Periodontal diagnosis in the context of the 2017 classification system of periodontal diseases and conditions

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In brief

This is the second in a series of case reports demonstrating the application of the BSP implementation plan for diagnosing periodontitis patients according to the 2017 classification.

We discuss staging and grading of periodontitis in relation to alternative case definitions used in the epidemiologic literature.

Abstract

Introduction The objective of this case report is to illustrate the diagnosis and classification of periodontitis according to the 2017 Classification system as recommended in the British Society of Periodontology (BSP) implementation plan.

Case report We describe a case of a patient who was diagnosed with "Localised periodontitis; Stage II, Grade B; currently unstable".

Conclusion The present case report presents an example for the application of the new classification system and illustrates how the new classification system captures disease severity, extent and disease susceptibility by staging and grading periodontitis.

Keywords:

Introduction

The 1999 classification of periodontal disease and conditions did not provide for a clear definition of periodontal health vs. disease. This was subsequently recognised as a significant limitation, in particular for clinical and epidemiologic research. Consequently, both a working group of the CDC/AAP[1][2] as well as an EFP workshop[3] suggested case definitions for periodontitis, for use in epidemiologic studies. These have subsequently gained some traction in the epidemiologic research community, but were "not intended nor approved for clinical use or biologic research"[2].

The 2017 classification of periodontal and peri-implant diseases and conditions provides, for the first time, clear definitions of periodontal health and disease [4]. Furthermore, the introduction of a staging and grading system provides for an explicit distinction of severity/extent of periodontitis (stage) and disease susceptibility/progression (grade) [5].

In this case presentation we report on a middle-aged patient with localised periodontitis. We demonstrate step-by-step how the BSP recommendations for implementation of the 2017 classification system [6] can be applied in practice to reach an appropriate periodontal diagnosis.

Case Report

The 47-year-old female patient presented as a new patient. The patient was a physician, a never-smoker and was in good general health with no relevant medical history. However, she reported frequent travelling and some stress. Intraoral clinical inspection revealed good oral hygiene and virtually no signs of gingival inflammation (Figure 1). In addition, the patient did not present overt interproximal recession or clinical attachment loss.

As part of the initial patient assessment a BPE screening examination was indicated (Table 1). The BPE codes of 4 in both upper posterior sextants were, in the absence

of pseudopockets, consistent with a provisional diagnosis of periodontitis and triggered a full periodontal assessment including a 6 point pocket chart, bleeding on probing and radiographs.

The detailed pocket chart (DPC) revealed maximum PPD of 6mm mesio-palatally on tooth 15 and disto-buccally on 26 (Figure 2). Consistent with the DPC findings, radiographic bone loss due to periodontitis was evident on 17,16,15, 26 and 27. Accounting for the radiographic evidence of previous apicectomy of 15, the bone loss was judged to be confined to the coronal third of the roots (Figure 3).

The medical history and results of the clinical and radiological examination therefore led to a diagnosis of periodontitis. There was evidence of bone loss exceeding 15% of the root length, but confined to the coronal third of the root length (Stage II periodontitis). The maximum bone loss was estimated as 30% (15 mesially, 27 mesially). As the patient was 47 years old, the numerical value of her maximum amount of bone loss in percent was greater than half her age in years (30 > 23.5), but not greater than her age (30 < 47). Therefore, this case was classified as Grade B periodontitis. Bone loss due to periodontitis was evident on 5 out of 28 teeth (<30%), resulting in an extent classification of 'localised' periodontitis. Finally, as this was a patient with untreated periodontitis with periodontal pockets up to 6mm, it was classed as 'currently unstable'.

The final diagnosis was:

Localised periodontitis; Stage II, Grade B; currently unstable

A systematic periodontal treatment was initiated. Note that the outcome of treatment would not result in a change of the initial disease classification as localised periodontitis; stage II/grade B. This patient would always be a periodontitis patient, with evidence of disease susceptibility, requiring appropriate periodontal maintenance.

Figure 1: Initial intraoral view

4	1	4
3	2	1

Table 1: BPE examination

RIGHT   LEFT

Buccal

Furcation:
▼ Grade 1
▽ Grade 2
▼ Grade 3

	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
Poc		224	543	333	323	223	323	222	223	323	332	332	324	436	423	
Rec		120	000	000	000	000	000	000	000	000	000	000	000	000	000	

Palatal

UPPER JAW

● Bleeding
● Suppuration

	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
Poc		432	444	326	322	223	222	222	222	222	222	323	323	434	434	
Rec		000	000	010	000	000	000	000	000	000	000	000	000	000	001	
Mob		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Poc		222	225	424	324	222	213	222	322	322	223	223	222	435	523	
Rec		000	010	000	000	000	000	000	000	000	000	000	001	000	010	

