

Prognosis of Periodontally Involved Teeth

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Learning Outcomes

- Define prognosis.
- Explain the importance of assigning periodontal prognosis before treatment and after each examination.
- Discuss the factors which affect periodontal prognosis.
- Compare different periodontal prognosis systems.

Lecture Outline

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- Define prognosis.
- Explain the importance of assigning periodontal prognosis before treatment and after each examination.
 - Aims of prognosis
 - Prognosis in context
- Prognosis systems
 - Challenges and complexity
 - Factors to consider
 - Previous systems
 - Future of prognosis
 - Prognosis at OHCWA
- Case examples
- Implants

Prognosis

- Greek
 - Pro = before
 - Gno = “to know”
 - Foreknowledge
- The likely outcome or course of a disease; the chance of recovery or recurrence

**Historically
based on
Experience**

**Aetiopathogenesis
and
Risk Factors**

- Prognosis is the prediction of the probable outcome of an individual's current medical condition. A prognosis is made on the basis of the normal course of a disease, the individual's physical and psychological condition, and additional factors such as therapeutic approach.



**Statistics /
Validated models
or systems**

- **Aim:** To predict the outcome of periodontally involved teeth, leading to better decision-making, treatment planning, and long-term predictable results
- Prognosis is an essential part of periodontal care, together with diagnosis/treatment/maintenance
- It directly influences treatment planning
- Involves the analysis of all contributing factors to periodontitis - hence a good history, examination, and accurate diagnosis are **essential prerequisites**
- Prognosis is a complex process and requires a **multidisciplinary approach** involving the patient
- Prognosis is **affected by the experience and skill of the clinician**

Prognosis provides guidance



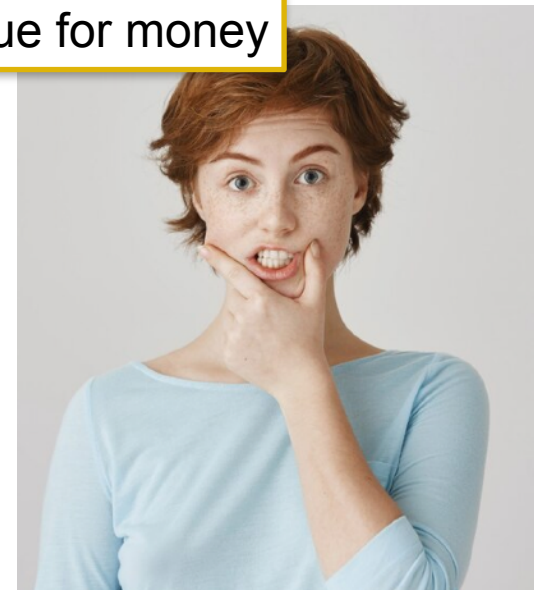
Questions from patient to dentist

- How long will my teeth last?
- How successful will this treatment be?
- Should I have the tooth extracted and replaced with an implant?
- Should I have the tooth extracted and added to my denture? Will I then need a new denture in a few years?

Time and value for money

Questions from dentist to periodontist (Or dental student to tutor)

- Can I go ahead and restore this periodontally involved tooth?



Prognosis in context



Examination



Diagnosis



Prognosis



Treatment planning



Therapy

Challenges of determining prognosis

Current consensus is periodontitis is a **multifactorial** disease influenced by **many risk factors** which individually impinge on disease progression, treatment management, and response.

