CLINICAL CRITERIA FOR DIAGNOSIS OF ORAL MUCOSAL LESIONS

AN AID FOR DENTAL AND MEDICAL PRACTITIONERS IN THE ASIA-PACIFIC REGION

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This illustrated manuscript has been originally prepared for training and calibration of examiners for a nationwide survey on ‘Oral Mucosal Lesions in Malaysia’. This manuscript has been revised to include oral manifestations in HIV/AIDS patients.

We would like to acknowledge Dr Yujiro Handa for his earlier contribution to this manuscript. We would also like to acknowledge Professor Dr. Ishak Abdul Razak, the Dean of the Faculty of Dentistry, for making this publication possible.

Authors
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FOREWORD

It gives me great pleasure to introduce yet another book published by the Faculty of Dentistry, University of Malaya. This illustrated book is indeed a commendable effort by its authors, Dr. Noriaki Ikeda from the Bureau of International Cooperation, International Medical Centre of Japan; Professor Dr. Peter Reichart from Humboldt University, Berlin, Germany; Professor Dr. Tony Axéll from the University of Oslo, Norway and Professor Rosnah Zain from the Faculty of Dentistry, University of Malaya.

Today the advancement and progress into the studies of diseases have developed to a magnitude that cannot possibly be handled by a single medical discipline. Thus, a more multi-faceted approach whereby specialisation into each area would be more appropriate in ensuring patients are properly managed.

In Oral Health Care, there is a multitude of oral mucosal diseases, and the importance of detecting them must be highlighted in the context of total oral and general health. Being aware of these conditions and recognising their inter-relationships with medical conditions remains the key to ensuring the best possible management for patients.

This book was written to provide medical and dental practitioners a guide to the diagnosis of oral mucosal lesions. Its authors have conducted a number of epidemiological studies and criteria standardisation workshops on oral mucosal lesions in the Asia-Pacific Region. Information on the oral mucosal changes in AIDS/HIV patients has also been included.

I truly hope that this book will be able to provide the necessary criteria to assist clinicians in recognising some of these lesions in practice. I am confident too that this book will be fully utilised by many involved in Oral Health Care practice and management. I have been informed that the Ministry of Health, Malaysia has
already shown great interest in using the book as a guide for their oral cancer screening programme which is supported in part by the World Health Organisation (WHO).

Once again I would like to take this opportunity to congratulate the authors for their commitment and efforts in promoting and enhancing research, education and awareness in the area of Oral Mucosal Diseases. This is also an encouragement for other clinicians and practitioners to write more based on their experiences locally and to fill in the dearth of knowledge concerning oral health in Malaysia and countries in the Asia Pacific Region.

May this book be beneficial for the good of our practitioners and patients.

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INTRODUCTION

The Asia-Pacific region consists of Cambodia, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Phillipines, Singapore, Thailand and Vietnam. Many studies have been conducted on the epidemiology of oral mucosal diseases in India while some studies have been conducted in Cambodia, Japan, Malaysia, Thailand and Vietnam. Different researchers or planners of such studies may use similar WHO based criteria but there is no standardization of the clinical application of such criteria. It is thus the purpose of this publication to supplement the WHO “Guide to epidemiology and diagnosis of oral mucosal diseases and conditions” with a pictorial illustration of the diseases in the Asia-Pacific region. Basic criteria that can be easily referred to are also included. However, this guidebook is not to replace the WHO guide, especially the area of planning such a study. It is also not to replace a good and properly conducted training and calibration of examiners. It is hoped that this guidebook will be a useful adjunct to the training and calibration period of any planned survey. This guidebook will also be a means of standardization of criteria as well as application of criteria for use in different countries in the Asia-Pacific region. By the existence of this guide, it is hoped that future epidemiology of oral mucosal diseases in the Asia-Pacific can be standardized making comparison of data more meaningful.

The initial objective of this guidebook as described above was to aid planners for oral mucosal lesion survey or oral cancer screening in training and calibrating examiners. It is also now the objective of this guidebook to assist dental and medical practitioners to recognize and be able to differentiate between the different oral mucosal lesions (where a few are potentially malignant /premalignant or malignant and the others are benign). With that in mind, lesions associated with AIDS/HIV patients have been included.

The preliminary management for patients with some of these lesions have also been included such that dental and medical practitioners will be able to initiate preliminary treatment prior to referring the patients to specialists where necessary. For lesion where malignancy is suspected, a referral to a specialist in particular an oral maxillofacial surgeon/oncologist is necessary for definitive diagnosis and further management. Any oral lesion/condition requiring non-surgical specialist management should be referred to an oral medicine specialist especially in cases, which require long-term follow-up and management.

Many of these cases would also require multidisciplinary team approach between the dental and medical specialists. Thus, by referring patients to the appropriate dental specialists for lesions in the mouth,
the multidisciplinary team approach will be pursued by these specialists when necessary.

EXAMINATION PROCEDURE

A systematic examination should be done in order not to miss any lesions. As suggested in the WHO guide, 2 mouth mirrors are recommended with digital palpation for particular lesions. Dentures should be removed prior to the examination.

STEP 1
The lips should be examined with the mouth closed and open. The lip texture, colour and surface abnormality of the vermillion border should be noted. Changes or alterations at the angle of the mouth should also be noted (Figure 1).

STEP 2
The anterior lower labial mucosa, sulcus and alveolus should be visually examined by retracting the lower lip with the two mirrors (Figure 2).

STEP 3
The right buccal mucosa can be retracted with the two mirrors and the right commissure, buccal mucosa, and right lower and upper sulcus can be visualized (Figure 3a & b). Examination of the entire buccal mucosa should extend from the commissure to the anterior tonsillar pillar. At the same time the right lower and upper labial alveolar mucosa can be visualized.

STEP 4
The anterior upper labial sulcus, mucosa and alveolus should be examined by retracting the upper lip with the two mirrors (Figure 4).

STEP 5
The left buccal mucosa should be retracted as in step 3 and the left commissure, left upper sulcus and lower sulcus can be visualized. Similarly the examination of the entire buccal mucosa should extend from the commissure to the anterior tonsillar pillar (Figure 3a & b). At the same time the left, upper and lower labial alveolar mucosa can be visualized.

