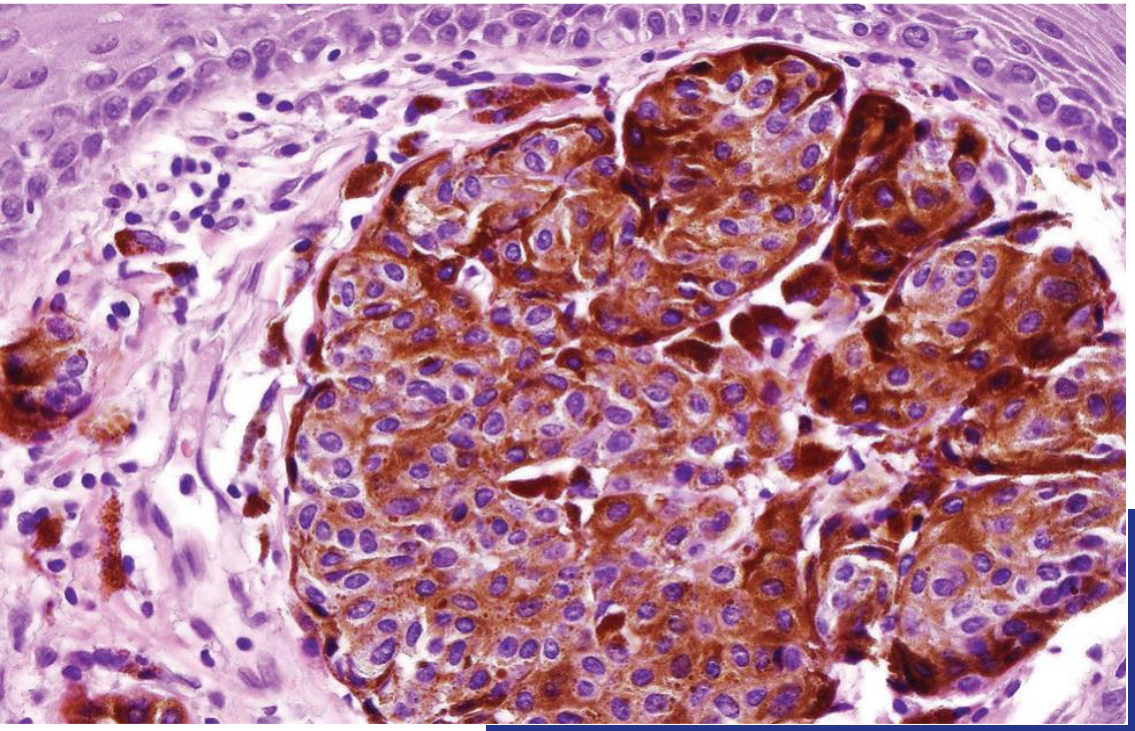

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# Oral Pathology module

## Epithelial disorders 1; Reactive, benign and pigmented lesions

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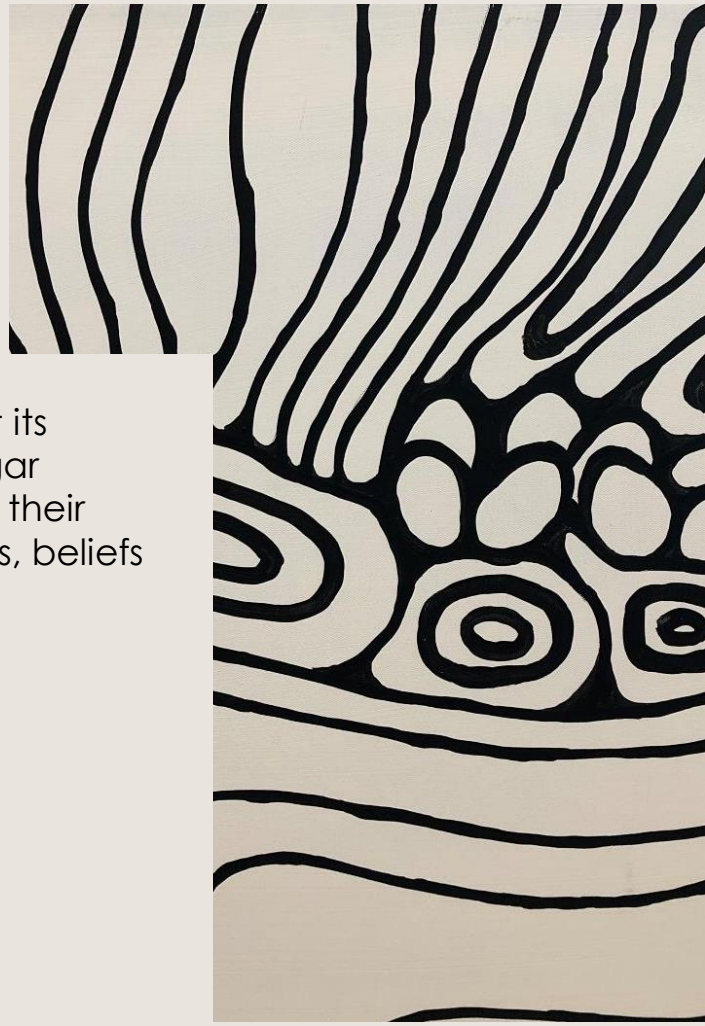
**DENT4217**

# Acknowledgement
## of country

The University of Western Australia acknowledges that its campus is situated on Noongar land, and that Noongar people remain the spiritual and cultural custodians of their land, and continue to practise their values, languages, beliefs and knowledge.



**Artist: Dr Richard Barry Walley OAM**

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# Learning outcomes

1. Describe common reactive and benign epithelial lesions of the oral mucosa.
2. Describe common reactive and benign pigmented lesions of the oral mucosa.

