Essentials of Periodontal Management in General Practice

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Introduction

Effective management of periodontal disease in any setting involves a 4 stage process:
• Screening
  - to identify the presence of a disease
• Assessment
  - to quantify the extent of that disease in the individual
• Treatment
  - to stabilise and control the disease
• Maintenance and Monitoring
  - to ensure that the disease does not recur

This programme aims to:
• Show the importance of screening for periodontal disease using BPE (Basic Periodontal examination)
• Highlight new changes in the use of BPE
• Identify the importance and limitations of periodontal probing
• Discuss different recording methods
• Evaluate different types of radiographs in periodontal diagnosis
• Outline currently used classification criteria
• Identify the key components of an effective diagnosis
• Outline the principles of effective treatment planning
• Discuss the crucial importance of self-performed plaque control and self-care
• Evaluate different forms of non-surgical management of periodontitis.
Screening, Assessment and Diagnosis

1. Screening

BPE is a fundamental screening tool that should be used on all patients on at least an annual basis, unless they have diagnosed periodontal disease, in which case BPE is unnecessary and detailed periodontal measurements should be used instead, for both assessment and monitoring. The following principles should be borne in mind when using BPE:

• Should be done every check-up
• Should usually be done by the dentist
• BPE is pre-diagnostic and diagnostic
• Radiographs should be taken of all Code 3 and 4 sextants
• Full pocket charting (6 point) for all Code 3 sextants
• Full mouth pocket charting if one or more Code 4 sextants
• Code * for any sextant where a furcation involvement is found

2. Assessment

Periodontal assessment involves 6 point pocket charting and recording of bleeding on probing sites, furcation involvements, mobility and sometimes recession (if it is possible to do so but usually this is difficult to do with any accuracy). It is important to remember that probing is an inherently inaccurate process and involves multiple sources of potential error:

Pressure
Position
Shape (tine)
Angulation
Tip diameter
Parallax
Obstacles (eg calculus)
Inflammatory status
Before or after treatment?
Although probing records are inaccurate they give a useful indication of the extent of disease and are useful measurements for comparative purposes, especially when evaluating the patient's response to treatment.

Probing records can be made electronically or by hand and there are advantages and disadvantages of both.

Radiographs are an essential part of periodontal assessment. Although there are a number of radiographic techniques that can be used, periapical views are accepted as the ‘gold standard’ for assessment of bone levels.

3. Diagnosis

The old classification system involved the following:

Early onset periodontitis (including JP, PPP, RPP – patients 35 years or younger)
Adult Periodontitis – pts >35 yrs
Refractory Periodontitis – disease not responding to therapy

This system of classification is no longer used. The most commonly used system is that proposed by Armitage (1999) which differentiates chronic and aggressive periodontitis which may be localised or generalised. The features of aggressive periodontitis are:

- More likely to have a genetic basis
- Often young patients
- Rapid breakdown at several / many sites
  - Need old radiographs to determine pace of disease in older patients
- Relatively little obvious plaque biofilm
- Often multiple vertical bone defects
- Soft tissues sometimes have purple/blue tinge when inflamed

The features of chronic periodontitis are:

- May have a genetic basis but often not clear
- Often in older patients
- Slow breakdown
- Need old radiographs to determine pace of disease in older patients
 Quantity of plaque biofilm often commensurate with disease levels

To establish an effective diagnosis that can inform the treatment planning process the following elements should be considered:

- Type of disease - chronic or aggressive
- Distribution of disease - generalised or localised
- Extent of disease - mild, moderate, severe
- Sites affected
- Risk factors involved

Treatment Planning Principles

Treatment planning for periodontitis management should be split into clearly defined phases:

The most important phase is the first phase since treatment is unlikely to succeed without an optimal level of plaque control and without some control of modifiable risk factors such as smoking, diabetes, stress and diet.
Self-Care Phase

Fundamental to the successful management of disease by non-surgical means (or indeed surgical means for that matter) is the establishment, before any treatment is carried out, of optimal self-performed biofilm control. The 6th European Workshop in Periodontology in 2008 stated that: “It should be noted that the performance of optimal oral hygiene practices is an inseparable principle to be observed with any protocol of mechanical debridement.” The effects of good biofilm control before starting treatment can be dramatic, the goal being to establish an optimal supragingival environment prior to starting subgingival instrumentation.

The self-care phase involves the control of plaque levels by the patient and all other modifiable risk factors. The better the control of these factors at this stage the better the likely response to treatment.