STEP 6
The hard palate can be examined with the patient’s mouth wide open
(Figure 5a). The soft palate can be viewed by depressing the tongue with the mouth mirror (Figure 5b).

**STEP 7**

The lower right lingual alveolar mucosa can be visualized with the aid of a mirror (Figure 6) used to deflect the tongue and at the same time the right floor of the mouth can be examined.

**STEP 8**

The anterior lower lingual alveolar mucosa can be visualized with the aid of a mirror (Figure 7) and at the same time the anterior floor of the mouth can be observed by asking the patient to lift up the tongue.

**STEP 9**

The lower left lingual alveolar mucosa and left floor of the mouth can be visualized as in step 7 (Figure 6).

**STEP 10**

The dorsum of the tongue should be examined at rest and any swelling, change of colour/texture/pattern of the papillae should be noted. The right tongue margin followed by the tip and the left tongue margin should be inspected. The margin could be visualized better by grasping the tip of the tongue with a piece of gauze to assist full protrusion (Figure 8a). At the same time the tongue can be deflected to the left to visualize the right ventral surface of the tongue and to the right to visualize the left ventral surface of the tongue (Figure 8b). If necessary, digital palpation of the dorsum of the tongue can be done (Figure 8c).

As mentioned in the WHO guide, mucosal or facial tissues that appear abnormal should be palpated, as well as the submandibular and cervical lymph nodes. Precautionary measures such as the usage of gloves should be taken if palpation of lesions is deemed appropriate.
Figure 1 – Step 1
Examination of lips with mouth slightly opened.

Figure 2 – Step 2
Anterior lower labial mucosa (lm), sulcus (s) and gingival/alveolar mucosa (gm) examined by retracting the lower lips with 2 mirrors.
The labial mucosa (lm) can be retracted with the 2 mirrors for examining the sulcus (s).

Examination of the entire buccal mucosa (bm) should extend from the commissure (c) to the anterior tonsillar pillar.
Figure 4 – Step 4
Anterior upper labial mucosa (lm), sulcus (s) and gingival/ alveolar mucosa (gm) examined by retracting the upper lips with 2 mirrors.

Figure 5a – Step 6
The hard palate (hp) can be viewed with the mouth wide open.
Figure 5b – Step 6
The soft palate (sp) and uvula (u) can be examined by depressing the tongue with the mouth mirror.

Figure 6 – Step 7 & 9
The lingual alveolar mucosa (lam) can be visualized by deflecting the tongue with the aid of a mirror.
Figure 7 – Step 8
The anterior lower lingual mucosa (llm) can be visualized with the aid of a mirror.

Figure 8a – Step 10
The tongue margin (tm) could be better visualized by grasping the tongue tip with a piece of gauze to assist full protrusion.
Figure 8b – Step 10
The tongue could be deflected to the side to visualize the ventral tongue (vt) surface.

Figure 8c – Step 10
Digital palpation of the dorsum of the tongue (dt) (if necessary).
DIAGNOSTIC CRITERIA

Similar to the WHO “Guide to epidemiology and diagnosis of oral mucosal diseases and conditions”, a limited range of ‘target lesions’ are selected for discussion in this book. However, differing in approach to the WHO guide, these lesions will be presented according to the main clinical appearance of the lesions. These lesions are to be divided into the white, red, ulcerated, quid associated lesions and exophytic lesions/swellings/pigmentation. As there are many similar clinical features for many of these lesions, a particular lesion can be described or mentioned repeatedly under different subheadings. This will aid dental and medical practitioners and examiners in the field when faced with a lesion of a certain clinical appearance and a series of differential diagnoses is now put forward to the examiners. With the training and calibration and with the guide of these pictorial illustrations of a series of lesions with similar clinical appearance, it is hoped that a more standardized diagnosis by different examiners will be achieved during an oral mucosal lesion survey or an oral cancer screening programme. It is also hoped that this guide would assist dental and medical practitioners in recognizing lesions such that proper initial management and referral to the relevant specialties can be done.

Most of the criteria described in this book are in accordance with ‘WHO guide to epidemiology of oral mucosal diseases and conditions’ (1978). Criteria for some premalignant (potentially malignant) lesions are similar to the ones in WHO’s ‘Histological Typing of Cancer & Precancer of The Oral Mucosa’ (1997) while the publication on leukoplakia arising from an ‘International seminar on oral leukoplakia and associated lesions related to tobacco habits’ (1984) were also referred to. For other lesions, the criteria described by Axéll in ‘A prevalence study of oral mucosal lesions in an adult Swedish population’ (1976) was used. Criteria were also based on the WHO’s ‘Application of international classification of diseases to dentistry and stomatology. ICD-DA’ (1995). The criteria on chewer’s mucosa and other quid related lesions are as in accordance with a recent publication by Zain et al (1999). Definitions for Human immunodeficiency virus (HIV)/Acquired immunodeficiency syndrome (AIDS) related lesions are in agreement with Pindborg and Reichart in ‘Atlas of diseases of the oral cavity in HIV infection’ (1995).

Some of the lesions under these clinical subheadings are presented below:

**White Lesions**

**Red Lesions**

**Ulcerated Lesions**

**Quid related lesions**

**Exophytic and pigmented lesions, mucosal swellings and other lesions**
**WHITE LESIONS**

- **Oral carcinoma**: May develop in a white area but is indurated. The surface maybe nodular or ulcerated (Figure 9). There may be fixation if the tissue occurs on a movable part of the mucosa. It may also present as a fungating mass.

- **Leukoplakia**: For all the types of leukoplakia described below, the basic criteria is as described in the WHO’s “Histological typing of cancer and precancer of the oral mucosa(1997)” and at the International Symposium held in Uppsala, Sweden on “Oral white lesion with special reference to precancerous and tobacco-related lesion(1994)” which is:

  “Oral leukoplakia is a predominantly white lesion of the oral mucosa that cannot be characterized as any other definable lesion; some oral leukoplakias will transform into cancer.”