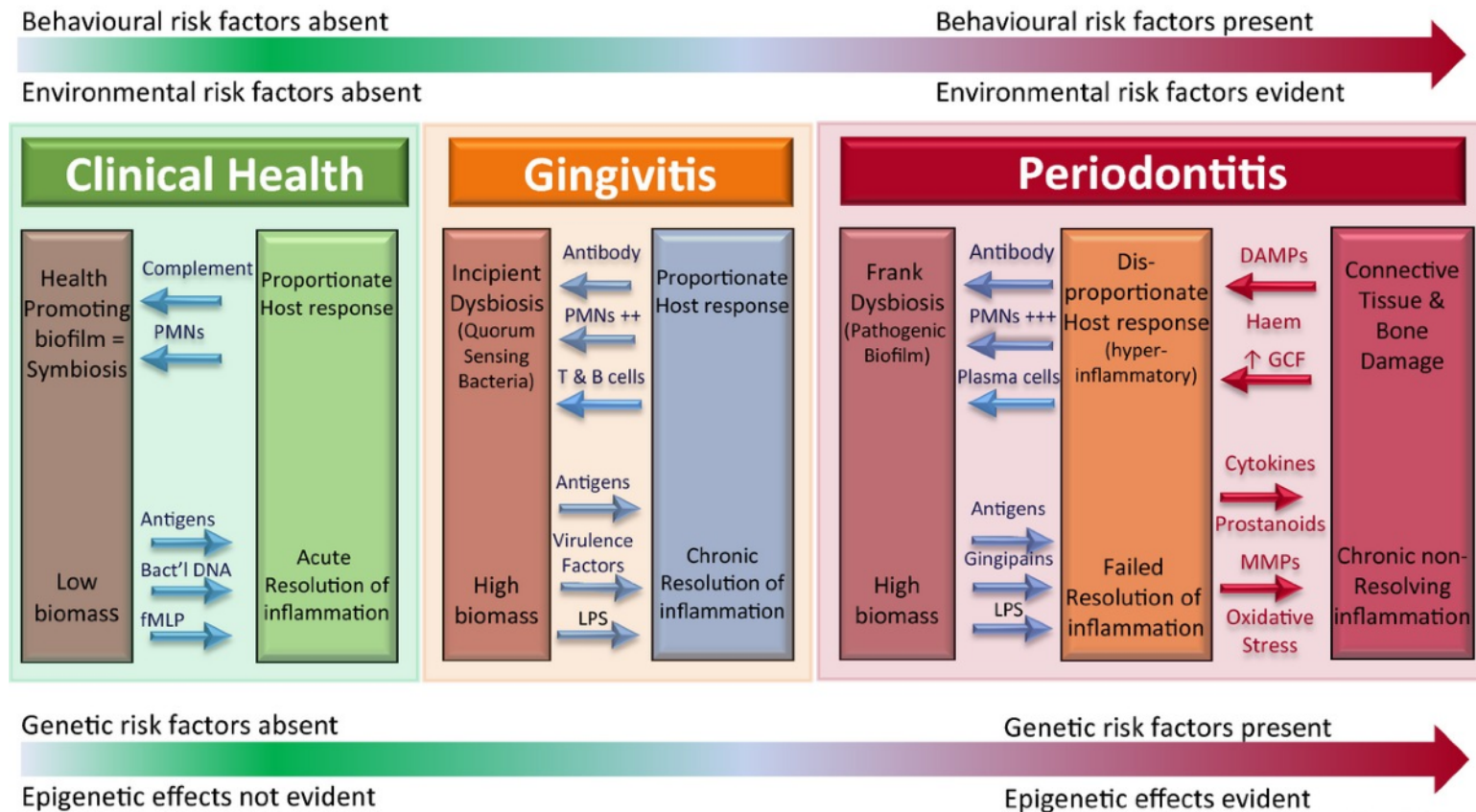
- Prognosis may change for better or worse.
- Constant reassessment of prognosis necessary.

Provisional Prognosis

For periodontal prognosis, the McGuire & Nunn 1996 classification as modified by Kwok and Caton 2007 prognosis can be utilised as this is very familiar to the current prognosis system used for restorative treatment plans. The determination of prognosis is an **evolving and dynamic process**. **Prognosis can change after treatment** as well as after recurrent disease activity. Therefore, **prognostication occurs after each examination** of the patient (Kwok & Caton 2007).

