



Tobacco Pouch Keratosis - A Common but of Ten Missed Oral Lesion

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Authors' contributions

This work was carried out in collaboration among all authors. Author SA prepared the manuscript, Author WC diagnosed and treated the patient, revised the manuscript and JRD reviewed the article and helped with references, finally all authors read and accepted the article. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Aim: As a reference for cases related to smokeless tobacco use, its management and also states about the importance of proper and early diagnosis of tobacco pouch keratosis.

Presentation of Case: A 45 year old male complained of a rough surface with burning sensation occasionally in the mucosa of the lower front teeth region. The patient gave a positive history of using smokeless tobacco mixed with areca nuts, four times a day for the past seven years. A greyish white mucosal thickening was evident in the mandibular right and left buccal vestibule, labial vestibule with surface ulcerations from 35 to 45 region. The lesions had ill-defined borders. It had a wrinkled, corrugated surface texture. On palpation the lesion had a rough and leathery consistency.

Discussion: Smokeless tobacco usage is on an alarming rise in the Indian subcontinent. Some use it as an alternative for smoking and others use it along with smoking tobacco without realizing that smokeless tobacco also has equal potential to cause oral and systemic effects. One of the most common lesion which occurs due to use of smokeless tobacco is tobacco pouch keratosis. This paper presents a case report and a review about the prevalence, etiology, clinical features, pathogenesis, harmful effects, management and prevention of tobacco pouch keratosis.

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Conclusion: Based on the clinical examination the lesion was diagnosed as tobacco pouch keratosis. Non-invasive procedures like habit cessation, counselling, early diagnosis may prevent the prognosis of the lesion and also decrease financial burden of the patient.

Keywords: Smokeless tobacco; tobacco pouch; keratosis; white lesion; chronic use; malignancy.

1. INTRODUCTION

Tobacco practice is a universal public health problem. There are various methods of tobacco consumption like smoking, chewing, snuff etc. One of the recent rapidly developing form of tobacco use among youth is smokeless tobacco. Smokeless tobacco represents a non-homogeneous group of compounds used with different intraoral application methods [1,2].

According to the GATS 2 survey by WHO it is found that 29.6% men, 12.8% women and 21.4 % of all adults currently use smokeless tobacco products (STP) which is higher than the prevalence of smoking tobacco users (19 % of men, 2% of women and 10.7%) [3]. The main types are plain form and mixed form where it is mixed with many ingredients like slaked lime, betel nut, camphor, salts etc.

Usage of smokeless tobacco has become an alternative to smoking in places where smoking ban exist in places like offices, public gatherings, schools, and colleagues. The main reason for people to become dependent on tobacco is the euphoriant effect given by nicotine present in it [4]. Smokeless tobacco usage has various side effects. It is a potent risk factor which can cause cancer in the oral cavity, pharynx, larynx, intestine, oesophagus⁵. Significant number of cancer have developed at the site of placement

[4] though its malignant potential is less than smoking tobacco. Smokeless tobacco usage also leads to the development of periodontal, gingival diseases, caries, halitosis, cervical abrasion, staining of teeth. A spectrum of lesions like leukoplakia, speckled leukoplakia, tobacco pouch keratosis, erythroplakia, squamous cell carcinoma are associated with the use of smokeless tobacco [1]. A case report of tobacco pouch keratosis associated with smokeless tobacco use is presented here with a brief review of the disease.

2. PRESENTATION OF CASE

A 45 year old male fisherman by occupation reported to the out-patient department with complaints of decayed upper left back teeth with no throbbing pain, sensitivity, nocturnal pain. He also felt a rough surface with burning sensation occasionally in the mucosa of lower front teeth region. He had no history of pain, swelling or taste alterations. The patient gave a positive history of using smokeless tobacco mixed with areca nut, four times a days for the past seven years. The patient used to keep smokeless tobacco in the mandibular labial vestibule, left and right posterior buccal vestibule for almost 3-4 hours, keeps sucking the juice produced and then spits it out. He denied habit of smoking or any other substance abuse. No other significant medical history was present.



