AN OVERVIEW OF THE NEW CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Wyoming Dental Hygienist's Association

Annual Session

September 20, 2019

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University of Utah School of Dentistry
Salt Lake City, Utah


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WYOMING
18 86
COWBOYS
PRIDE OF LARAMIE


UTAH
18 50
UTES

LOYAL UW ALUMNUS!

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

- Reflects what is understood today, but can accommodate enhancements as we learn more
- Will be taught and implemented globally, but adoption/integration will take time
- Model will be revisited/revised to reflect ongoing research, innovation, and patient care

Courtesy of AAP (2018)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

- Underscores similarities to progressive medical conditions that can manifest and modify based on patient characteristics and risk

Courtesy of AAP (2018)

CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS 2017

Periodontal Diseases and Conditions

Periodontal Health, Gingival Diseases and Conditions

Chapple, Mealey, et al. 2018 Consensus Rept link

Trombelli et al. 2018 Case Definitions link

- **Periodontal Health and Gingival Health**
- **Gingivitis: Dental Biofilm-Induced**
- **Gingival Diseases: Non-Dental Biofilm-Induced**

Periodontitis

Papapanou, Sanz et al. 2018 Consensus Rept link

Jepsen, Caton et al. 2018 Consensus Rept link

Tonetti, Greenwell, Kornman. 2018 Case Definitions link

- **Necrotizing Periodontal Diseases**
- **Periodontitis**
- **Periodontitis as a Manifestation of Systemic Disease**

Other Conditions Affecting the Periodontium

Jepsen, Caton et al. 2018 Consensus Rept link

Papapanou, Sanz et al. 2018 Consensus Rept link

- **Systemic diseases or conditions affecting the periodontal supporting tissues**
- **Periodontal Abscesses and Endodontic-Periodontal Lesions**
- **Mucogingival Deformities and Conditions**
- **Traumatic Occlusal Forces**
- **Tooth and Prosthesis Related Factors**

Peri-Implant Diseases and Conditions

Berglundh, Armitage et al. 2018 Consensus Rept link

- **Peri-Implant Health**
- **Peri-Implant Mucositis**
- **Peri-Implantitis**
- **Peri-Implant Soft and Hard Tissue Deficiencies**

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Caton J, 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 Periodontol.* 2018;89(Suppl 1):S1-S8. https://doi.org/10.1002/JPER.18-0157

PERIODONTAL PROCESS

PERIODONTAL EXAMINATION

Clinical parameters to gather

- Probing depths
- Location of the gingival margin
- Clinical attachment level
- Bleeding sites
- Mobility
- Furcations

PERIODONTAL EXAMINATION

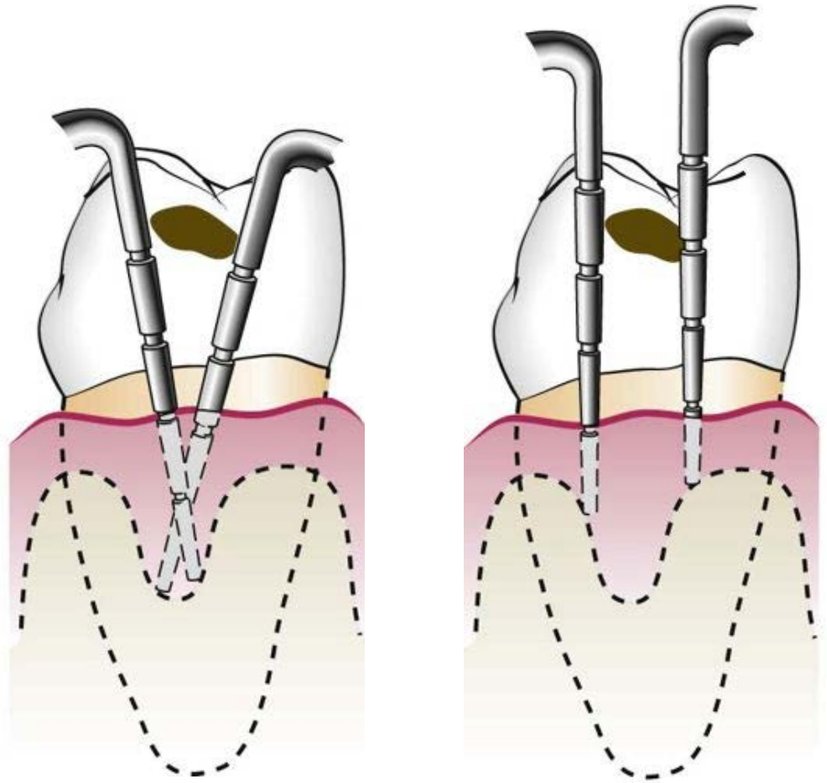
Periodontal probing

Be sure to probe accurately

- Angle the probe into the col area

Round up

- i.e. if at junction, round to next higher measurement



YES NO

Courtesy of Dr. James Winkler Perio I Lecture

PERIODONTAL EXAMINATION

Gingival Margins

- Coronal to the CEJ (enlargement)
- Apical to the CEJ (recession)

Epic Wisdom:

- Coronal is a “-” number
- Recession is a whole number (ie. not “-”)

PERIODONTAL CLINICAL ATTACHMENT LEVEL VERSUS CLINICAL ATTACHMENT LOSS

Consider the periodontal attachment

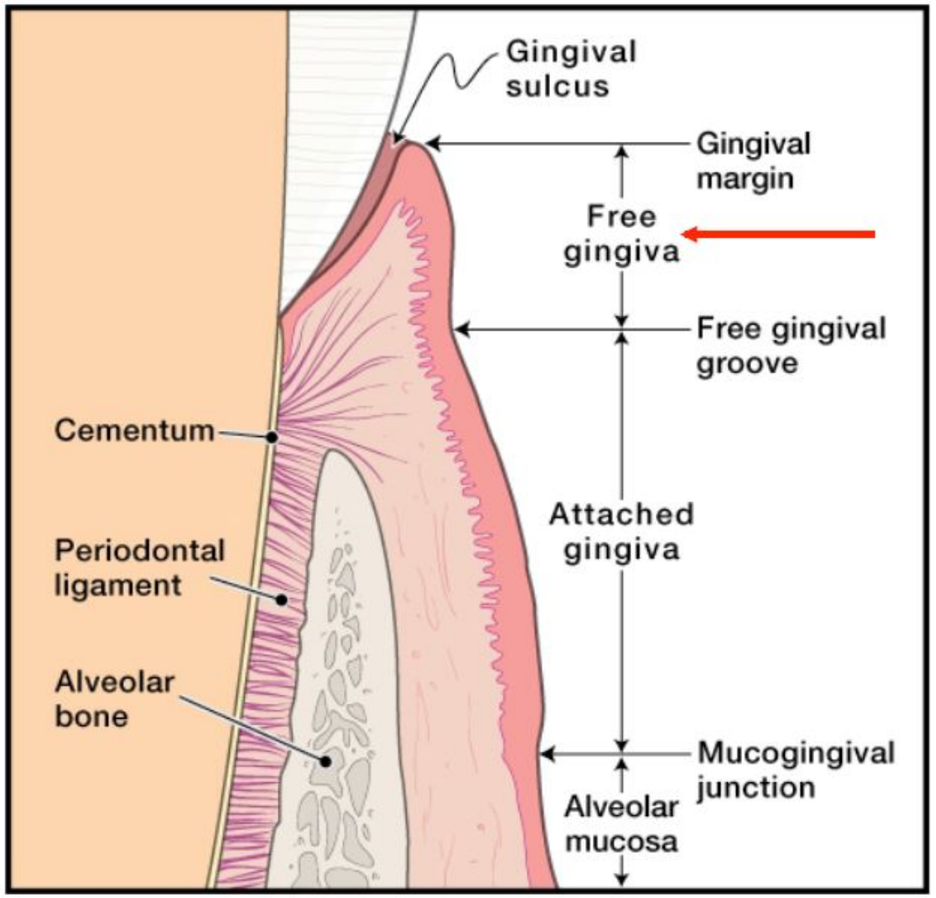
- Supracrestal attachment tissue

  (Formerly known as the biologic width)

  – 1 mm sulcus depth
  – 1 mm junctional epithelium
  – 1mm connective tissue

Gargiulo AW, Wentz FM, Orban B. *J Periodontal*. 1961 32:261-267

PERIODONTAL CLINICAL ATTACHMENT LEVEL VERSUS CLINICAL ATTACHMENT LOSS



PERIODONTAL CLINICAL ATTACHMENT LEVEL VERSUS CLINICAL ATTACHMENT LOSS

Clinical Attachment Level

- The distance from the cemento-enamel junction to the tip of the periodontal probe during diagnostic probing. The health of the *attachment* apparatus can affect the measurement.

  (AAP Glossary of Terms)

Clinical Attachment Loss

- The apical migration of the attachment apparatus

PERIODONTAL EXAMINATION

CAL

- Clinical Attachment ***Level***
  - A calculated measurement based upon probing depth and location of the gingival margin
- Clinical Attachment ***Loss***
  - New periodontal disease classification system utilizes loss
  - New periodontal disease classification system for periodontitis uses CAL at interdental sites primarily, but can involve buccal and lingual surfaces if ≥3mm

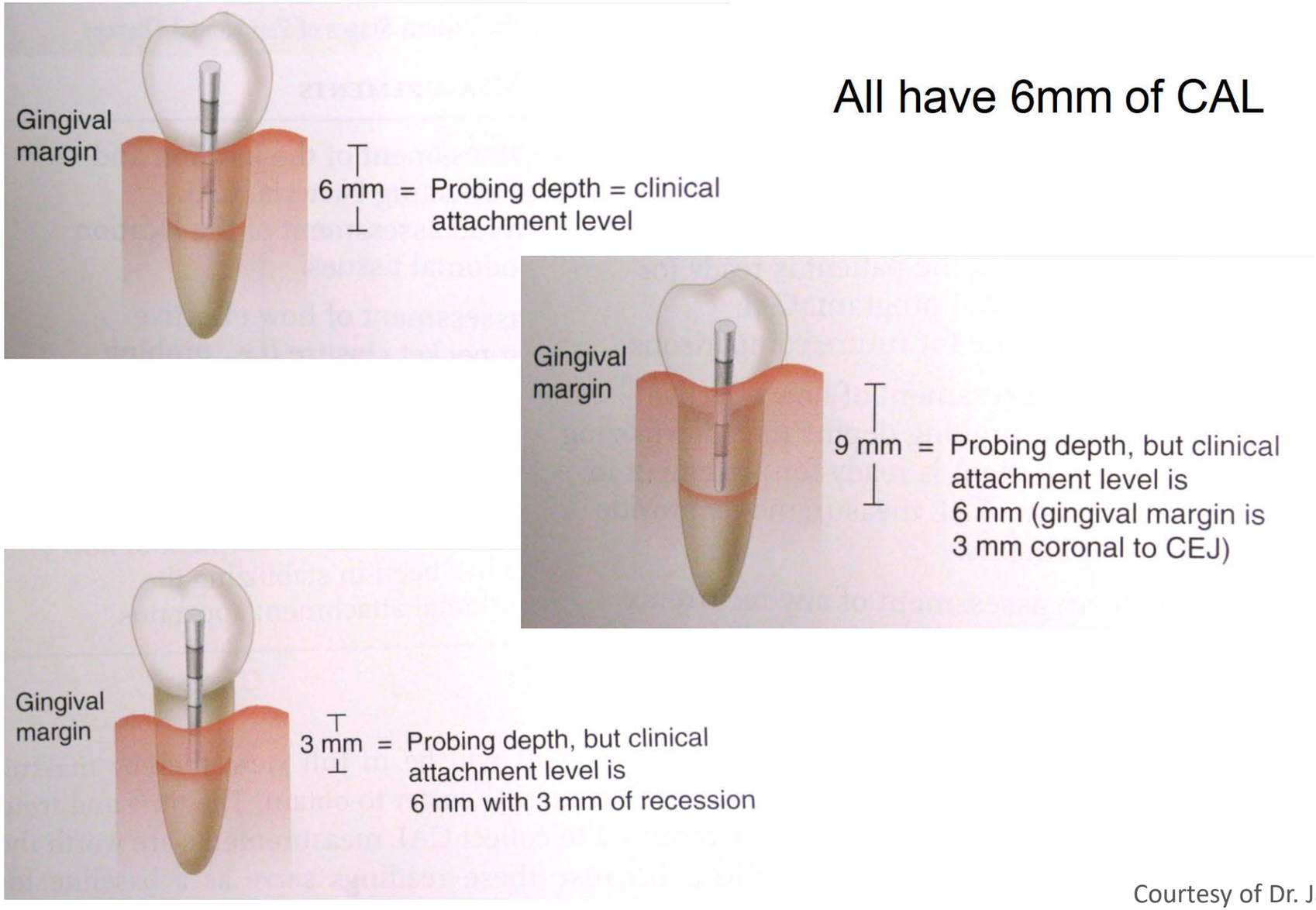
PERIODONTAL CLINICAL ATTACHMENT LEVEL VERSUS CLINICAL ATTACHMENT LOSS

Clinical Attachment Level	**Clinical Attachment Loss**
2-3 mm level	1-2 mm loss
4-5 mm level	3-4 mm loss
≥6 mm level	≥5 mm loss

PERIODONTAL PROBING: DIFFERENCES IN CLINICAL ATTACHMENT LEVELS

Clinical Attachment Level vs. Probing Depth

All have 6mm of CAL



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Courtesy of Dr. James Winkler Perio I Lecture

PERIODONTAL EXAMINATION

Mobilities

- Use the ends of two instruments

YES

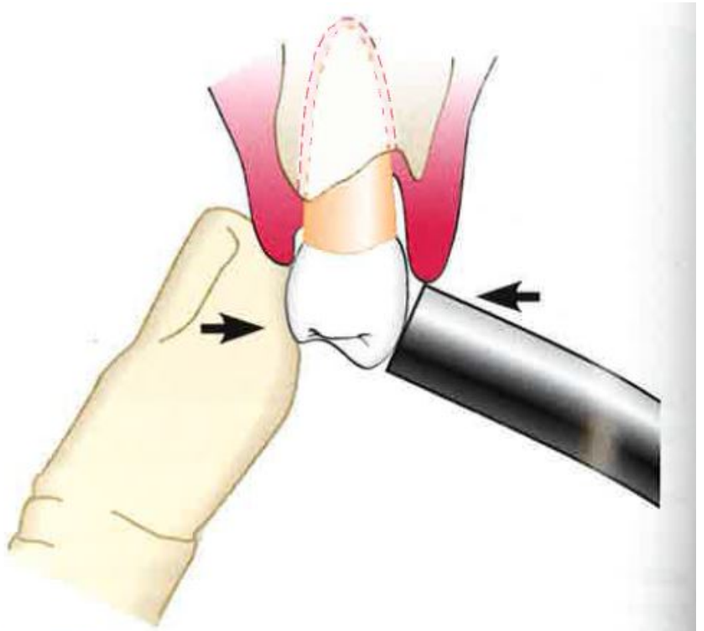


Figure 29-7 Tooth mobility is checked with a metal instrument and one finger.