Lingual = Tongue Side
Buccal = Cheek or Lip Side

Red line = Bone Level
Blue line = Gum Level

Rec = Gum Recession
Poc = Pocketing
Mob = Mobility

Lingual

	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
Poc		223	322	224	324	322	223	222	222	222	223	323	323	322	323	
Rec		000	000	100	000	000	000	000	000	000	000	010	000	000	000	
Mob		0	0	0	0	0	0	0	0	0	0	0	0	0	0	

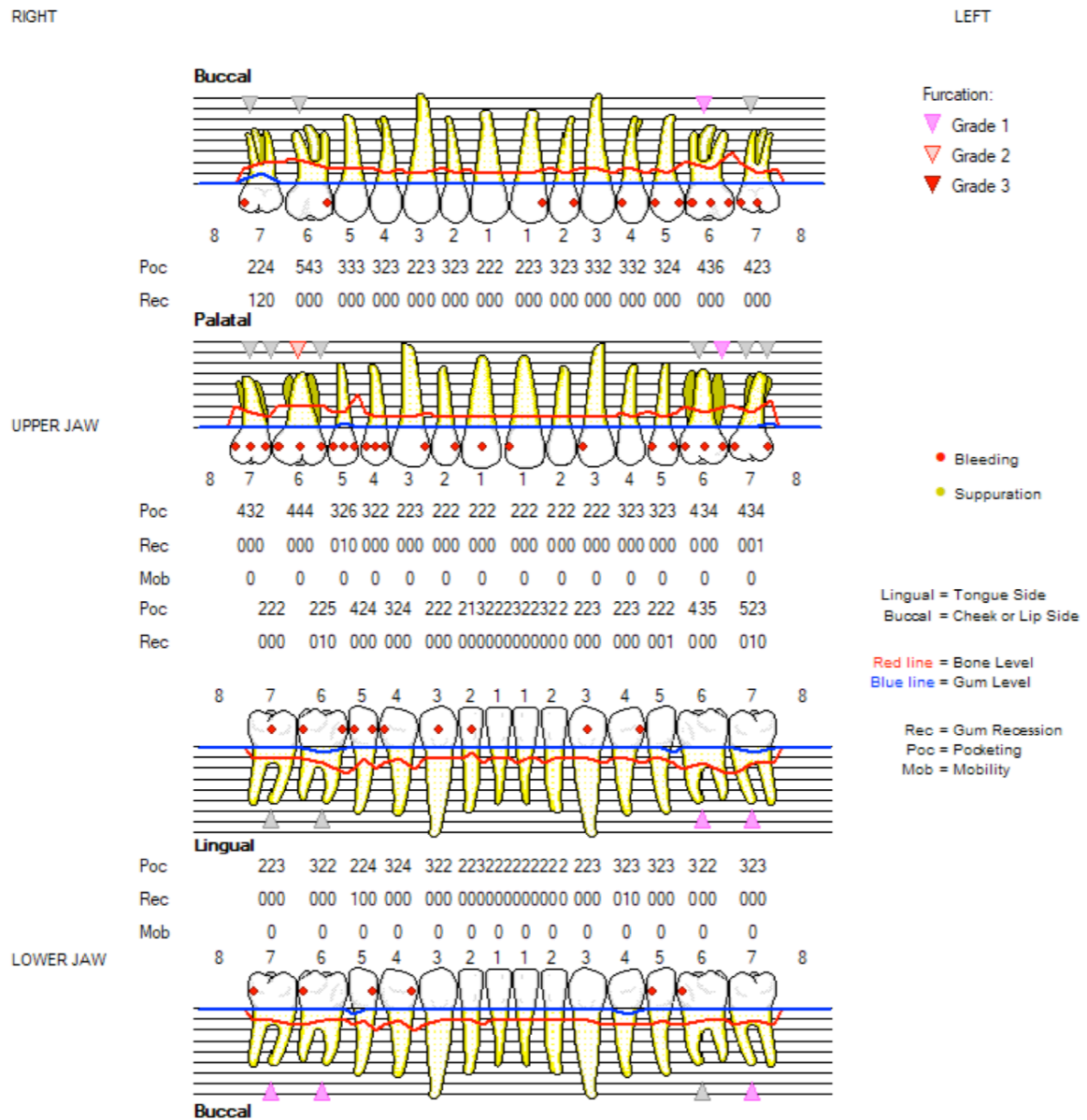LOWER JAW | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
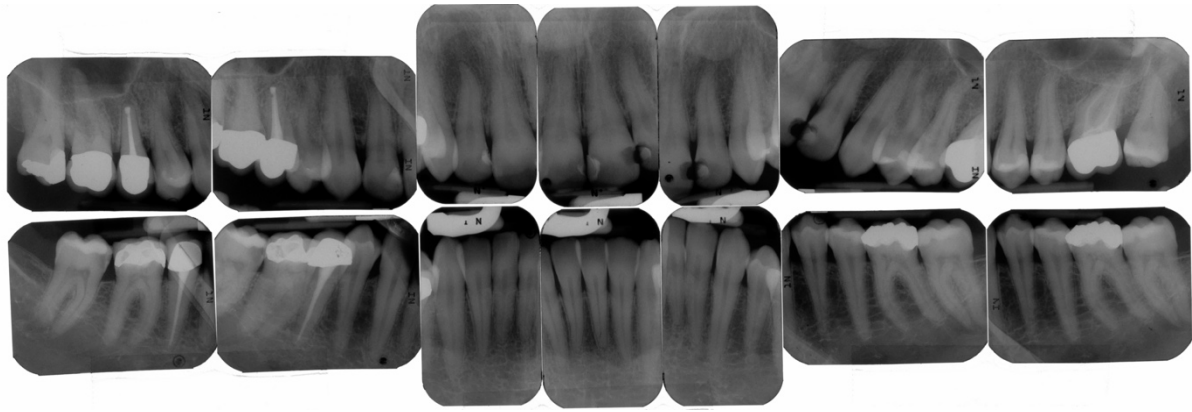
Buccal