  Two of the three clinical variants of oral white and red lesion of the oral mucosa are:

  a. **Homogeneous leukoplakia**

     A predominantly white lesion of uniform flat, thin appearance that may exhibit shallow cracks and has a smooth wrinkled or corrugated surface with a consistent texture throughout (Figure 10a). This lesion should be differentiated from leukoedema (Figure 11), habitual cheek and lip biting (Figure 12a), frictional lesion (Figure 12b), smoker's palate (Figure 13) and geographic tongue (Figure 14).

  b. **Non-homogeneous leukoplakia**

     A predominantly white or white and red lesion (erythroleukoplakia) (Figure 10b (i)) that may be irregularly flat, nodular or exophytic.

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<tr>
<td>Leukoedema</td>
<td>Pseudomembranous candidosis</td>
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nodular lesions (Figure 10b (ii)) have slightly raised, rounded, red and/or white excrences and the exophytic lesions (Figure 10b (iii)) have irregular blunt or sharp projections. Leukoplakia should be differentiated from “hairy leukoplakia” (Figure 10c (i)), which is a whitish material on the tongue border showing a corrugated pattern that cannot be scraped and does not disappear after antimycotic treatment. This lesion is often bilateral (Figure 10c (ii)) and seen in HIV/AIDS patient. It is not a potentially malignant lesion.

Leukoedema can be differentiated from homogeneous leukoplakia since it is a definable entity which presents as a diffuse grayish-white, smooth, edematous film bilaterally in the buccal mucosa. There is delicate folding of the surface, which is more or less vertical. These folds do not disappear on maximal opening but the lesion surface can be scraped or displaced and reestablishes itself within a short time (Figure 11). Cheek and lip biting or morsicatio buccarum is also definable and is a diffusely outlined lesions where there is self-infliction from chewing (Figure 12a). A rough, macerated surface of mucosa with flaky desquamation is evident. Frictional lesion is a whitish area on the mucosa, which is directly related to a traumatic agent (Figure 12b) and therefore excludes the diagnosis of leukoplakia. Smoker’s palate is also a definable entity in the palatal mucosa, which exhibits fissuring and is grayish-white with loss of translucence. In the palate there may be multiple red dots. The patient is or has recently been a habitual smoker (Figure 13). Similarly, geographic tongue is a well defined entity which presents as well demarcated areas of depapillation with peripheral reddening or whitish/yellowish, serpiginous lines partly surrounding red depapillated areas (Figure 14).

**Lichen planus:**

This lesion presents as the white and red forms. The white form has been described as the papular, reticular and the plaque types.

a. Papular type
   White pinhead-sized papules, which cannot be rubbed off.

b. Reticular type
   White distinct striae forming linear/reticular/annular patterns. These white structures cannot be rubbed off (Figure 15a).

c. Plaque type
   White plaque-like lesions with striae at the margins. The white structures cannot be rubbed off (Figure 15b).
Lichen planus is a diagnosable disease clinically and histologically. Clinically, lichen planus should be ruled out before diagnosing leukoplakia. For both condition and lesion respectively, their premalignant status is dependent on whether ‘squamous epithelial dysplasia’ was observed histologically.

**Discoid lupus erythematous:**

Discoid lupus erythematous may present as well defined ulcerative areas with 2-3 mm broad, slightly raised whitish margins from which numerous delicate lines are radiating (Figure 16). Scaly areas are evident when present on the vermilion borders of the lip.

**Pseudomembranous candidosis:**

This lesion present as creamy white or grayish patches or nodules, which can be rubbed off leaving a bright erythematous or bleeding surface (Figure 17a). In HIV positive patients these may be more extended (Figure 17b, 17c and 17d).
WHITE LESIONS

Figure 9 – Oral carcinoma (white lesion)
May develop in a white area, may be indurated, nodular or ulcerated. There may be fixation if the tissue occurs on a movable part of the mucosa. Carcinoma may also present as a fungating mass. When unsure of a diagnosis or a malignancy, refer to a specialist.

Figure 10a – Homogeneous type leukoplakia
A predominantly white lesion of uniform flat, thin appearance that may exhibit shallow cracks and has a smooth wrinkled or corrugated surface with a consistent texture throughout margins or with indistinct boundaries. Being a potentially malignant lesion, a specialist referral is necessary.
Figure 10b (i) – Non-homogeneous type leukoplakia - erythroleukoplakia
A predominantly white and red lesion where in parts of the lesion, there are one or more red or ulcerative areas. This is a potentially malignant lesion and a specialist referral is necessary for further management.

Figure 10b (ii) – Non-homogeneous type of leukoplakia
This type of leukoplakia presents with a predominantly white lesion, which may be irregularly, flat and nodular. A specialist referral is necessary for further management and to rule out malignancy.
Figure 10b (iii) – Non-homogeneous leukoplakia
Predominantly white lesions, which may be exophytic with irregular, blunt or sharp projections. A specialist referral is necessary to rule out malignancy.

Figure 10c (i) – Hairy leukoplakia in an AIDS patient
Characteristic hairy leukoplakia at the lateral tongue border showing the corrugated pattern. Hairy leukoplakia is associated with Epstein-Barr-virus and does not need therapy.
Figure 10c (ii) – Hairy leukoplakia in an HIV-positive patient
This lesion presents as whitish material at the lateral border of tongue, often bilateral, which cannot be scraped off and does not disappear after antimycotic treatment.

Figure 11 – Leukoedema
This condition presents as a diffuse grayish-white, smooth, edematous film bilaterally in the buccal mucosa. There are delicate folds which do not disappear on maximal opening but lesional surface can be scraped or displaced and the folds reestablish themselves within a short time. No treatment is required for this lesion after the definitive diagnosis of leukoedema has been established.
Figure 12a – Habitual cheek biting (Morsicatio buccarum)
Macerated buccal mucosa showing whitish flaky desquamation of keratinized surface.

Figure 12b – Frictional lesion
A whitish area on the mucosa, which is directly related to a traumatic agent for example a sharp cusp of an upper tooth as in this case. For both these lesions, the causative factors (traumatic agents) should be reduced or eliminated.

