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Corresponding Author:

Nattanit Boonsong, Department of Oral Biology and Diagnostic Sciences, Faculty of Dentistry, Chiang Mai University, Suthep Road, Muang, Chiang Mai 50200, Thailand
E-mail: Nattanit.b@cmu.ac.th

Intramucosal Melanocytic Nevus of Buccal Mucosa: Two Case Reports

Marisa Permpoontanalap¹, Surawut Pongsiriwet², Jitjirroj Ittichaicharoen², Kittipong Laosuwan², Khanaphot Jiwanarom¹, Wirada Kornkrasunk³, Nattanit Boonsong²

¹Master of Science Program in Dentistry, Faculty of Dentistry, Chiangmai University, Thailand

²Department of Oral Biology and Diagnostic Sciences, Faculty of Dentistry, Chiangmai University, Thailand

³Dental Student, Faculty of Dentistry, Chiangmai University, Thailand

Abstract

Oral melanocytic nevus is a rare benign lesion in the oral cavity, arising from melanocytes and nevoid cells of neural crest origin. It appears as a blue-to-black, well-defined, round or oval lesion, 1-6 mm, usually asymptomatic. Histopathology shows nevoid cell clusters with melanin, classified into four types: junctional, compound, intramucosal (most common), and blue nevus. Differential diagnosis includes physiologic pigmentation, amalgam tattoo, oral melanotic macule, smoker's melanosis, and melanoma. Treatment involves observation or excisional biopsy for histopathology. Prognosis is good, with no malignant tendency. This case report enhances understanding of the lesion and emphasizes accurate diagnosis.

Keywords: intramucosal, melanin, nevoid cells, oral melanocytic nevus, oral pigmented lesion

Introduction

Oral melanocytic nevus is a benign mucosal lesion that occurs within the oral cavity. It may be congenital or acquired and results from the proliferation of melanocytes and nevus cells, both of which originate from neural crest cells.⁽¹⁾

While melanocytic nevi are commonly found on the skin, their presence in the oral cavity is relatively uncommon. Oral melanocytic nevi occur more frequently in females than in males and are more prevalent in Caucasian populations compared to Asians or individuals with darker skin. These lesions can be found across all age groups, with the average age of diagnosis ranging between 30 and 40 years. The most common intraoral site is the hard palate (approximately 42%)⁽²⁾, followed by the buccal mucosa (17%) and the retromolar area (11%). Less commonly, they may also be observed on the gingiva, vermillion border of the lips, soft palate, and tongue.^(3,4)

Clinically, oral melanocytic nevi present as asymptomatic, well-circumscribed lesions. They may appear round or oval, with a smooth surface that can be flat or slightly elevated. The coloration varies from blue or bluish gray to black. These lesions are typically small, with an average diameter ranging from 1 to 6 mm.^(1,5)

Histopathologically, oral melanocytic nevi are characterized by a benign, unencapsulated proliferation of nevus cells. These cells are typically arranged in small round clusters called thèques, and they often display an ovoid or epithelioid morphology with abundant cytoplasm and intracellular melanin pigment. In deeper portions of the lesion, nevus cells usually exhibit reduced cytoplasm, lack pigmentation, and resemble lymphocytes, whereas the deepest layers commonly contain spindle-shaped nevus cells.⁽⁶⁾ According to the World Health Organization (WHO) Classification of Head and Neck Tumours, 5th Edition (2024), oral melanocytic nevi are categorized based on the developmental stages of nevus cell proliferation into junctional, compound, and intramucosal types.^(3,7,8) In addition, blue nevi, although primarily cutaneous lesions, may also occur within the oral mucosa and are further subclassified into common (dendritic) and cellular types.⁽⁹⁾