NO

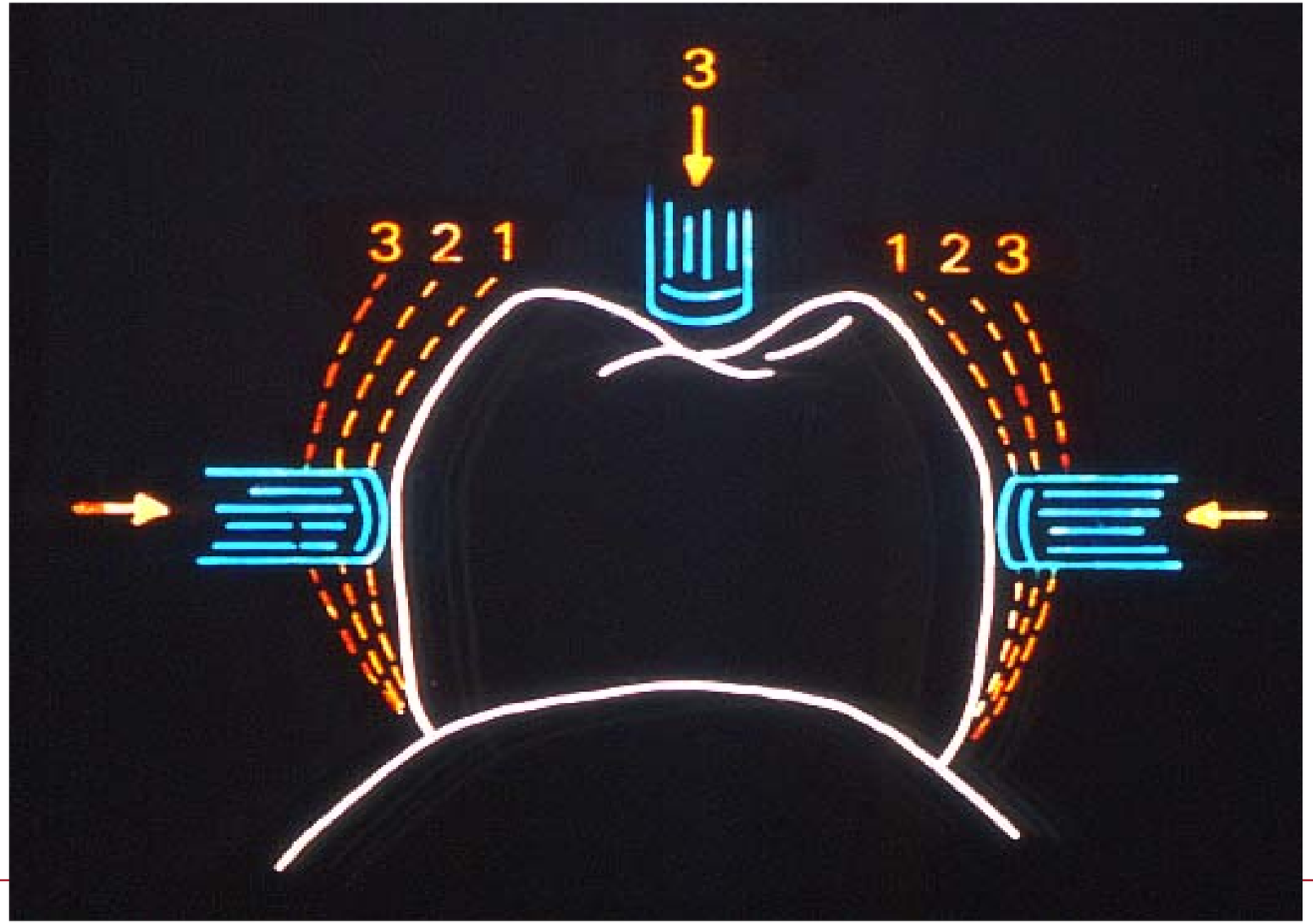
PERIODONTAL EXAMINATION: MOBILITIES

Miller Mobility Classification System

- Grade I
  - Buccal-lingual movement up to 1mm
- Grade II
  - Buccal-lingual movement 1-2mm
- Grade III
  - Buccal-lingual movement ≥ 2mm or depressibility in the socket

PERIODONTAL EXAMINATION

Mobilities



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Courtesy of Dr. Vanchit John

PERIODONTAL EXAMINATION

Furcations

- Nabers probe

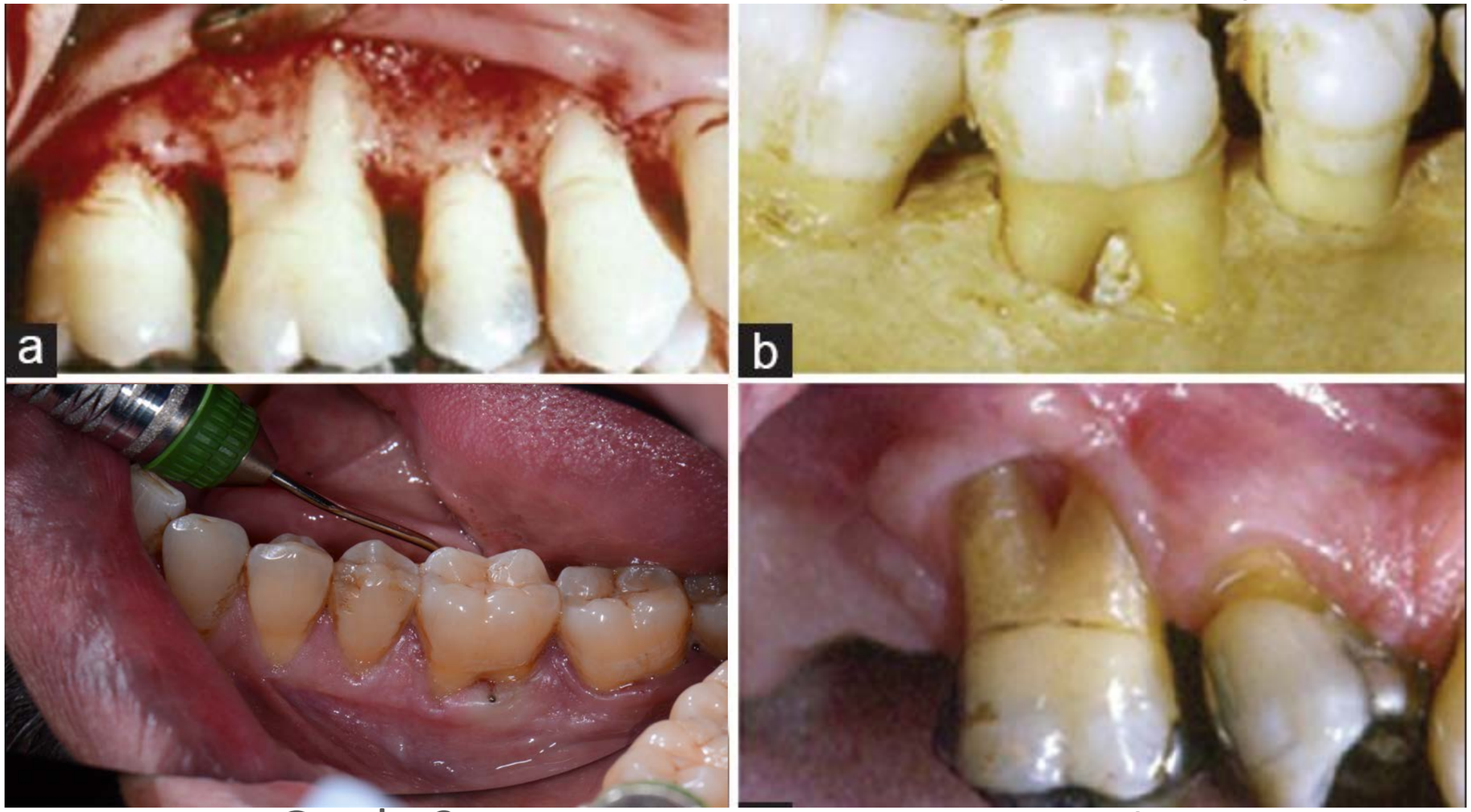
PERIODONTAL EXAMINATION: FURCATIONS

Grade 1

(Incipient)

Grade 2

(Cul de sac)



Grade 3

(Through and Through)

Grade 4

(High and Dry)


OLD FAITHFUL GEYSER
27 SEPTEMBER 2012
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PERIODONTAL DIAGNOSIS

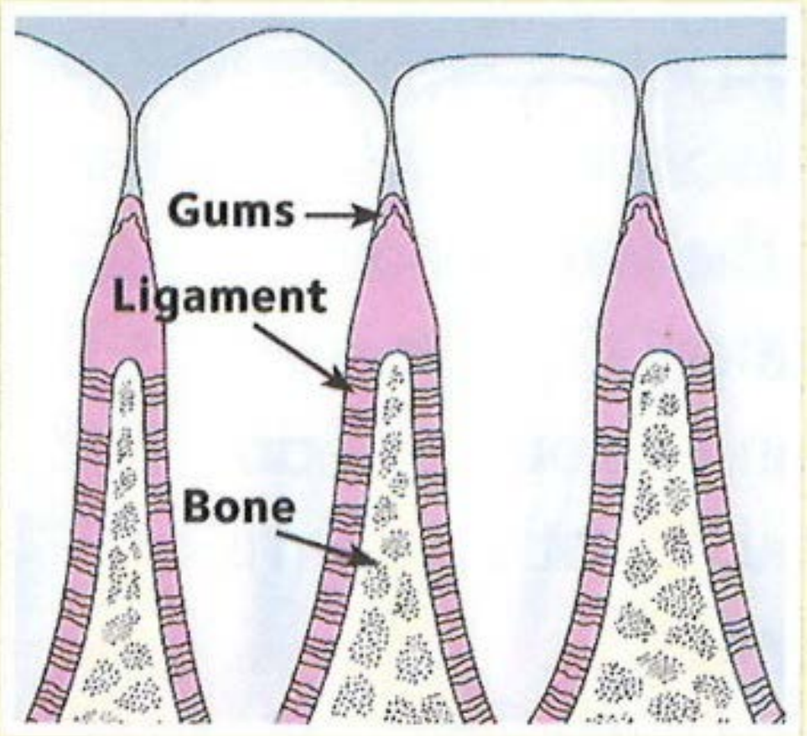
Gingivitis – No attachment loss

– i.e. no bone loss

Periodontitis – Attachment loss

– i.e. bone loss

HEALTHY GINGIVA



Healthy Gums

Teeth are held firmly in place by the gums, bone and periodontal ligament. Gums hug the teeth tightly. There is little or no buildup of plaque and tartar.

Jargon

Gums = Gingiva

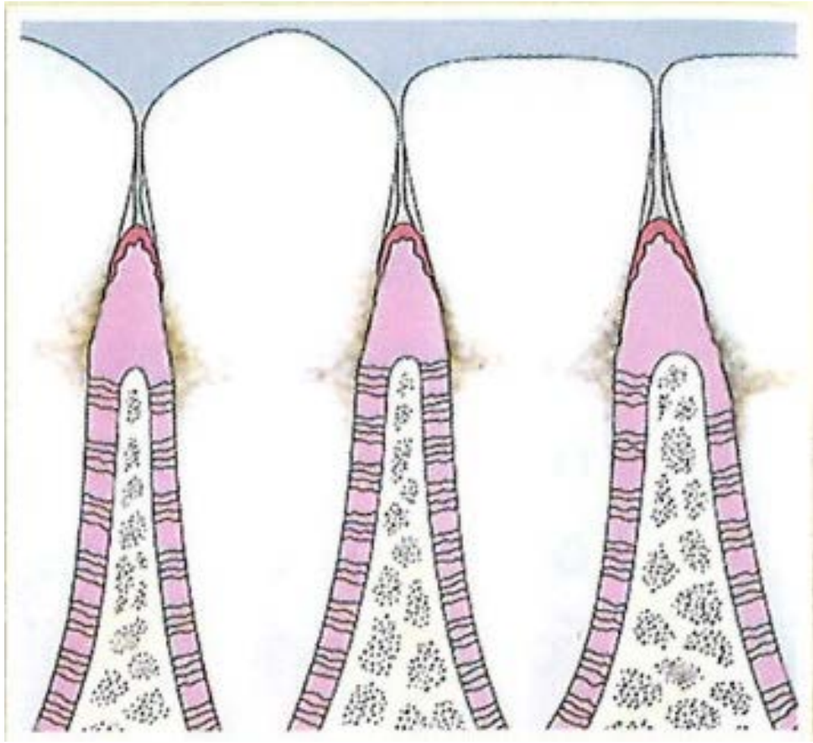
Plaque = Biofilm

Tarter = Calculus

Image Source: ADA American Dental Association

GINGIVITIS

No Attachment Loss
(No Bone Loss)



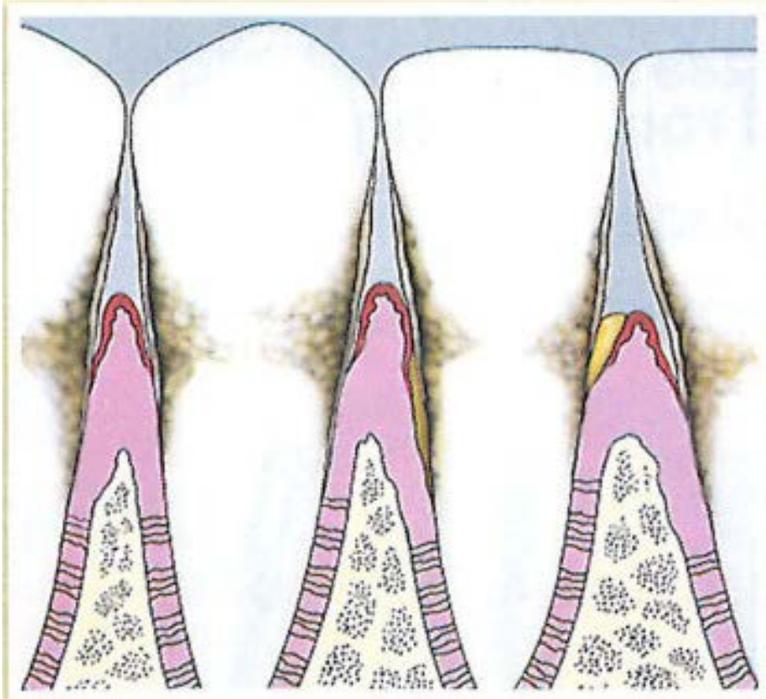
The bacteria in plaque irritate the gums, making them red, tender, swollen and likely to bleed. If plaque is not removed, it can harden into tartar.

Image Source: ADA American Dental Association

PERIODONTITIS

Attachment Loss

(Bone Loss)



In time, as plaque and tartar build up along the gum line, plaque bacteria break down the soft tissues that support the tooth. As the disease progresses, bacteria attack the bone tissue also.

Image Source: ADA American Dental Association

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

GINGIVAL HEALTH

Less than 10% bleeding sites with probing depths ≤ 3mm

- Epidemiological definition

Characterized by successful treatment through control of local and systemic risk factors, resulting in minimal (< 10% of sites) BOP, no probing depths of 4mm or greater that bleeding on probing, optimal improvement in other clinical parameters and lack of progressive periodontal destruction

- Clinical practice definition

Courtesy of Dr. Audra Ward (2018)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

PERIODONTAL HEALTH AND GINGIVAL HEALTH

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

PERIODONTAL HEALTH AND GINGIVAL HEALTH

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

GINGIVITIS

≥ 10% bleeding sites with probing depths ≤ 3mm

- Epidemiological definition
- Localized is defined as 10% - 30% bleeding sites
- Generalized is defined as > 30% bleeding sites
- In clinical practice we should refer to the gingivitis look-up table to determine if we have a gingivitis case.

Courtesy of Dr. Audra Ward (2018)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Health vs. Gingivitis Look-up Table

Intact periodontium	Health	Gingivitis
Probing attachment loss	No	No
Probing pocket depths (assuming no pseudo pockets)	≤ 3 mm	≤ 3 mm
Bleeding on probing	< 10%	Yes (≥ 10%)
Radiological bone loss	No	No
Reduced periodontium Non-periodontitis patient	Health	Gingivitis
Probing attachment loss	Yes	Yes
Probing pocket depths (all sites and assuming no pseudo pockets)	≤ 3 mm	≤ 3 mm
Bleeding on probing	< 10%	Yes (≥ 10%)
Radiological bone loss	Possible	Possible
Successfully treated stable periodontitis patient	Health	Gingivitis in a patient with a history of periodontitis
Probing attachment loss	Yes	Yes
Probing pocket depths (all sites and assuming no pseudo pockets)	≤ 4 mm (no site ≥ 4 mm with BOP	≤ 3 mm
Bleeding on probing	< 10%	Yes (≥ 10%)
Radiological bone loss	Yes	Yes

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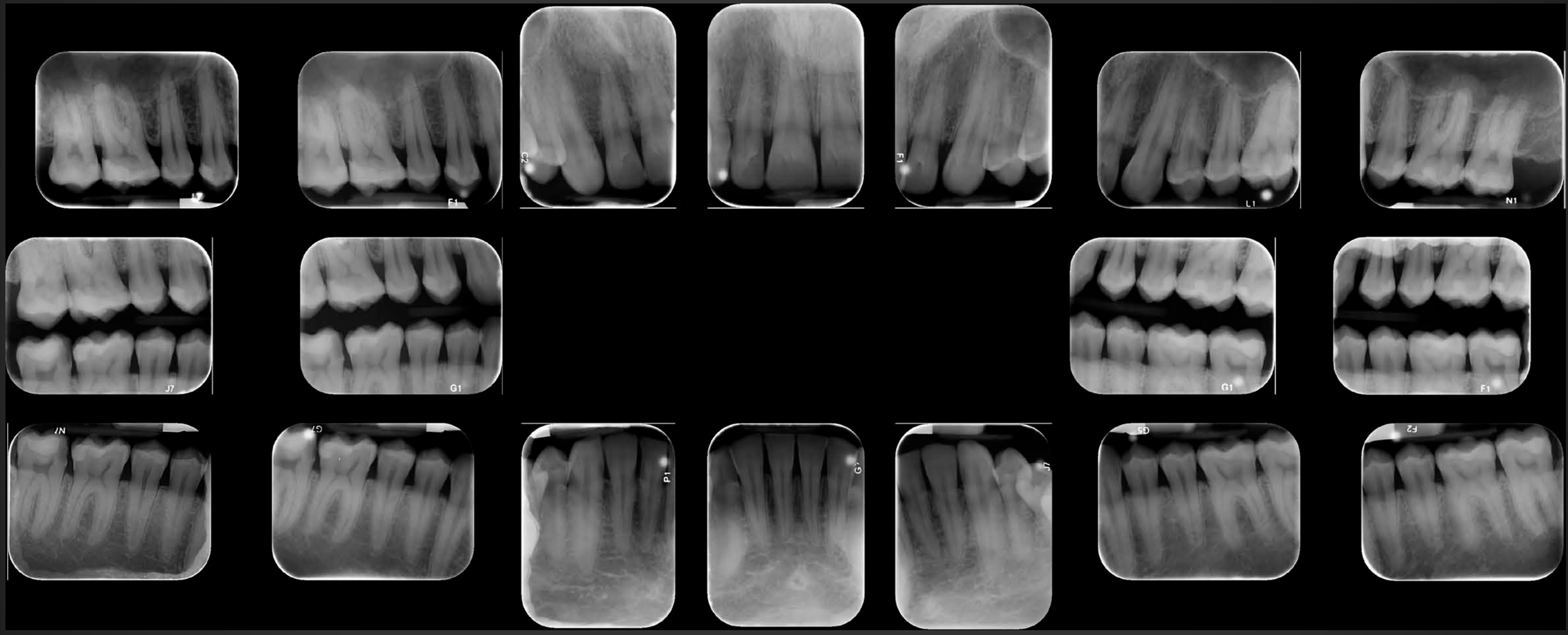
GINGIVITIS