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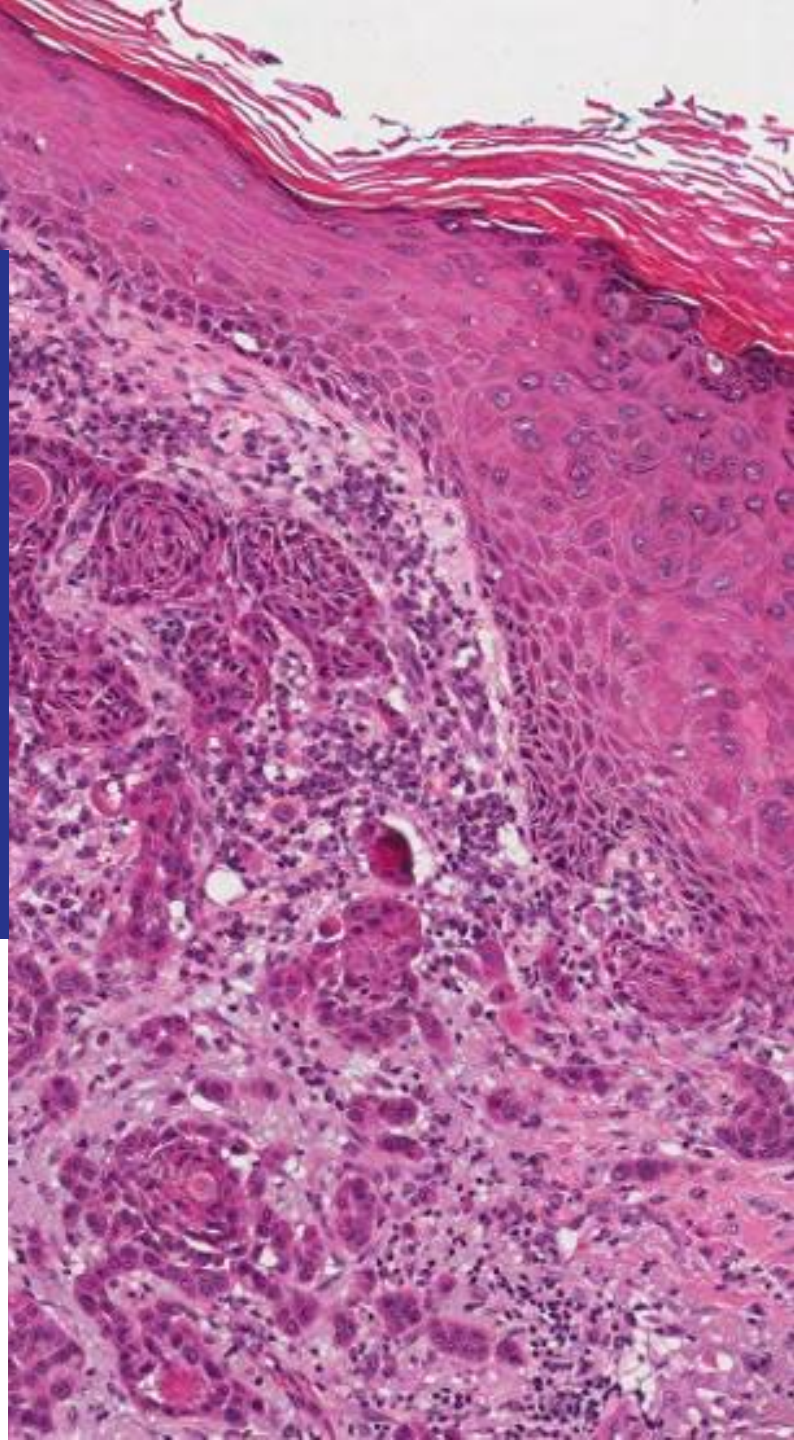
# Reactive and benign pigmented disorders

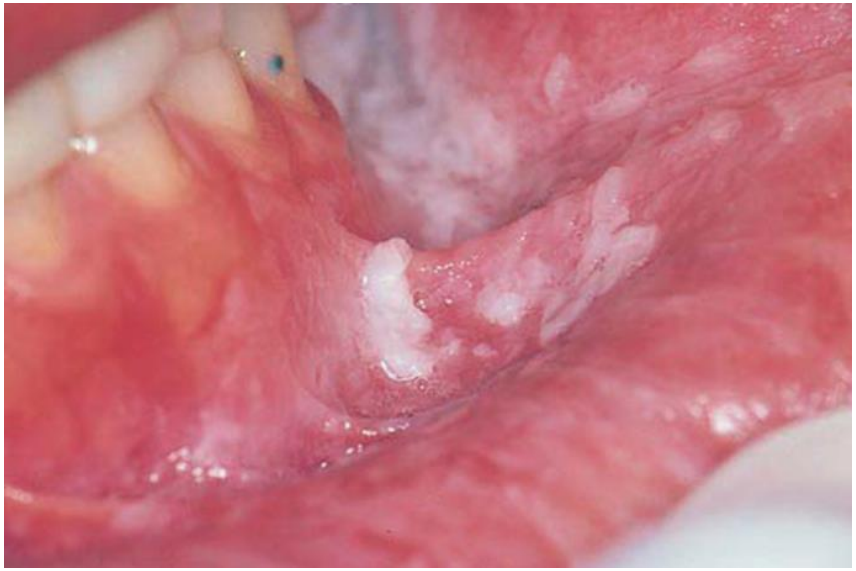


# Reactive, benign and pigmented oral lesions Important cause of benign mucosal lesions

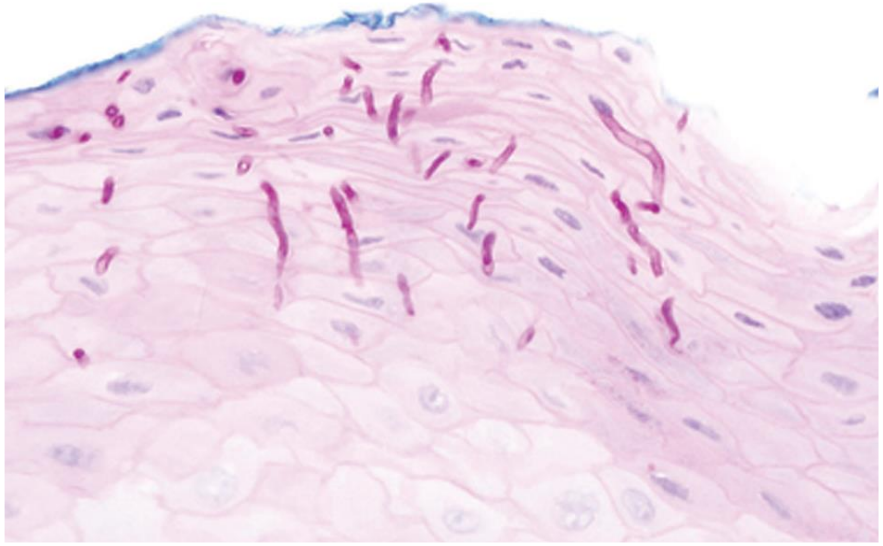
| Prevalence | Lesion | Cause |
|---|---|---|
| Common | leukoedema | Normal variation |
| | Frictional keratosis | Physical injury (friction) |
| | Cheek biting | Physical injury (trauma) |
| | Fordyce's granules | Developmental |
| | Nicotine stomatitis | Pipe smoking |
| | Thrush | Candidal infection |
| | Physiologic and racial pigmentation | Normal variation |
| Less common | Chemical trauma | Caustic chemicals |
| | Hairy leukoplakia | EBV |
| | White sponge naevus | Developmental |
| | Squamous papilloma | HPV |
| | Verruca vulgaris | HPV |
| | Condyloma acuminatum | HPV |
| | Oral melanotic macules | Uncertain |
| | Oral nevi | Uncertain |
| | Denture related stomatitis | Uncertain |
| | Verruciform xanthoma | Uncertain |
| | Skin grafts | Iatrogenic |