Challenges of determining prognosis

Current aetiopathogenesis model

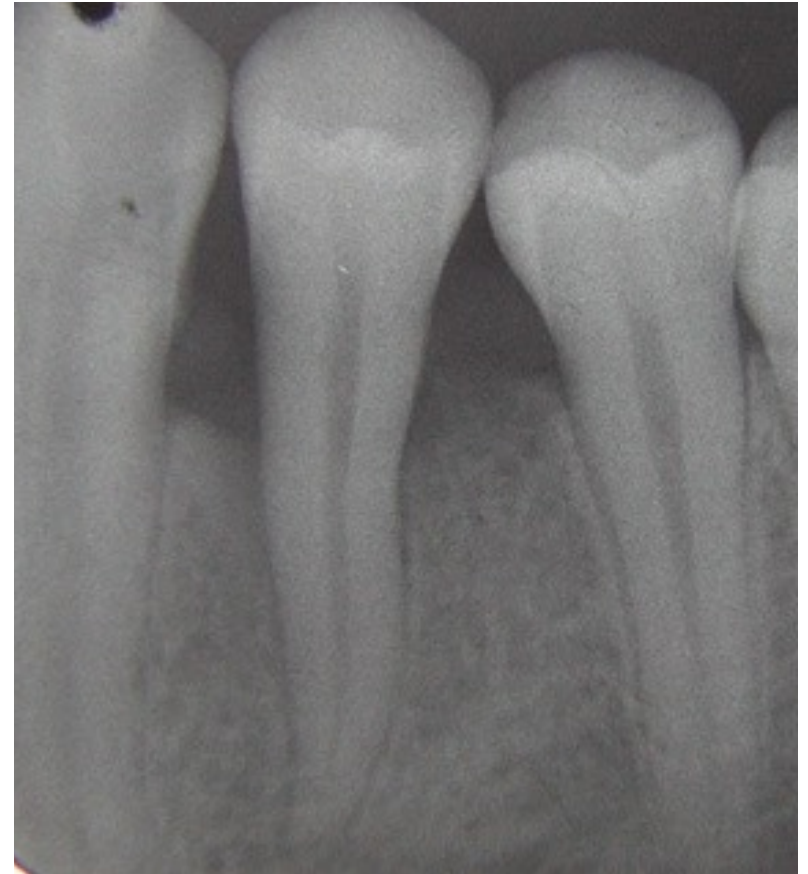


Challenges of determining prognosis

How accurate are we at determining the prognosis of periodontally compromised teeth?



Are we too hasty in making the decision to extract?



Prognosis vs actual outcome

Prognosis versus actual outcome. II. The effectiveness of clinical parameters in developing an accurate prognosis

McGuire & Nunn 1996

- Assigned 5 categories
 - Good, fair, poor, questionable hopeless
 - Treated and maintained over 8 years
 - Good prognosis stayed relatively stable
 - Fair prognosis category mostly improved
 - Poor/questionable categories generally improved
 - 25% of hopeless teeth were retained after 8 years
-
- Overall accuracy **35 %**



Prognosis vs actual outcome

Periodontal attachment levels of extractions
presumably performed for periodontal reasons

Splieth et al 2002

- Looked at what were dentists “forceps level”
- 500 teeth extracted for periodontal reasons
- A considerable number of teeth were extracted at an **attachment level of 50-70%**
- Concluded that the threshold for periodontal extractions was **too low**
- Called for an improvement in the knowledge of periodontal diagnosis and treatment

Factors determining prognosis

Table 1 Factors affecting tooth prognosis

Systemic factors	Periodontal factors	Prosthetic factors	Endodontic factors
Patient compliance	Symptoms	Caries	Loss of vitality
Plaque control	Plaque	Functional or non-functional tooth	Combined endodontic-periodontic infection
Smoking	Calculus	Over-eruption	Root resorption
Disease severity	Periodontal probing depths	Abutment tooth or not	
Patient age	Bleeding/suppurative on probing	Occlusal trauma	
Systemic disease	Tooth mobility	Aesthetics	
Stress	Furcation involvement	Tooth surface loss	
Mouth breathing/xerostomia	Bony defects		
Alcohol intake	Subgingival/defective restorations		
Diet	Root length, size and divergence		
	Root concavities		
	Root proximity		
	Developmental grooves		
	Bifurcation ridges		
	Cervical enamel projections		
	Enamel pearls		
	Access		
	Disease severity		

Factors determining prognosis

Prognostic Factors:

Factors which are associated with a particular **outcome** among diseased individuals.

i.e. likelihood of **survival** vs likelihood of **improvement**.

One essential element of prognosis is the definition of the intended **outcome**.

