



Ian Holland

# Management of White Patches

**Abstract:** White patches are a worrying finding for patients, in particular with concern arising about the possibility of the lesions being or becoming cancerous. This paper looks at some of the common white patches that present and relevant considerations in deciding on a management plan for them.

**Clinical Relevance:** White patches are a common clinical problem and may have a potential to become neoplastic.

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Alteration in the appearance of the oral mucosa is a common presenting complaint of patients or may be an incidental finding on routine clinical examination of both new and review patients. The development and presence of such lesions often raises concern about the potential for the lesion to be or become an oral cancer.

The terminology of white patches in the literature is often used inconsistently with terms such as hyperkeratosis, leukoplakia and leukoedema which can be reasonably well defined and differentiated, being used interchangeably in some instances.

■ Hyperkeratosis is the development of a keratinized layer at a site that is not normally keratinized or a thickening of an existing keratinized layer.

■ Leukoplakia is defined as a white patch or plaque that cannot be rubbed off and cannot be characterized clinically or histologically as any other disease.

■ Leukoedema is a descriptive, the mucosa being a milky white colour with a translucent appearance.

However, the terms used to describe a particular lesion are not as important as the answers to the questions:

■ What is the diagnosis?  
■ How should the lesion be managed?  
■ What is the potential for the presence of, or development of, oral cancer?

In considering the diagnosis and

subsequent management, it is helpful to have a classification of white patches. They can be broadly divided into two groups:

- Those that can be rubbed off; and
- Those that are adherent to the oral mucosa.

The first group have three main causes:

- *Candida albicans* (infective in origin) (Figure 1);
- Necrosed or dead mucosa that is sloughing from the underlying base; and
- Collected food debris in patients with poor oral hygiene.

Those white patches that are adherent can be divided into developmental or acquired lesions.

## Developmental white patches

### Fordyce granules

These are not always white in colour, more frequently having a yellowish tinge. They, not infrequently, cause concern to patients. They are asymptomatic, sebaceous glands found on the labial and buccal mucosa. Their significance is that they may, if not previously noticed, give rise to concerns of oral cancer.

### Geographic tongue (Figure 2)

This is a common condition of unknown aetiology and is included as the predominantly red patches of the tongue can have a white periphery. The distinctive features of this condition are the characteristic appearance and variable parts of the tongue that are affected at different times, giving rise to its alternative name erythema migrans.

Figure 1. Infective white patch *candida albicans*.

Figure 2. Geographic tongue showing the white periphery to tongue lesion.



Figure 3. White sponge naevus.

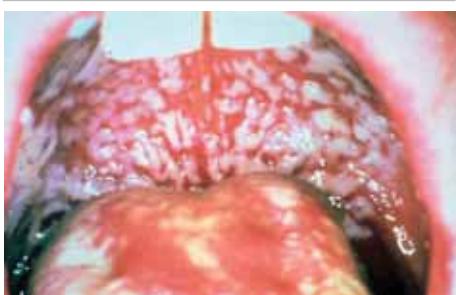
### White sponge naevus (Figure 3)

This lesion can affect any part of the oral mucosa and has a white, shaggy,

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**Figure 4.** Hyperkeratotic white patch secondary to occlusal trauma opposite the occlusal plane of the upper denture and lower teeth.



**Figure 5.** Pseudomembranous candidiasis, the widespread raised white patches on an erythematous background is typical. The white areas will wipe off leaving an underlying raw mucosa.



**Figure 6.** Chronic hyperplastic candidal white patch.



**Figure 7.** Viral papilloma shows typical raised warty appearance.

### Tylosis

A rare autosomal dominant disorder that may affect the oral mucosa but more commonly affects the palms and soles of the feet.

### Darier's disease

Another autosomal dominant disorder which is mucocutaneous. The oral mucosa is affected in approximately 50% of cases. The lesions usually affect the palate.

## Acquired white patches

### Traumatic (Figure 4)

Mechanical trauma is one of the commonest causes of white patches. This is most frequently seen on the buccal mucosa or lateral margins of the tongue adjacent to the occlusal plane. Edentulous ridges, opposing a natural dentition under an ill-fitting denture, or in patients who are edentulous but choose not to wear dentures, can frequently develop white patches as a result of masticatory 'trauma'.

Chemical trauma can result in a white patch secondary to necrosis of the oral mucosa. Aspirin held in the mouth, typically against the cheek, can cause such an injury.

Thermal trauma, usually from food or drink that is too hot, can produce a similar patch to chemical trauma. Nicotinic stomatitis seen in pipe smokers is seen on the palate, a white patch frequently speckled with red areas as a result of inflammatory changes from salivary glands.