The junctional nevus is characterized by nests of pigmented nevus cells confined to the basal layer of the oral epithelium. The compound nevus exhibits nests of nevus cells distributed in both the epithelial layer and

the superficial lamina propria. The intramucosal nevus contains nevus cell nests localized exclusively within the lamina propria, beneath the epithelium. The blue nevus consists of spindle-shaped melanocytes situated in the lamina propria. Among the latter, the common blue nevus is the most frequently encountered subtype and demonstrates an intramucosal proliferation of elongated spindle-shaped melanocytes arranged in short fascicles within the connective tissue. In contrast, the cellular blue nevus is less common and exhibits nodular proliferation composed of dendritic spindle cells intermingled with compact aggregates of larger oval-to-round melanocytes with pale cytoplasm and sparse or absent melanin pigment. Although rare, cellular blue nevi have been reported to carry a minimal yet noteworthy potential for malignant transformation.⁽¹⁰⁾

Among these subtypes, the intramucosal nevus is reported to be the most common, followed by the blue nevus.^(7,11)

The differential diagnosis of oral melanocytic nevus includes distinguishing it from normal physiologic pigmentation, particularly in individuals with darker skin, vascular lesions such as hemangiomas and vascular malformations, as well as other pigmented oral lesions such as amalgam tattoos, oral melanotic macules, smoker's melanosis, and oral malignant melanoma.⁽¹²⁻¹⁴⁾ Clinical examination techniques such as diascopy can be helpful in differentiating pigmented lesions from vascular lesions, as demonstrated in the cases presented herein.

In terms of management, if the lesion remains stable in size, color, and shape, and is asymptomatic, observation may be appropriate. However, if changes in the lesion are observed, if symptoms develop, or if the lesion is located in an esthetically sensitive area such as the tongue or lip, an excisional biopsy with a small margin of normal tissue is recommended to prevent recurrence. In cases where melanoma is suspected, an incisional biopsy may be indicated for histopathologic evaluation.⁽¹⁵⁾

The prognosis for oral melanocytic nevi is generally excellent. These lesions are benign with no known malignant potential, and recurrence is rare following complete surgical excision.

Case Report

Case 1

A 65-year-old Thai female patient was referred to

a dental clinic for evaluation of a red lesion on the hard palate. During the intraoral examination, an incidental finding of a black lesion was noted on the right buccal mucosa. The patient was asymptomatic and reported no prior awareness of the lesion. The palatal erythematous area was clinically suspected to be denture-related stomatitis and was unrelated to the pigmented lesion on the buccal mucosa, which was the focus of this case report.

The patient had a medical history of diabetes and osteoporosis. Current medications included insulin injections, sitagliptin, metformin, dapagliflozin, and denosumab (administered via injection every 6 months), as well as lansoprazole, caltrate, and vitamin B complex. The patient denied any known drug allergies. Extraoral examination revealed no abnormalities. Intraoral examination showed a well-defined, smooth-surfaced, darkly pigmented lesion on the right buccal mucosa, oval in shape, measuring approximately 9×5 mm² (Figure 1A).

Further evaluation of the lesion was performed using the diascopy technique, in which a glass slide was used to apply pressure to the lesion in order to differentiate it from a vascular lesion. The black lesion did not blanch under pressure suggesting a non-vascular origin (Figure 1B).

The lesion on the right buccal mucosa was excised with a narrow clinical margin of approximately 1-2 mm, which was sufficient for complete removal while preserving surrounding healthy tissue. An elliptical incision with the lesion positioned centrally was used, allowing for optimal wound closure and minimizing tension on the adjacent mucosa.^(16,17) This approach is consistent with standard surgical management of benign oral melanocytic nevi (Figure 2A).

Histopathological examination of the excised specimen revealed oral mucosa covered by acanthotic parakeratinized stratified squamous epithelium. Within the lamina propria, there was a proliferation of nevoid cells containing melanin pigment granules. Nevus cells were not observed within the epithelial layer or the superficial portion of the lamina propria. No evidence of cellular atypia or mitotic activity was identified. Based on these histopathological findings, a final diagnosis of intramucosal melanocytic nevus was made (Figure 2B, 2C, 2D). In this case, the excisional biopsy served both diagnostic and therapeutic purposes. At the 7-day follow-up visit, sutures were removed, and the patient was re-evaluated one month postoperatively. The biopsy site demonstrated

normal healing, with no evidence of recurrence at the right buccal mucosa (Figure 3).