Figure 13 – Smoker’s palate in a heavy pipe smoker
Characteristic whitish changes of the palate with the accessory salivary gland duct orifices presenting as small red dots (former terminology: stomatitis nicotina palati). Stopping the pipe smoking habit can eliminate the lesion. Malignant change from this type of lesion is rare.
Figure 14 – Geographic tongue
There are well-demarcated areas of depapillation with peripheral reddening or whitish/yellowish, serpiginous lines partly surrounding red depapillated areas. There is spontaneous regression and recurrence of lesions. No therapy is required for asymptomatic patients. Occasionally, there may be symptoms (pain or a smarting feeling).

Figure 15a – Lichen planus -reticular
White distinct striae forming linear/ reticular/ annular patterns. These white structures cannot be rubbed off. No therapy is required but patient should be closely followed up by an oral medicine specialist for changes in color and surface texture i.e. erythematous or ulcerated areas.
Figure 15b – Lichen planus - plaque type
White plaque-like lesions with striae at the margins. The white structures cannot be rubbed off. A specialist should closely follow up patient for changes in color and surface texture such as erythematous or ulcerated areas.

Figure 16 – Discoid lupus erythematosis
This lesion may present as well defined, erythematous areas with 2-4 mm broad, slightly raised whitish margins from which numerous delicate lines are radiating. Scaly areas are evident when present on the vermilion border of the lips. In few cases, carcinoma has been reported in the atrophied area of discoid lupus erythematosis in the vermilion of lower lip and thus a close follow-up by a specialist is required.
Figure 17a (i) & (ii) – Acute pseudomembranous candidosis
There are creamy white or grayish patches or nodules on the tongue and buccal mucosa, which can be rubbed off leaving a bright erythematous or bleeding surface. This lesion can be treated with topical antifungal for 2–4 weeks.

Figure 17b – Pseudomembranous candidosis in an HIV-positive patient
The underlying oral mucosa is of normal appearance and colour.
Figure 17c – Pseudomembranous candidosis in an HIV-positive patient
There is extensive pseudomembranous candidosis of the soft palate and uvula. The underlying mucosa is red, representative of erythematous candidosis (HIV-positive male patient).

Figure 17d – Mixed candidoses in an HIV-positive patient.
There are mixed pseudomembranous and erythematous candidoses of the hard palate in an HIV-positive patient.
RED LESIONS

Oral carcinoma  Median rhomboid glossitis
Erythroplakia  Discoid lupus erythematosus
Erythematous candidosis  Denture stomatitis
Lichen planus

Oral Carcinoma:

This lesion may develop in a red area but there is induration where the tissue feels firm and thickened throughout the lesion (Figure 18) or at the margins if ulcerated.

Erythroplakia:

The term erythroplakia is used analogously to leukoplakia to designate lesions of the oral mucosa that present as red areas and cannot be diagnosed as any other definable lesion (Figure 19). The outline of this lesion is usually irregular and the surface is sometimes granular in appearance.

This definition was described in WHO’s “Guide to epidemiology and diagnosis of oral mucosal diseases and conditions (1978)”. Erythroplakia was re-defined at the International Symposium held in Uppsala, Sweden on “Oral white lesion with special reference to precancerous and tobacco-related lesion (1994)” and the WHO’s “Histological typing of oral cancer and precancer (1997)”. If red and white areas occur together, the lesion should be classified as non-homogeneous leukoplakia (see section on leukoplakia) and not erythroplakia. Erythroplakia should be distinguished from other red lesions such as erythematous candidosis and median rhomboid glossitis. Median rhomboid glossitis is an ovoid, smooth/lobular, reddish and depapillated lesion on the tongue dorsum in front of the foramen caecum area (Figure 20). In the past, median rhomboid glossitis was thought to be developmental in origin but is now believed to be a chronic infection with Candida albicans.

Erythematous candidosis:

(i) Acute erythematous candidosis

This lesion appears as red painful areas of the oral mucosa, which may occur during treatment with antibiotics such as the ‘antibiotic
sore tongue'. In HIV positive patient, acute erythematous candidiasis may be seen as circumscribed multifocal erythematous patches illustrated in Figure 21a.

(ii) Chronic erythematous candidosis
This lesion shows an erythematous area of the mucosa with or without irregular white patches in the center of the lesion. If a whitish border surrounds the lesion, it is narrow in width. The white structures cannot be attributed to any other diagnosable disease.

(iv) Chronic nodular / hyperplastic candidosis
This lesion has an erythematous area with white, pinhead-sized nodules and if the lesion is surrounded by a whitish margin, it is narrow in width. The white structures cannot be rubbed off and cannot be attributed to any other diagnosable disease.

Both chronic erythematous candidosis and chronic nodular / hyperplastic candidosis are frequently commissural lesions with clinical features similar to those found in central areas of non-homogeneous leukoplakia. However, characteristics fulfilling the criteria set for the diagnosis of leukoplakia are absent.

**Denture stomatitis**

This lesion may be a form of chronic erythematous candidosis and shows a diffusely red denture covered mucosa (Figure 21b) or the denture covered mucosa may have multiple, small, papillomatous, reddened hyperplasias. The lesion may be present for less than two-thirds (localized type) or two-thirds or more of the denture-covered area (generalized type).

**Lichen planus**

The red forms of lichen planus consist of the erythematous and bullous types. The ulcerative type is also one of the red form of lichen planus. However, this type will be considered under the section on ‘Ulcerated lesions’

The erythematous type of lichen planus may present as:

(i) Red, erythematous areas with papules/striae at the margins and the white structures cannot be rubbed off (Figure 22a (i)).
(ii) Atrophy of tongue papillae with a whitish, dry surface. There are white papules or striae present in other locations of the mouth. The white structures cannot be rubbed off (Figure 22a (ii)). This tongue lesion should be differentiated from median rhomboid glossitis as described above (Figure 19).

(iii) The bullous type of lichen planus where vesicles/bullae in areas of white/red type of lichen planus are present (Figure 22b). May also comprise a desquamative gingivitis. Desquamative gingivitis refers to a group of lesions presenting as diffuse erythematous gingiva due to erosions and ulcerations.