Fig. 1. Shows a greyish white patch seen in the labial vestibule with gingival recession in mandibular anterior teeth



Fig. 2. Greyish white patch with corrugated appearance and deepening of buccal vestibule along with marked gingival recession of 44,45and 46

On examination, a greyish white mucosal thickening was evident in the mandibular right and left buccal vestibule, labial vestibule (Fig 1) with surface ulcerations from 35 to 45 region. The lesions had an ill-defined borders and periphery of the lesions gradually merges with the surrounding normal mucosa. It had a wrinkled, corrugated surface texture (Fig 2). On palpation the lesion had a rough and leathery consistency. On stretching the mucosa a pouch like structure was evident which is formed due to the chronic placement of smokeless tobacco mixture. Black tobacco staining of the teeth adjacent to the lesion was evident along with dental caries, gingival recession, cervical abrasion and grade I mobility with grade I furcation involvement in 36. Also dental caries involving enamel and dentin was found in tooth 26.

Based on the history and clinical examination, the lesion was diagnosed as tobacco pouch keratosis in the mandibular labial and buccal vestibules. Patient was advised on tobacco cessation counselling and is currently on follow up.

3. DISCUSSION

Tobacco pouch keratosis represents a characteristic white or grey plaque involving the mucosa which is in direct contact with the snuff or chewing tobacco [2] It is also referred as smokeless tobacco induced keratosis, spit tobacco keratosis, tobacco chewers white lesion [5].

Tobacco pouch keratosis develops due to the chronic placement of smokeless tobacco either

processed form or unprocessed in the vestibule for long hours. There are 34 varieties of smokeless tobacco products as described by WHO FCTC and about 20 such products are widely used in India. They may be used alone or used with slaked lime, areca nut, camphor, betel leaf, menthol, spices, herbs, sweeteners, essential oils and various salts. The list of additives is exhaustive and these offer a unique flavors and fragrance to each smokeless tobacco product [2].

Here the unburned tobacco is placed in the vestibule more commonly for extended period of time. The STP reacts with saliva and produces juice containing toxic substances which releases even chemical carcinogens. Euphoriant effect produced by nicotine present in tobacco is the main reason for all tobacco users to get addicted to it [4]. Approximately twice the amount of nicotine is absorbed orally than smoking and orally absorbed nicotine stays for much longer in the bloodstream.

Chronic placement of smokeless tobacco in the same site for several hours causes mucosal irritation, so as a protective response, the mucosa produces increased keratin and this results in hyperkeratosis [2]. The tension caused due to the chronic placement of large amount of smokeless tobacco results in flaccidity of mucosa and this is seen as a pouch like structure on stretching of mucosa called tobacco pouch or snuff pouch. Smokeless tobacco contains about 4000 toxins. Some of which are tobacco specific nitrosamines (TSNA) like NNN and NNK, alkaloids like nicotine, phytosterols like cholesterol, heterocyclic hydrocarbons, aldehydes, heavy metals, pesticides, radioactive

substances, toxic metals like lead, cadmium, arsenic [4]. One of the harmful carcinogen found in smokeless tobacco is TSNA, are formed when tobacco leaves are grown, cured, aged and processed. It has been found that smokeless tobacco contains about seven different types of TSNA and once they get activated reacts with cellular components like DNA, haemoglobin and cause cell mutation. By this way TSNA contributes to the development of cancer at the site of placement, upper aero digestive track. Nicotine in STP also promotes tumour angiogenesis and its growth, increases mutation within cell's DNA, acts synergistically with other carcinogens and also inhibits tumour apoptosis.

Tobacco pouch keratosis usually develops at the site of placement of smokeless tobacco. Most common sites of development is mandibular labial vestibule followed by buccal vestibule [1] and maxillary labial vestibule. It is characterized by presence of white mucosal lesion with surface wrinkling. The clinical feature varies, as initial lesions may be noted in the form of mild mucosal alterations and in chronic users white, thick, leathery lesion may be seen [2]. The altered mucosa is typically thin, translucent, with ill-defined borders and the periphery merge with surrounding normal mucosa.