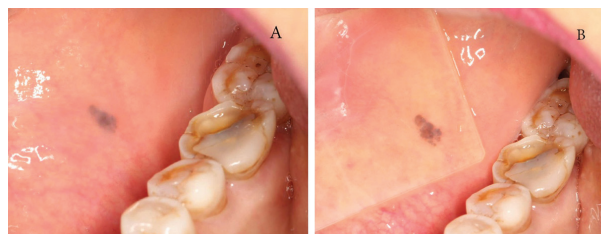


Figure 1: Intraoral examination. (A) black pigmented lesion on the right buccal mucosa; (B) diascopy test showing no blanching upon pressure with a glass slide.

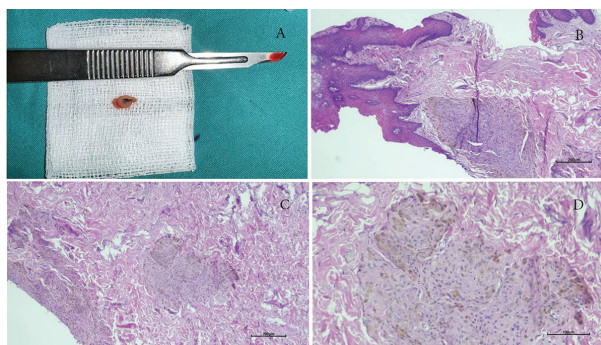


Figure 2: Excisional biopsy and histopathological findings. (A) excisional biopsy specimen showing the pigmented lesion with adjacent normal tissue; (B) the mucosa covered by acanthotic parakeratinized stratified squamous epithelium with nests of nevus cells. (hematoxylin and eosin stain, 40xmagnification); (C) nevus cell nests located within the lamina propria. (hematoxylin and eosin stain, 40x magnification); (D) nevus cell nests containing melanin pigment granules. (hematoxylin and eosin stain, 100x magnification).



Figure 3: One-month postoperative follow-up showing normal wound healing without evidence of recurrence.

Case 2

A 13-year-old Thai male patient was referred for evaluation of an incidental pigmented lesion on the right buccal mucosa, initially detected by a dentist. The patient was asymptomatic and had not previously noticed the lesion. He denied any underlying medical conditions, drug allergies, or regular medication use.

Extraoral examination revealed no abnormalities. Intraoral examination showed a brown to dark pigmented lesion on the right buccal mucosa, oval in shape, measuring approximately 3×2 mm². The lesion had well-defined borders, a smooth surface, and was slightly elevated (Figure 4).

Further evaluation was performed using the diascopy technique, in which a glass slide was applied to the lesion to distinguish it from a vascular lesion. The brown-black lesion did not blanch under pressure, indicating a non-vascular origin.

Excisional biopsy of the lesion was performed with a narrow clinical margin of approximately 1-2 mm, allowing complete removal while minimizing disruption to the surrounding healthy mucosa. Histopathological examination demonstrated oral mucosa lined by parakeratinized stratified squamous epithelium. The underlying connective tissue contained a proliferation of nevoid cells with melanin pigment granules, arranged in nests and occasionally in a haphazard pattern. These features were consistent with an intramucosal melanocytic nevus (Figure 5). In this case, the excisional biopsy provided both diagnostic confirmation and therapeutic benefit, ensuring lesion removal while preserving normal tissue integrity.^(16,17)



Figure 4: Intra-oral examination: brown-black pigmented lesion on the right buccal mucosa.

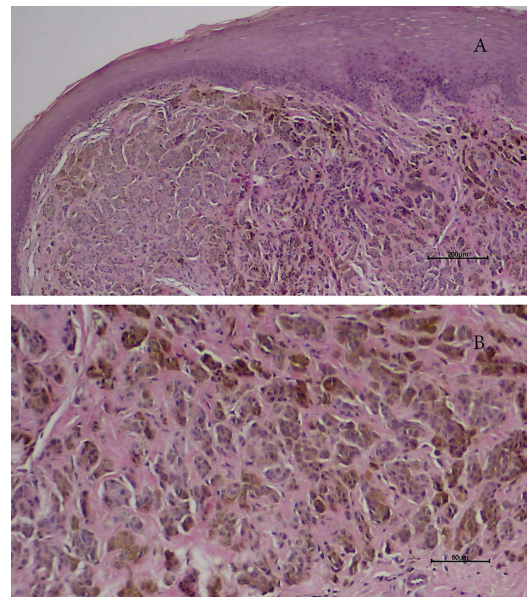


Figure 5: Histopathological characteristics of intramucosal melanocytic nevus of the oral mucosa. (A) oral mucosa covered by parakeratinized stratified squamous epithelium with nests of nevoid cells (hematoxylin and eosin stain, 40x magnification); (B) nevoid cell nests located within the connective tissue containing melanin pigment granules (hematoxylin and eosin stain, 100x magnification).

