

## An Overview on New Classification of Periodontal And Peri-Implant Diseases And Conditions 2017

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### **Abstract**

*Classification of the disease helps to the diagnosis, prognosis and treatment of particular disease.*

*The first classification scheme to be accepted by the AAP was that of Orban in 1942. Since then, a number of different systems have been proposed. The newer classification of periodontal and peri-implant diseases and conditions developed through combined effort by AAP and EFP aims to identify well defined clinical entities using clear criteria that are able to link diagnosis with prevention and treatment, thus moving towards precision and individualized dentistry. It also lays the framework for future research work in dentistry. This review summarize the key changes, benefits and limitations of the newer classification of periodontal and peri-implant diseases and conditions 2017.*

**Keywords:** Classification, Periodontal health, Periodontal Diseases, Grading, Staging, Peri-implant health, Peri-Implant Diseases

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### **I. Introduction**

Classification is nothing but systematic arrangement of classes or groups based on perceived common characteristics. It helps in the diagnosis, prognosis and treatment planning of the disease. It helps to understand the etiology, pathology of disease. Most importantly, it helps to communicate among clinicians, researchers, educators, students, epidemiologists and public health workers<sup>1</sup>.

Classification of periodontal disease helps in the development of frameworks to study the etiology, pathogenesis and treatment of diseases; in addition it provides the international healthcare community with a way of communicating in a common language. Classification systems also provide practitioners with a scheme with which to organize and execute treatment strategies for individual patients<sup>2</sup>.

A classification system for periodontal and peri-implant diseases and conditions is necessary for clinicians to properly diagnose and treat patients as well as for scientists to investigate etiology, pathogenesis, natural history and treatment of the diseases and conditions<sup>3</sup>.

### **Historical Perspective**

The first classification system for periodontal disease was recorded by Joseph Fox in 1806, to classify ‘gingival disease’. The first classification scheme to be accepted by the American Academy of Periodontology (AAP) was that of Orban in 1942. Since then, a number of different systems have been proposed (Table 1).

In 1966, the AAP convened a workshop to produce a new system, which was further revised in 1986 and 1989 amending. The classification that evolved from these discussions categorized periodontal diseases into a number of key groups, with which most practitioners will be familiar. The AAP and European classification schemes were further amended in 1999 when the International Workshop for Classification of Periodontal Diseases was convened to address a number of issues that were felt to be lacking in the 1989 and 1993 classifications.

Unfortunately, in 1999 classification of periodontal disease and conditions had some drawbacks regarding overlapping nature of criteria of disease, also created some confusion among clinicians to diagnosing the case. And also Peri-implant health/ Conditions were not included in the 1999 classification, it did not give clue regarding correct treatment plan, as it depended on correct diagnosis of the disease<sup>1</sup>. All these difficulties led to improvement of 1999 classification which was co-sponsored by the American Academy of Periodontology (AAP) and the European Federation of Periodontology (EFP). An organizing committee from AAP and EFP published 19 review papers and 4 Consensus reports which covered relevant areas in Periodontology and Implantology, including the untouched areas of 1999 classification of periodontal disease.

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This culminated the development of 2017 new classification for periodontal diseases through combined effort by AAP and EFP(Table 2)

**Table 1**

<b>Year proposed</b>	<b>Body responsible</b>	<b>Main points of classification</b>
1806	Joseph Fox	First recorded classification of ‘gum disease’
1942	Orban	First classification recognized by the American Academy of Periodontology
1966	American Academy of Periodontology	Chronic marginal periodontitis
1977	American Academy of Periodontology	Juvenile periodontitis
1986	American Academy of Periodontology	Prepubertal periodontitis Localized juvenile Generalized juvenile Adult periodontitis Necrotizing ulcerative periodontitis Refractory periodontitis
1989	American Academy of Periodontology	Early-onset periodontitis Periodontitis associated with systemic disease Refractory periodontitis
1993	European Workshop on Periodontics	Early-onset periodontitis Adult periodontitis Necrotizing ulcerative periodontitis
1999	International Workshop on Periodontal Classification	Gingival Diseases Replacement of “Adult Periodontitis” with “Chronic Periodontitis” and “Early-Onset Periodontitis” with “Aggressive Periodontitis”