The red type of lichen planus should be differentiated from discoid lupus erythematosus (Figure 16).
RED LESIONS

Figure 18 – Oral carcinoma (red lesion)
This lesion (arrows) may develop in a red area but there is induration where the tissue feels firm and thickened throughout the lesion or at the margins if ulcerated. When suspicious of a malignancy, a specialist referral is required.

Figure 19 – Erythroplakia
A bright red lesion (arrows) in the buccal mucosa, which cannot be diagnosed as any other definable lesion. A specialist referral is required for diagnosis and further management as it is an uncommon lesion (if strict criteria is adhered in clinically diagnosing this lesion) where more than 80% are dysplastic or malignant upon biopsy.
Figure 20 – Median rhomboid glossitis
An ovoid, smooth/lobular, reddish and depapillated tongue lesion in front of the foremen caecum area. This lesion should be recognized and distinguished from erythroplakia. The latter lesion has a malignant potential while median rhomboid glossitis does not. It is usually asymptomatic. Antimycotic treatment rarely heals lesion.

Figure 21a – Multifocal erythematous candidosis in an HIV-positive patient
Circumscribed multifocal erythematous areas (arrows) in the palate in an HIV-positive patient. Often lesions of the tongue and the palate are observed simultaneously due to constant contact of the tongue with the palate ("kissing lesion").
Figure 21b – Denture stomatitis
This lesion shows a diffusely red denture covered mucosa or the denture-covered mucosa may have multiple, small, papillomatous, and reddened hyperplasias. The patient should be taught denture hygiene and topical antimycotic be placed in denture fitting surface to be worn by patient.

Figure 22a (i) – Lichen planus - erythematous type
Red, erythematous areas with papules/ striae at the margins and the white structures cannot be rubbed off. A specialist referral is required for definitive diagnosis and long term follow-up and management.
In some cases where the tongue is affected, there is atrophy of tongue papillae with a whitish, dry surface. A clinical definitive diagnosis of lichen planus can confidently be made when there are white papules or striae present in other locations of the mouth. Long term management and follow-up by a specialist is required.

Vesicles/bullae are present in areas of white/red type of lichen planus. This type is rarely seen may be due to the fact that the bulla has ruptured and clinically, these may appear as an ulcerative type of lichen planus. A specialist referral is required to rule out other more severe vesiculobullous lesions.
**ULCERATED LESIONS**

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**Oral carcinoma:**

The lesion is ulcerated with induration at the ulcer margins. The ulcer may have a raised, rolled border and may develop in a white area (Figure 23). It should be distinguished from a large solitary major aphthous ulcer.

Recurrent major aphthous ulcer may present as 1 - 2 ulcers at each episode occurring on any part of the non-keratinized mucosa or fauces with a predilection for the tongue in some patients (Figure 24a). It usually feels indurated and heals with scarring. Healing may take several weeks. An ulcerated oral carcinoma should also be differentiated from the exaggerated form of aphthous and non-specific ulcers in AIDS/HIV-positive patients (Figure 24b and 24c) or a traumatic ulcer.

A traumatic ulcer can be differentiated from an ulcerated oral carcinoma since the traumatic ulcer (Figure 25) is a mild or moderately symptomatic ulcer on the oral mucosa, which can be related to trauma at examination.

A bacterial (e.g. tuberculosis)/ deep fungal ulcer (e.g. histoplasmosis) may present as a deep non-healing ulcer (Figure 26), which may mimic oral carcinoma. A positive culture or identification of the infectious agent (bacterial/fungal) in biopsies would rule-out oral carcinoma.

**Lichen Planus - ulcerative type:**

This type of lichen planus usually presents as areas of ulcerations with white papules/striae at the margins. The white structures cannot be rubbed off (Figure 27). This lesion should be distinguished from discoid lupus erythematosus, multiple recurrent minor aphthous ulcers, pemphigus vulgaris, mucous membrane pemphigoid, acute herpetic gingivostomatitis, recurrent intraoral herpes and necrotizing gingivitis.

Discoid lupus erythematosus may appear similar to lichen planus (Figure 16).
Recurrent minor aphthous ulcer is usually confined to non-keratinized mucosa or the tongue with 1 - 4 ulcers at one episode. The ulcers measure up to 1 cm and heal in 1 - 2 weeks without scarring. They are well defined and covered by a grey-white or yellowish fibrinous coating surrounded by an erythematous halo (Figure 28a & b). In addition to the clinical features, minor aphthous ulcers can be distinguished from ulcerative lichen planus from a history of recurrence as reported by the patients.

The mucous membrane pemphigoid (MMP)\textsuperscript{+} and pemphigus vulgaris (PV) presents with formation of bullae intraorally prior to widespread ulcerations of the oral mucosa. These lesions are manifestations of systemic diseases and can be differentiated from ulcerative lichen planus where bullae may be seen at intraoral examination or reported by patients that lesion begins with bullae formation followed by widespread ulceration of the oral mucosa. Persistent bullae are frequently seen in MMP (Figure 29a) but rarely in PV (Figure 29b).

Acute herpetic gingivostomatitis usually presents as numerous small vesicles on any part of the oral mucosa, which ruptures in 12 - 24 hours leaving small painful shallow ulcers. There is accompanying systemic signs and symptoms such as fever, malaise and arthralgia, which differentiate this lesion from ulcerative lichen planus. This lesion commonly occurs in small children. The lesions heal within two weeks without scarring. Recurrent intraoral herpetic ulcers present as clusters of vesicles and/or ulcers on the keratinized oral mucosa (hard palate and gingiva). There is no red halo surrounding the ulcers. The lesions heal within two weeks without scarring. Other than the clinical presentation of shallow ulcers, a history of recurrence with the lesion appearing at the same site distinguishes recurrent intraoral herpes from ulcerative lichen planus. The accompanying systemic symptom in patients with acute herpetic gingivostomatitis serves to distinguish ulcerative lichen planus from acute herpetic gingivostomatitis.

Necrotizing gingivitis is differentiated from ulcerative lichen planus by its clinical presentation where necrotizing gingivitis presents as a necrotic area covered by a yellowish pseudomembrane at the top of the interdental papillae. The pseudomembrane can be wiped off leaving a red, bleeding and tender surface. Necrotizing gingivitis is also observed in HIV-positive patients (Figure 30a & b).

