially malignant lesions, infective and immune diseases or neoplasms[2] Oral mucous membrane, is the inner cover of the oral cavity. It has a complicated structure adapted to both its anatomical location and the function it must perform. The oral cavity is bounded internally by alveolar processes. The upper boundaries include the palate(hard and soft) inferior boundaries include the base of tongue and floor of the mouth. The Posterior limit includes the palatoglossal arch and palatine tonsil. The presence and degree of dilatation of the subepithelial corium vascular vessels and the amount of melanin pigment in the epithelium are the factors that influence the colour of mucosa. The Origination of oral epithelium is partially from endoderm(tongue)while the rest of epithelial structures originate from ectodermal origin(lips, buccal sulci, gingivae, cheeks, palate, floor of the mouth)[3] . In daily dental practice, dentist carries out intra-oral and extra-oral examination. He examines both soft as well as hard tissues[4] It is easy to differentiate any lesion or abnormality in the oral cavity, but not all the patches or variations are related to pathology. The oral mucosa, including normal normal variant, should be examined[5]

The normal variant can be classified as follows

D) Location

A) On Lips-Commissural Lip Pits, Ephelides.

B) On Gingiva-Retrocuspid Papilla.

C] Buccal Mucosa-Linea Alba Buccalis, Fordyce’s Granules ,Leukodema.

D] Tongue-Lingual Thyroid Nodule, Hairy Tongue, Fissured Tongue , Foliate Papillae, Circumvallate Papilla, Tongue Crenations , (Lateral Surface), Hyperplastic Lymphoid tissues. On Ventral surface-Cavier Tongue.

E] On Frenum- Frenal Tag(Common on Maxillary frenum)

F] May be seen on Gingiva,Tongue, Buccal Mucosae- Racial Pigmentation variant, should be examined[2]

Materials and Methods

Study Design

An observational descriptive study with a cross-sectional design with total sampling conducted from November 2022 to March 2024.

Study Participants

All the participants of this study are Healthy Individuals. Informed consent were obtained from the patients who were willing to participate in the study. The inclusion criteria of the sample in this study were age ,cooperative, and healthy individuals. In this study, we defined healthy elderly patients as those without degenerative diseases (hypertension, diabetes mellitus, coronary heart disease, or chronic kidney diseases)

Intraoral Examination

An oral medicine specialist, along with students from the oral medicine program, conducted a screening examination that included an intraoral clinical assessment. An intraoral examination was performed using an intraoral mirror to screen the oral mucosa for soft tissue lesions. Variations of the mucosa or pseudo lesions, viewed as forms of soft tissue variations from their normal shape, were diagnosed through clinical examination. The normal variance, or pseudo lesions, of the mucosa were determined della Vella et al. study of 2019, with modifications given as follows in (Table 1) [6]

Table 1: Oral cavity pseudo lesions and their location

Location	Normal variance of the mucosa
Tongue	Fissured tongue Crenated tongue White and black hairy tongue Coated tongue Sublingual varices Lingual fimbriae Papilla circumvallate prominent Papilla foliate prominent Hyperpigmented papilla of tongue Depapilated tongue, including geographic tongue

Oral Mucosa	Linea alba buccalis Fordyce granules White sponge nevus Steno's duct orifice hyperplasia
Gingiva	Racial pigmentation on gingiva
Bone	Torus palatinus Torus mandibularis

We identified nine normal variances of the oral mucosa: Fissured Tongue (61.5%), Linea Alba Buccalis (25%), Racial Pigmentation (11.5%), Crenated Tongue (8.5%), Circumvallate Papillae (4.5%), Leukoedema (4%), Fordyce Granules (3.5%), Commissural Lip Pits (4%) and Parotid Papilla (0.5%) (Table 2)

Table 2:-Prevalence of Pseudo lesions in the population

Oral normal variance	Number of subjects	Percentage
Fissured Tongue	123	61.5
Linea Alba buccalis	50	25
Racial Pigmentation	23	11
Crenated Tongue	17	8.5
Circumvallate Papillae	09	4.5
Leukoedema	08	4
Fordyce Granules	07	3.5
Commissural Lip Pits	04	2
Parotid Papilla	01	0.5
Total number of Subjects	200	100



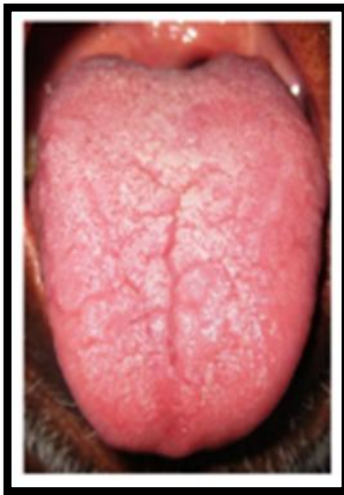
A



B



C



D



E

Clinical appearance of oral normal variance in Patients. (A) Fordyce granules (B) Linea Alba (C) Leukodema (D) Fissured Tongue , and (E) Crenated Tongue