**Table 2**

CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS 2017								
Periodontal Diseases and Conditions								
Periodontal Health, Gingival Diseases and Conditions			Periodontitis			Developmental and Acquired Deformities and Conditions Affecting the Periodontium		
Periodontal Health and Gingival Health	Gingivitis: Dental Biofilm-induced	Gingival Diseases: Non-Dental Biofilm-induced	Periodontitis	Acute Lesions affecting periodontal tissues	Periodontitis as a manifestation of systemic diseases	Tooth and Prostheses related factors	Mucogingival Deformities and Conditions	Traumatic occlusal forces
Peri-Implant Diseases and Conditions								
Peri-implant health		Peri-implant mucositis			Peri-implantitis		Peri-implant soft & hard tissue deficiencies	

### **The key changes that were put forward in new classification were:**

- The definition of periodontal health is defined as absence of clinically detectable inflammation in the new classification.<sup>4</sup>
- The term “plaque induced” has been replaced by the term “dental biofilm induced”.
- Smoking, hyperglycemia, nutritional factors, pharmacological agents, sex steroid hormones, hematological condition are some of the risk factors which are newly added in the classification.<sup>5</sup>
- The non-plaque- induced gingival lesions are often manifestations of systemic conditions, but they may also represent pathologic changes limited to gingival tissues. In this new classification, the lesion categorized under viral origin is elaborated in detail, in which the coxsackie virus, molluscum contagiosum, human papilloma virus are newly added. Neoplasms and gingival pigmentation category are also included.<sup>6</sup>
- In the present classification, ANUG and ANUP are replaced by necrotizing gingivitis, necrotizing periodontitis and necrotizing stomatitis, which are categorized under necrotizing periodontal diseases.<sup>7</sup>
- Any abscess of periodontium is described as periodontal abscess and term gingival abscess is removed.<sup>7</sup>
- In the new classification, the term chronic and aggressive periodontitis are removed and a multi dimensional staging and grading system is included.<sup>8</sup>
- Staging of periodontitis from I to IV is based on severity (primarily periodontal breakdown with reference to root length and periodontitis- associated tooth loss), complexity of management (pocket depth, infrabony defects, furcation involvement, tooth hypermobility, masticatory dysfunction) and periodontitis is also described based on extent (localized or generalized). (Table 3)
- Grading of periodontitis is estimated with direct or indirect evidence of rate in three categories: slow, moderate and rapid progression as grade A, B & C respectively. Risk factor analysis is used as grade modifier.

The proposed staging and grading is designed to avoid the paradox of improvement of disease severity observed after loss/extraction of the more compromised teeth. (Table 4)

- In the new classification, there is renaming of occlusal trauma as traumatic occlusal forces which is defined as any occlusal force resulting in injury of the teeth and/or the periodontal attachment apparatus.<sup>9</sup>
- Gingival biotype is replaced with gingival phenotype as since it is considered that, gingival phenotype has more relevance in outcome assessment of therapy in several dental disciplines, including periodontal and implant therapy, prosthodontics, and orthodontics.<sup>10</sup>
- In the new classification, there is addition of term “peri-implant disease” which addresses about health and disease of peri-implant hard and soft tissues such as mucositis, peri-implantitis and also about the deficiencies of hard and soft tissues.<sup>11</sup>

**Table 3 PERIODONTITIS: STAGING**

	Periodontitis	Stage I	Stage II	Stage III	Stage IV
Severity	Interdental CAL(at site of greatest loss)	1 – 2 mm	3 – 4 mm	≥5 mm	≥5 mm
	RBL	Coronal third (<15%)	Coronal third (15%-33%)	Extending to middle third of root and beyond	Extending to middle third of root and beyond
	Tooth loss (due to periodontitis)	No tooth loss		≤4 teeth	≥5 teeth
Complexity	Local	<ul style="list-style-type: none"> <li>Max. probing depth ≤4 mm</li> <li>Mostly horizontal bone loss</li> </ul>	<ul style="list-style-type: none"> <li>Max. probing depth ≤5 mm</li> <li>Mostly horizontal bone loss</li> </ul>	In addition to Stage II complexity: <ul style="list-style-type: none"> <li>Probing depths ≥6 mm</li> <li>Vertical bone loss ≥3 mm</li> <li>Furcation involvement Class II or III</li> <li>Moderate ridge defects</li> </ul>	In addition to: Stage III complexity: <ul style="list-style-type: none"> <li>Need for complex rehabilitation due to: <ul style="list-style-type: none"> <li>Masticatory dysfunction</li> <li>Secondary occlusal trauma (tooth mobility degree ≥2)</li> <li>Severe ridge defects</li> <li>Bite collapse, drifting, flaring</li> <li>&lt;20 remaining teeth</li> </ul> </li> </ul>
Extent and distribution	Add to stage as descriptor	For each stage, describe extent as: <ul style="list-style-type: none"> <li>Localized (&lt;30% of teeth involved)</li> <li>Generalized; or</li> <li>Molar/incisor pattern</li> </ul>			