On palpation the lesion feels soft and velvety with rough fissured surface texture and on stretching a pouch like structure is evident which is the reason for its name. Other local features seen are gingival recession, dental caries, periodontal weakening, bone loss, attrition abrasion, staining of teeth, and ulcerations in the adjacent mucosa occasionally [2].

Microscopic examination of the biopsy specimen reveals the following features – squamous epithelium in mucosa shows hyperkeratinisation with acanthosis (thickening of spinous layer) [2]. Other characteristic feature is presence of parakeratotic chevrons within the pointed projections of superficial epithelial layers. This feature may not be seen in all cases. Connective tissue may have hyaline deposition long with blood vessel engorgement and increased vascularity.

Development of epithelial dysplasia is uncommon and if present they will be in mild form [2].

Most of the tobacco pouch lesions are reversible with cessation of habit. Usually it resolves within

3 to 6 weeks after habit cessation. If the lesion doesn't resolve or if any surface alterations take place biopsy should be taken for further treatment. Alternating the tobacco chewing between sides and jaws instead of using single site can reduce the epithelial alterations but it also has chances to develop lesion in multiple sites [2]. Chemo preventive antioxidants also can be prescribed for 3 to 6 months.

Counselling and medication are effective when used by themselves for treating tobacco dependence. The combination of counselling and medication, however, is more effective than either alone. Thus, clinicians should encourage all individuals making a quit attempt to use both counselling and medication.

The risk of progression of tobacco pouch keratosis should be reduced by asking the patient to quit the habit, advice patient about the harmful effects of STP. Patients should have regular follow-up visits to the dentists for oral examinations. Long term follow up is needed for monitoring of development of new lesions and for their early diagnosis and treatment.

Proper clinical examination and early detection by the clinician will help to prevent complications. Psychiatric counselling to withdraw the habit will be helpful. Social awareness about the harmful effects of smokeless tobacco usage should be created which help people to not initiate the habit or quit the habit if they are already using STP.

On taking into account the various effects of tobacco use, many states in India have banned the usage of smokeless tobacco. Implementing strict legislations against the use of Smokeless tobacco can be achieved, thus saving lives and reducing health inequalities. This cannot be achieved without effective enforcement, regular monitoring and collaboration between people to share and learn from each other's experiences. By doing so, governments can curb the devastating health, social, environmental and economic consequences caused by tobacco use.

4. CLINICAL SIGNIFICANCE

Smokeless tobacco usage leads to alternation in the oral micro flora and host response, this plays important role in progression of the [6]. It has negative effect on host response like alteration of neutrophil function, delayed immune response⁸. Nicotine causes increased growth of destructive bacteria and pathogenic fungi. Nicotine mixes with plasma proteins and attaches to the mucous

membrane depending on the pH, more alkaline pH, greater the lipophilicity, vigorous resorption of membranes which causes and supports candida colonization [7].

Thus there is increased colonization of candida species than the normal mucosa. Human papilloma virus has been isolated from tobacco pouch keratosis lesion and it is also found in association with some oral cancers[8].

Smokeless tobacco causes various systemic effects along with a spectrum of oral lesions such as addiction, carcinogenesis, cardio vascular problems, increased chances of still birth and retarded foetal brain development. Various health hazards are caused due to the ready absorption of nicotine through oral mucosa [9,10]

5. CONCLUSION

One of the recently developing practices is the use of smokeless tobacco and development of its associated lesions. Dental professionals play an important role in early diagnosis if such lesions and treating them. Conditions like tobacco pouch keratosis are likely to be transformed into malignancies; they should not be neglected and treated accordingly. Proper diagnosis, good treatment and psychiatric counselling for withdrawal of habit can improve the quality of life of the patients.

CONSENT

All authors declare that 'written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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