# CANDIDOSIS

- Three types of candidal infection cause white patches and are relatively common.
- **Thrush** (acute candidosis) is readily distinguishable from other white lesions. The patches can easily be wiped off, and the condition is sore.
- **Chronic hyperplastic candidosis** and **chronic mucocutaneous**
- **Candidosis** forms discrete white plaques similar clinically to other types of leukoplakia

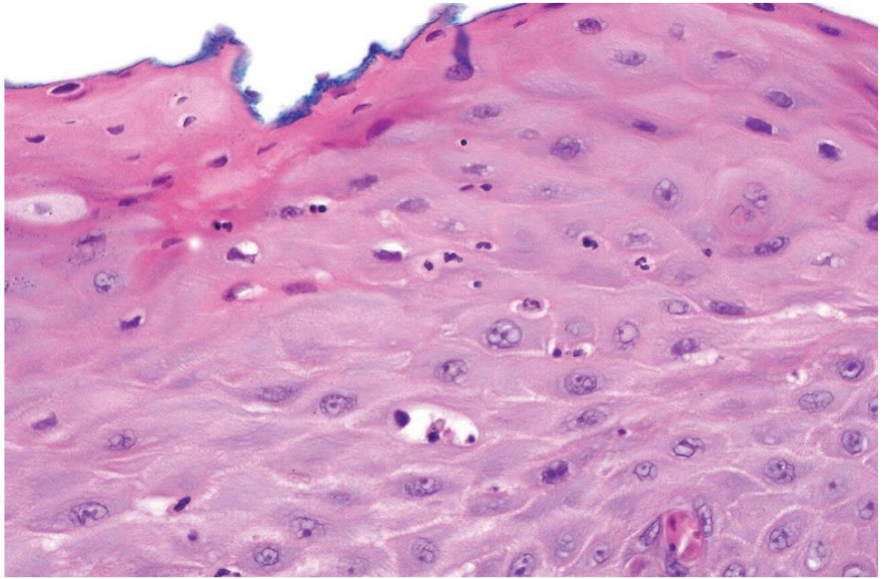


# CANDIDOSIS



**Thrush: key features**

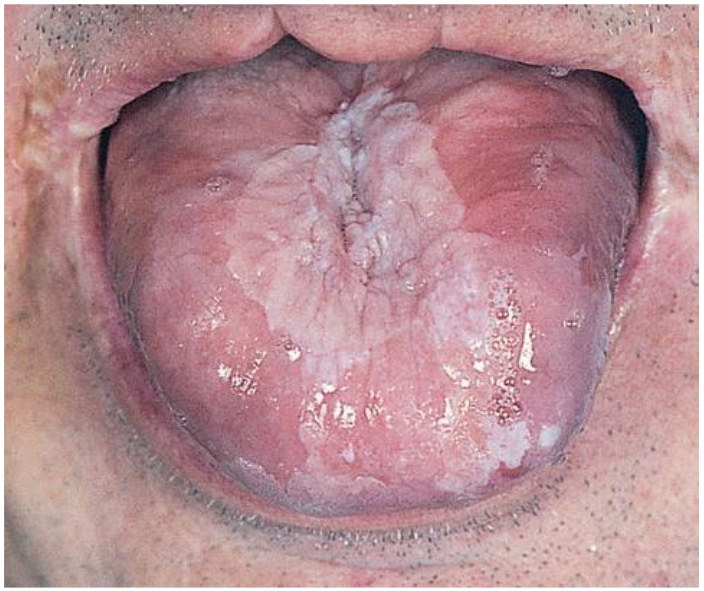
- Acute candidosis
- Painful
- Secondary to various predisposing factors
- common in HIV infection and indicates low immunity
- Creamy soft patches, readily wiped off the mucosa
- Smear shows many Gram-positive hyphae
- Histology shows hyphae invading superficial epithelium

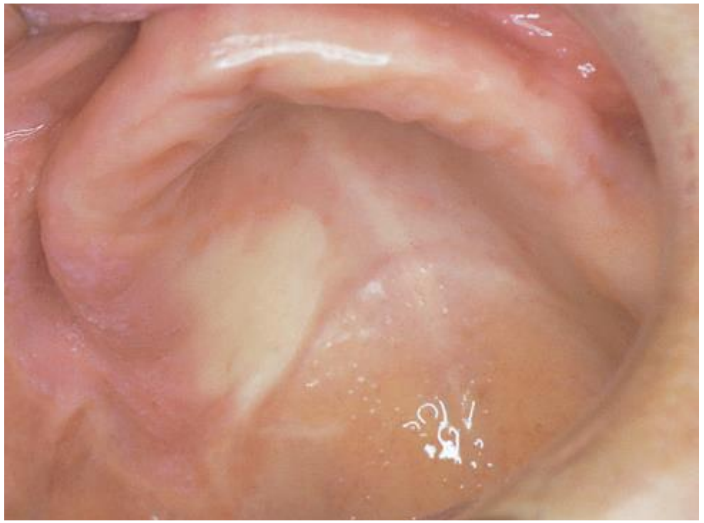


# SKIN GRAFTS

- Skin grafts typically appear sharply demarcated, smooth and paler than the surrounding mucosa and occasionally grow hairs

- After many years grafts change in appearance and are less easy to differentiate from a leukoplakia