**Table 4- PERIODONTITIS: GRADING**

	Progression		Grade A: Slow rate	Grade B: Moderate rate	Grade C: Rapid rate								
Primary criteria	Direct evidence of progression	Radiographic bone loss or CAL	No loss over 5 years	<2 mm over 5 years	≥2 mm over 5 years								
		% bone loss / age	<0.25	0.25 to 1.0	>1.0								
	Indirect evidence of progression	Case phenotype	Heavy biofilm deposits with low levels of destruction	Destruction commensurate with biofilm deposits	Destruction exceeds expectations given biofilm deposits; specific clinical patterns suggestive of periods of rapid progression and/or early onset disease								
Grade modifiers		<table border="1"> <tr> <td>Smoking</td> <td>Non-smoker</td> <td>&lt;10 cigarettes/day</td> <td>≥10 cigarettes/day</td> </tr> <tr> <td>Diabetes</td> <td>Normoglycemic/no diagnosis of diabetes</td> <td>HbA1c &lt;7.0% in patients with diabetes</td> <td>HbA1c ≥7.0% in patients with diabetes</td> </tr> </table>	Smoking	Non-smoker	<10 cigarettes/day	≥10 cigarettes/day	Diabetes	Normoglycemic/no diagnosis of diabetes	HbA1c <7.0% in patients with diabetes	HbA1c ≥7.0% in patients with diabetes			
Smoking	Non-smoker	<10 cigarettes/day	≥10 cigarettes/day										
Diabetes	Normoglycemic/no diagnosis of diabetes	HbA1c <7.0% in patients with diabetes	HbA1c ≥7.0% in patients with diabetes										

#### Benefits of new classification

The recently introduced classification of periodontal diseases aims to identify well defined clinical entities using clear criteria that are able to link diagnosis with prevention and treatment, thus moving towards precision and individualized dentistry. It defines specific criteria for the following diagnoses: i) periodontal health ; ii) gingivitis ; iii) reduced but healthy periodontium (successfully treated periodontitis); iv) gingival inflammation in a periodontitis patient (treated periodontitis with persistent inflammation) ; v) periodontitis ; vi) periodontitis as a manifestation of systemic diseases and; vii) necrotizing periodontal disease.<sup>12</sup>

Highlights from the 2017 proceedings include a recategorization of various forms of periodontitis, the development of a novel staging and grading system for periodontitis, and the inaugural classification for peri-

implant diseases and conditions. Grading and staging system allows clinician to consistently assess the current level of severity of periodontitis and its impact on the treatment required.

The new system for grading periodontal disease introduces biomarkers, these are still to be standardised, so “research in this regard, has strongly been encouraged to identify critical biomarkers and then develop personalised predictive models to combat periodontal diseases.”

In the previous classification, it was difficult to differentiate between aggressive and chronic periodontitis – whereas in this new classification a stage 2 and 3 periodontitis is clearly defined to differentiate them.<sup>8</sup>

### **Drawbacks**

Any attempt to group the entire constellation of periodontal diseases into an orderly and widely accepted classification system is fraught with difficulty, and inevitably considerable controversy.<sup>13</sup> Implementation of the new classification of periodontal diseases requires careful navigation of the new case definitions and organization of the diagnostic process along rationale and also requires modification of the current way of thinking to optimize diagnosis in clinical practice and education<sup>12</sup>.

## **II. Conclusion**

Execution of the new classification scheme for periodontal diseases gives an insight of the etiology, pathology and pathogenesis of the periodontal diseases which is beneficial for the patients and also brings about significant difference in prevalence estimates of periodontitis. It also lays the framework for future research work in dentistry. Wide adoption of staging and grading could help to assess the prognosis, risk assessment of the patient, early periodontal treatment intervention leading to decreased tooth loss, and have a potential effect on overall health improvement and wellness. Implant dentistry is part of daily clinical practice, case definitions for Peri-implant diseases and conditions was much needed.

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