\textsuperscript{+} Also known as Cicatricial pemphigoid.
Angular cheilitis:

There is fissuring or ulceration of the skin and/oral mucosa in the labial commissure or discontinuity of the commissural mucosa or the skin which can be provoked by slight stretching (Figure 31a & b). A mixture of factors is responsible for angular cheilitis with a mixed infection of Candidal albicans and Staphylococcocus *aureus* being the major aetiological factor. This lesion is often seen bilateraly in HIV-positive patients (Figure 31b). This lesion should be distinguished from herpes labialis, which is usually a Herpes Simplex 1 (HSV 1) viral infection. Herpes labialis presents as clusters of vesicles and/or crusts on the vermilion border of the lip (Figure 32a) but not on moist mucosa. There is a history of recurrence and the lesions heal within three weeks. Figures 32b shows late stage of HSV 1 infection of lower lip with crusting and residual ulceration, which should be distinguished from cheilitis where the latter is not related to formation of vesicles prior to the ulceration. Herpes Simplex 1 Virus may present as atypical ulceration in HIV-infected patient (Figure 32c).
ULCERATED LESIONS

Figure 23 – Oral carcinoma (ulcerated lesion)
The lesion is ulcerated with induration at the ulcer margins. The ulcer may have a raised, rolled border and may develop in a white area. A specialist referral is required for further investigation and management.

Figure 24a – Major aphthous ulcer
There are 1-2 ulcers at each episode occurring on any part of the non-keratinized mucosa or fauces with a predilection for the tongue in some patients. It usually feels indurated and heals with scarring. Healing may take several weeks. Severe cases with multiple ulcers and no ulcer-free days require further investigation and management by a specialist.
Figure 24c – Severe oral ulceration in AIDS patient
Severe oral ulceration (arrows) of the floor of mouth and the lower surface of the tongue in an AIDS patient. In addition several other large ulceration of the oral mucosa were found in this AIDS patient. No underlying cause was detected. The diagnosis of ulceration "not otherwise specified" was made.

Figure 24b – Aphthous ulceration in an HIV-positive patient
Recurrent aphthous ulceration (arrows) in the floor of the mouth of an HIV-positive Thai woman. Often this type of ulceration is persistent and in some cases is resistant to therapy.
Figure 25 – Traumatic ulcer
A mild or moderately symptomatic ulcer on the oral mucosa, which can be related to trauma at examination. The ulcer will heal upon removal of the causative agent i.e. the sharp cusp of a tooth in this case.

Figure 26 – Deep non-healing ulcers
(a) A chronic, painful non-healing deep ulcer with induration which clinically mimics oral cancer. An incisional biopsy showed this lesion to be histoplasmosis.

(b) A deep non-healing tongue ulcer which on biopsy was shown to be a tuberculous ulcer.
Figure 27 – Lichen planus (ulcerative)
Areas of ulcerations with white papules/striae at the margins. The white structures cannot be rubbed off. Referral to a specialist for further management and regular follow-up as oral lichen planus has a chronic prolonged course with a small possibility of malignant change being reported (<2%).

Figure 28a – Minor aphthous ulcers
The ulcers (arrows) are well defined and covered by a grey-white or yellowish fibrinous coating surrounded by an erythematous halo.
Figure 28b – Minor aphthous ulcers
The ulcers (arrows) are usually confined to non-keratinized mucosa or the tongue with 1-4 ulcers at one episode. Each ulcer is small and heals in 1-2 weeks without scarring. Some of the ulcers may coalesce to form irregular margin.

Figure 29a (i) – Mucous membrane pemphigoid (MMP)
Formation of bullae but normally appear intraorally as widespread ulceration of the oral mucosa. Persistent bullae are frequently seen in MMP.

Figure 29a (ii) shows gingival changes in MMP. A referral to a specialist is required for definitive diagnosis and management.
Figure 30a – Necrotising ulcerative gingivitis in an HIV-positive patient
Initial necrotizing ulcerative gingivitis in an HIV-positive patient. Ulceration of several papillae (arrows) is seen.

Figure 29b – Pemphigus vulgaris (PV)
There is bullae formation which appear intraorally as widespread ulceration of the oral mucosa. Persistent bullae are rarely seen in PV. A specialist referral is necessary for a definitive diagnosis and long term management.
Figure 30b – Necrotizing ulcerative gingivitis in an AIDS patient
Characteristic necrotizing ulcerative gingivitis with loss of papillae (arrow),
necrosis and severe pain. Often bleeding is another symptom.

Figure 31a – Angular cheilitis
There is fissuring and ulceration of the corners of the mouth. The
lesion is usually due to a mixed infection of Candida albicans and
Staphylococcus aureus. Atrophy of the tongue papillae is also one
of the manifestations of a fungal infection. An underlying nutritional
deficiency (e.g. iron, folic acid or vitamin $B_{12}$) and an underlying
systemic disease may also contribute to angular cheilitis and
atrophy of tongue papillae.
Figure 31b – Angular cheilitis in an HIV patient
Slight fissuring and pseudomembranous candidosis is seen.

Figure 32a – Herpes labialis
Clusters of vesicles and/or crusts on the vermilion border of the lip but not on moist mucosa. There is history of recurrence in the same location. Healing occurred within 3 weeks.
Figure 32b – Late stage of HSV 1 infection of lower lip with crusting and residual ulceration. This clinical picture may be confused with exfoliative cheilitis.

Figure 32c – Atypical ulceration of HSV 1 infection in an HIV-infected person. HSV 1 infection of dorsum of tongue in an HIV-infected patient. The ulceration is atypical in terms of location, duration and severity.
QUIP RELATED LESIONS

Oral submucous fibrosis (OSF)  Quid-induced lesions
Chewer’s mucosa  Betel-quid lichenoid lesions
Areca nut-related lesions

Oral submucous fibrosis (OSF)

This condition used to be diagnosed as OSF clinically and epidemiologically when there is presence of palpable bands in the oral mucosa which will lead to restriction of movements of mouth and/or tongue which clinically shows limited mouth opening (Figure 33a). The tongue may be small and show a marked loss of papillae (Figure 33b). This latter feature may be seen in the early lesion as well as vertical fibrous bands which can be detected in the cheek and felt by running the blunt edge of the mouth mirror backwards and forwards along the cheek mucosa. The buccal mucosa may appear atrophied with the presence of betel-quid stains. The palate may appear pale with a shrunken uvula. Hypo- and hyperpigmentation and areas of leukoplakia are also present in OSF.