Patient level factors

Local/Tooth level factors



Defined **outcome**

Prognosis for individual teeth vs overall

Periodontitis does not progress uniformly in the dentition, and has general/systemic factors as well as local/tooth-related factors.

- **INDIVIDUAL**

- Considers each individual tooth as periodontitis does not occur uniformly and has an episodic nature
- Considers other aspects: endo, restorative...

- **OVERALL**

- Considers dentition as a whole.
- Should include general factors that affect the dentition as a whole too
- Should treatment be undertaken?
- Is treatment likely to succeed?
- When restorative treatments are needed, are the teeth able to support them?

Patient level factors

- Age
- Patients' expectations
- Risk factors (smoking, diabetes, stress)
- Compliance to biofilm control
- Compliance to maintenance care

Patient Age

For two patients with comparable levels of remaining connective tissue attachment and alveolar bone, the prognosis is generally better for the older of the two. For the younger patient, the prognosis is not as good because of the shorter time frame in which the periodontal destruction has occurred; the younger patient may also have an aggressive pattern of disease progression because of systemic disease, smoking, or other factors. In addition, although the younger patient would ordinarily be expected to have a greater reparative capacity, the occurrence of so much destruction in a relatively short period would exceed any naturally occurring periodontal repair.

Local/Tooth level factors

- Anatomic factors
 - Short tapered roots
 - Cervical enamel projections
 - Enamel pearls
 - Root concavities
 - Developmental grooves
 - Root proximity
- Tooth position and occlusion
- Furcation involvement
- Crown-root ratio
- Abutment tooth
- Traumatic occlusion
- Disease severity
 - BOP
 - PPD
 - CAL
 - Bone loss for age
- Distribution and type of bone loss
 - Localised
 - Generalised
 - Horizontal
 - Infrabony
- Tooth mobility
- Other involvements
 - Caries
 - Endodontic