Discussion

This case report presents patients diagnosed with intramucosal melanocytic nevus located on the buccal mucosa, a relatively uncommon site for oral melanocytic nevi.

Based on the lesion's location, clinical characteristics, and histopathological findings, a definitive diagnosis of intramucosal melanocytic nevus was established. This is the most frequently encountered subtype of oral melanocytic nevus.

A study by Natarajan (2019) reported that intramucosal melanocytic nevus can occur in various locations within the oral cavity, with the most common site being the hard palate, followed by the buccal mucosa and retro-molar area.^(7,18)

In this case series, the lesions were located on the buccal mucosa, which aligns with previous reports of oral intramucosal melanocytic nevi.⁽¹⁹⁾

However, documented cases of intramucosal melanocytic nevus specifically involving the buccal mucosa remain limited. Therefore, this report contributes to the broader understanding of such lesions in this anatomical location.

Clinically, the lesions were asymptomatic, well-

defined, small in size, and darkly pigmented which are features consistent with the typical clinical presentation of oral melanocytic nevi. A study by Nagarajan *et al.*, (2016) found that intramucosal melanocytic nevus of the oral mucosa are more commonly observed in females than in males and are typically found in middle-aged individuals.⁽²⁰⁾ This finding corresponds with the patient profile in case study 1 but differs from that in case study 2. However, the incidence of such lesions in Asian populations has not been extensively studied.

Differential diagnosis is important, as these pigmented lesions resemble other melanotic conditions in the oral cavity. In this case series, the diascopy test was utilized to distinguish the lesion from vascular lesions. Additionally, histopathological examination plays a crucial role in differentiating oral melanocytic nevi, which are benign, from oral melanoma⁽²¹⁾, which requires precise diagnosis to avoid serious complications.

The malignant transformation rate of oral melanocytic nevi is relatively low. Studies have reported a transformation rate into oral melanoma of approximately 5.2-6.3%, with the blue nevus subtype being more commonly associated with such malignant changes.^(22,23)

Limitations of this report include its nature as a case study, which prevents drawing definitive conclusions about epidemiological trends or risk factors. In addition, genetic or immunohistochemical studies were not conducted, which could have provided further confirmation of the lesion's characteristics.

From a clinical management standpoint, asymptomatic patients may be placed under observation with regular follow-ups to monitor for any changes in the lesion. Biopsy is warranted if there are suspicious changes or malignancy is suspected.⁽²⁴⁾ In this case, before performing the procedure, the patients were informed about possible management options, including close observation without biopsy or complete excision for definitive histopathological diagnosis. Both patients choose excisional biopsy, which provided both diagnostic and therapeutic benefits. This approach is supported by Tarakaji *et al.*,⁽²⁵⁾ who emphasized that although the risk of malignant transformation in oral melanocytic nevi is low, histopathological confirmation is essential to ensure diagnostic accuracy and patient safety.⁽²⁵⁾

Dentists should educate patients about the nature of the lesion and the recommended steps if changes occur.

Conclusions

Intramucosal melanocytic nevus can occur on the buccal mucosa, although it is relatively uncommon. Diagnosis relies on thorough history-taking, clinical examination, and histopathological evaluation through biopsy. Primary treatment options include regular monitoring or complete excisional biopsy, which serves both diagnostic and therapeutic purposes. Patients should be followed up to monitor for possible recurrence. Although rare, increased understanding and documentation of oral pigmented lesions from case studies like this one can provide valuable clinical knowledge for future reference.

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Conflict of Interest

The authors declare no conflict of interest.

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