At a Kuala Lumpur workshop in 1996 on “Oral mucosal lesions associated with quid chewing habits”, other features of OSF was also recognized. It is then recommended that the definition of OSF is expanded and OSF is then diagnosed when one or more of the following characteristics are present namely:

1. Palpable fibrous bands;
2. The mucosal texture feels tough and leathery; and
3. Blanching of the oral mucosa where blanching is further defined as a persistent, white marble-like appearance of the oral mucosa that maybe localized, diffuse or reticular. Blanching in OSF should be distinguished from the pale appearance of the mucosa due to vascular or haematological disorders or from loss of normal pigmentation.

The early lesion of OSF should also be distinguished from chewer’s mucosa.

Chewer’s mucosa

The Kuala Lumpur workshop in 1996 on “Oral mucosal lesions associated with quid chewing habits” had also re-defined chewer’s...
mucosa. It is defined, as a condition of the oral mucosa where because of the direct action of the quid or traumatic effect of chewing, or both, there is a tendency for the oral mucosa to desquamate or peel. Loose and detached tags of tissue can also be seen or felt. The underlying areas assume a pseudomembranous or wrinkled appearance. The area may show evidence of incorporation of ingredients of the quid in the form of yellowish or reddish-brown encrustations (Figure 34a and 34b).

This lesion should be distinguished from morsicatio buccarum or cheek biting (Figure 12a). Morsicatio buccarum is a diffusely outlined lesion where there is self-infliction from chewing. A rough, macerated surface of mucosa with flaky desquamation is evident. This clinical picture of morsicatio buccarum is similar with chewer's mucosa but differ where the latter is accompanied by the presence of quid stains in the affected buccal mucosa. Morsicatio buccarum also differs from chewer's mucosa where the latter arises from an intentional habit while the former from an unintentional habit.

Areca nut-related lesions

This group of lesions is present in some chewers of areca nut. Clinically, there maybe an ill-defined whitish gray discoloration on the buccal mucosa either uni- or bilaterally that cannot be rubbed off. The mucosa may show a linen-like texture and histologically show ortho- and/or parakeratinized epithelium. Localized leukoplakic, erythroplakic and erythroleukoplakic areas and frank malignancies are rarely seen among areca-nut chewers.

Quid-induced lesions

This group of lesions is present in quid chewers. This lesion is a localized lesion of the oral mucosa corresponding to the regular site of placement of a quid and characterized by one or more of the following characteristics: 1) change of normal color, 2) wrinkled appearance 3) thickening of the mucosa, 4) scrapable or non-scrapable epithelial surface, and 5) presence of ulceration. The tobacco and lime user's lesion, snuff-induced lesions and areca-quid induced lesions are examples of quid induced lesions (Figure 35a).

1 The Kuala Lumpur workshop in 1996 on “Oral mucosal lesions associated with quid chewing habits” recommended that ‘quid’ be defined as “a substance, or mixture of substances, placed in the mouth or chewed and remaining in contact with the mucosa, usually containing one or both the basic ingredients, tobacco or areca nut, in raw or any manufactured or processed forms”.

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**Betel-quid lichenoid lesions**

This is a quid-induced lichenoid lesion presenting exclusively among betel-quid users. It resembles lichen planus but there are specific differences. It is characterized by the presence of white, linear, wavy, non-elevated parallel lines, which do not overlap or criss-cross and in some instances radiate from a central erythematous area (Figure 35b). It generally occurs at the site of placement of quid. This lesion may regress with decrease in chewing frequency, or change in site of quid placement or disappears completely with cessation of betel-quid habit.
LESIONS RELATED TO QUID CHEWING HABITS

Figure 33a – Oral submucous fibrosis (OSF)
This condition is diagnosed as OSF when there is the presence of palpable bands in the oral mucosa, which will lead to restriction of movements of mouth and/or tongue and clinically show limited mouth opening. Those with no palpable bands but with leathery mucosa and/or blanched mucosa have also been recognized. Specialist referral is required for management and long term follow-up to exclude the development of malignancies.

Figure 33b – Oral submucous fibrosis of tongue
There is marked loss of tongue papillae with the presence of palpable bands or leathery or blanched mucosa in other areas. Leukoplakic or erythroplakic localized areas on the tongue and other areas may be seen.
Figure 34a – Chewer’s mucosa
There is a tendency to desquamation or peeling off the oral epithelium due to the direct action of the quid or due to the contributing traumatic effect of chewing. Loose and detached tags of tissue may be seen and often there are yellowish or reddish-brown encrustations (arrows) on the mucosal surface. Reducing frequency and duration or cessation of habit leads to regression of lesion.

Figure 34b – Buccal mucosa of a betel chewer of 40 years duration. Chewer’s mucosa showing brownish material on the surfaces of the oral mucosa in addition to some whitish leukoplakia-like changes in the commissures (arrows). Chewer’s mucosa is still not considered as a premalignant lesion. However, the presence of a leukoplakic or erythroplakic areas would place this lesion as a potentially malignant lesion.
Figure 35a – Quid-induced lesion
This is a localized lesion corresponding to the site of a quid placement. There is a change in color and a wrinkled appearance of the buccal mucosa. Cessation of quid chewing habit would lead to regression of lesion.

Figure 35b – Quid-induced lesion – betel-quid lichenoid lesion
Lichen planus-like lesion characterized by the presence of white, linear, wavy, non-elevated parallel lines. There is no criss-crossing of the lines. In this case, there appears to be broad whitish plaque radiating from an erythematosus center.
EXOPHYTIC AND PIGMENTED LESIONS
AND MUCOSAL SWELLINGS

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**Oral carcinoma**

The oral carcinoma may appear as a fungating exophytic mass, which may bleed easily at a later stage (Figure 36). Verrucous carcinoma is a special type of oral carcinoma, which is exophytic, painless and has a warty or white nodular surface (Figure 37).

