

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

Walter, C; Ower, P; Tank, M; West, N X; Needleman, I; Hughes, F J; Wadia, R; Milward, M R; Hodge, P J; Chapple, I L C; Dietrich, T

DOI:  
[10.1038/sj.bdj.2019.45](https://doi.org/10.1038/sj.bdj.2019.45)

License:  
None: All rights reserved

Document Version  
Peer reviewed version

Citation for published version (Harvard):  
Walter, C, Ower, P, Tank, M, West, NX, Needleman, I, Hughes, FJ, Wadia, R, Milward, MR, Hodge, PJ, Chapple, ILC & Dietrich, T 2019, 'Periodontal diagnosis in the context of the 2017 classification system of periodontal diseases and conditions: Presentation of a middle-aged patient with localised periodontitis', *British Dental Journal*, vol. 226, no. 2, pp. 98-100. <https://doi.org/10.1038/sj.bdj.2019.45>

[Link to publication on Research at Birmingham portal](#)

**Publisher Rights Statement:**  
Checked for eligibility 01/02/2019

This is an author-produced, peer-reviewed version of an article published in the *British Dental Journal*.  
For non-commercial use  
<https://doi.org/10.1038/sj.bdj.2019.45>

### General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

### Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact [UBIRA@lists.bham.ac.uk](mailto:UBIRA@lists.bham.ac.uk) providing details and we will remove access to the work immediately and investigate.

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

Clemens Walter, Ower P, Tank M, West NX, Needleman I, Hughes FJ, Wadia R, Milward MR, Hodge PJ, Chapple ILC, Thomas Dietrich\*

**\*Corresponding author:**

Professor Thomas Dietrich

The School of Dentistry

University of Birmingham

5 Mill Pool Way

Birmingham

B5 7EG

UK

t.dietrich@bham.ac.uk

**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<sup>1 2</sup> as well as an EFP workshop<sup>3</sup> 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”<sup>2</sup>.

The 2017 classification of periodontal and peri-implant diseases and conditions provides, for the first time, clear definitions of periodontal health and disease<sup>4</sup>. 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)<sup>5</sup>.

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<sup>6</sup> 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 ( $30 > 23.5$ ), 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