Courtesy of Dr. Audra Ward 2018

Gingivitis



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PREVALENCE OF PERIODONTITIS

Periodontitis is more prevalent than Diabetes

(2015): 9.4% of the population

30.3 million people

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P.I. Eke, B.A. Dye, L. Wei, G.O. Thornton-Evans, and R.J. Genco. Prevalence of Periodontitis in Adults in the United States: 2009 and 2010. J DENT RES 0022034512457373, August 30, 2012 doi: 10.1177/0022034512457373; pulled from Perio.org 2012

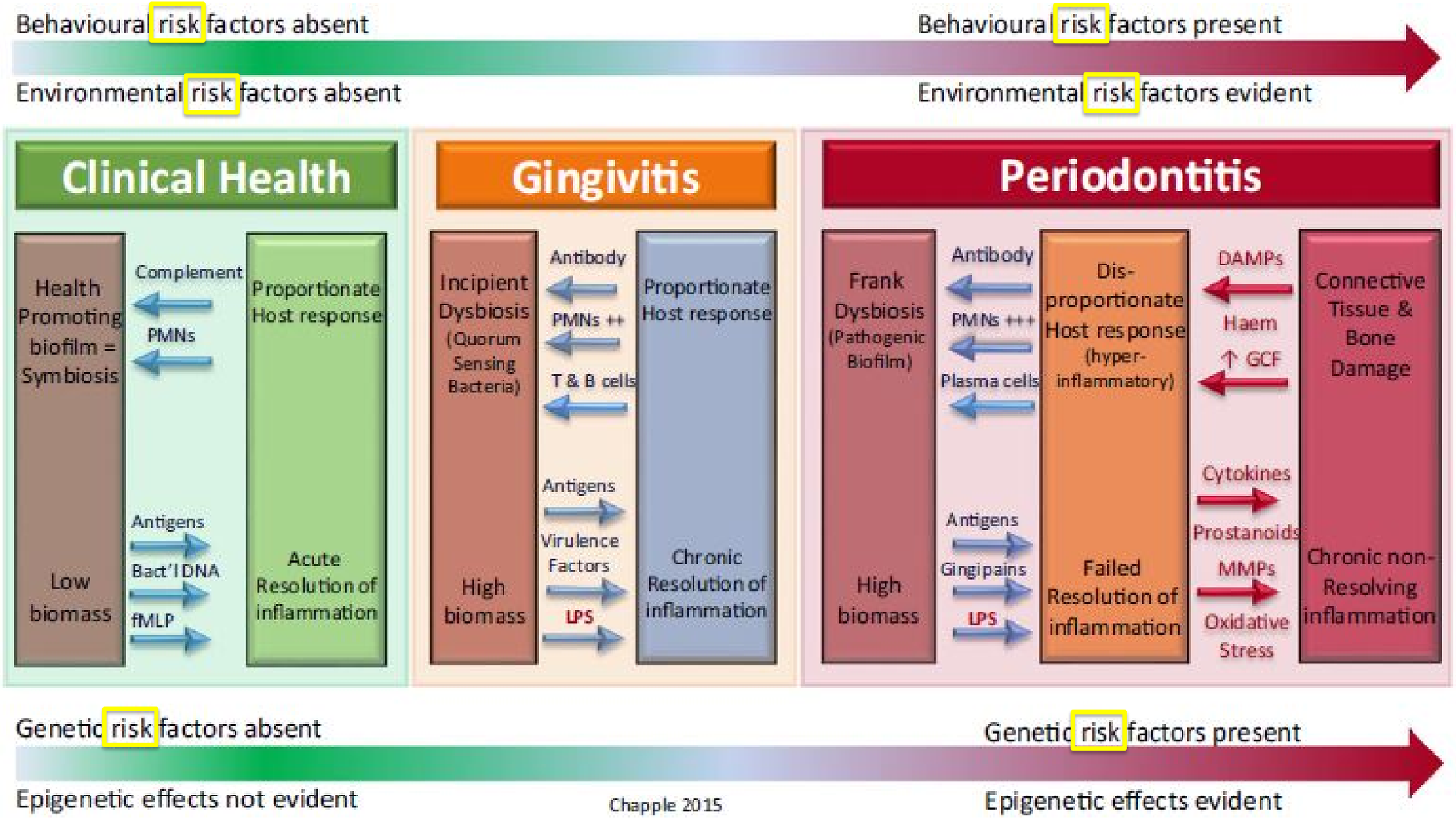
2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

First new classification of periodontal disease since 1999

Complete paradigm shift from Chronic Periodontitis to Stages and Grades

Now classifies the Peri-Implant Diseases

- Peri-Mucositis
- Peri-Implantitis



Murakami S, Mealey BL, Mariottie A, Chapple ILC. Dental plaque-induced gingival conditions. *J Periodontol.* 2018;89(Suppl 1):S17-S27. https://doi.org/10.1002/JPER.17-0095

70% stage I or stage II

Staging and Grading Periodontitis

The 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions resulted in a new classification of periodontitis characterized by a multidimensional staging and grading system. The charts below provide an overview. Please visit **perio.org/2017wwdc** for the complete suite of reviews, case definition papers, and consensus reports.

PERIODONTITIS: STAGING

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Initial stage should be determined using clinical attachment loss (CAL). If CAL is not available, radiographic bone loss (RBL) should be used. Tooth loss due to periodontitis may modify stage definition. One or more complexity factors may shift the stage to a higher level. See **perio.org/2017wwdc** for additional information.

	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**	• Max. probing depth ≤4 mm • Mostly horizontal bone loss	• Max. probing depth ≤5 mm • Mostly horizontal bone loss	In addition to Stage II complexity: • Probing depths ≥6 mm • Vertical bone loss ≥3 mm • Furcation involvement Class II or III • Moderate ridge defects	In addition to Stage III complexity: • Need for complex rehabilitation due to: – Masticatory dysfunction – Secondary occlusal trauma (tooth mobility degree ≥2) – Severe ridge defects – Bite collapse, drifting, flaring – < 20 remaining teeth (10 opposing pairs)
Extent and distribution	**Add to stage as descriptor**	For each stage, describe extent as: • Localized (<30% of teeth involved); • Generalized; or • Molar/incisor pattern		Potential for tooth loss	Potential for dentition loss

30% stage III or stage IV

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Table Courtesy of AAP (2018)

Default to Grade B until proven otherwise

PERIODONTITIS: GRADING

Grading aims to indicate the rate of periodontitis progression, responsiveness to standard therapy, and potential impact on systemic health.

Clinicians should initially assume grade B disease and seek specific evidence to shift to grade A or C.
See **perio.org/2017wwdc** for additional information.

	Progression		Grade A: Slow rate	Grade B: Moderate rate	Grade C: Rapid rate
Primary criteria *Whenever available, direct evidence should be used.*	Direct evidence of progression	Radiographic bone loss or CAL	No loss over 5 years	<2 mm over 5 years	≥2 mm over 5 years
	Indirect evidence of progression	% bone loss / age	<0.25	0.25 to 1.0	>1.0
		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	Risk factors	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

The 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions was co-presented by the American Academy of Periodontology (AAP) and the European Federation of Periodontology (EFP).

Tables from Tonetti, Greenwell, Kornman. *J Periodontol* 2018;89 (Suppl 1): S159-S172.

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Table Courtesy of AAP (2018)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

KEY CHANGES

1. Chronic Periodontitis is replaced with **periodontitis**
2. Aggressive Periodontitis is replaced with **periodontitis**
3. Addition of Staging (severity) AND Grading (rate of progression)
4. The terms mild, moderate and severe have been removed and replaced with a disease STAGE with respect to periodontitis

Courtesy of Dr. Audra Ward (2018)

PERIODONTITIS

Defining a “periodontitis case”:

Interdental CAL is detectable at ≥ 2 non-adjacent teeth,

Courtesy of Dr. Audra Ward (2018)

PERIODONTITIS

Buccal of oral (lingual) CAL ≥ 3mm with pocketing ≥ 3mm is detectable at ≥ 2 teeth but the observed CAL cannot be ascribed to non-periodontitis related causes such as:

1. Gingival recession of traumatic origin
2. Dental caries extending in the cervical area of the tooth
3. Presence of CAL on the distal aspect of a second molar and associated with malposition or extraction of a third molar
4. An endodontic lesion draining through the marginal periodontium
5. The occurrence of a vertical root fracture

Courtesy of Dr. Audra Ward 2018

1999 PERIODONTAL DISEASE CLASSIFICATIONS: PERIODONTITIS

Slight periodontitis

- 1-2mm CAL

Moderate periodontitis

- 3-4mm CAL

Severe periodontitis

- ≥5mm CAL

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontitis: Staging

- Stage I
  - formerly known as *slight* periodontitis
- Stage II
  - formerly known as *moderate* periodontitis
- Stage III and Stage IV
  - formerly known as *severe* periodontitis
    - III: potential for tooth loss
    - IV: potential for dentition loss

Three Steps to Staging and Grading a Patient

Step 1: Initial Case Overview to Assess Disease

Screen:

- Full mouth probing depths
- Full mouth radiographs
- Missing teeth

Mild to moderate periodontitis will typically be either Stage I or Stage II

Severe to very severe periodontitis will typically be either Stage III or Stage IV

Step 2: Establish Stage

For mild to moderate periodontitis (typically Stage I or Stage II):

- Confirm clinical attachment loss (CAL)
- Rule out non-periodontitis causes of CAL (e.g., cervical restorations or caries, root fractures, CAL due to traumatic causes)
- Determine maximum CAL or radiographic bone loss (RBL)
- Confirm RBL patterns

For moderate to severe periodontitis (typically Stage III or Stage IV):

- Determine maximum CAL or RBL
- Confirm RBL patterns
- Assess tooth loss due to periodontitis
- Evaluate case complexity factors (e.g., severe CAL frequency, surgical challenges)

Step 3: Establish Grade

- Calculate RBL (% of root length x 100) divided by age
- Assess risk factors (e.g., smoking, diabetes)
- Measure response to scaling and root planing and plaque control
- Assess expected rate of bone loss
- Conduct detailed risk assessment
- Account for medical and systemic inflammatory considerations

Stage descriptions drawn from Tonetti, Greenwell, Kornman. *J Periodontol* 2018;89 (Suppl 1): S159-S172.

STEP ONE:
INITIAL CASE OVERVIEW TO ASSESS DISEASE

Courtesy of Dr. Audra Ward 2018

STEP 1: INITIAL CASE OVERVIEW TO ASSESS DISEASE

Gathering a dental history of the patient is important *(“the art of the interview”)*

- How often do you see a dentist?
- Why did you lose your teeth (caries or periodontitis)?

Full mouth radiographs

Full mouth probing depths

Missing teeth

- particularly those lost due to periodontitis

Courtesy of Dr. Audra Ward 2018

STEP TWO:
ESTABLISH STAGE

STEP 2: ESTABLISH STAGE

Severity

- Clinical attachment loss (CAL)
- Radiographic bone loss (RBL)
- Tooth loss (due to periodontitis)

Courtesy of Dr. Audra Ward 2018

70% stage I or stage II

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30% stage III or stage IV

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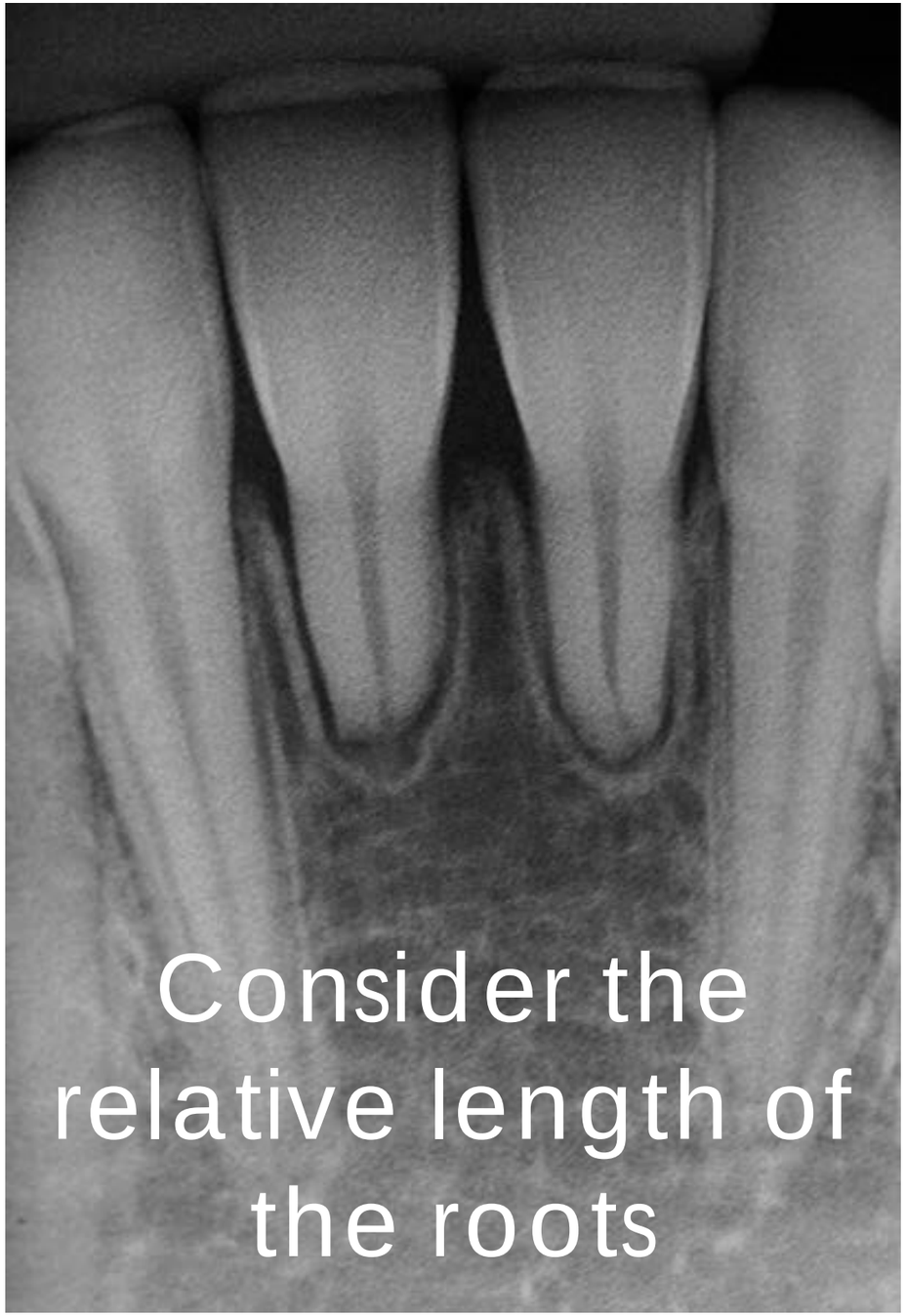
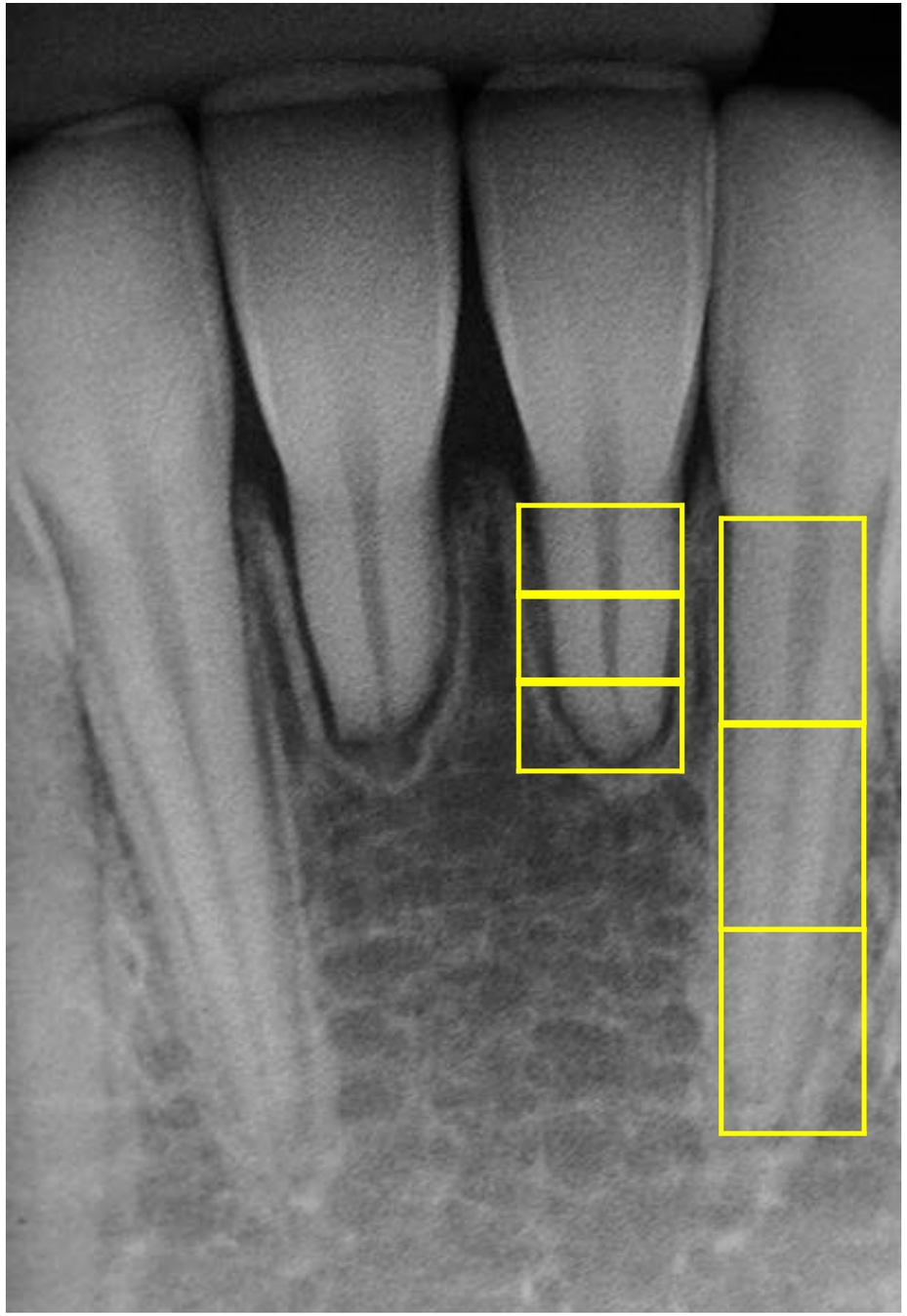
Table Courtesy of AAP (2018)


Consider the relative length of the roots



STEP 2: ESTABLISH STAGE

Complexity (new)

- Increased probing depths
- Type of bone loss
- Furcation invasion
- Occlusal trauma
- Less than 10 opposing pairs of teeth

Courtesy of Dr. Audra Ward 2018

70% stage I or stage II

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30% stage III or stage IV

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Table Courtesy of AAP (2018)

STEP 2: ESTABLISH STAGE

Extent and Distribution

- Localized (less than 30% of teeth involved)
- Generalized
- Molar-Incisor pattern (formerly periodontosis, localized juvenile periodontitis, localized aggressive periodontitis)

Courtesy of Dr. Audra Ward 2018

70% stage I or stage II

Staging and Grading Periodontitis

The 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions resulted in a new classification of periodontitis characterized by a multidimensional staging and grading system. The charts below provide an overview. Please visit **perio.org/2017wwdc** for the complete suite of reviews, case definition papers, and consensus reports.

