

# Fissured tongue in geriatric female patient with diabetes mellitus and schizophrenia: a case report and review of literature

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## Οσχεοειδής γλώσσα σε γηριατρική ασθενή με σακχαρώδη διαβήτη και σχιζοφρένεια: αναφορά περίπτωσης και ανασκόπηση της βιβλιογραφίας

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Case Report  
Αναφορά Περιστατικού

**SUMMARY:** Tongue is a sensitive muscular organ in the oral cavity that plays an important role in speech, taste and deglutition. Fissured tongue is one of the conditions commonly encountered in routine dental practice, characterized by grooves and fissures covering the dorsal surface of the tongue. This condition is asymptomatic, until food particles trapped in the grooves which leads to inflammation and halitosis. Some studies proposed that a polygenic mode of inheritance is associated with the development of tongue grooves. Common systemic illnesses associated with this condition are hypertension, diabetes mellitus and schizophrenia. Proper knowledge of the association between these conditions and fissured tongue may help the dentist to treat this disorder at an early stage.

**KEY WORDS:** *fissured tongue, diabetes mellitus, schizophrenia*

**ΠΕΡΙΛΗΨΗ:** Η γλώσσα είναι ένα ευαίσθητο μυϊκό όργανο της στοματικής κοιλότητας που παίζει σημαντικό ρόλο στην ομιλία, τη γεύση και την αποβολή. Η οσχεοειδής γλώσσα είναι μια από τις καταστάσεις που συναντάται συνήθως στην καθημερινή οδοντιατρική πρακτική, η οποία χαρακτηρίζεται από αυλακώσεις και ρωγμές που καλύπτουν τη ραχιαία επιφάνεια της γλώσσας. Αυτή η κατάσταση είναι ασυμπτωματική, έως ότου παγιδευτούν σωματίδια τροφής στις αυλακώσεις, γεγονός που οδηγεί σε φλεγμονή και δυσοσμία του στόματος. Ορισμένες μελέτες πρότειναν ότι ένας πολυγονιδιακός τρόπος κληρονομικότητας σχετίζεται με την ανάπτυξη αυλακώσεων της γλώσσας. Συχνές συστηματικές ασθένειες που σχετίζονται με αυτή την πάθηση είναι η υπέρταση, ο σακχαρώδης διαβήτης και η σχιζοφρένεια. Η σωστή γνώση της συσχέτισης μεταξύ αυτών των καταστάσεων και της οσχεοειδούς γλώσσας μπορεί να βοηθήσει τον οδοντίατρο να αντιμετωπίσει αυτή τη διαταραχή σε πρώιμο στάδιο.

**ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ:** *οσχεοειδής γλώσσα, σακχαρώδης διαβήτης, σχιζοφρένεια*

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## INTRODUCTION

Fissured tongue also known as lingua plicata (LP) is usually present as an asymptomatic condition characterized by grooves and fissures of varying depth covering the dorsal surface of the tongue. Prevalence rate ranges from 10-40% across globally (1). Differences in the rates are due to variations in the characteristics of participant's race, geographic location and ethnicity in different studies. Fissures on the tongue can be of varying depth, starts from 2 to 6mm. These cracks can trap food, which then leads to localized inflammation, burning sensation of the tongue and bad breath (2).

Diagnosis can be made through oral examination and detailed history. Feil and Filippi found that elderly males with smoking habit exerted an increased prevalence (1).

Any alterations in the anatomic structure of tongue may lead to numerous systemic diseases or tongue pathology alone may be the first sign for some systemic diseases. Prevalence of diabetes is significantly higher in fissured tongue patients, and this relationship seems to be related with/without medication (3).

Schizophrenia is a complex and heterogeneous mental disorder, characterized by various symptoms including delusions, hallucinations and cognitive disorders. The disease exhibits the co existence of mental disorders with numerous organic co-morbidities which includes the classic metabolic (4).

## CASE HISTORY

A 60 years old female, visited the dental center in PSP medical college hospital and research institute located in Kanchipuram district, Tamilnadu, India. Her chief complaint was pain in the dorsal surface of the tongue of one week duration. Pain aggravated on eating, drinking and even during speaking.

During the patient's visit, a detailed medical history was taken along with routine diagnostic procedure. Patient is a known diabetic for past 5 years and schizophrenic for past 8 years. She is under medication for both the conditions. Her family history revealed that both her father and brother are known diabetics.

Extra-oral examination revealed normal facial morphology, no skin lesions were detected. With the calculus accumulation on the lingual surface of the lower anterior teeth, intra oral examination exerted a fair oral hygiene. Generalized attrition and abrasion were noted. Patient had multiple missing teeth and she had undergone root canal treatment and a metallic crown placement in relation to 16.

On intra oral examination the patient exhibited a thick coated tongue with a white soft material. A deep central groove of about 6 millimeter depth, was found on the dorsal surface of the tongue (Fig. 1). No lateral fissures



Fig. 1: Coated tongue with central longitudinal fissure.

were detected. Family history revealed that all her family members had the same tongue grooves.

Oral prophylaxis was done for the patient and oral hygiene instructions were given. Patient was prescribed a mouthwash and was recommended to incorporate a balanced diet into her regular diet and she was advised to cleanse the tongue properly in order to avoid any food lodgment into the grooves.

## DISCUSSION

Fissured tongue is as an asymptomatic condition characterized by grooves and fissures of varying depth covering the dorsal surface of the tongue. Prevalence rate ranges from 10-40% across globally. Though the exact etiology of fissured tongue has not been identified, a polygenic mode of inheritance is proposed, as the condition is seen clustering in families (1).