## Infective

### Fungal

Infection with *candida* (predominantly *albicans*) can result in a number of different white patches.

### Pseudomembranous candidiasis (Figure 5)

This results in a widespread distribution of white plaques that can often be rubbed off leaving an underlying erythematous mucosa. It may be a patchy small area distributed over the oral mucosa or cover large areas of the mucosa in a single white lesion. It is present only in the presence of an underlying cause that results in local or systemic compromise of the immune system.

### Chronic hyperplastic candidiasis (Figure 6)

This is classically, but not universally, seen as a white patch intra-orally in the region of the commissures of the lips, often bilaterally. Unlike pseudomembranous candidal infection it cannot be wiped away and the underlying candidal association is only apparent at biopsy as the white patches are clinically very similar to leukoplakias. Although it may resolve following treatment with antifungals, it has a higher risk of malignant transformation than other white patches and consequently warrants excision.

## Viral

### Viral papillomas (Figure 7)

These are polypoid lesions that often have an irregular surface, which may have a white hyperkeratotic appearance. Whilst they are often small and have a relatively distinct appearance, large viral papillomas can be difficult to distinguish from verrucous papillomatous lesions which often have areas of neoplastic change within them.

HIV does not typically present as a white patch but hairy 'leukoplakia' seen in HIV can present as a white patch.

## Idiopathic

By definition all leukoplakias are idiopathic.

### Lichen planus

Lichen planus is a common mucocutaneous condition that has several subtypes. It can be a purely cutaneous lesion, a purely mucosal condition, or affect both skin and mucous membranes. Intra-orally reticular or striated lichen planus and erosive forms are the commonest and most concerning, respectively. Reticular lichen planus (Figure 8) is seen as a lace-like pattern of striae on the buccal mucous membranes or lateral borders of the tongue. It is frequently bilateral and often asymptomatic. Erosive lichen planus has areas of erosive ulceration within the area of mucosa affected by the hyperkeratosis. These are often symptomatic, especially to hot (thermal) and spicy foods. It is not uncommon for patients to have a background of reticular-like lichen planus with erosive episodes that occur periodically. Uncertainty exists about the potential for malignant transformation in lichen planus, but it is thought to be higher in erosive forms.

folded appearance. It is an autosomal dominant condition but has variable penetrance and is one of the few white patches to be seen in children.



**Figure 8.** Striated lichen planus in buccal mucosa.



**Figure 9.** Lichenoid reaction to adjacent amalgam restoration.

## Lichenoid reactions

These are so called as clinically and histologically they appear very similar to lichen planus. The difference is that the presence of the lesions is associated with a causative agent. There are a number of identified causative agents, amongst them amalgam restorations (Figure 9), and a number of pharmaceutical drugs. If lesions are in close contact with amalgam restorations, or patients have recently commenced a new medication prior to the onset of the lesion, there may be a link between the two. In these cases, replacement of the causative agent by another agent that does not have this side-effect may resolve the lesion.

## Management of white patches

It is a reasonable view that all new white patches should be referred for specialist opinion on management (which will vary, from advice and ongoing monitoring in the primary care setting, to all management of the white patch being undertaken in the secondary care setting), unless there is clear evidence of a local traumatic cause which can be removed and its removal results in resolution of the white patch.

As for all clinical problems, management is based on a thorough history, examination, investigation and treatment plan.

## History

If the patient is aware of the white patch, its duration and any associated symptoms should be recorded. Details of whether the lesion was noticed following any particular event, eg trauma, or change in medication, should likewise be noted. Whether there has been any change in the appearance or symptoms associated with the lesion at all since it was first noticed, eg Does it vary in location or size? Does it come and go? - should also be recorded. Patients should be asked if they have become aware of any new skin lesions alongside the problems reported intra-orally.

A medical history should be included and, in particular, cover aspects such as medication, especially new medications, family history of similar oral symptoms and any history of immunological disease.

Alongside details of the medical history, patients should be asked about smoking and drinking habits and if they have any other habits, such as use of tobacco in the mouth other than in a smoking manner.

## Examination

Many patients will be previously unaware of the presence of the white patch and so the examination findings become the basis of diagnosis and treatment planning.

Features of note in the examination are the site of the lesion and whether it is an isolated lesion or there are several lesions. An assessment is required of whether the lesion is homogeneous or not and, if not, whether any non-white elements of the patch are normal-looking mucosa or more erythematous than normal. The lesion should be palpated to determine if it is indurated, and whether it is adherent to the mucosa or can be rubbed off should be assessed. The presence of erosion or ulceration should also be noted. An assessment of the hard tissues should be made to see if there is any correlation between the white patch and local trauma.