PERIODONTITIS: STAGING

Staging intends to classify the severity and extent of a patient's disease based on the measurable amount of destroyed and/or damaged tissue as a result of periodontitis and to assess the specific factors that may attribute to the complexity of long-term case management.

Initial stage should be determined using clinical attachment loss (CAL). If CAL is not available, radiographic bone loss (RBL) should be used. Tooth loss due to periodontitis may modify stage definition. One or more complexity factors may shift the stage to a higher level. See **perio.org/2017wwdc** for additional information.

	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**	• Max. probing depth ≤4 mm • Mostly horizontal bone loss	• Max. probing depth ≤5 mm • Mostly horizontal bone loss	In addition to Stage II complexity: • Probing depths ≥6 mm • Vertical bone loss ≥3 mm • Furcation involvement Class II or III • Moderate ridge defects	In addition to Stage III complexity: • Need for complex rehabilitation due to: – Masticatory dysfunction – Secondary occlusal trauma (tooth mobility degree ≥2) – Severe ridge defects – Bite collapse, drifting, flaring – < 20 remaining teeth (10 opposing pairs)
Extent and distribution	**Add to stage as descriptor**	For each stage, describe extent as: • Localized (<30% of teeth involved); • Generalized; or • Molar/incisor pattern		Potential for <u>tooth loss</u>	Potential for <u>dentition loss</u>

30% stage III or stage IV

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Table Courtesy of AAP (2018)

STEP THREE:
ESTABLISH GRADE

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Grade relates to:

- Rate of progression of attachment loss

- Systemic risk for periodontitis

STEP 3: ESTABLISH GRADE

Periodontitis: Grading

- Grade A: Slow rate
- Grade B: Moderate rate
- Grade C: Rapid rate

STEP 3: ESTABLISH GRADE

Primary Criteria

- Radiographic bone loss or CAL over 5 years
  - This is direct evidence and is preferred
- % bone loss/age (see chart)
- Plaque levels

Courtesy of Dr. Audra Ward 2018

Default to Grade B until proven otherwise

PERIODONTITIS: GRADING

Grading aims to indicate the rate of periodontitis progression, responsiveness to standard therapy, and potential impact on systemic health.

Clinicians should initially assume grade B disease and seek specific evidence to shift to grade A or C.
See **perio.org/2017wwdc** for additional information.

	Progression		Grade A: Slow rate	Grade B: Moderate rate	Grade C: Rapid rate
Primary criteria *Whenever available, direct evidence should be used.*	Direct evidence of progression	Radiographic bone loss or CAL	No loss over 5 years	<2 mm over 5 years	≥2 mm over 5 years
	Indirect evidence of progression	% bone loss / age	<0.25	0.25 to 1.0	>1.0
		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	Risk factors	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

The 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions was co-presented by the American Academy of Periodontology (AAP) and the European Federation of Periodontology (EFP).

Tables from Tonetti, Greenwell, Kornman. *J Periodontol* 2018;89 (Suppl 1): S159-S172.

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% BONE LOSS/AGE

% Bone Loss	Age	% Bone Loss/Age	Grade
25	25	1.00	C
50	25	2.00	C
75	25	3.00	C
25	30	0.83	B
50	30	1.67	C
75	30	2.50	C
25	35	0.71	B
50	35	1.43	C
75	35	2.14	C
25	40	0.63	B
50	40	1.25	C
75	40	1.88	C
25	45	0.56	B
50	45	1.11	C
75	45	1.67	C
25	50	0.50	B
50	50	1.00	C
75	50	1.50	C
25	55	0.45	B
50	55	0.91	B
75	55	1.36	C

% Bone Loss	Age	% Bone Loss/Age	Grade
25	60	0.42	B
50	60	0.83	B
75	60	1.25	C
25	65	0.38	B
50	65	0.77	B
75	65	1.15	C
25	70	0.36	B
50	70	0.71	B
75	70	1.07	C
25	75	0.33	B
50	75	0.67	B
75	75	1.00	C
25	80	0.31	B
50	80	0.63	B
75	80	0.94	B
25	85	0.29	B
50	85	0.59	B
75	85	0.88	B
25	90	0.28	B
50	90	0.56	B
75	90	0.83	B

Courtesy of Dr. Audra Ward 2018

% Bone Loss	Age	% Bone Loss/Age	Grade
10	25	0.40	B
25	25	1.00	C
50	25	2.00	C
75	25	3.00	C
10	30	0.33	B
25	30	0.83	B
50	30	1.67	C
75	30	2.50	C
10	35	0.29	B
25	35	0.71	B
50	35	1.43	C
75	35	2.14	C
10	40	0.25	B
25	40	0.63	B
50	40	1.25	C
75	40	1.88	C
10	45	0.22	A
25	45	0.56	B
50	45	1.11	C
75	45	1.67	C
10	50	0.20	A
25	50	0.50	B
50	50	1.00	C
75	50	1.50	C
10	55	0.18	A
25	55	0.45	B
50	55	0.91	B
75	55	1.36	C

% Bone Loss	Age	% Bone Loss/Age	Grade
10	60	0.17	A
25	60	0.42	B
50	60	0.83	B
75	60	1.25	C
10	65	0.15	A
25	65	0.38	B
50	65	0.77	B
75	65	1.15	C
10	70	0.14	A
25	70	0.36	B
50	70	0.71	B
75	70	1.07	C
10	75	0.13	A
25	75	0.33	B
50	75	0.67	B
75	75	1.00	C
10	80	0.13	A
25	80	0.31	B
50	80	0.63	B
75	80	0.94	B
10	85	0.12	A
25	85	0.29	B
50	85	0.59	B
75	85	0.88	B
10	90	0.11	A
25	90	0.28	B
50	90	0.56	B
75	90	0.83	B

Courtesy of Dr. Audra Ward 2018

STEP 3: ESTABLISH GRADE

Grade Modifiers: Grade A

- Non-Smoking
- Non-Diabetic

STEP 3: ESTABLISH GRADE

Grade Modifiers: Grade B

- Smoking
  - <10 per day
- Diabetes
  - HbA1c < 7.0

Grade Modifiers: Grade C

- Smoking
  - ≥10 per day
- Diabetes
  - HbA1c ≥ 7.0

Courtesy of Dr. Audra Ward 2018

Default to Grade B until proven otherwise

PERIODONTITIS: GRADING

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2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Stage I, Grade B Periodontitis

(Slight)

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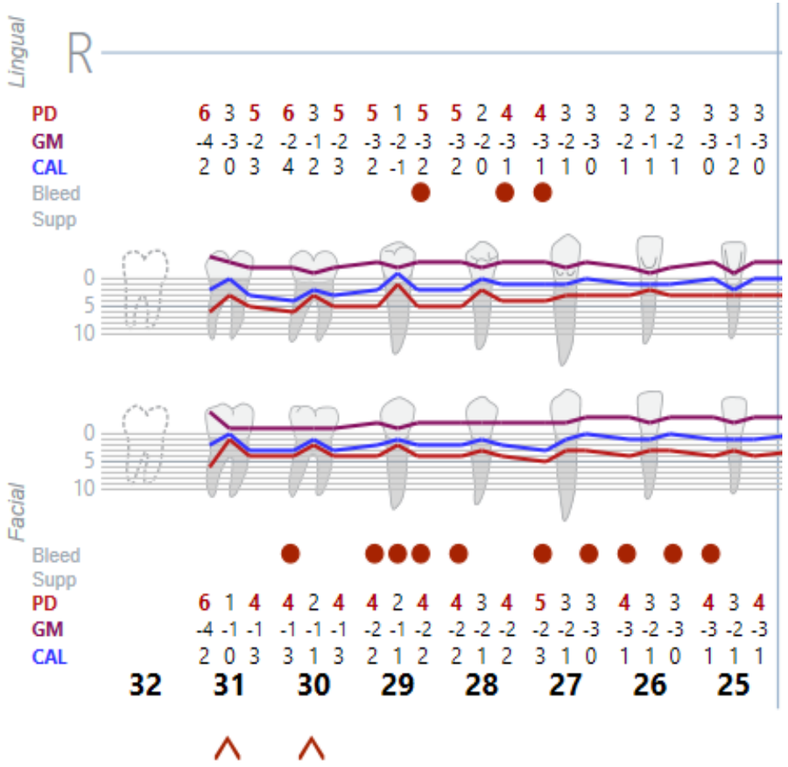
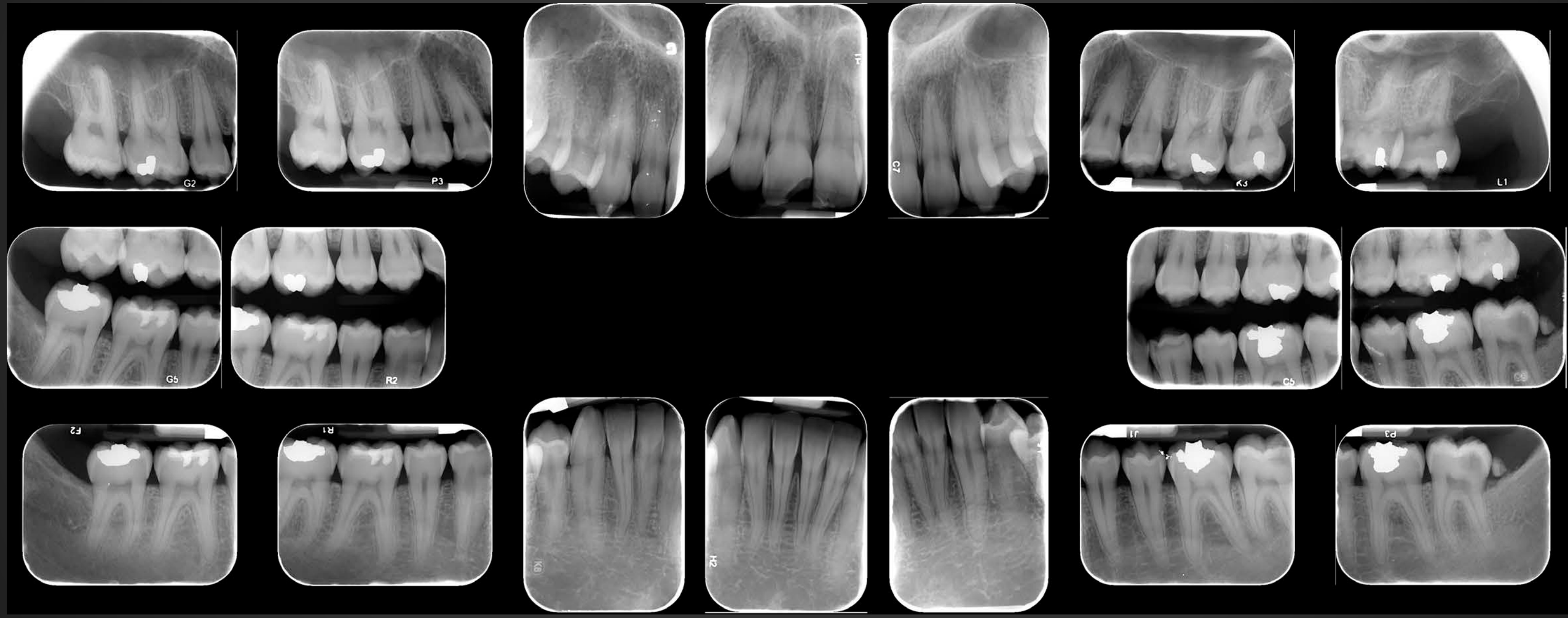
Stage I, Grade B Periodontitis (Slight)



Stage 1, Grade B Periodontitis (SLIGHT)



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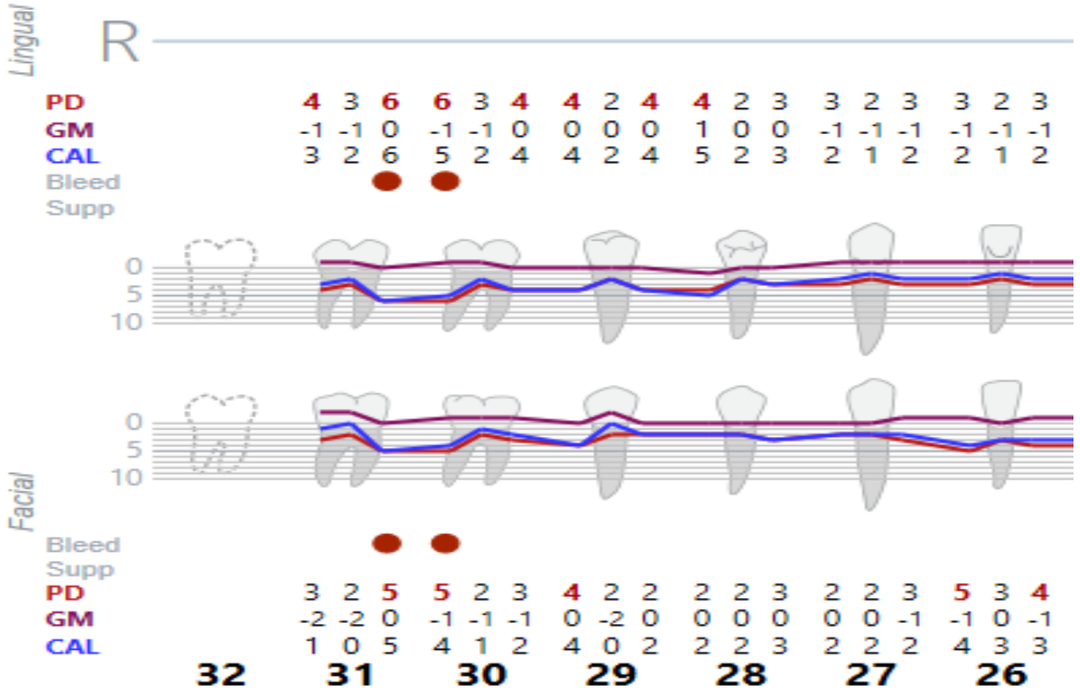
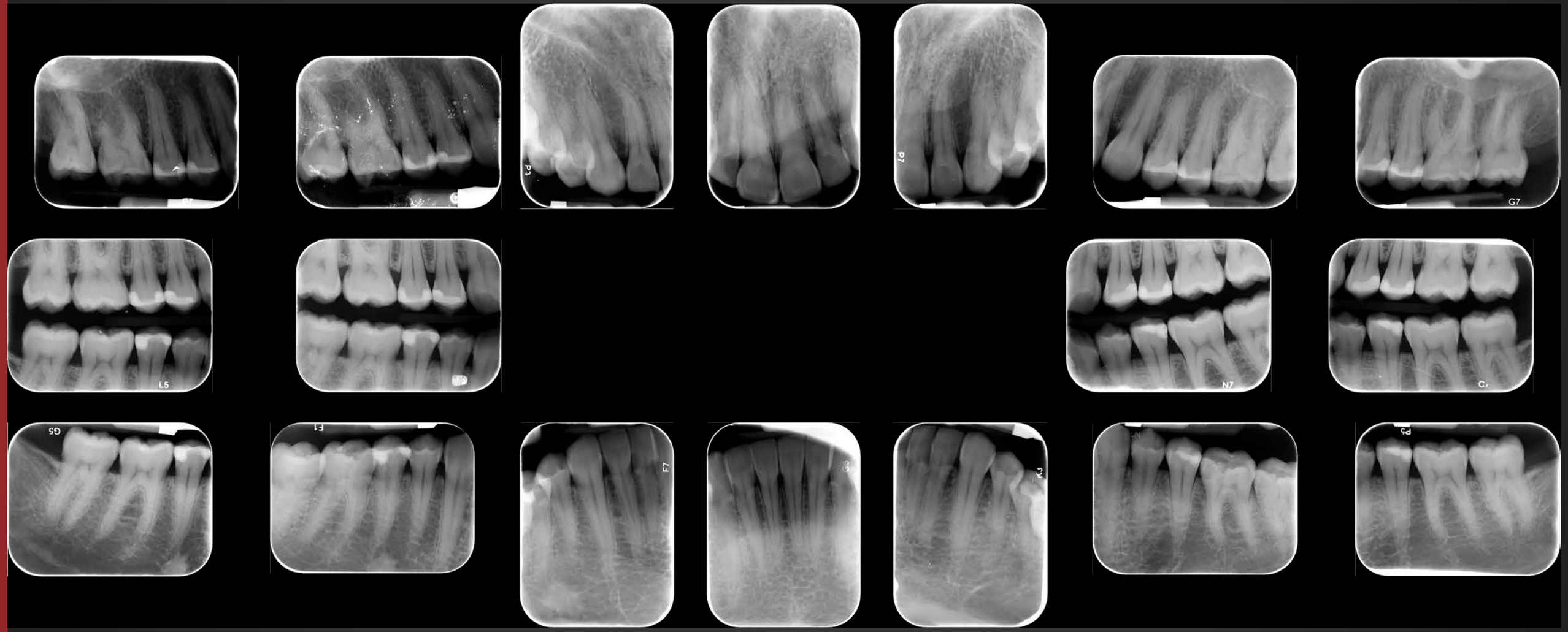
Stage II, Grade B Periodontitis (Moderate)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Stage II, Grade B Periodontitis (Moderate)