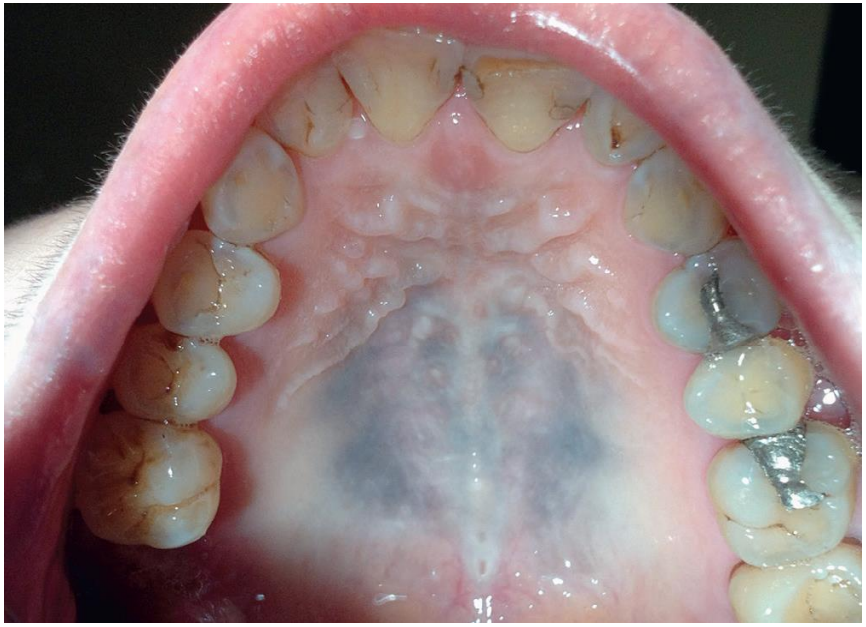


# Pigmentation

- Racial
- Food/drugs
  - Chlorhexidine
  - Minocycline
  - Zidovudine
- Endocrinological
  - Pregnancy
  - Addison's disease
- Others
  - Amlgam tattoo
  - Lentigines
  - Melanoma
  - Nevi
  - Peutz-Jegher's syndrome
  - Kaposi's sarcoma

# MEDICATION-INDUCED PIGMENTATION

- Tetracyclines (including the semisynthetic minocycline and doxycycline),
- Quinoline antimalarial medications (including hydroxychloroquine, mepacrine, and quinacrine)
- Psychotropic drugs such as retigabine, clofazimine and imatinib, a tyrosine kinase inhibitor.

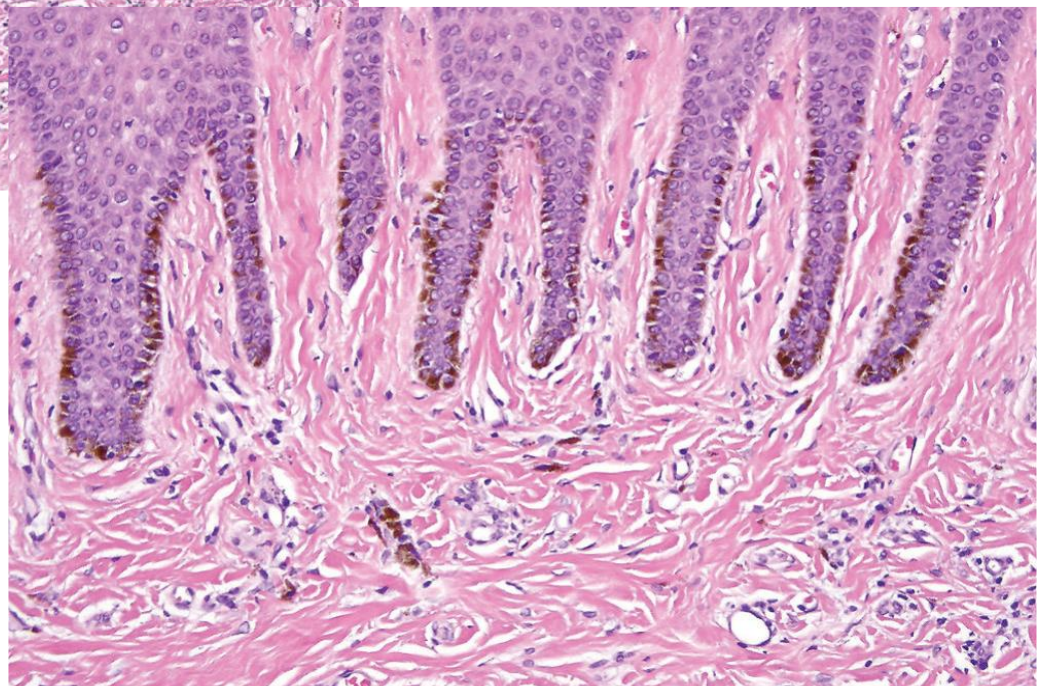


Breakdown products of antimalarial drugs, minocycline, and imatinib chelate with iron or melanin and deposit within the lamina propria. Birth control pills lower cortisol levels and increase adrenocorticotrophic hormone (ACTH) levels, leading to the stimulation of melanocytes.

# ORAL MELANOTIC MACULE

- Discrete, usually solitary (sometimes multiple), tan-to-brown-to-black, painless macules are evenly pigmented, less than 1 cm, and frequently occur on the lower vermilion (labial melanotic macule, 33% of cases), gingiva and palatal mucosa, or buccal mucosa

- Multiple melanotic macules may be idiopathic Addison disease, and in syndromes such as the Laugier-Hunziker syndrome (with melanonychia), neurofibromatosis, Peutz-Jeghers syndrome, McCune-Albright syndrome, Carney syndrome complex, LEOPARD



