Management of Tobacco Pouch Keratosis in the tribal area of Mayurbhanj, India

Shubham Sritam Samantaray, BDS[1]; **Pallavi Patra**, BDS[1]; **Sandeep Sagar Panda**, BDS, MDS[2]; **Prativa Panda**, MBBS, MD[3]; **Bijay Kumar Dash**, MBBS, MD[4]; **Subita Pranav Patil**, MBBS, MD[5]; **Atul Madhukar Budukh**, PhD[6]

1. Centre for Cancer Epidemiology (CCE), Tata Memorial Centre (TMC), Navi Mumbai, Maharashtra, India
2. Pandit Raghunath Murmu (PRM) Medical College and Hospital, Baripada, Odisha, India
3. Pandit Raghunath Murmu (PRM) Medical College and Hospital, Baripada, Odisha, India
4. District Headquarters Hospital, Mayurbhanj, Odisha, India
5. Centre for Cancer Epidemiology (CCE), Tata Memorial Centre (TMC), A CI of Homi Bhabha National Institute, Navi Mumbai, Maharashtra, India
6. Centre for Cancer Epidemiology (CCE), Tata Memorial Centre (TMC), A CI of Homi Bhabha National Institute, Navi Mumbai, Maharashtra, India

Corresponding author: Atul Budukh, PhD
Professor Epidemiology
Tata Memorial Centre (TMC)
Homi Bhabha National Institute, (HBNI)
Centre for Cancer Epidemiology, ACTREC, Sector 22
Utsav Chowk, CISF Road, Kharghar, Navi Mumbai
Maharashtra 410 210, India
Telephone: 91-22-27405000 Ext: 5848
Email: atul.budukh@gmail.com, budukham@tmc.gov.in
ORCiD: 0000-0001-6723-802X

ABSTRACT

Case Description: Tobacco pouch keratosis (TPK) is a benign oral lesion primarily associated with the use of smokeless tobacco products. While commonly observed in males, mainly due to higher tobacco prevalence, this case report highlights the occurrence of TPK in a female individual, emphasizing the need for larger recognition and understanding of this condition. Typically found in the lower vestibule, TPK presents as a white, curdy lesion on the oral mucosa. Despite its benign nature, longer persistence of TPK may lead to premalignant changes and subsequent malignancy. **Discussion:** This case report discusses the clinical findings, diagnosis, and management of TPK in a female patient. Tobacco cessation counselling, pharmacotherapy, and regular monitoring are important components of the management plan to prevent malignant transformation. **Conclusion:** By focusing on a female individual, this report aims to raise awareness among healthcare professionals about the potential occurrence of TPK in village tribal people, thereby facilitating early detection and appropriate intervention to mitigate the risk of malignant transformation.

Keywords: counselling; India; neoplasm; smokeless tobacco; tobacco pouch keratosis; tobacco use cessation; tribal

CDHA Research Agenda category: risk assessment and management

INTRODUCTION

Tobacco pouch keratosis (TPK), also known as snuff dipper's lesion, is thick whitish curdy patches on the oral mucosa, that typically develop in the mouth where smokeless tobacco products are placed.[1] These lesions are potential precursors to oral cancer, especially since the risk is increased fourfold for chronic smokeless tobacco users.[1] The management of TPK requires cessation of tobacco use and regular monitoring by healthcare professionals. A biopsy is advised if there is no clinical regression of the lesion.[1] Typically, the microscopic examination reveals a corrugated parakeratotic surface, epithelial acanthosis, and an absence of dysplasia.[2] Providing comprehensive support services to TPK patients, which involve educating and encouraging patients about the adverse effects of tobacco use and offering impactful counselling that enables them to quit the habit, has the potential to ultimately reduce their risk of developing oral cancer.

The Tata Memorial Centre, a grant-in-aid institute under the Department of Atomic Energy, Government of India, with the support of the Ministry of Health and Family Welfare, Odisha, has started an Early Detection Programme (EDP) for oral, breast, and cervical cancer in the Mayurbhanj district of Odisha state, India. EDP, a service program, involves raising cancer awareness and providing easy access to diagnosis and treatment to the community. Here, we present the oral manifestation of a 60-year-old female patient diagnosed with TPK during EDP, Mayurbhanj activities, and intervention provided through these services.