Stage II, Grade B Periodontitis (MODERATE)



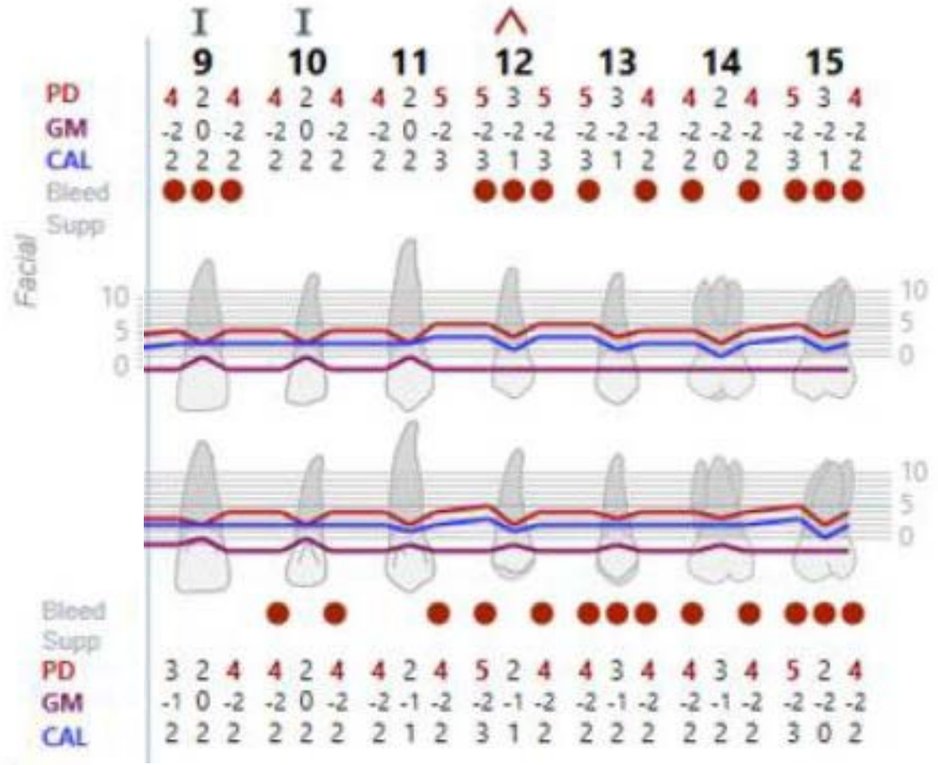
2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Stage II, Grade B Periodontitis

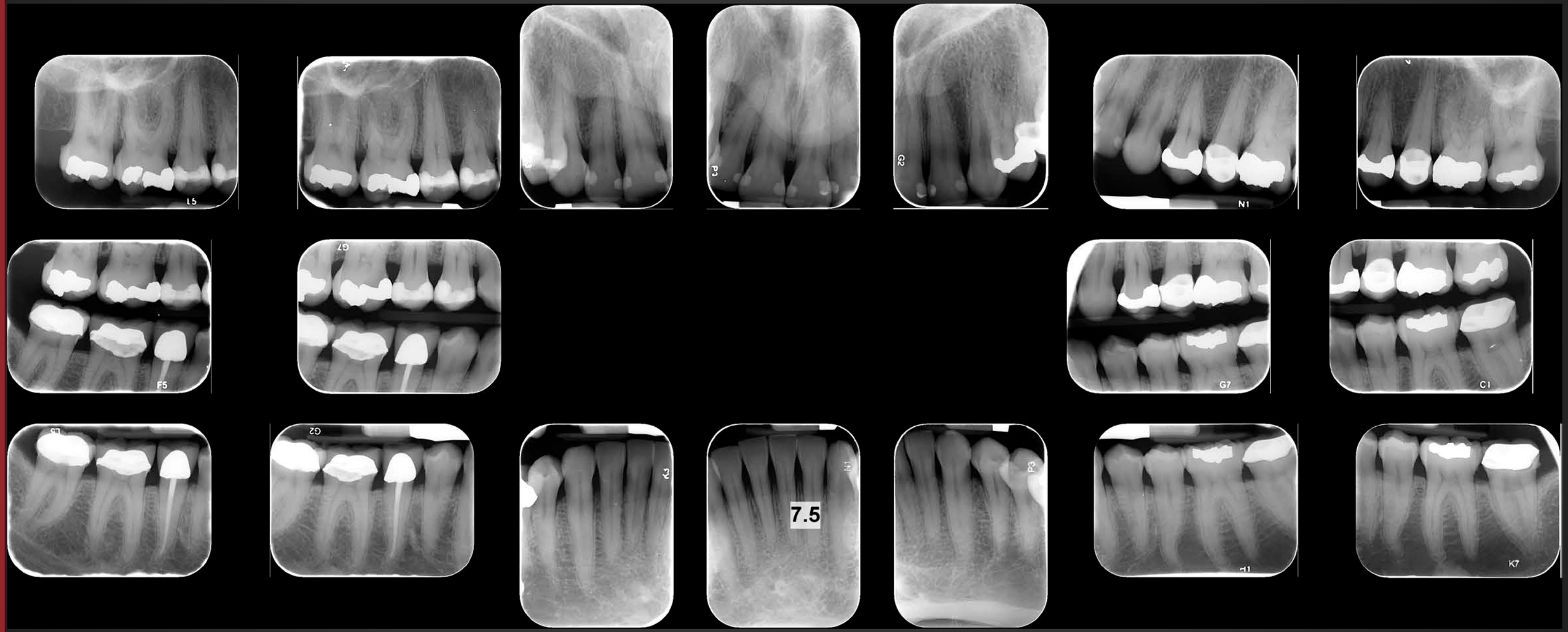
(Moderate)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Stage II, Grade B Periodontitis (Moderate)



Stage II, Grade B Periodontitis (MODERATE)



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Stage III, Grade C Periodontitis

(Severe)

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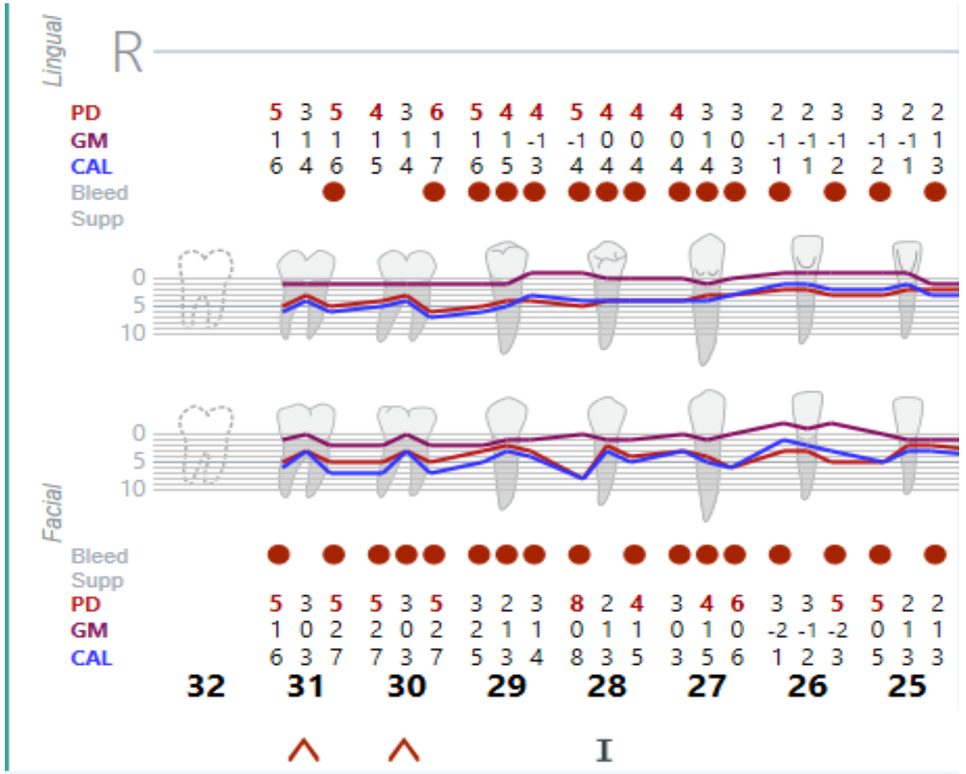
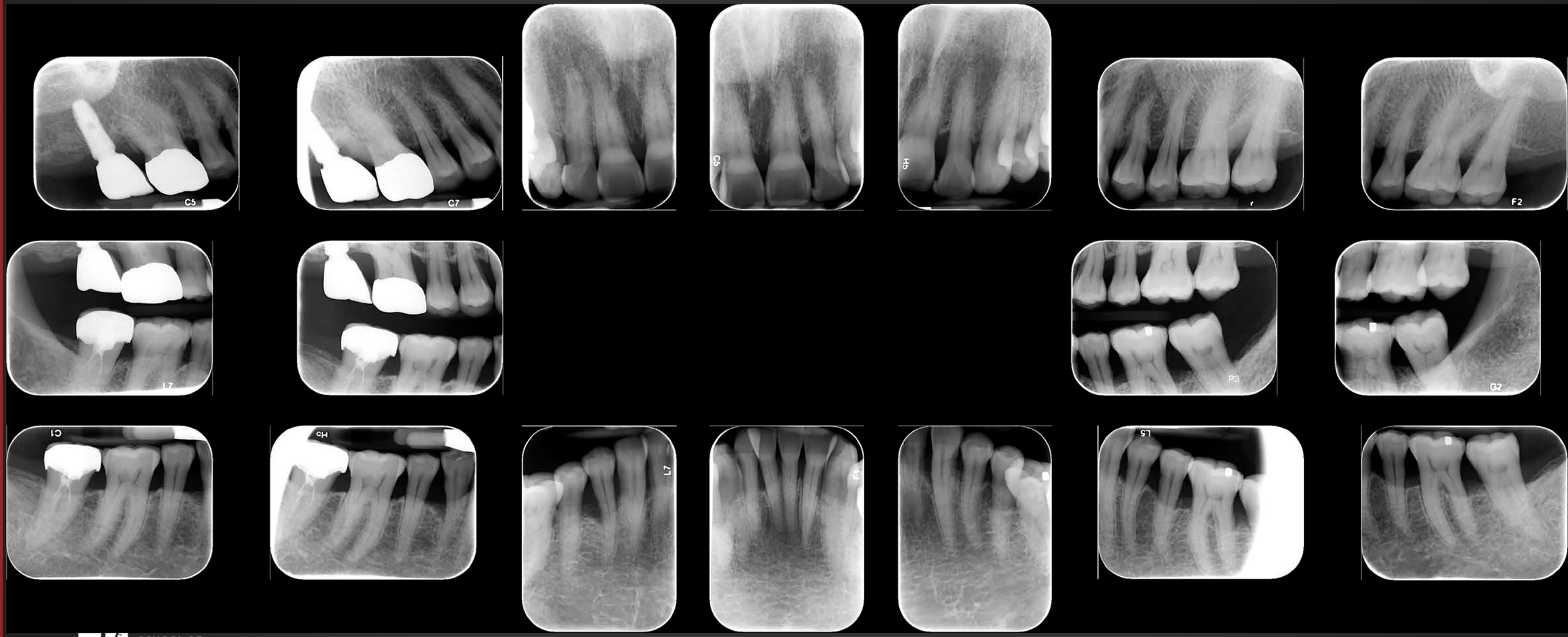
Stage III, Grade C Periodontitis

(Severe)



Stage III, Grade C Periodontitis (SEVERE)



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Stage IV, Grade C Periodontitis

(Very Severe, Terminal Dentition?)

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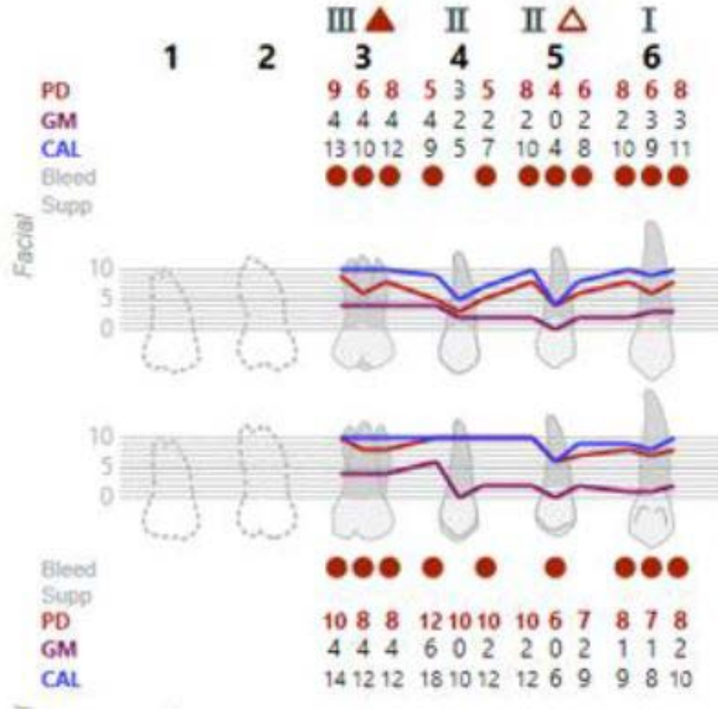
Stage IV, Grade C Periodontitis

(Very Severe, Terminal Dentition?)