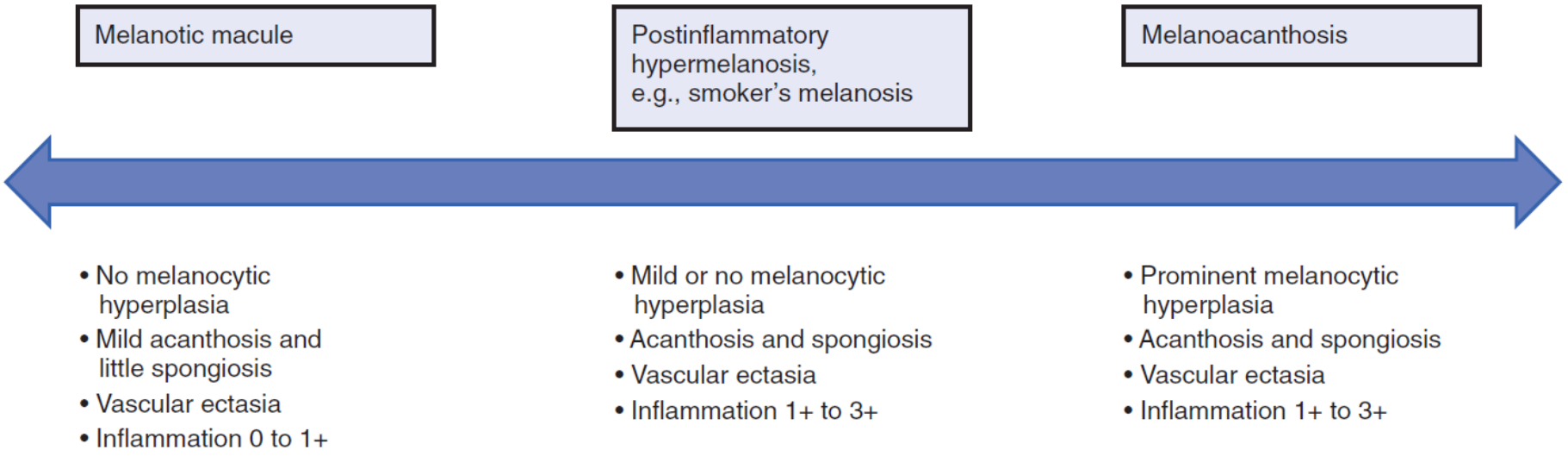
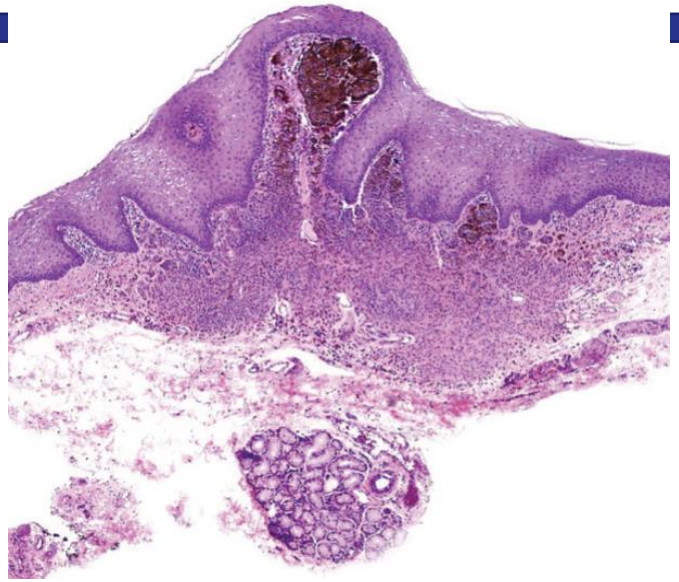
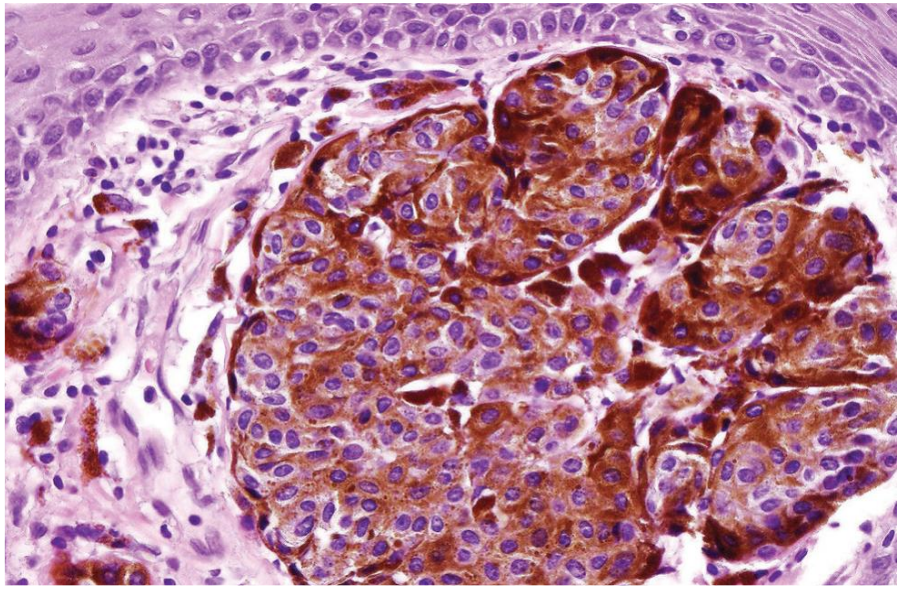



**FIG. 9.11** Relationship between melanotic macule, postinflammatory hypermelanosis, and melanoacanthosis.

# ORAL MELANOCYTIC NEVUS

- Most common site is the palatal mucosa (34% to 44%), with other sites being the mucobuccal fold, buccal mucosa, lip vermilion, and gingiva.
- They may be brown, blue-grey, black, or nonpigmented.
- The frequency in the oral cavity is as follows: intramucosal nevus (64% to 80%), blue nevus (8% to 17%), and compound nevus (6% to 17%); junctional and combined nevi are uncommon.
- Melanocytic nevi derive from melanocytes that originate from the neural crest.