Following the history and examination, it may well be possible to come to a firm diagnosis, examples are the hyperkeratosis seen bilaterally opposite the occlusal plane in patients who report a cheek-biting habit, or an area of hyperkeratotic slough in the patient who has toothache and kept an aspirin in the area affected. If there is a local cause, such as trauma, it is appropriate

to remove the cause and assess response to treatment.

As all white patches should be monitored, no matter what other management decisions are made, if possible it is a good idea to take a clinical photograph when the lesion is first noted.

Some features of white patches in a particular area are associated with an increased risk of potential for malignant transformation,<sup>1</sup> notably an area with sublingual sites, the lateral/ventral surface of the tongue and the retromolar/soft palate area being sites of particular concern. Also, heterogeneous lesions with an erythematous or speckled-looking mucosa amongst the white patch have a greater incidence of dysplastic or neoplastic change. White patches arising in a non-smoker, with increasing age and in the female sex are also associated with a higher risk of malignant transformation.

If a definitive diagnosis cannot be made following the history and examination, further investigation should be considered. If there is any suggestion of an infective candidal aetiology, a swab for candida should be undertaken and antifungal therapy started, with subsequent follow-up to assess both swab results and response to treatment. Otherwise, a biopsy of the lesion should be discussed with the patient and recommended.

Biopsies are usually performed under local anaesthesia and should be taken from area(s) of the white patch that are clinically most concerning, such as areas of ulceration or areas of mixed white/erythematous appearance. Unless the lesion is very small, biopsy will be incisional, not excisional, with further planning made following histology. If the white patch is adjacent to salivary duct orifices, care must be taken not to damage these in taking the biopsy. If lesions are heterogeneous in appearance, multiple biopsies can be taken.

The objective of the biopsy is to try to determine a definitive diagnosis, if possible. If not, histology will assess if there is any dysplasia (and if so the degree of dysplasia) or neoplasia present.

## Treatment

Following histological results, treatment options are:

- Removal of cause, eg traumatic lesions, alteration of medication or replacement of amalgam for lichenoid reactions;

- Monitoring with repeat biopsy in the event of any change;
- Excision, which is probably best done by laser;
- Medical treatment with retinoids is currently being investigated but not yet mainstream.

All patients who smoke should be advised to stop.

White patches that show any evidence of moderate dysplasia, or worse, or if histology indicates any other potentially pre-malignant diagnosis, like chronic hyperplastic candidiasis, should be excised.

adhered to. However, some white patches do represent a pre-cancerous condition that has the potential to become invasive. The incidence of malignant transformation in white patches varies in the literature. Many papers, however, consider different lesions in different populations and/or sites. A recent review<sup>1</sup> suggests the risk of transformation in homogeneous white patches that may be potentially pre-malignant white patches is approximately 5%.

## Summary

For any new white patch we should endeavour to answer the question initially posed: What is the diagnosis?

If this can be done without a biopsy, the condition can be managed as appropriate for the diagnosis, monitoring the response to treatment measures taken. If the white patch is one that is expected not to resolve, it should then be monitored at regular check-up visits and, in the event of any change in appearance or symptoms, consideration should be given to further investigation.

Any patient who smokes or drinks excessively should be advised to stop both activities and referred for specialist help if required.

All white patches that cannot be diagnosed and any that have any features that are associated with a higher potential for malignant change should be biopsied. In the event of histology showing any evidence of dysplasia, or worse, or other known potentially pre-malignant diagnosis, there should be removal of the lesion and long-term monitoring.

## References

1. Napier SS, Speight PM. Natural history of potentially malignant oral lesions and conditions: an overview of the literature. *J Oral Pathol Med* 2008; **37**: 1–10. Review.
2. Cowan CG, Gregg TA, Napier SS, McKenna SM, Kee F. Potentially malignant lesions in northern Ireland: a 20-year population-based perspective of malignant transformation. *Oral Dis* 2001; **7**: 18–24.

An advertisement for Planmeca dental X-ray equipment. The background is a dark blue gradient with the text '3D 2D' repeated in a grid pattern. In the top right, a white Planmeca ProMAX 3D X-ray machine is shown. In the bottom left, a white Planmeca OrthoDontic XC X-ray machine is shown. The text '2D and 3D X-Ray Solutions' is prominently displayed in the center. Below the machines, the text 'Innovative x-ray solutions', 'Invaluable support', and 'Expert advice' is listed. At the bottom, contact information is provided: 'Freephone: 0800 027 9599', 'www.planmeca.com', and 'equipment@planmeca.co.uk'. Logos for BDPA Dental Showcare (10-11 October 2010, F62, London) and Pludent (Unique concepts delivered flawlessly) are in the bottom right. A small circular logo for 'PLANMECTA' is in the bottom left.