Stage IV, Grade C
Periodontitis (VERY SEVERE)

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MRN: 01548593

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Comments:

- Aggressive Periodontitis is no longer a classification of periodontitis
  - Now known as Stage III or IV, *Grade C*

- The Stage is based upon the most severe area of periodontitis

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Comments

- The Stage is based upon the most severe area of periodontitis
  - A combination of stages is not possible at this time
    - ie. Generalized Gingivitis with Localized Stage II periodontitis #’s 2-3 and 14-15
    - ie. Generalized Stage I Periodontitis with Localized Stage III Periodontitis #’s 14-15

PERI-IMPLANT HEALTH

Courtesy of Dr. Audra Ward 2018

PERI-IMPLANT HEALTH

- Visual absence of signs of inflammation
  - Pink, firm tissue without swelling
- Lack of profuse (line or drop) bleeding on probing
- There should be no increase in probing depth over time
- Bone loss over time (following initial healing) should not be ≥ 2mm

Courtesy of Dr. Audra Ward 2018

PERI-IMPLANT DISEASES

Peri-Mucositis

- Equivalent to gingivitis with teeth

Peri-Implantitis

- Equivalent to periodontitis with teeth

PERI-IMPLANT MUCOSITIS

Courtesy of Dr. Audra Ward 2018

PERI-IMPLANT MUCOSITIS

- Signs of inflammation may be present
  - Red, soft tissue with swelling
- Presence of profuse (vs. line or drop) bleeding on probing or suppuration
- An increase in probing depth over time
- Absence of bone loss beyond crestal bone level changes resulting from the initial remodeling

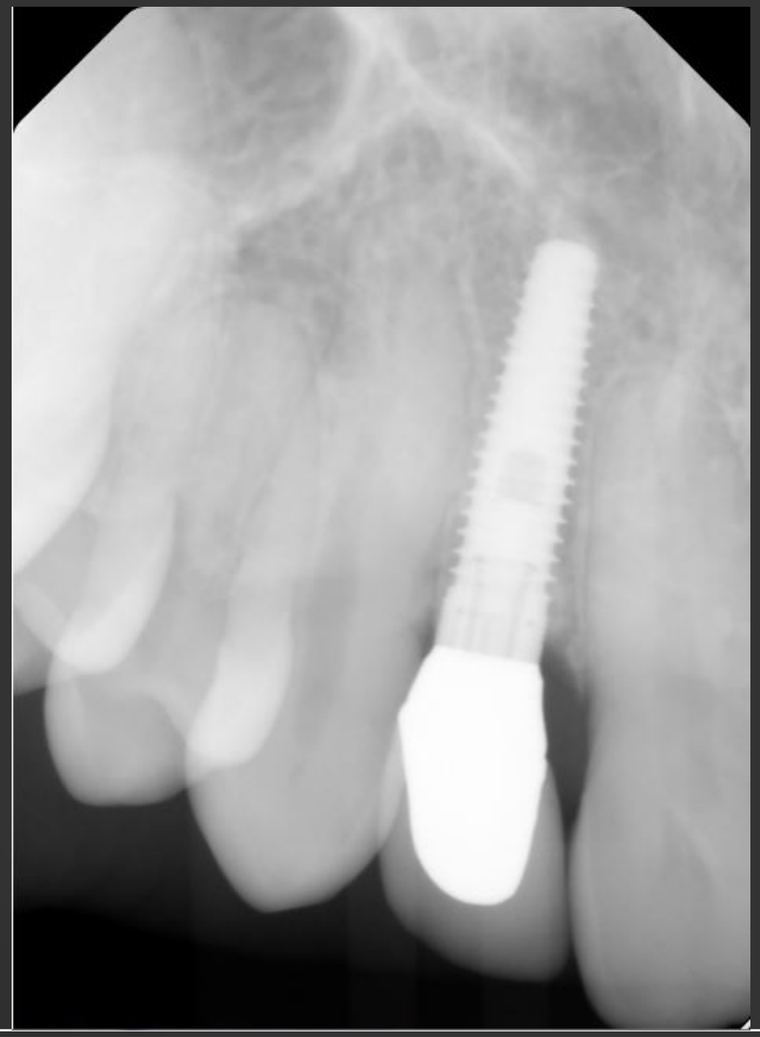
Courtesy of Dr. Audra Ward 2018

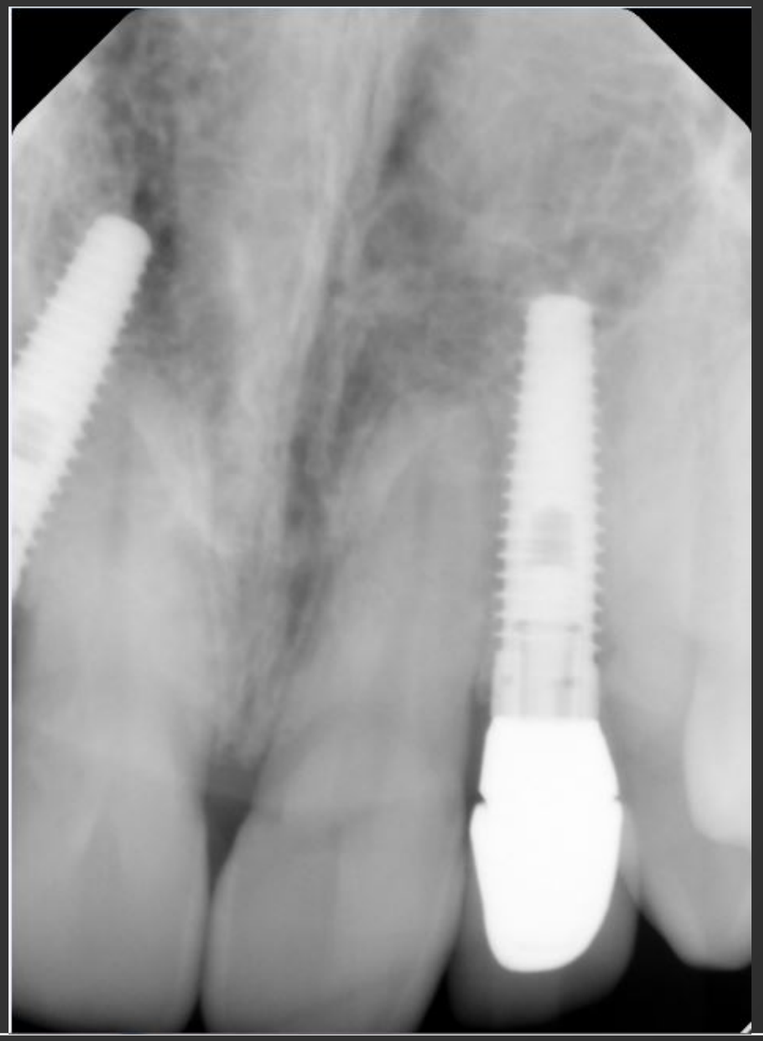
PERI-IMPLANT DISEASES

Peri-mucositis

Peri-Implant Diseases

Peri-Mucositis





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PERI-IMPLANTITIS

Courtesy of Dr. Audra Ward 2018

PERI-IMPLANTITIS

- Evidence of visual inflammatory changes combined with BOP and/or suppuration
- Increasing probing depths as compared to baseline (supra-structure in place)
- Progressive bone loss compared to bone levels measured radiographically at 1 year post placement of supra-structure
- Radiographic evidence of bone loss ≥ 3mm and/or probing depths ≥ 6mm in conjunction with profuse bleeding represents peri-implantitis

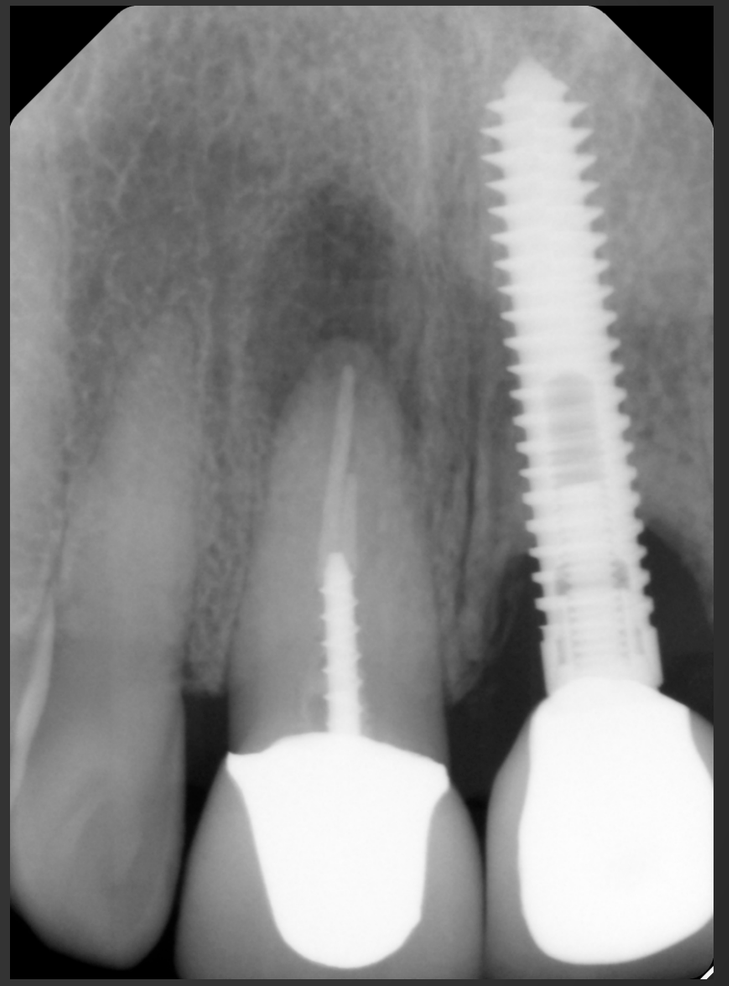
Courtesy of Dr. Audra Ward 2018

PERI-IMPLANT DISEASES AND CONDITIONS

Peri-Implantitis

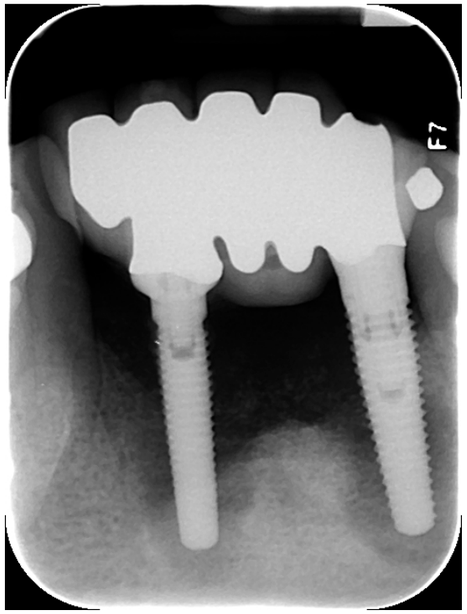
Peri-Implant Diseases

Peri-Implantitis



PERI-IMPLANT DISEASES AND CONDITIONS

Peri-Implantitis



GINGIVAL CONDITIONS

My gums are “receding”

Mucogingival periodontal conditions

GINGIVAL RECESSION AS A SIGN OF PERIODONTITIS

GINGIVAL RECESSION AS A DIAGNOSIS

MUCOGINGIVAL DEFORMITIES AND CONDITIONS

Mucogingival conditions are a general description

- Much like caries and periodontal disease
  - How extensive?
    - Periodontitis: Localized vs. Generalized
  - How severe?
    - Caries: Initial, Moderate, Advanced
    - Periodontitis: Stage 1, Stage 2, Stage 3, Stage 4

MUCOGINGIVAL DEFORMITIES AND CONDITIONS

Periodontal *biotype* is replaced with **periodontal phenotype** (phenotype is a finding and especially relates to mucogingival considerations)

- **Probe visible: thin (≤ *1mm*)**
- ***Probe not visible: thick (> 1mm)***

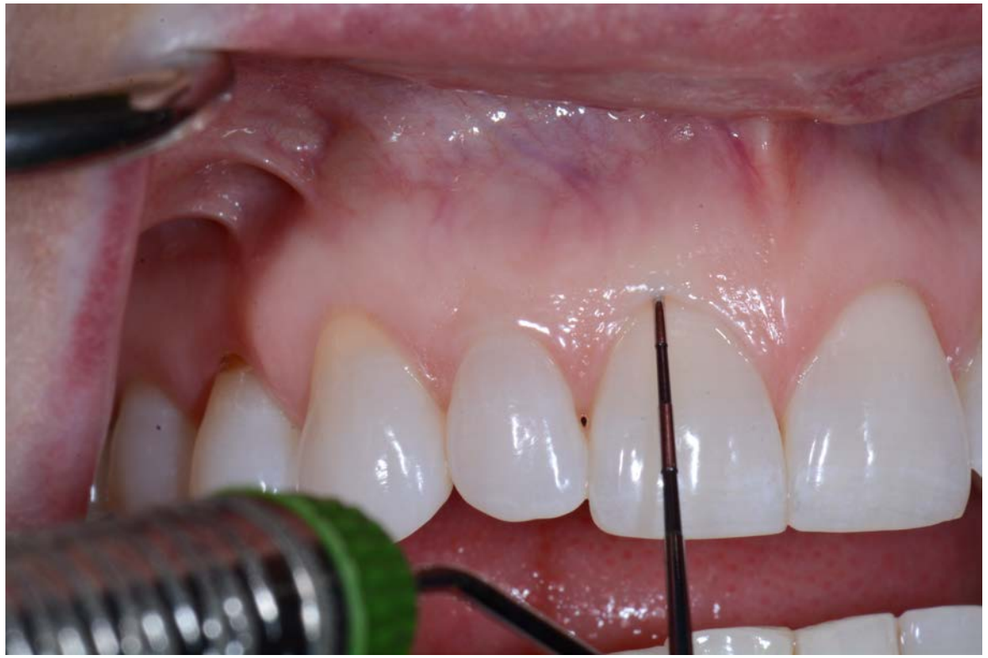
PERIODONTAL PHENOTYPE

Probe visible:

thin (≤ *1mm*)

Probe not visible:

thick (> *1mm*)



MUCOGINGIVAL DEFORMITIES AND CONDITIONS

Examination of mucogingival conditions

-Roll Technique

MUCOGINGIVAL DEFORMITIES AND CONDITIONS

Determining the amount of attached gingiva

- Measure width of keratinized gingiva
- Measure probing depth

$$\frac{\text{Width of keratinized gingiva} - \text{probing depth}}{\text{Amount of attached gingiva}}$$

MUCOGINGIVAL DEFORMITIES AND CONDITIONS

Recession Type 1 (RT1)

- aka Miller Type 1 and 2

Recession Type 2 (RT2)

- aka Miller Type 3

Recession Type 3 (RT3)

- aka Miller Type 4

- Recession Type 1 (RT1): Gingival recession with no loss of interproximal attachment. Interproximal CEJ is clinically not detectable at both mesial and distal aspects of the tooth.

- Recession Type 2 (RT2): Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the depth of the interproximal sulcus/pocket) is less than or equal to the buccal attachment loss (measured from the buccal CEJ to the apical end of the buccal sulcus/pocket)

- Recession Type 3 (RT3): Gingival recession associated with loss of interproximal attachment. The amount of interproximal attachment loss (measured from the interproximal CEJ to the apical end of the sulcus/pocket) is greater than the buccal attachment loss (measured from the buccal CEJ to the apical end of the buccal sulcus/pocket)

Cortellini P, Bissada NF. Mucogingival conditions in the natural dentition: Narrative review, case definitions, and diagnostic considerations. *J Periodontol.* 2018;89(Suppl 1):S204-S213. https://doi.org/10.1002/JPER.16-0671

MUCOGINGIVAL DEFORMITIES AND CONDITIONS

Mucogingival diagnoses

- Conditions with no recession:
  - Adequate attached gingiva
  - Inadequate attached gingiva
- Conditions with recession:
  - Gingival recession with adequate attached gingiva
  - Gingival recession with inadequate attached gingiva

MUCOGINGIVAL DEFORMITIES AND CONDITIONS

Mucogingival diagnoses

How much attached gingiva do you need?

It depends...

- Aggressive tooth brusher?
- Restorative or prosthetic considerations?
  - Subgingival restoration location
  - Subgingival crown location
  - RPD Clasp
- Orthodontic treatment?

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Mucogingival Deformities and Conditions

Recession Type I (RT1)

Tongue Piercing

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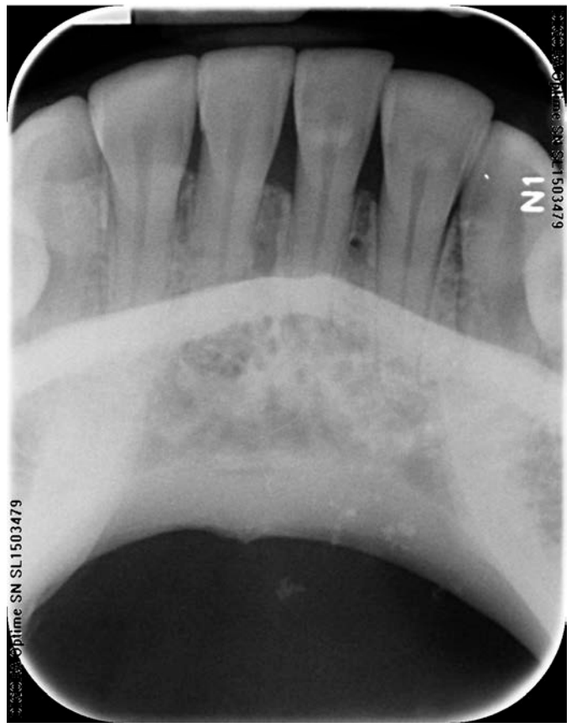
Mucogingival Deformities and Conditions

Recession Type 1 (RT1)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Mucogingival Deformities and Conditions

Recession Type 2 (RT2)



2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Mucogingival Deformities and Conditions

Recession Type 2 (RT2)

Recipient Site
#24

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Mucogingival Deformities and Conditions

Recession Type 2 (RT2)

Donor Site
Left Palate

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Mucogingival Deformities and Conditions

Recession Type 3 (RT3)

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Mucogingival Deformities and Conditions

Recession Type 3 (RT3)




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Mucogingival Deformities and Conditions

Recession Type 3 (RT3)

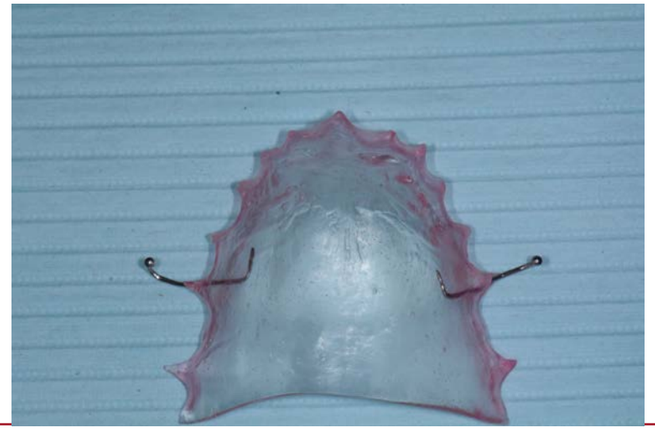




2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Mucogingival Deformities and Conditions

Recession Type 3 (RT3)



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Mucogingival Deformities and Conditions

Recession Type 3 (RT3)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Gingival Recession Due to Traumatic Oral Hygiene

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

TRAUMATIC OCCLUSAL FORCES

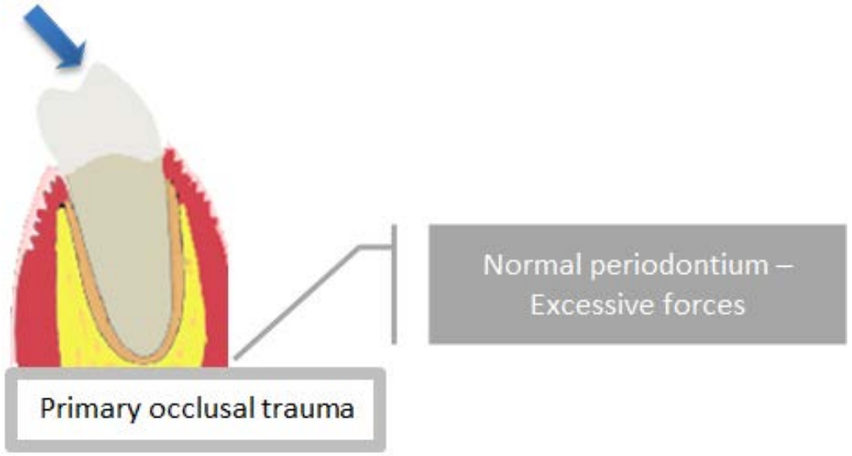

TABLE 1 Proposed clinical and radiographic indicators of occlusal trauma

1. Fremitus	7. Thermal sensitivity
2. Mobility	8. Discomfort/pain on chewing
3. Occlusal discrepancies	9. Widened PDL space
4. Wear facets	10. Root resorption
5. Tooth migration	11. Cemental tear
6. Fractured tooth	

PDL, periodontal ligament.