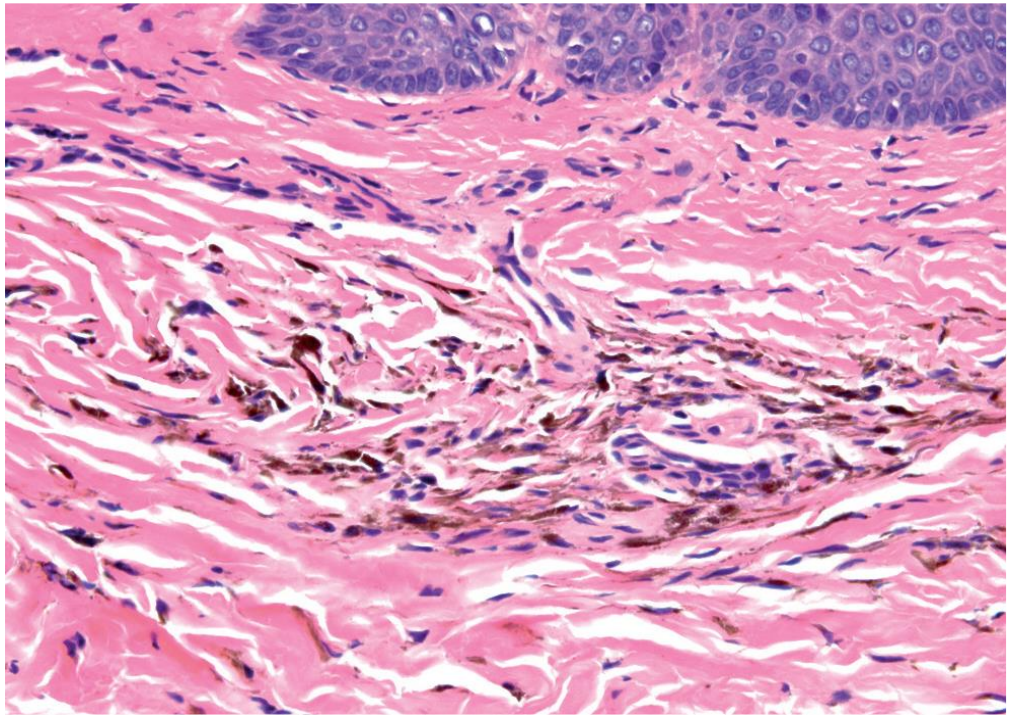


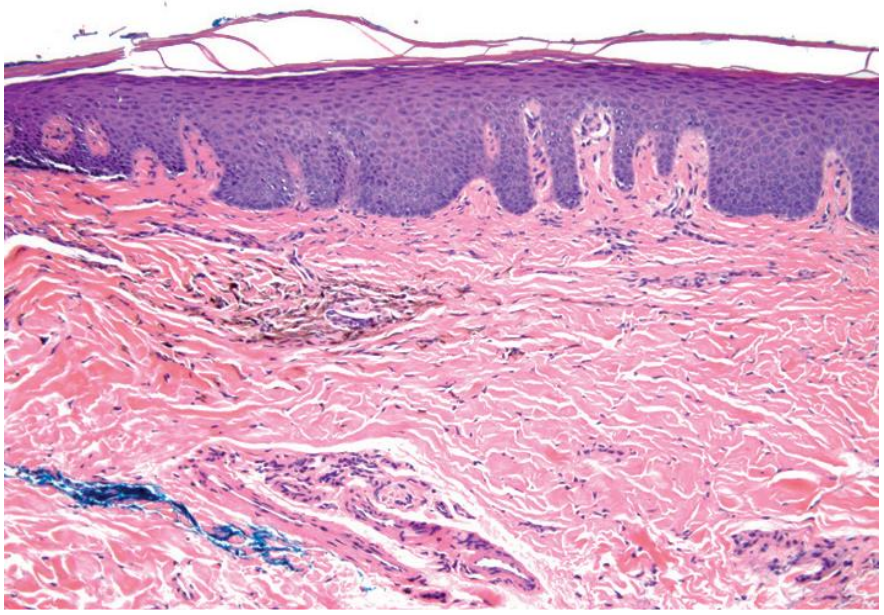


Intramucosal melanocytic nevus. Melanocytes are heavily pigmented near the surface.
Compound nevus: This is a combination of intramucosal and junctional nevus with nests of benign melanocytes
clustered within the lower part of the epithelium, often forming bulbous rete ridges