The condition is usually asymptomatic. Some patients may complain of mild pain. In some cases, the condition is worsened by entrapment of food particles within the fissures and in patients with poor oral hygiene and nutrition (2).

It can be classified as median and lateral types based on the position of the fissures. Sudarshan R et al., have proposed a novel method of classification based on the pattern of tongue fissures, number of fissures and associated symptoms such as burning sensation and feeling of food lodgement. In their study, they found that central longitudinal type as the most common type of tongue fissuring which has been discussed in this report (5).

In some cases, tongue fissuring may be associated with other systemic conditions. Most common conditions are diabetes and hyper tension. Others include asthma,

gastritis, trigeminal neuralgia, epilepsy, candidiasis, carcinoma, and Down's syndrome (4).

Diabetes is a debilitating metabolic disorder with high rate of prevalence worldwide. A study conducted by Balasubramanian S et al., using Panoramic tongue imaging and deep convolutional machine learning model, revealed about 38.80% people had shown fissures on the dorsal surface of the tongue along with coatings (9). Several studies demonstrated the relationship between diabetes and fissured tongue and the risk factors include inadequate blood glucose control, immunological changes, microcirculatory alternation with decrease of blood flow, xerostomia and alteration in salivary flow and composition (7).

Schizophrenia is a devastating and complex disorder, which impacts normal brain functions, creating mental disarray. While exact origins for this disease remain obscure, it is thought to result from disturbances in brain cell communications due to improper levels of specific neurotransmitters. Trixler et al., found some specific anomalies of the mouth and head, such as fissured tongue, flat occiput along with primitive ears in these patients and hypothesized that they have more relevance to the neurodevelopmental failure (8).

In their study Babović SS et al., proposed that higher

prevalence of vertical fissure running along the midline and few fissures diffusely distributed cross the dorsal tongue surface in schizophrenic patients, like that of our study case (9). Apart from this, antipsychotic drugs themselves, can cause xerostomia with several dental complications, including caries, fissured tongue and tongue atrophy, and oral ulcers (8).

Burning sensation on the tongue may also correlate with the systemic factors such as medication, anaemia, oesophageal reflux, vitamin deficiency, psychological factors and poor oral hygiene (10). While treating the symptomatic fissured tongue cases, these factors also have to be taken into account.

## CONCLUSION

This case report emphasizes on the importance of detecting the association between the fissured tongue and other medical complications. It has to be extensively studied in a larger population to validate its specific relation with systemic illness. It is also important to work with diabetes mellitus and schizophrenia patients to improve basic self care skills in order to improve their oral hygiene status, and subsequently a better general health.

## REFERENCES

1. Feil ND, Filippi A. Frequency of fissured tongue (lingua plicata) as a function of age. *Swiss Dent J*. 2016 Mar 8;126(10):886-97.
2. Hamrah MH, Baghalian A, Ghadimi S, Mokhtari S, Kargar M, Khosrozadeh M, Dahi T, Charkazi A, Hamrah MS, Hamrah MH. The Prevalence and Correlates of Fissured Tongue Among Outpatients in Andkhoy City, Afghanistan: A Cross-Sectional Study. *Clin Cosmet Investig Dent*. 2021 Jul 27;13:335-342. doi: 10.2147/CCIDE.S323428. PMID: 34345186; PMCID: PMC8325757.
3. González-Álvarez L, García-Pola MJ. Risk factors associated with tongue lesions: a propensity score-matched case-control study. *Med Oral Patol Oral Cir Bucal*. 2022 Jan 1;27(1):e25-e34. doi: 10.4317/medoral.24836. PMID: 34874926; PMCID: PMC8719789.
4. Denis F, Pelletier JF, Chauvet-Gelinier JC, Rude N, Trojak B. Oral health is a challenging problem for patients with schizophrenia: a narrative review. *Iranian Journal of Psychiatry and Behavioral Sciences*. 2018 Mar 31;12(1).
5. Sudarshan R, Sree Vijayabala G, Samata Y, Ravikiran A. Newer classification system for fissured tongue: an epidemiological approach. *Journal of tropical medicine*. 2015 Sep 20;2015.
6. Balasubramanian S, Jeyakumar V, Nachimuthu DS. Panoramic tongue imaging and deep convolutional machine learning model for diabetes diagnosis in humans. *Scientific Reports*. 2022 Jan 7;12(1):1-8.
7. Cicmil S, Mladenović I, Krunic J, Ivanović D, Stojanović N. Oral alterations in diabetes mellitus. *Balkan J Dent Med*. 2018;22(1):7-14. doi:10.2478/bjdm-2018-0002
8. Trixler M, Tenyi T, Csabi G, Szabo R. Minor physical anomalies in schizophrenia and bipolar affective disorder. *Schizophr Res*. 2001; 52(3):195-201.
9. Babović SS, Srdić-Galić B, Žigjć S, Mladenović-Siladić Đ, Gajić Z, Bošković K. Craniofacial measures and minor physical anomalies in patients with schizophrenia in a cohort of Serbian population. *Srpski arhiv za celokupno lekarstvo*. 2019;147(5-6):348-56.
10. Aggarwal A, Panat SR (2012) Burning mouth syndrome: a diagnostic and therapeutic dilemma. *J Clin Exp Dent* 4: e180-e185.

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