Fan J, Caton JG. Occlusal trauma and excessive occlusal forces: Narrative review, case definitions, and diagnostic considerations. *J Periodontol.* 2018;89(Suppl 1):S214-S222. https://doi.org/10.1002/JPER.16-0581

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THE OCCLUSION—CEMENTAL TEAR

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

TRAUMATIC OCCLUSAL FORCES

Conclusions:

- Occlusal trauma does not initiate periodontitis, and there is weak evidence that it alters the progression of the disease.
- There is no credible evidence to support the existence of abfraction or implicate it as a cause of gingival recession.
- Reduction of tooth mobility may enhance the effect of periodontal therapy.

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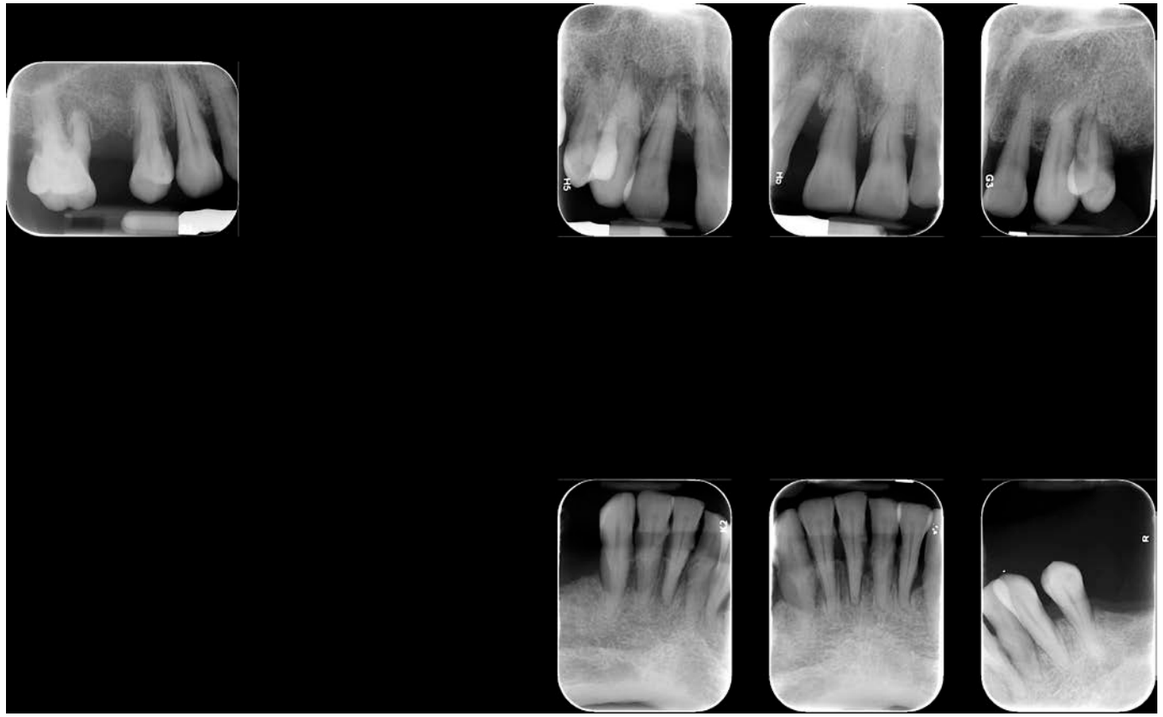
Fan J, Caton JG. Occlusal trauma and excessive occlusal forces: Narrative review, case definitions, and diagnostic considerations. *J. Periodontol.* 2018;89(Suppl 1): S214-S222. https://doi.org/10.1002/JPER.16-0581

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontitis as a manifestation of systemic disease



Uncontrolled Diabetes

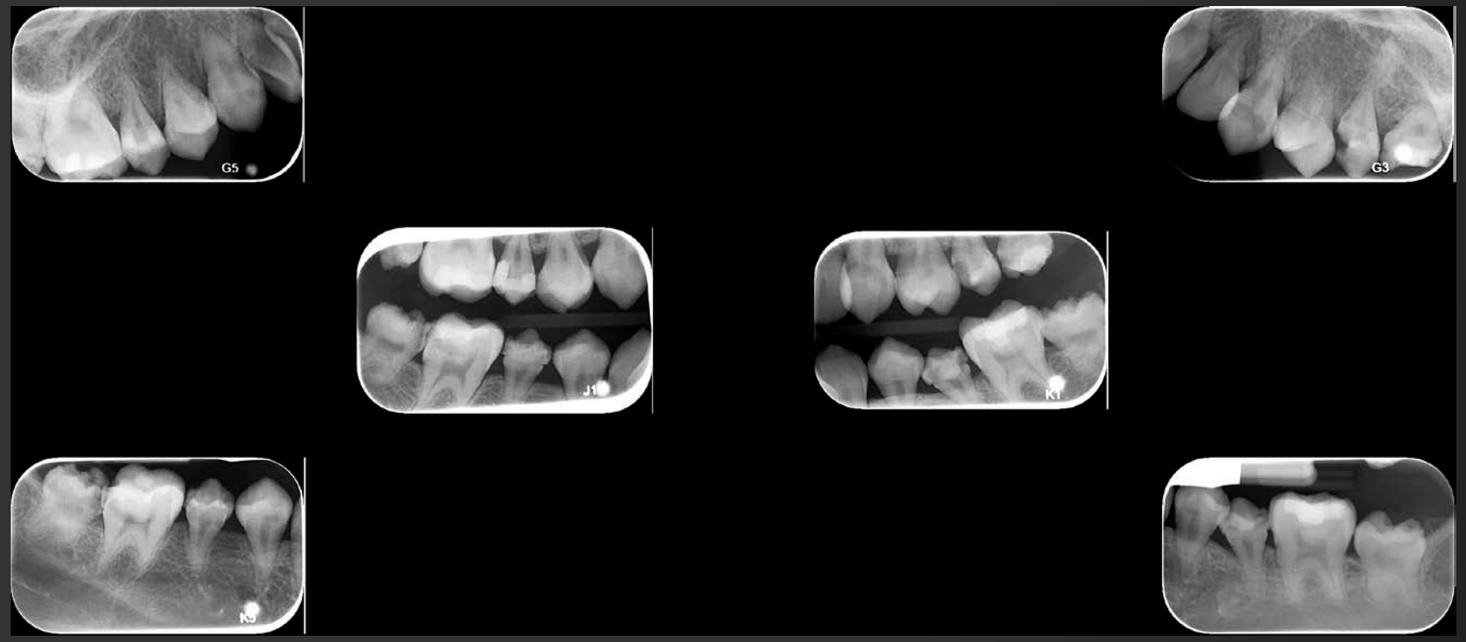
2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Systemic diseases or conditions affecting the periodontal supporting tissues

- Down syndrome
- Systemic lupus erythematosus (SLE)
- Cylic neutropenia
- Ehlers-Danlos syndrome
- Papillon-Lefevre syndrome
- Chediak-Higashi syndrome

Systemic diseases or conditions affecting the periodontal supporting tissues

Leukemia Patient



SYSTEMIC DISEASES OR CONDITIONS AFFECTING THE PERIODONTAL SUPPORTING TISSUES

Acute Monocytic Leukemia

Courtesy of Dr. Joan Otomo-Corgel and Dr. Paulo Camargo (2019)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Gingival Diseases: Non-Dental Biofilm-Induced

TABLE 1 Classification table summary: non–plaque-induced gingival diseases and conditions

1 Genetic/developmental disorders

1.1 Hereditary gingival fibromatosis (HGF)

2 Specific infections

2.1 Bacterial origin

Necrotizing periodontal diseases (*Treponema* spp., *Selenomonas* spp., *Fusobacterium* spp., *Prevotella intermedia*, and others)
Neisseria gonorrhoeae (gonorrhea)
Treponema pallidum (syphilis)
Mycobacterium tuberculosis (tuberculosis)
Streptococcal gingivitis (strains of streptococcus)

2.2 Viral origin

Coxsackie virus (hand-foot-and-mouth disease)
Herpes simplex 1/2 (primary or recurrent)
Varicella-zoster virus (chicken pox or shingles affecting V nerve)
Molluscum contagiosum virus
Human papilloma virus (squamous cell papilloma, condyloma acuminatum, verrucca vulgaris, and focal epithelial hyperplasia)

2.3 Fungal

Candidosis
Other mycoses (e.g., histoplasmosis, aspergillosis)

3 Inflammatory and immune conditions and lesions

3.1 Hypersensitivity reactions

Contact allergy
Plasma cell gingivitis
Erythema multiforme

3.2 Autoimmune diseases of skin and mucous membranes

Pemphigus vulgaris
Pemphigoid
Lichen planus
Lupus erythematosus

3.3. Granulomatous inflammatory conditions (orofacial granulomatosis)

Crohn's disease
Sarcoidosis

4 Reactive processes

4.1 Epulides

Fibrous epulis
Calcifying fibroblastic granuloma
Pyogenic granuloma (vascular epulis)
Peripheral giant cell granuloma (or central)

5 Neoplasms

5.1 Premalignant

Leukoplakia
Erythroplakia

5.2 Malignant

Squamous cell carcinoma
Leukemia
Lymphoma

6 Endocrine, nutritional, and metabolic diseases

6.1 Vitamin deficiencies

Vitamin C deficiency (scurvy)

7 Traumatic lesions

7.1 Physical/mechanical insults

Frictional keratosis
Toothbrushing-induced gingival ulceration
Factitious injury (self-harm)

7.2 Chemical (toxic) insults

Etching
Chlorhexidine
Acetylsalicylic acid
Cocaine
Hydrogen peroxide
Dentifrice detergents
Paraformaldehyde or calcium hydroxide

7.3 Thermal insults

Burns of mucosa

8 Gingival pigmentation

Gingival pigmentation/melanoplakia
Smoker's melanosis
Drug-induced pigmentation (antimalarials; minocycline)
Amalgam tattoo

Holmstrup P, Plemons J, Meyle J. Non-plaque-induced gingival diseases. *J Periodontol.* 2018;89(Suppl 1):S28-S45. https://doi.org/10.1002/JPER.17-0163

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

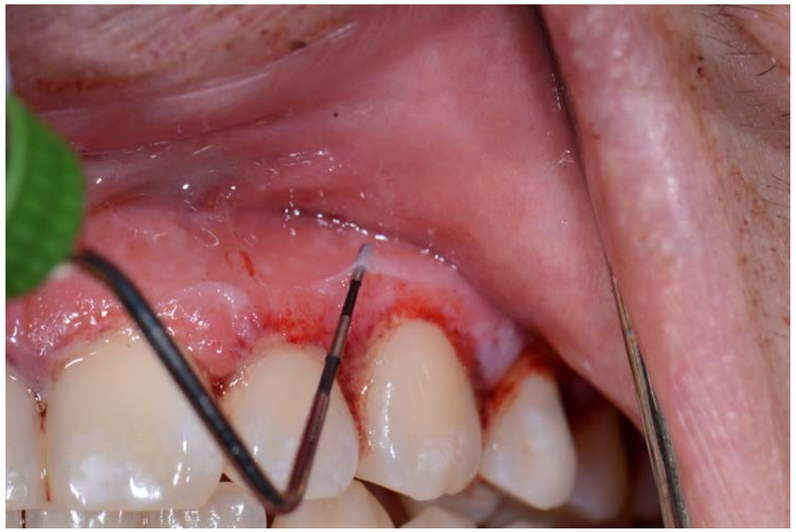
Gingival Diseases: Non-Dental Biofilm-Induced

Calcium channel blocker

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Gingival Diseases: Non-Dental Biofilm-Induced

Desquamative Gingivitis



2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Gingival Diseases: Non-Dental Biofilm-Induced

Desquamative Gingivitis

Erosive Lichen Planus

Benign Mucous Membrane Pemphigoid

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Gingival Diseases: Non-Dental Biofilm-Induced Hypersensitivity Reaction

Courtesy of Dr. Joan Otomo-Corgel and Dr. Paulo Camargo (2019)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Gingival Diseases: Non-Dental Biofilm-Induced

Pregnancy

Courtesy of Dr. Joan Otomo-Corgel and Dr. Paulo Camargo (2019)

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Necrotizing Periodontal Diseases

Necrotizing Gingivitis

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Necrotizing Periodontal Diseases

Necrotizing Periodontitis

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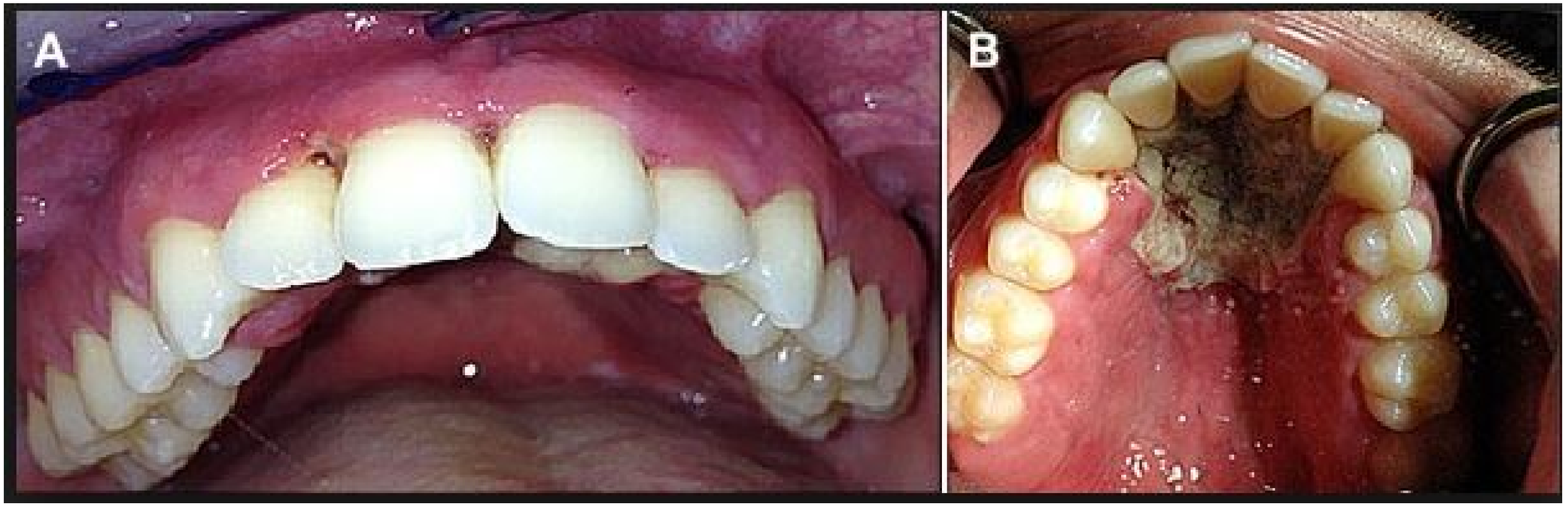
Necrotizing Periodontal Diseases

Necrotizing Stomatitis



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2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontal Abscess

BOX 42-2 Differential Diagnosis of Periodontal and Pulpal Abscess

Periodontal Abscess

Associated with preexisting periodontal pocket.
Radiographs show periodontal angular bone loss and furcation radiolucency.
Tests show vital pulp.
Swelling usually includes gingival tissue, with occasional fistula.
Pain usually dull and localized.
Sensitivity to percussion may or may not be present.