CASE DESCRIPTION

A 60-year-old female patient, having a history of type 2 diabetes and hypertension diagnosed and controlled for over 10 years, visited our EDP, Mayurbhanj Out Patient Department for oral cancer

screening. She had a complaint of discomfort caused by a rough surface in her left lower vestibule. Aside from that, she experienced no pain, burning sensation, or altered taste. The history taking of the patient revealed that she was a chronic smokeless tobacco user, having a long-standing habit of consuming betel leaf, and Dukta (dry tobacco leaf powder) for over 30 years. She was consuming Dukta three to five times a day. She typically formed a quid from these ingredients, retaining it in her left vestibule for 4-5 hours before disposal, chewing a minimum of three quids daily. She had no history of tobacco consumption in smoked form and alcohol consumption.

The intraoral examination revealed a brownish-yellow plaque which was present on the left gingiva-buccal sulcus extending to the buccal mucosa (Figure 1). The lesion was located between the distal surface of the lower left canine and the distal surface of the lower left first molar, with diffuse borders. Yellowish encrustation and remnants of the tobacco products were present on the lesion. The lesion had a thick, and rough-corrugated surface texture on palpation. Apart from the lesion, severe tooth attrition was present with gingival recession and tobacco stains. Submandibular and sublingual lymph nodes were non-palpable. The overall oral hygiene was poor and the patient had halitosis. The rest of the oral mucosa was healthy and appeared normal.

The biopsy was performed to confirm the clinical suspicion of leukoplakia, candidiasis and frictional keratosis. It was performed on the day of examination. A punch biopsy was conducted in the left lower buccal sulcus region, based on clinical examination findings. The tissue sample, approximately 0.3-0.5 mm, was immediately placed in 10% formalin and sent for histopathological examination which further confirmed hyperkeratosis and acanthosis.

The patient was advised oral prophylaxis/scaling and to use a mixture of 10mls of 0.12% Chlorhexidine mouthwash mixed with 10 ml of warm drinking water twice daily for a week to maintain oral hygiene. Healthcare professionals from EDP, and Mayurbhanj provided education

about the harmful effects of smokeless tobacco. She was provided effective counselling to stop the tobacco habit. She was also advised to switch the tobacco to the other side of the mouth temporarily, as quitting tobacco completely might be challenging.

RESULTS

At first, the patient was scheduled for a follow-up appointment in one month. During the initial follow-up, there was no observable clinical improvement in the lesion. The patient had decreased, but not entirely quit, chewing tobacco at that point. The patient received more counseling on the importance of entirely abstaining from tobacco use. The patient was also advised to continue use of the mouthwash mixture.

The patient revisited the OPD (after two months of initial evaluation), and the lesion showed moderate improvement as she was able to successfully abstain from tobacco use. Antioxidant medications (Cap. Vitamin A:5000IU & Vitamin E:15-30IU, each once daily) were prescribed. Further, tooth scaling and root planing were performed. At the third follow-up, which occurred 3 months later, the TPK lesion showed total remission, as depicted in Figure 2. The patient was instructed to abstain from resuming tobacco consumption and to adhere to a nutritious diet. The microscopic findings of the histopathological sample ruled out evidence of malignancy and described hyperkeratosis and acanthosis, which was in favour of TPK.

DISCUSSION

Our case report demonstrates the occurrence of TPK in an older female patient. The development of a widely recognized white mucosal lesion in the area of tobacco contact, known as smokeless tobacco keratosis, snuff dipper's keratosis, or TPK, is the consequence of habitually chewing tobacco leaves or dipping snuff that causes constant friction against oral mucosa.[1]

Differential Diagnosis:

- Tobacco pouch keratosis
- Leukoplakia
- Frictional keratosis
- Oral candidiasis

The absence of patches which were white, well demarcated, non-scrapable ruled out leukoplakia. Additionally, the lack of sharp edges eliminated the possibility of frictional keratosis. Furthermore, the absence of creamy white lesions, soreness, burning sensations, cracks at the corners of the mouth, and difficulty eating ruled out oral candidiasis.

This lesion was characterized by grayish white, smooth to leathery texture and was scrapable. It presented with wrinkling and was associated with tobacco use, leading to a diagnosis of TPK.

