

Periodontal disease in the older patient

Aims and objectives

This paper aims to update the reader on the current understanding of the impact of ageing on periodontitis. It presents a clinical case to highlight the importance of early diagnosis and some of the key features required in successful management.

Introduction

There has been a consistent increase in the proportion of older members of society due to improved healthcare and standards of living driving an increased lifespan. Alongside this, populations are keeping their teeth longer and have heightened expectations for what dentistry can deliver. Several international surveys have shown that periodontitis can affect around half of the adult population, and that the numbers of patients experiencing periodontal disease increases with age.¹ When combined, all of these factors result in increasing oral healthcare demand in the older patient, notably the management of periodontitis.

The impact of periodontitis is wide ranging, including loss of function and aesthetic concerns with tooth loss, cost to healthcare providers, and associations with a number of systemic diseases, e.g., diabetes, cardiovascular disease and, more recently, Alzheimer's disease. There is also evidence that successful periodontitis management improves outcomes in type 2 diabetes.²

Why do older patients get more disease?

There are a number of reasons for increased levels of periodontitis in the older patient, which can be summarised as follows:

1. Accumulated risk: Older patients will potentially be exposed to established periodontal risk factors for longer (e.g., smoking, poor oral hygiene, etc.).
2. Biological changes: The ageing process results in a range of changes to the periodontal structures (**Table 1**), including reduced immune function and reduction in healing potential. These can affect the way the body responds to plaque biofilm challenge, resulting in increased disease susceptibility.

Other important factors for the ageing patient include:

- a reduction in manual dexterity that inhibits the efficacy of plaque removal;
- increased incidence of systemic disease (several of which have associations

with periodontitis, e.g., type 2 diabetes); and,

- polypharmacy, where patients are on multiple medications that may have direct or indirect effects on the oral tissues, e.g., calcium channel blockers that cause drug-induced gingival enlargement, which we will explore in the clinical case in this article.

A further example of a periodontal condition that may be related to drug therapy is desquamative gingivitis, where painful erosions or ulcerations form on the gingival tissue, which in turn makes toothbrushing very uncomfortable. Plaque control then becomes suboptimal and periodontitis may follow as a consequence of a deteriorating cycle that is difficult to manage without topical steroids. Given that desquamative gingivitis can have significant underlying pathology other than drug related (e.g., pemphigus, pemphigoid, etc.), if present, this condition requires investigation.

There is also evidence to suggest that changes to the plaque biofilm take place with increasing age. These include increased plaque accumulation and changes in the microflora, including some of the key periodontal pathogens.³ However, the significance of these changes has yet to be fully explored.

Psychosocial factors in the management of periodontitis

In any patient, psychosocial factors play an important role in behaviour that can impinge on plaque control compliance. The most important is 'self-efficacy', which is giving the patient the belief that changing their behaviour will improve the clinical outcome. In relation to periodontal disease, self-efficacy of improving patient plaque control will have the biggest single positive impact on the management of periodontitis (see Step 1 of periodontal management below).

The literature indicates that for the majority of adult life, for most patients, there is negligible change in intellect, so there are no issues in older patients who are cognitively well and acting on information given. However, decline in biological function can lead to a reduced ability to undertake certain tasks, including those related to oral hygiene.

Alongside this, older patients can be prone to information overload, meaning that the way information is delivered is important, with a strategy of regular 'bite-sized' instructions being optimal.

As we age, we are more likely to experience major life events/illnesses that can



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FIGURES 1a-1c: Clinical images demonstrated generalised extrinsic staining, with associated plaque and calculus deposits, mild gingival recession, generalised periodontal pocketing, drifting and spacing of the maxillary dentition, and previous loss of teeth. Pus was identifiable at the gingival margin at the mid-distal aspect of tooth 46, which proved non-vital to sensibility testing, and a periodontal-endodontic lesion was diagnosed.

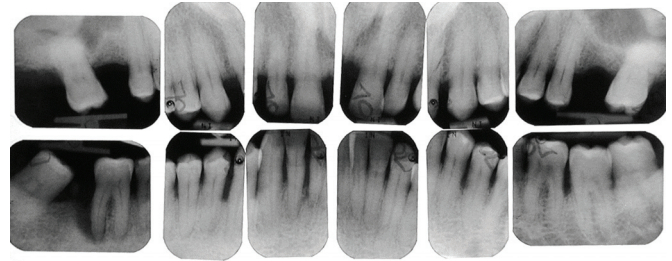


Figure 2: Furcation involvement was identifiable clinically and radiographically on multiple teeth.

cause low self-esteem, meaning that the diagnosis of periodontitis may be deemed of low importance. In such cases, motivating the patient to deliver good oral hygiene can be a significant challenge. The plaque control challenge can be made even more difficult as gingival recession and changes to interproximal spaces between the teeth mean that adjustments to techniques and products become necessary.

Having discussed all these factors, it is important to note that periodontitis is not a result of aging per se; if risk factors are adequately managed, then patients will maintain a healthy periodontium as they grow older. It is also important that, as for all our patients, older adults are regularly screened for periodontal disease (Basic Periodontal Examination (BPE)/Community Periodontal Index of Treatment Needs (CPITN)/Periodontal Screening and Recording (PSR)) and management of risk factors, as early disease management results in improved patient outcomes.