Pulpal Abscess

Offending tooth may have large restoration.
May have no periodontal pocket, or if present, probes as a narrow defect.
Tests show nonvital pulp.
Swelling often localized to apex, with a fistulous tract.
Pain often severe and difficult to localize.
Sensitivity to percussion.

Modified from Corbet EF: *Periodontol 2000* 34:204, 2004.

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontal Abscesses

BOX 42-3 Treatment Options for Periodontal Abscess

1. Drainage through pocket retraction or incision
2. Scaling and root planing
3. Periodontal surgery
4. Systemic antibiotics
5. Tooth removal

Modified from Sanz M, Herrera D, van Winkelhoff AJ: The periodontal abscess. In Lindhe, J: *Clinical periodontology,* Copenhagen, 2000, Munksgaard.

BOX 42-4 Indications for Antibiotic Therapy in Patients with Acute Abscess

1. Cellulitis (nonlocalized, spreading infection)
2. Deep, inaccessible pocket
3. Fever
4. Regional lymphadenopathy
5. Immunocompromised patient

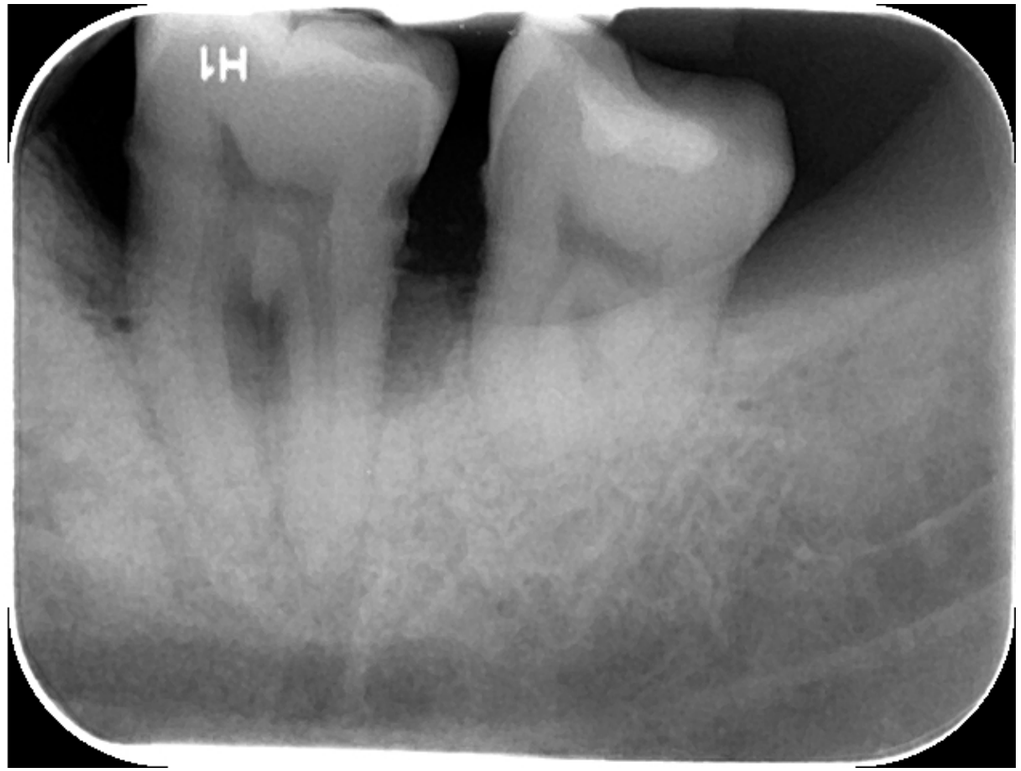
2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontal Abscesses (Gingival Abscess)

SCHOOL OF DENTISTRY
UNIVERSITY OF UTAH

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontal Abscesses



2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Pulpal Abscess

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Modified from Corbet EF: *Periodontol 2000* 34:204, 2004.

Refer to Endodontics curriculum

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontal Abscesses and Endodontic-Periodontal Lesions

- Primary Endo with Secondary Perio
- Primary Perio with Secondary Endo
- True Combined

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontal Abscesses and Endodontic-Periodontal Lesions

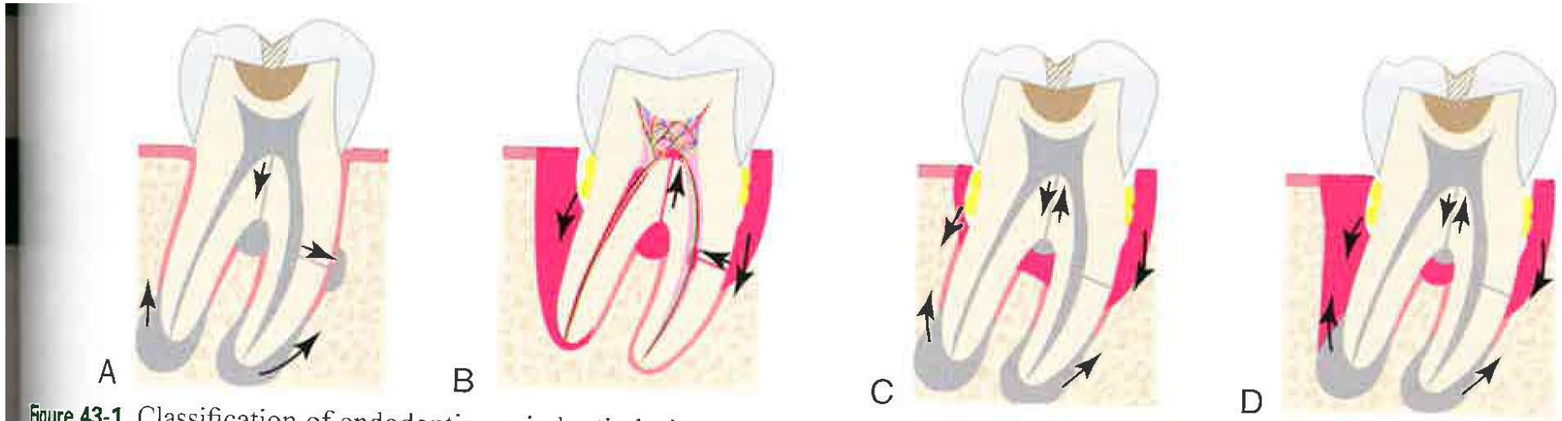
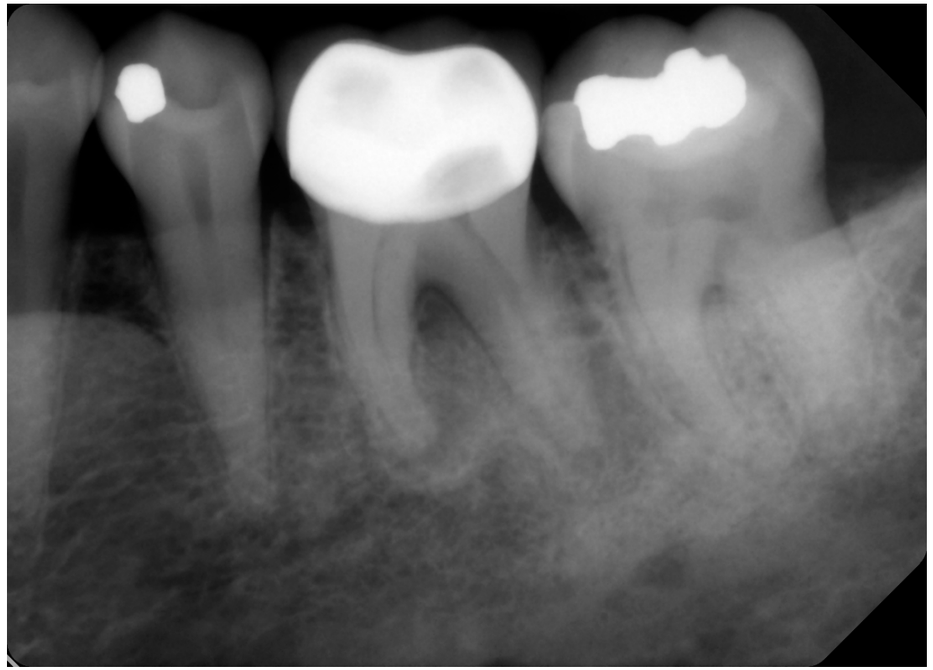


Figure 43-1 Classification of endodontic-periodontic lesions. **A,** Primary pulpal infection can lead to chronic periradicular periodontitis by which a periapical radiolucency (PARL) can develop and migrate cervically. Mandibular molars can also have accessory canals in lateral orientation or in the furcation area. These accessory canals can allow migration of the primary pulpal infection and cause secondary breakdown of the periodontium at their respected loci. **B,** Primary periodontal infection can lead to extensive breakdown of alveolar crest bone that migrates from the cervical area to the apex. In these lesions, one would find generalized bone loss around a single tooth or often might involve multiple adjacent teeth. Because of the pulpal-periodontal continuum through main root canal foramina or through accessory canals, extensive periodontal infection can cause irritation in the pulp tissues. **C,** Both primary pulpal and primary periodontal infection can occur simultaneously in an "independent" endodontic-periodontic lesion, exhibiting the characteristics of both. **D,** Primary pulpal and primary periodontal infections can occur extensively in this "combined" endodontic-periodontic lesion.

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Endodontic-Periodontal Lesions



2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Periodontal Abscesses and Endodontic-Periodontal Lesions

Vertical Root Fracture

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

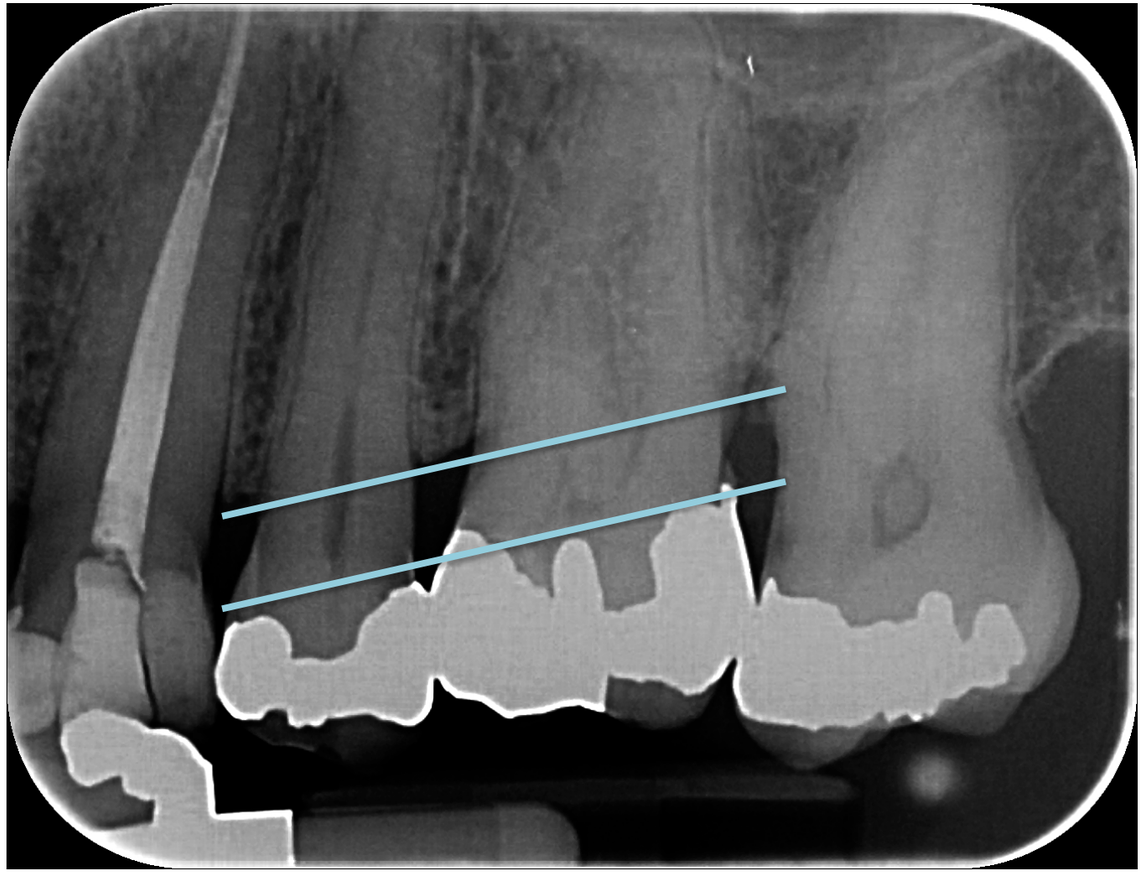
Periodontal Abscesses and Endodontic-Periodontal Lesions

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Tooth and Prosthesis Related Factors

2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Tooth and Prosthesis Related Factors



2017 CLASSIFICATION OF PERIODONTAL AND PERI-IMPLANT DISEASES AND CONDITIONS

Gingival health on a reduced periodontium of a non-periodontitis patient

The End!

Thank you!

PERIODONTAL PROGNOSIS

Kwok and Caton

(*J Periodontol* 2007; 78: 2063-2071)

- Favorable
- Questionable
- Unfavorable
- Hopeless

YES

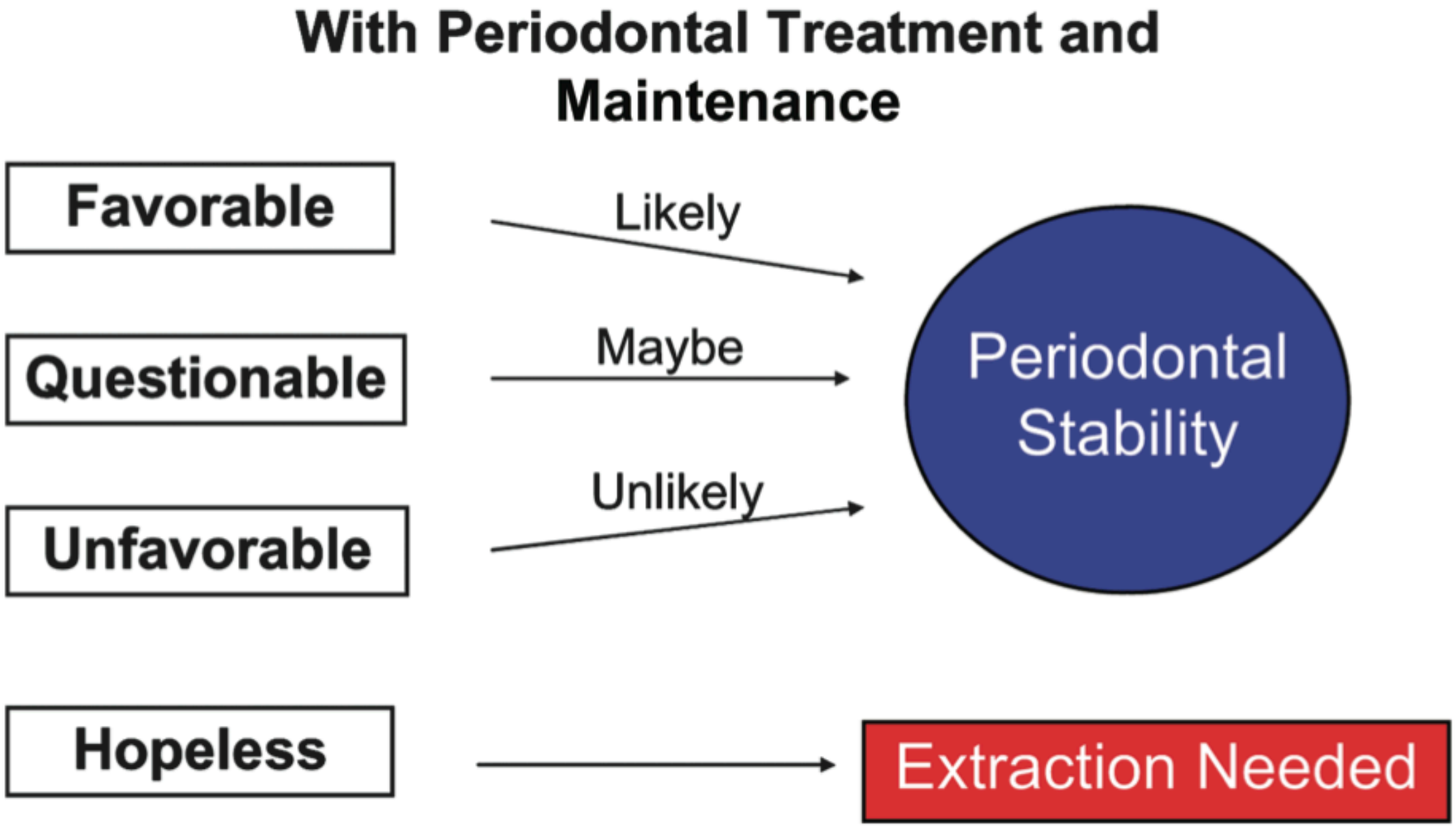
McQuire

(*J Periodontol* 1991; 62: 51-58)

- Good
- Fair
- Poor
- Questionable
- Hopeless

NO

KWOK AND CATON PERIODONTAL PROGNOSIS



J Periodontol 2007; 78: 2063-2071