TPK lesions are usually found in the lower vestibule of the oral cavity- which is the most common place for keeping smokeless tobacco. Usually, the lesion exhibits increased thickness and a wrinkled texture, and as the condition deteriorates, it develops a firmer and rough texture. The progression of TPK depends on several factors including, duration and frequency of the tobacco consumption habit, type of smokeless tobacco used, and the number of oral cavity sites where tobacco is placed.[3]

Tobacco consumption, both in smoke and smokeless form, is a major public health issue. It is evident that tobacco, regardless of its form, has more than 7000 chemicals, and of these, a minimum of 250 chemicals are known to be carcinogenic.[4] As a result, tobacco usage is linked to a higher likelihood of developing chronic inflammatory diseases of the oral mucosa such as periodontal diseases and oral cancer by interfering with mouth chemistry. [4] Hence, although the chances of TPK undergoing malignant transformation are small compared to other premalignant

conditions including leukoplakia and oral sub mucous fibrosis, it is crucial to enhance the knowledge and awareness of these lesions among healthcare professionals and the community.

There is a region-wide variation in the type of smokeless tobacco used in India. Some of the common smokeless tobacco products used in India include, but are not limited to, pan (betel quid), gundi, khaini, gudakhu, masheri, supari, and dukhta.[5] The description of these products is in Table 1. Furthermore, the duration of the tobacco consumption habit also plays an important role in development of TPK. The highest rates of smokeless tobacco consumption are reported in South and Southeast Asia.[6] Furthermore, India, with 8.4% of tobacco prevalence among children 13 to 15 years of age, has witnessed the early onset of smokeless tobacco use as 24% of youth consume smokeless tobacco products like gutkha, khaini, and zarda before reaching 17 years of age.[7] Research has shown that TPK can occur in 60% of individuals who use smokeless tobacco within a period of six months to three years.[8] The early initiation of tobacco use is a cause of concern and necessitates strong health promotion programs that effectively convey the adverse effects of tobacco on health.

While the prevalence of TPK has undergone extensive scrutiny across diverse populations, a higher incidence is consistently reported among individuals who habitually consume smokeless tobacco.[9] TPK develops as early as a year after habit onset[10], therefore the case's delayed presentation calls attention to the diagnostic issues it brings. Our case underscores the significance of considering TPK in the differential diagnosis of oral mucosal lesions, even within demographics conventionally less associated with smokeless tobacco use.

A comprehensive treatment approach for TPK includes complete cessation of tobacco habit by an individual as well as effective tobacco cessation counselling and regular monitoring for assessing the disease progression by healthcare professionals. The Tobacco and Cancer Program of the

National Cancer Institute has recommended the 5 As guidelines (Ask, Advise, Assess, Assist, Arrange) for tobacco cessation counselling.[11] TPK usually resolves to normal within 2 to 6 weeks after tobacco habit cessation.[2] A biopsy and confirmation with histopathology is beneficial to rule out any potential malignancy.

CONCLUSION

The use of smokeless tobacco has increased at a rapid pace in recent years, about twice as much as smoking in India. The use of smokeless tobacco is associated with premalignant and malignant lesions. Quitting tobacco aids in recovery and minimizes the risk associated with its continuous use. Health professionals are essential in the early diagnosis of tobacco-related illnesses, hence they should be sensitized about harmful effects of tobacco consumption and common tobacco-induced oral lesions such as TPK, and should be given training for effective tobacco cessation counselling. Also, the community should be made aware of the hazards of tobacco use.

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CONFLICTS OF INTEREST

All authors declare no conflict of interest. No funding was received to assist with the preparation of this manuscript.

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Figure 1. Tobacco Pouch Keratosis on left lower buccal mucosa

Figure 2. After three months of the Tobacco Pouch Keratosis completely healed

Table 1. Types of smokeless tobacco products

Types	**Description**
Pan	A blend of betel leaf, catechu, slaked lime, and areca nut.
Gundi	A powdered form of tobacco often wrapped in a betel leaf
Khaini	A form of chewing tobacco typically used in South Asia
Gudakhu	A paste-like tobacco product, commonly used in rural India.
Masheri	A form of chewing tobacco mixed with lime and masala.
Supari	Areca nut, often served with tobacco and other ingredients.
Dukhta	A blend of composed tobacco leaf with other tobacco ingredients.