During this phase it is wise not to probe the patient if there is widespread marginal inflammation as this is uncomfortable for the patient and the data that are recorded are very inaccurate. It is better to carry out a ‘pre-treatment’ charting (rather than a ‘baseline’ charting) when there has been some control of marginal inflammation. In addition, it is wise not carry out any instrumentation during this phase as this can enhance the patient’s sense of self efficacy - the recognition by the patient that what they are doing is having an impact on their periodontal condition, in the absence of professional intervention. This can be very motivating and in this respect the use of digital photography (recording ‘before’ and “after” gingival conditions) can be invaluable in patient education. Plaque and marginal bleeding scores can also be used for motivational purposes but these do not have the visual impact of photographs.

Other essential elements of patient motivation include:

- Explain disease process in detail (Philippot et al 2005)
- Develop self-efficacy (Philippot et al 2005) by deferring treatment
- Make concrete plans with patient (Schuz et al 2006)
- Event-based recall (Ellis 1998)
• Verbal and written information (Ley 1988)

Oral hygiene instruction can be personalised by taking photographs or videos of the oral hygiene techniques that should be employed.
It is important to stress the importance of subgingival plaque control using fine single-tufted brushes that have been shown to have the same effect as professional subgingival debridement (Page & Rams 2013).

Non-Surgical Therapy of Periodontitis

Many of the methods commonly used today to treat periodontal diseases have remained largely unchanged for decades. In non-surgical periodontal therapy it has been thought in the past that it is necessary to remove not only the subgingival biofilm but also all calculus and to plane away contaminated cementum to ensure treatment success.
While it is universally accepted that biofilm removal is essential to ensure positive treatment outcomes, the removal of subgingival calculus and root cementum is more controversial.
It is now believed that calculus is an inert material that is incapable of illiciting an inflammatory response and that it is the bacterial biofilm on the surface of the calculus that is the source of the periodontal lesion. In a review in 2011 Jepsen concluded that:

• “Calculus may be considered the result rather than the cause of periodontal inflammation...”
• “Subgingival calculus represents a secondary product of infection rather than a primary cause...”
• “Periodontal healing occurs even in the presence of calculus as long as the bacterial plaque is removed...”

The process of root planing is still widely practiced but it was described, and named, in the dental literature a century ago. Root planing involves the deliberate removal of tooth structure during periodontal instrumentation to render the root surface “hard” and “smooth” and is an invasive procedure since it involves the removal of tooth structure. Studies from the early 1980s onwards however suggested that the intentional removal of cementum during root planing was not justified (Nakib et al 1982, Moore et al 1986, Hughes & Smales
1990) and so the concept of less invasive non-surgical management of the diseased root surface was developed. The use of minimally-invasive techniques in restorative dentistry is now recognised as of increasing importance, and is often in the better interests of patients. The same principles can be applied to a minimally-invasive non-surgical periodontal treatment approach.

This has led to the concept of root surface debridement (RSD) as an alternative to root planing (Smart et al 1990), the goal being the achievement of a biocompatible root surface without the removal of tooth structure. The difference between root planing and root surface debridement has been clarified by the inclusion of the term ‘Periodontal Debridement’ in the National Library of Medicine’s Medical Subject Headings (MeSH) database where it is defined as: “Removal or disruption of dental deposits… without deliberate removal of cementum as done in root planing and often in dental scaling.” It has been shown that RSD has the potential to achieve the same level of root surface decontamination as root planing but with the advantages of conservation of tooth structure, shorter treatment time and greater patient comfort. In addition, the concept of RSD allows for the exclusive use of ultrasonic instrumentation, since there is no need to remove cementum by hand planing. Furthermore, ultrasonic use has been shown to be as effective as hand instrumentation in terms of clinical and microbiological treatment outcomes (Tunkel et al 2002) and is much less technically demanding. The use of local anaesthesia is often unnecessary with such light instrumentation, thus reducing the potential for iatrogenic damage and this, combined with the shorter treatment time, also permits a full mouth treatment approach, as opposed to quadrant by quadrant treatment, which has been shown to yield better treatment outcomes (Quirynen et al 1999, Koshy et al 2005).

The term ‘full mouth ultrasonic debridement’ (FMUD) has been used to describe this type of non-surgical therapy in which full mouth treatment is carried out using ultrasonic instrumentation exclusively and with a debridement technique rather than a planing approach. Over time, and with consistent patient adherence, stable results can be readily achieved often with spontaneous healing of vertical bone defects. Several studies have directly compared the minimally-invasive FMUD approach, comprising a single visit of less than one hour, with the traditional SRP approach of 3-4 hours of root planing, by quadrant with local anaesthesia, over 4 visits (Wennstrom et al 2005, Zanatta et al 2006, Del Peloso Ribiero et al 2008). In each case the treatment outcomes were identical.
RSD, and specifically FMUD, would therefore appear to offer an achievable non-surgical approach that is as effective as more complex therapies and which benefits both patients and operators.

REFERENCES