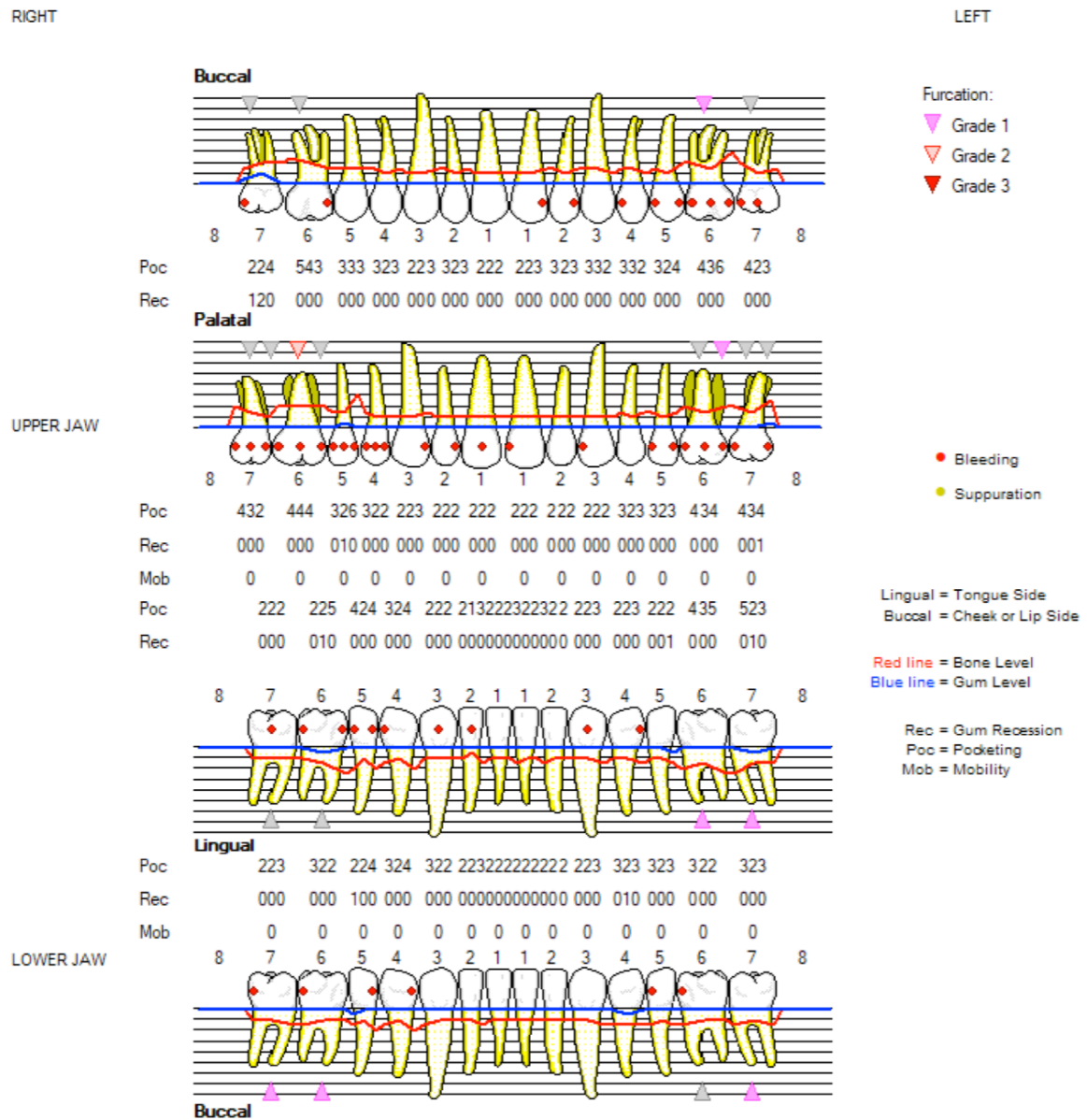


Figure 2: Detailed Periodontal Charts (DPC)

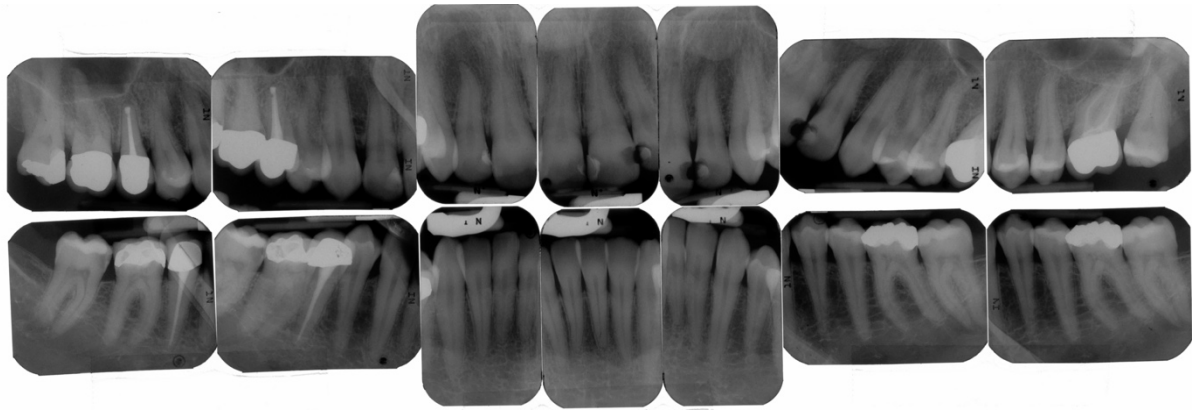


Figure 3: Periapical intraoral radiographs.