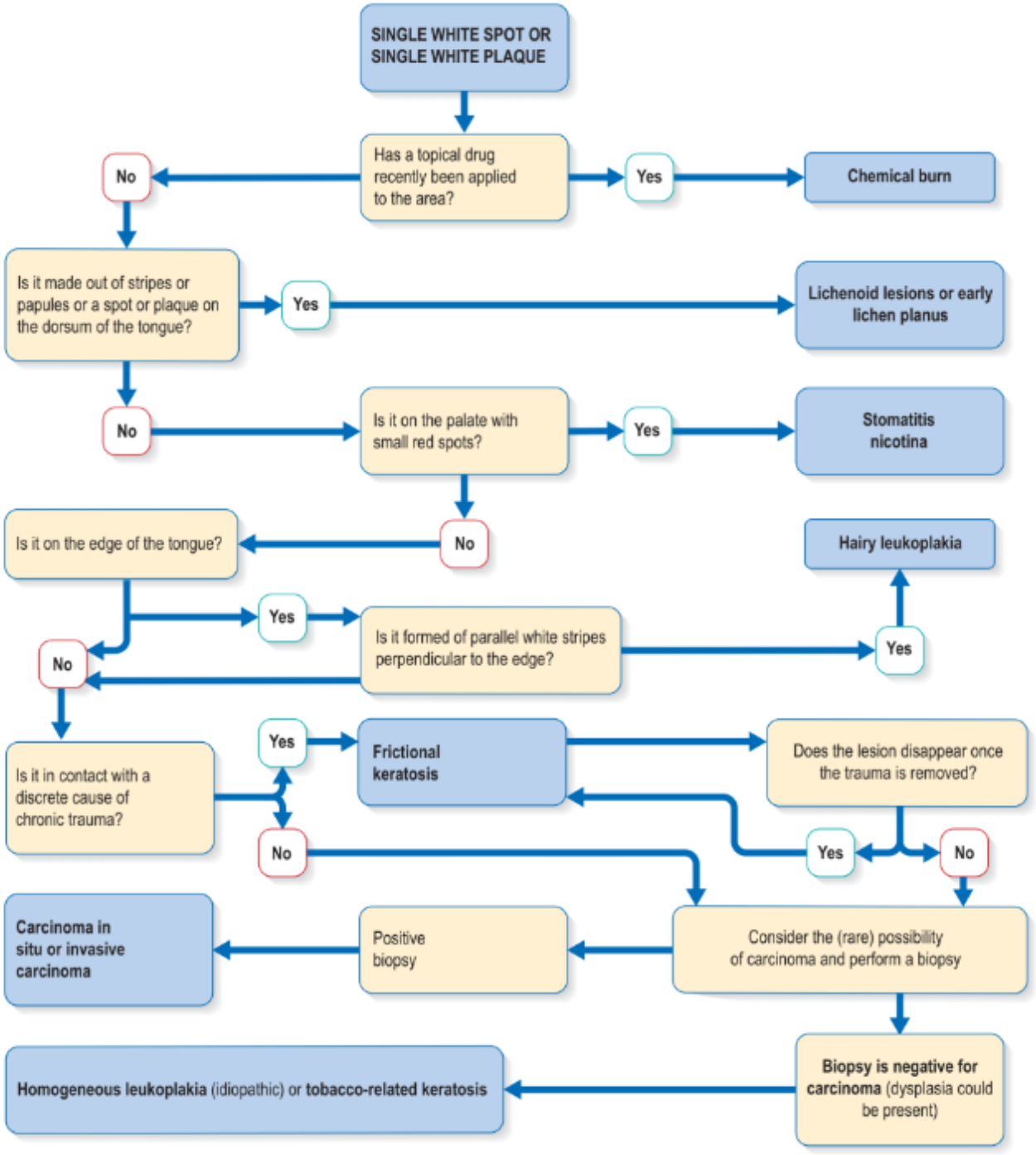
# BLUE NEVUS

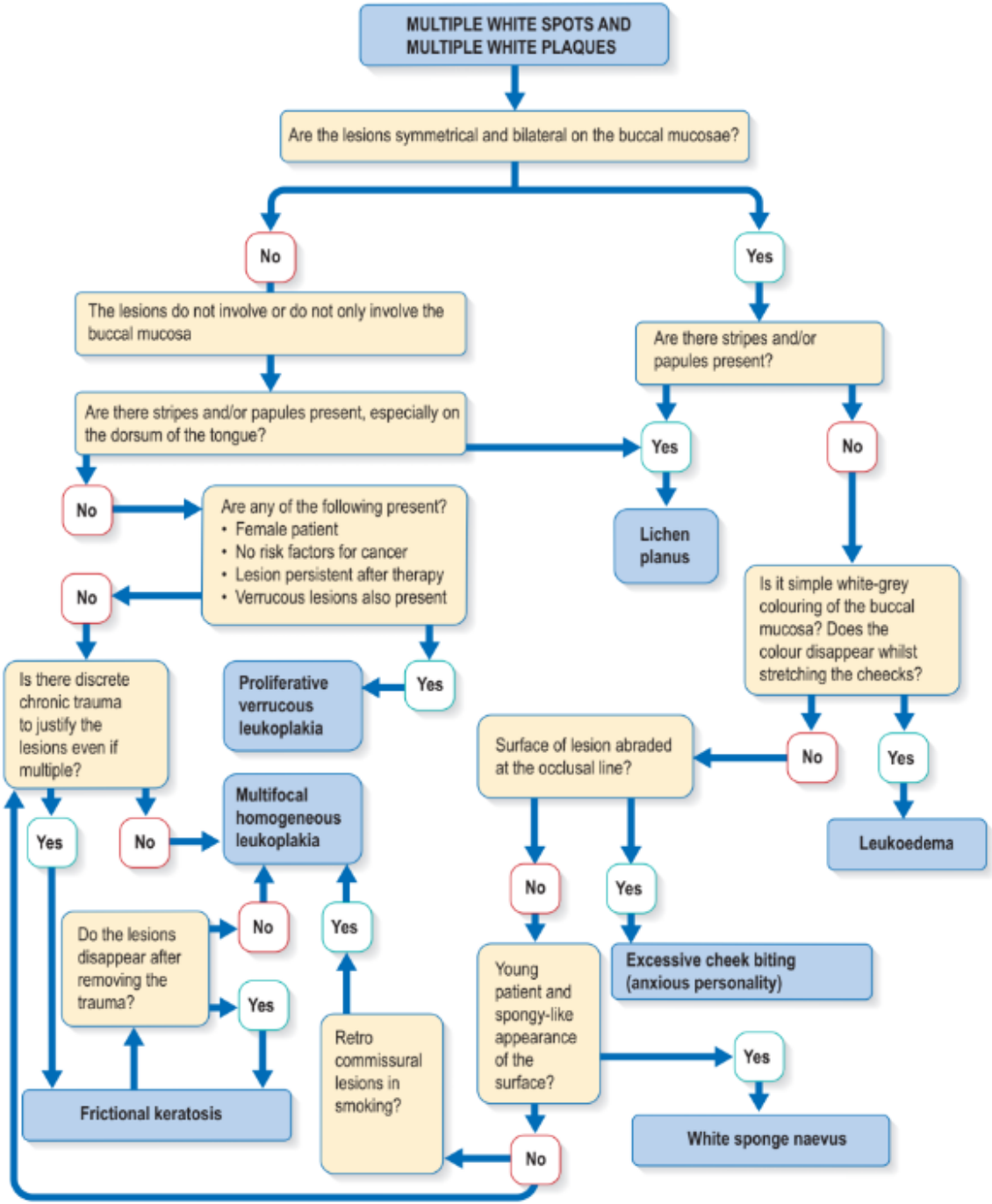
- Discrete proliferation of spindled melanocytes with variable melanin and benign spindled nuclei exhibiting dispersed chromatin and small nucleoli, scattered within densely collagenous stroma without hyperplasia of melanocytes within the epithelium