A clinical case

The clinical case presented is of a 74-year-old male patient of Afro-Caribbean ethnicity who had been referred for specialist opinion by his general medical practitioner (GMP) due to 'swollen gums' that had been identified during a domiciliary appointment. Medical history revealed that he had commenced taking a calcium channel antagonist (amlodipine) for hypertension approximately 12 months previously, and gingival enlargement commenced within three months.

The patient was a symptomatic attendee to various local general dental practitioners, a former smoker and, in addition to the drug-induced gingival enlargement (as a consequence of suboptimal plaque control and amlodipine), there was an underlying periodontitis.

His clinical images (**Figure 1**) demonstrate generalised extrinsic staining with associated plaque and calculus deposits, mild gingival recession, generalised periodontal pocketing, drifting and spacing of the maxillary dentition, and previous loss of teeth. Pus was identifiable at the gingival margin at the mid-distal aspect of tooth 46, which proved non-vital to sensibility testing, and a periodontal-endodontic lesion was diagnosed.

Furcation involvement was identifiable clinically and radiographically (**Figure 2**) on multiple teeth and, in short, the case demonstrates an ageing patient with a broad range of clinical features and risk factors common to patients with periodontitis.

The patient's management included liaising with the GMP about the underlying condition and seeking an alternative class of anti-hypertensive. In addition, the patient's periodontal treatment was delivered according to the European Federation of Periodontology clinical guideline on the treatment of Stage I-III periodontitis.⁴ In this case, the treatment plan was as follows:

Table 1: Age-related changes in the periodontium.

Tissue	Clinical	Radiological	Cellular
Gingiva	Less stippling (relevance unclear) Increased likelihood of recession	None	Thinning of epithelium, reduced keratinisation and cellularity
Cementum	Continually laid down throughout life over entire root surface Recession likely to lead to cementum and root dentine exposure	Most pronounced in apical third due to passive eruption	Ongoing deposition of cellular cementum
Alveolar bone	Increased likelihood of attachment loss	Reduced periodontal membrane space (likely consequence of occlusal forces)	Reduced cellularity and thickness of cribriform plate
Periodontal ligament			Reduced proliferation of periodontal fibroblasts, and collagen and protein synthesis

Step 1: Guiding behaviour change by motivating the patient to undertake successful removal of supragingival dental biofilm and risk factor control:

- supragingival dental biofilm control;
- interventions to improve the effectiveness of oral hygiene, including the adaptation of toothbrush handles and long-handled interdental brushes;
- professional mechanical plaque removal (PMPR), which included ultrasonic and hand instrumentation; and,
- risk factor control, which included all the health behavioural change interventions eliminating/mitigating the recognised risk factors for periodontitis onset and progression (smoking cessation and dietary counselling for the patient's domiciliary carers).

Step 2: Cause-related therapy aimed at controlling (reducing/eliminating) the subgingival biofilm and calculus:

- subgingival instrumentation using ultrasonics and site specific Gracey curettes instrumenting to the apical extent of the periodontal pocket.

Step 3: Treating those areas of the dentition that were not responding adequately to the second step of therapy:

- re-evaluation appointment three months after Step 2; and,
- repeated subgingival instrumentation on three occasions (as per the protocol described in Step 2).

Step 4: Supportive periodontal care aimed at maintaining periodontal stability:

- combining preventive and therapeutic interventions defined in the first and second steps of therapy.

Step 1 was particularly challenging given the patient's initial stance of 'I'm 74 years old and know how to brush my own teeth'. However, over a series of appointments it became clear that the patient's brushing technique was ineffective and that although he had been 'told' how to brush, he had never been 'shown' how to brush. Watching the patient attempt to brush revealed a sub-optimal approach and the authors would advocate an 'observed brushing' approach for patients struggling with home plaque control.

As a consequence of Steps 1 and 2, the patient experienced further gingival recession and subsequent dentinal hypersensitivity, which was managed through the use of a desensitising toothpaste and professional fluoride applications. This had the additional benefit of reducing the likelihood of root caries. A re-sizing of interdental brush advice was required. Additional gingival recontouring was undertaken surgically to remove those areas of gingival enlargement that had not resolved from the combination of a change in medication and the non-surgical periodontal treatment.

Conclusions

There are key messages in managing the older patient with periodontitis:

- it is not inevitable that patients will get periodontitis as they age;
- regular screening using the BPE/CPITN/PSR, along with risk factor management, is key to disease prevention/management;
- it is important to treat each patient as an individual and ensure that oral hygiene instruction is bespoke for each patient, understanding the specific challenges they have, and modifying clinician advice and oral hygiene devices to optimise home plaque control;
- it is important to try and understand a patient's motivation and ability to deliver necessary levels of plaque control – for example, an older patient may have carer responsibilities for a close relative, meaning that they have little time or motivation for oral care or require adaptations to their toothbrushes, etc.;

- patients have a range of biological changes as they get older, but from a clinical point of view appear to respond in a similar way to periodontal treatment to a younger patient;
- once periodontitis has been identified via the screening process, the patient embarks on a stepwise journey of provision of periodontal care;
- liaising with our medical colleagues is essential to highlight the impact of medical conditions and their associated medications on oral and periodontal health, as well as issues surrounding polypharmacy, and nutritional issues that are more likely in older individuals; and,
- given the population shifts globally to an ageing population, this article serves as a reminder of the key principles of management of periodontal diseases, namely plaque control.

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