Data Presentation

The data obtained will be presented descriptively through percentages, and by using a prevalence rate analyzed using the Microsoft Excel 2020 (Microsoft Corp., Redmond, WA, USA) software

Results

The demographic data from those subjects can be found in Table 3 . The majority of the subjects were in the age range of 60 to 69 years, and almost all of them were women with 64.5%

Table 3: Demographic details

Demographic aspects	Number of subjects	Percentage
AGE		
Male	71	35.5
Female	129	64.5
AGE GROUPS		
00-19	9	05%
20-29	40	20%
30-39	30	15%
40-49	40	20%
50-59	34	17%
60-69	44	22%
70-79	1	01%
80-89	2	01%

Discussion

Normal anatomical variations in the oral cavity may occur with aging as a predisposing factor. Recognizing these general variations, along with clinical findings that may be linked to systemic, psychological, and behavioral conditions particularly in older adults is essential. Identifying such normal oral variances can help clinicians deliver appropriate and effective oral health care [7] In vulnerable age groups like the elderly, considerable normal variation can be observed in the oral cavity particularly tongue lesions which may indicate specific needs for oral health intervention[8]

In this study, it was found that 61.5% of the patients had a fissured tongue, which was the largest prevalence. The city in Maharashtra, India, reported the highest prevalence with fissured tongue accounting for 51.7% of the cases[9] In India, fissured tongue was reported as the second most common type of lesion, accounting for 20.1% [10] Fissured tongue is generally painless, except when food debris accumulates in the grooves, potentially leading to infections, inflammation, and irritation[6] If these lesions become painful due to infection, the treatment is focused on reducing both inflammation and infection[11] Crenated tongue may result from pressure on the tongue, often due to habits like pressing it against the teeth, pushing or sucking the tongue, bruxism, macroglossia, or tongue thrusting[6] Linea alba buccalis is a hyperkeratotic lesion linked to repeated pressure, frictional trauma, and other parafunctional habits involving the buccal surface of the teeth. Since it results from frictional trauma, there is no specific treatment required[7] Fordyce granules was discovered by Sir John Addison Fordyce (1858-1925) and first described these ectopic sebaceous glands or sebaceous choristomas(normal tissues in abnormal location) within the oral mucosa in 1896[12] Racial Pigmentation in African-Americans mainly show this Physiologic condition which is benign melanosis of the oral mucosa . Mainly seen in first two decades of life. It is also seen prominently in areas of friction and pressure.The other sites are buccal mucosa, hard palate, lips and tongue. The condition may increase with age. The color intensity may be affected by smoking ,harmones and medication.The pigmentation is due to increased melanocytic activity rather than increase in number. The characteristic of pigmentation is generalized involvement of an area, Symmetrical involvement[2] The color change is not seen abruptly is also a striking feature. The other causes for pigmentation should be ruled out like Addison's disease , Smoker's melanosis. Drug related pigmentation and Intentional tattooing. It may be associated with McCune–Albright, and Laugier–Hunziker disease. Smoking related pigmentation can be localised and can be differentiated easily[2] Treatment not necessary, although ruling out any of a number of other sources of pigmentation may be necessary [12] Leukodema specified as accumulation of the fluid within the epithelial cells of buccal mucosa (keratinocytes). Temporary disappearance of pale lesion is seen by stretching the buccal mucosa ,it is called as clinical stretch test.No treatment is required[1] Circumvallate papillae(vallate papillae) are dome-shaped structures on the human tongue that vary in number from 8 to 12. They are situated on the surface of the tongue immediately in front of the foramen caecum and sulcus terminalis, forming a row on either side; the two rows run backward and medially, and meet in the midline. Each papillae consists of a projection of mucous membrane from 1 to 2 mm. wide, attached to the bottom of a circular depression of the mucous membrane; the margin of the depression is elevated to form a wall (vallum), and between this and the papilla is a circular sulcus termed the fossa. The tongue and being studded with numerous small secondary papillae and covered by stratified squamous epithelium. Ducts of lingual salivary glands, known as Von Ebner's glands empty a serous secretion into the base of the circular depression, which acts like a moat.No treatment is required [13]

Conclusion

The most commonly observed normal oral variation in this study was fissured tongue. However, the findings should be interpreted with caution. It is strongly recommended that future research include larger, randomly selected samples and focus on factors such as oral hygiene, smoking, and racial differences. Larger sample sizes in future studies would help identify a broader range of normal oral mucosal variations.

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