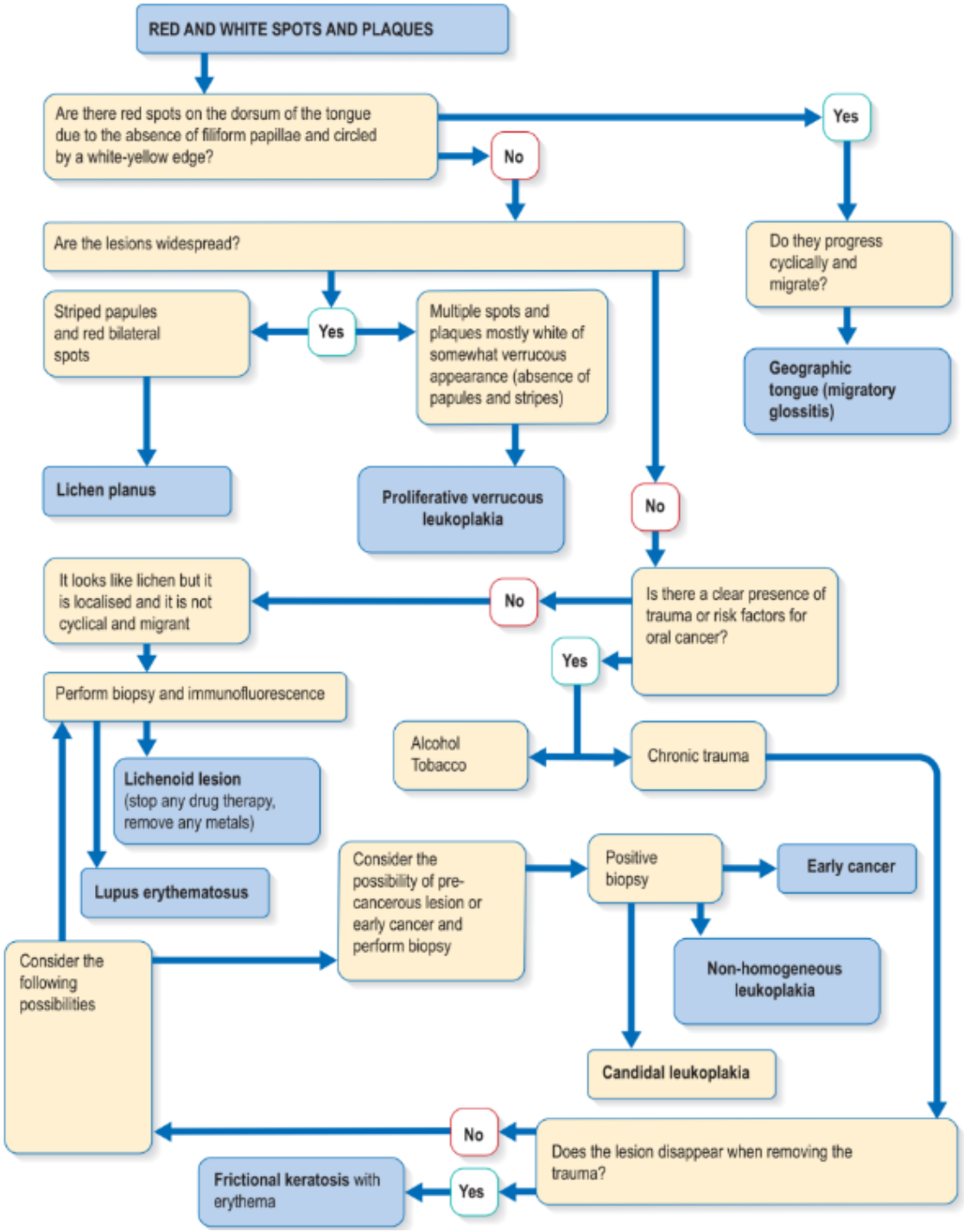




| | Macule | Nevi | Melanoacanthoma | OMM |
|---|---|---|---|---|
| Prevalence in melanocytic lesions | 62% (48, 49) | 15% (48, 49) | 0.8% (48, 49) | 0.7% (48, 49) |
| Color | Gray to brown to black | Brown, bluish-gray or black, 15% non-pigmented | Brown or black | Variable |
| Size (mean diameter) | <1 cm | 0.5cm | Several centimeters | 4 cm |
| Shape | Flat, solitary & well-circumscribed | Well-demarcated but elevated | Flat or slightly raised | Asymmetric with irregular outline |
| Commonly occurred site | Lip & gingiva | Palate | Buccal mucosa | Hard palate & maxillary gingiva |
| Causative factor | Melanin deposition | Proliferation of melanocytes | Proliferation of keratinocytes & melanocytes | Uncontrolled growth of melanocytes |
| Histopathologic features | Melanin accumulation without an increase in melanocytes. | Polygonal & epithelioid nevus cells in the superficial. Cytoplasm transparent to light stained. | Many dendritic melanocytes, processes containing melanin & melanophagocytes in all strata of epithelium. | Large, vesicular nucleus & prominent nucleoli. Aggregated into sheets or alveolar groups. Neurotropic or desmoplastic configurations. |


SINGLE WHITE SPOT OR SINGLE WHITE PLAQUE
Has a topical drug recently been applied to the area?
No
Yes
Chemical burn
Is it made out of stripes or papules or a spot or plaque on the dorsum of the tongue?
Yes
Lichenoid lesions or early lichen planus
No
Is it on the palate with small red spots?
Yes
Stomatitis nicotina
No
Is it on the edge of the tongue?
Hairy leukoplakia
Yes
Is it formed of parallel white stripes perpendicular to the edge?
Yes
No
Yes
Frictional keratosis
Does the lesion disappear once the trauma is removed?
Is it in contact with a discrete cause of chronic trauma?
No
Yes
No
Carcinoma in situ or invasive carcinoma
Positive biopsy
Consider the (rare) possibility of carcinoma and perform a biopsy
Homogeneous leukoplakia (idiopathic) or tobacco-related keratosis
Biopsy is negative for carcinoma (dysplasia could be present)


MULTIPLE WHITE SPOTS AND MULTIPLE WHITE PLAQUES
Are the lesions symmetrical and bilateral on the buccal mucosae?
No
Yes
The lesions do not involve or do not only involve the buccal mucosa
Are there stripes and/or papules present?
Are there stripes and/or papules present, especially on the dorsum of the tongue?
Yes
No
Lichen planus
No
Are any of the following present?
• Female patient
• No risk factors for cancer
• Lesion persistent after therapy
• Verrucous lesions also present
Is it simple white-grey colouring of the buccal mucosa? Does the colour disappear whilst stretching the cheecks?
No
Yes
Proliferative verrucous leukoplakia
Yes
Is there discrete chronic trauma to justify the lesions even if multiple?
Surface of lesion abraded at the occlusal line?
No
Yes
Leukoedema
Yes
No
Multifocal homogeneous leukoplakia
No
Yes
Do the lesions disappear after removing the trauma?
No
Yes
Young patient and spongy-like appearance of the surface?
Excessive cheek biting (anxious personality)
Yes
Retro commissural lesions in smoking?
Frictional keratosis
No
White sponge naevus


RED AND WHITE SPOTS AND PLAQUES
Are there red spots on the dorsum of the tongue due to the absence of filiform papillae and circled by a white-yellow edge?
Yes
No
Do they progress cyclically and migrate?
Geographic tongue (migratory glossitis)
Are the lesions widespread?
Striped papules and red bilateral spots
Yes
Multiple spots and plaques mostly white of somewhat verrucous appearance (absence of papules and stripes)
Lichen planus
Proliferative verrucous leukoplakia
No
Is there a clear presence of trauma or risk factors for oral cancer?
No
It looks like lichen but it is localised and it is not cyclical and migrant
Yes
Perform biopsy and immunofluorescence
Alcohol Tobacco
Chronic trauma
Lichenoid lesion (stop any drug therapy, remove any metals)
Lupus erythematosus
Consider the possibility of pre-cancerous lesion or early cancer and perform biopsy
Positive biopsy
Early cancer
Non-homogeneous leukoplakia
Consider the following possibilities
Candidal leukoplakia
No
Does the lesion disappear when removing the trauma?
Frictional keratosis with erythema
Yes

# Quiz

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# References


- Odell E. 2018. Cawson's Essentials of Oral Pathology and Oral Medicine
- Woo SB. 2023. Oral Pathology. A Comprehensive Atlas and Text
- Sapp JP, Eversole LR, Wysocki GP. 2004. Contemporary oral and maxillofacial pathology.

# Questions