Figure 2: Detailed Periodontal Charts (DPC)

Figure 3: Periapical intraoral radiographs.

Discussion/Summary

This case report provides an example of how to diagnose a patient with local periodontal inflammation according to the 2017 classification of periodontal and peri-implant diseases and conditions by following the BSP implementation plan [6].

Under the 1999 classification system, this patient would have been diagnosed with localised chronic periodontitis. The 1999 consensus statement distinguished localised (≤30%) from generalised (>30%) chronic periodontitis based on the proportion of affected sites. It also states, perhaps somewhat ambiguously, that severity "can be described for the entire dentition or for individual teeth and sites" using cut-offs of 1 to 2mm, 2 to 3mm and ≥5mm clinical attachment loss for slight, moderate and severe disease, respectively [7]. However, explicit patient level case definitions for chronic periodontitis of different severity levels were not given. In order to achieve some consistency of periodontitis case definitions across epidemiologic studies, several groups have proposed diagnostic thresholds [1,3,8]. A CDC/AAP working group proposed criteria for mild, moderate and severe periodontitis based on clinical attachment loss and periodontal probing depths [2]. Importantly, these definitions were explicitly developed for use in epidemiologic studies and not intended for use in clinical practice. Severe periodontitis was defined as ≥2 interproximal sites with clinical attachment level ≥6 mm (not on same tooth) and ≥1 interproximal site with periodontal probing depth ≥5 mm. Hence, the patient described here would have satisfied the AAP/CDC criteria for 'severe' periodontitis,

due to the periodontal findings on teeth 15 and 26. However, the patient has localised disease, and we presume that most periodontists, when considering the spectrum of disease encountered in clinical practice would agree that her disease is of moderate severity and its management of moderate complexity. The staging and grading according to the new classification appropriately reflects this by assigning Stage II (i.e., moderate severity in terms of historic tissue loss) and Grade B (i.e., moderate disease susceptibility).

In addition to determining disease stage and grade as well as current disease status (stable/remission/unstable), the BSP implementation plan highlights the need for a risk factor assessment. Periodontitis is a complex disease with a large number of causal risk factors conspiring to produce disease in an individual. Our understanding of the interplay between different microbial, environmental, behavioural, genetic and other risk factors in the aetiology and pathogenesis of periodontitis has evolved significantly over recent decades, and a 'holistic' approach to periodontal care should account for relevant risk factors. Note that the periodontitis grade will reflect the patient's past risk factor profile, including both modifiable (e.g., smoking) and unmodifiable (e.g., genetic factors) exposures. The consensus of the 2017 classification workshop was that unequivocal evidence exists for smoking and poorly controlled diabetes as risk factors for periodontitis, and that smoking history and diabetes mellitus should therefore be part of a formal diagnostic statement [9]. However, specific risk factors are of limited relevance where there are no clear diagnostic criteria or operationalisations for use in clinical dental practice (e.g., 'family history', 'chronic stress' or 'diet') or where the evidence for their aetiologic role is limited or controversial. Hence, even though the patient presented here reported 'some stress' that may well have contributed to her periodontitis [10] and will have been noted during history-taking, this does not feature in the diagnostic statement.

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