**Other lesions**

Lesions such as fibroepithelial polyp, pyogenic granuloma and mucocele are benign swellings, which may have the colour of normal mucosa or a red/bluish colour and easily bleeds or is fluctuant. Fibroepithelial polyp is an exophytic nodular sessile or pedunculated overgrowth of the mucosa which has a surface colour similar to the normal oral mucosa (Figure 38). A lesion that is reddish/brownish in colour and bleeds easily may be a pyogenic granuloma. This lesion is usually nodular, sessile/pedunculated with a smooth, granular or lobulated surface. The fluctuant lesion is the mucocele which usually presents as either a bluish/pink, fluctuant/firm painless swelling or as a deep-seated, firm/fluctuant swelling with the normal colour of the mucosa which varies in size intermittently (Figure 39).

Pigmented lesions may be physiologic as in excessive melanin pigmentation. These lesions appear as macules or diffusely outlined brownish - blackish coloration of the mucosa which is not due to exogenous pigments. It can occur on any parts of the oral mucosa but most commonly on the gingiva (Figure 40). Dark color of the oral mucosa, which is similar to pigmentation, is seen in foreign body reaction such as in amalgam tattoo, which is a blue-gray/black lesion with poorly defined periphery. The lesion is covered by normal mucosa (Figure 41). Pigmented lesions, which are benign are naevi or malignant tumours as seen in melanoma. Naevus is a rare bluish - gray smooth surfaced, or exophytic lesion. It may occur on the oral mucosa or lip. Melanoma is a rare, bluish-black, pigmented, exophytic lesion. Rarely it is not pigmented and is then clinically indistinguishable from some other oral tumours.
Another oral lesion which commonly occurs in the oral mucosa is Fordyce's condition (heterotopic sebaceous glands) and this should be recognized as only an anatomic variation. This condition presents with small, sometimes slightly elevated circular or rosette-shaped yellowish colored spots, which are distinctly demarcated from the surrounding mucosa. The spots usually appear in the buccal mucosa but also frequently occur in the vermilion border of the lips (Figure 42).

Other exophytic lesions include the papilloma (Figure 43a). Papilloma is a pedunculated or sessile tumour with papillomatous surface. The color is white or slightly pink. This lesion is similar to verruca vulgaris clinically. Verrucous types of lesions can also be observed in AIDS patient (Figure 43b). A malignant type of oral lesion strongly associated with HIV infection is the Kaposi's sarcoma. This lesion is another AIDS related lesion (in addition to other earlier mentioned entities) which is considered under this topic of oral mucosal swellings. Kaposi's sarcoma in AIDS's patient may initially present as a macular lesion, which may become tumorous. Ulceration may also occur. The lesions maybe multifocal and can occur on the palate and gingiva intraorally (Figure 44a, 44b, 44c).

References


EXOPHYTIC AND PIGMENTED LESIONS AND MUCOSAL SWELLINGS

Figure 36 – Oral carcinoma (exophytic)
May appear as a fungating exophytic mass, which may bleed easily at a later stage. Requires referral to specialist for diagnosis and management.

Figure 37 – Verrucous carcinoma
This is a special type of oral carcinoma, which is exophytic, painless and has a warty or white nodular surface. A deep incisional biopsy is required in order to access the broad pushing invasive growth of this lesion. Early referral (prior to an incisional biopsy) to a specialist for investigation and management is required.
Figure 38 – Fibroepithelial polyp
This is an exophytic nodular sessile or pedunculated overgrowth of the mucosa with a surface colour similar to the normal oral mucosa. An excisional biopsy would confirm the lesion and would be sufficient management for this type of lesion.

Figure 39 – Mucocoele
This lesion present either as a bluish/pink, fluctuant/firm painless swelling or a deep-seated, firm/fluctuant swelling with the normal color of the mucosa which varies in size intermittently. The lesion should be excised and confirmed histologically.
Figure 40 – Excessive melanin pigmentation
Macules or diffusely outlined brownish - blackish coloration of the mucosa which is not due to exogenous pigments. It can occur on any parts of the oral mucosa but most commonly on the gingiva. There is an ethnic predisposition especially in dark-skinned individuals. The pigmentation may increase with smoking. This lesion is a physiologic change, which only requires recognition. Intraoral naevus (and melanoma) should be ruled out in cases of localized macule especially in the palate.

Figure 41 – Amalgam tattoo (Focal argyrosis)
A blue-gray/black lesion with poorly defined periphery. This lesion is the result of implantation of amalgam into the soft tissue during extraction (implanted into extraction sockets) or direct implantation into gingiva during amalgam removal or insertion. Requires ruling out other pigmented neoplasms.
Figure 43a – Papilloma
A pedunculated lesion with papillary surface in the palate. An excisional biopsy is required for diagnosis and would be sufficient management.

Figure 42 – Fordyce’s condition
This condition presents with small, sometimes slightly elevated circular or rosette-shaped yellowish colored spots, which are distinctly demarcated from the surrounding mucosa. The spots usually appear in the buccal mucosa but also frequently occurs in the vermillion border of the lips. This lesion should be recognized as an anatomic variation and no therapy is required.
Figure 43b – Verruca-like proliferation in an AIDS patient
In this patient there is verruca-like proliferation at the comissure of the mouth. Human papilloma virus type 6, 11 and 18 were revealed in this lesion.

Figure 44a – Multifocal Kaposi’s sarcoma in an AIDS patient
Multifocal Kaposi’s sarcoma in the palate. It is partly flat and ulcerated on the right side of the palate. Often the palatal KS is found bilaterally.
Figure 44b – Initial Kaposi’s sarcoma in an AIDS patient
Initial macular Kaposi’s sarcoma (arrows) in the gingiva. The differential diagnosis includes haematoma, tattoo’s, haemangioma, melanoma and other neoplastic vascular diseases.

Figure 44c – Extensive Kaposi’s sarcoma in an AIDS patient
Extensive tumorous Kaposi’s sarcoma is seen in the maxillary anterior gingiva. Treatment of KS is palliative but includes radiotherapy and intralesional or systemic chemotherapy.
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