### 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 <sup>6</sup>.

Under the 1999 classification system, this patient would have been diagnosed with localised chronic periodontitis. The 1999 consensus statement distinguished localised ( $\leq 30\%$ ) 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  $\geq 5$ mm clinical attachment loss for slight, moderate and severe disease, respectively <sup>7</sup>. 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 <sup>138</sup>. A CDC/AAP working group proposed criteria for mild, moderate and severe periodontitis based on clinical attachment loss and periodontal probing depths <sup>2</sup>. Importantly, these definitions were explicitly developed for use in epidemiologic studies and not intended for use in clinical practice. Severe periodontitis was defined as  $\geq 2$  interproximal sites with clinical attachment level  $\geq 6$  mm (not on same tooth) and  $\geq 1$  interproximal site with periodontal probing depth  $\geq 5$  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<sup>9</sup>. 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 aetiological role is limited or controversial. Hence, even though the patient presented here reported 'some stress' that may well have contributed to her periodontitis<sup>10</sup> and will have been noted during history-taking, this does not feature in the diagnostic statement.

## References

1. Page RC, Eke PI. Case Definitions for Use in Population-Based Surveillance of Periodontitis. *J Periodontol* 2007;78 Suppl 7S:1387-99. doi: 10.1902/jop.2007.060264 [published Online First: 2007/07/01]
2. Eke PI, Page RC, Wei L, et al. Update of the case definitions for population-based surveillance of periodontitis. *J Periodontol* 2012;83(12):1449-54. doi: 10.1902/jop.2012.110664 [published Online First: 2012/03/17]
3. Tonetti MS, Claffey N, European Workshop in Periodontology group C. Advances in the progression of periodontitis and proposal of definitions of a periodontitis case and disease progression for use in risk factor research. Group C consensus report of the 5th European Workshop in Periodontology. *J Clin Periodontol* 2005;32 Suppl 6:210-3. doi: 10.1111/j.1600-051X.2005.00822.x [published Online First: 2005/09/01]
4. Caton JG, Armitage G, Berglundh T, et al. A new classification scheme for periodontal and peri-implant diseases and conditions - Introduction and key changes from the 1999 classification. *J Clin Periodontol* 2018;45 Suppl 20:S1-S8. doi: 10.1111/jcpe.12935 [published Online First: 2018/06/22]
5. Papapanou PN, Sanz M, Buduneli N, et al. Periodontitis: Consensus report of workgroup 2 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. *J Clin Periodontol* 2018;45 Suppl 20:S162-S70. doi: 10.1111/jcpe.12946 [published Online First: 2018/06/22]
6. Dietrich T, Ower P, Tank M, et al. Periodontal diagnosis in the context of the 2017 classification system of periodontal diseases and conditions – Implementation in Clinical Practice. *Brit Dent J* 2019;226(1):tbc.
7. 1999 International Workshop for a Classification of Periodontal Diseases and Conditions. Papers. Oak Brook, Illinois, October 30-November 2, 1999. *Ann Periodontol* 1999;4(1):i, 1-112. doi: 10.1902/annals.1999.4.1.i [published Online First: 2000/07/15]
8. Machtei EE, Christersson LA, Grossi SG, et al. Clinical criteria for the definition of "established periodontitis". *J Periodontol* 1992;63(3):206-14. doi: 10.1902/jop.1992.63.3.206 [published Online First: 1992/03/01]
9. Jepsen S, Caton JG, Albandar JM, et al. Periodontal manifestations of systemic diseases and developmental and acquired conditions: Consensus report of workgroup 3 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions. *J Clin Periodontol* 2018;45 Suppl 20:S219-S29. doi: 10.1111/jcpe.12951 [published Online First: 2018/06/22]
10. Warren KR, Postolache TT, Groer ME, et al. Role of chronic stress and depression in periodontal diseases. *Periodontol 2000* 2014;64(1):127-38. doi: 10.1111/prd.12036 [published Online First: 2013/12/11]