Local/Tooth level factors

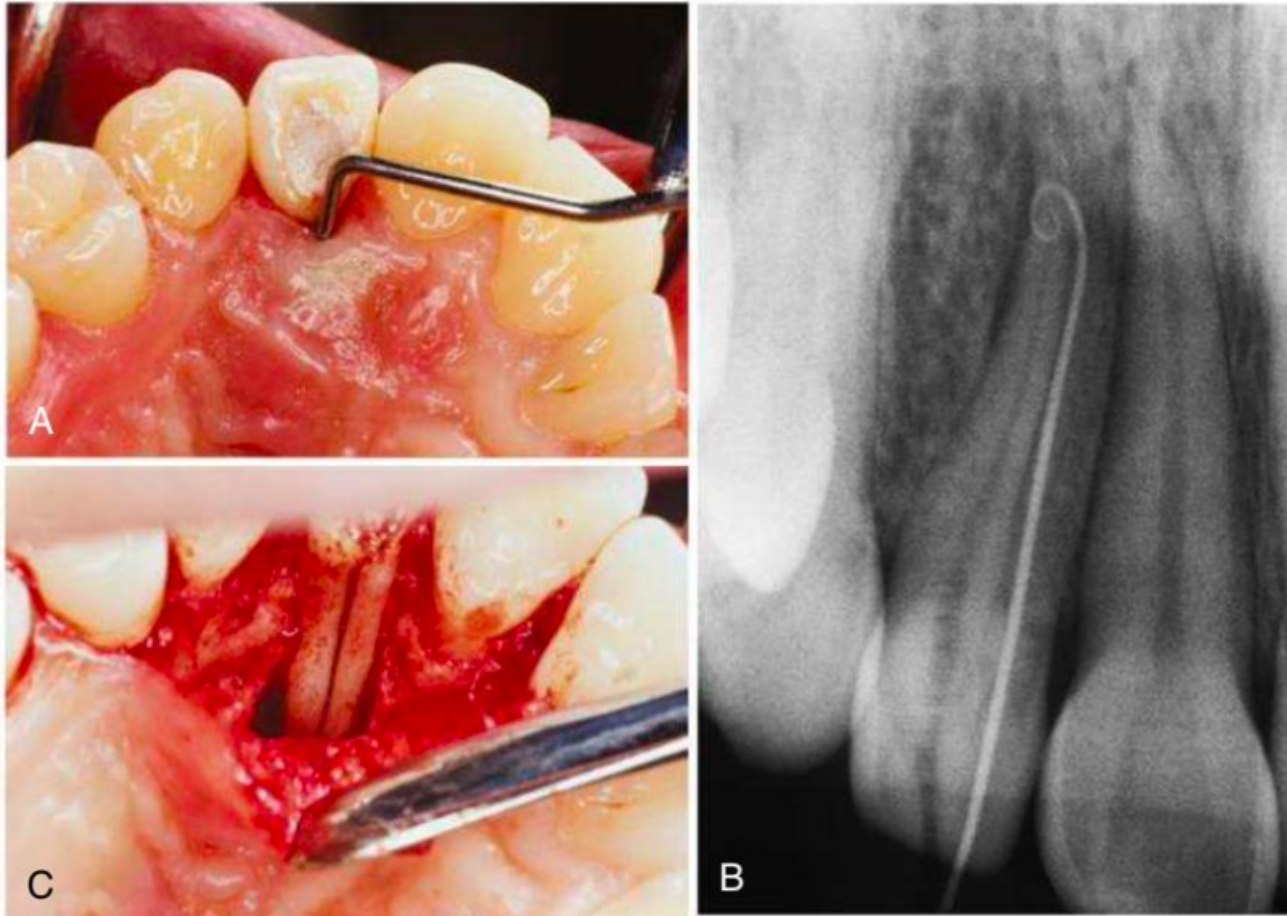
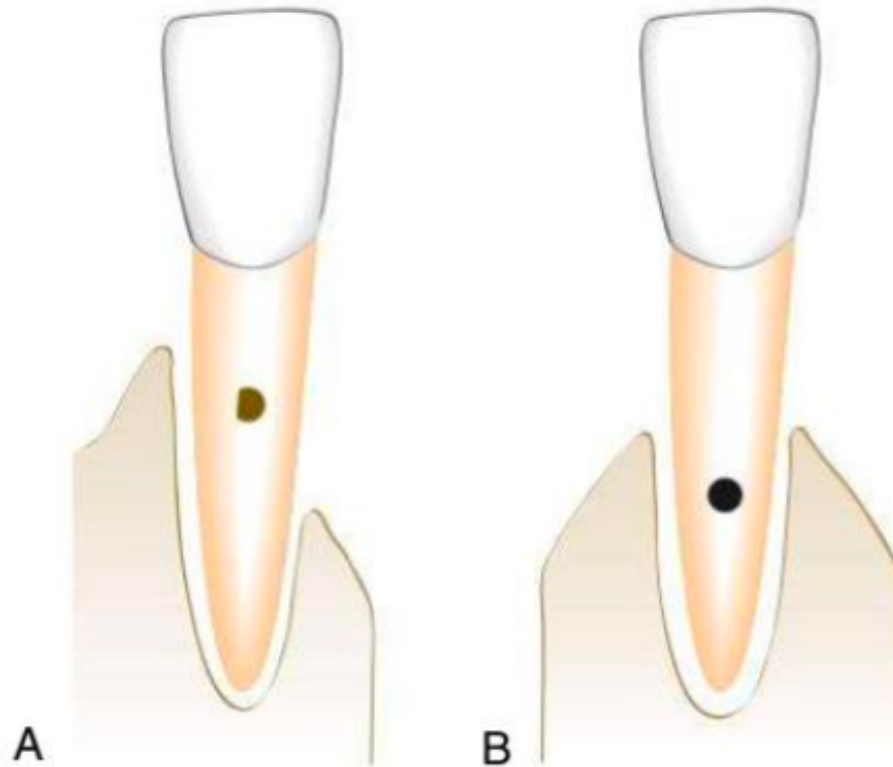


Fig. 41.7 Palatogingival groove. (A) Probe in place to indicate a deep pocket along the palatogingival groove. (B) Radiograph with a gutta-percha point placed in the pocket. (C) The area is surgically opened. Note the palatogingival groove along the entire palatal portion of the root. (Courtesy Dr. Nadia Chugal, University of California, Los Angeles.)

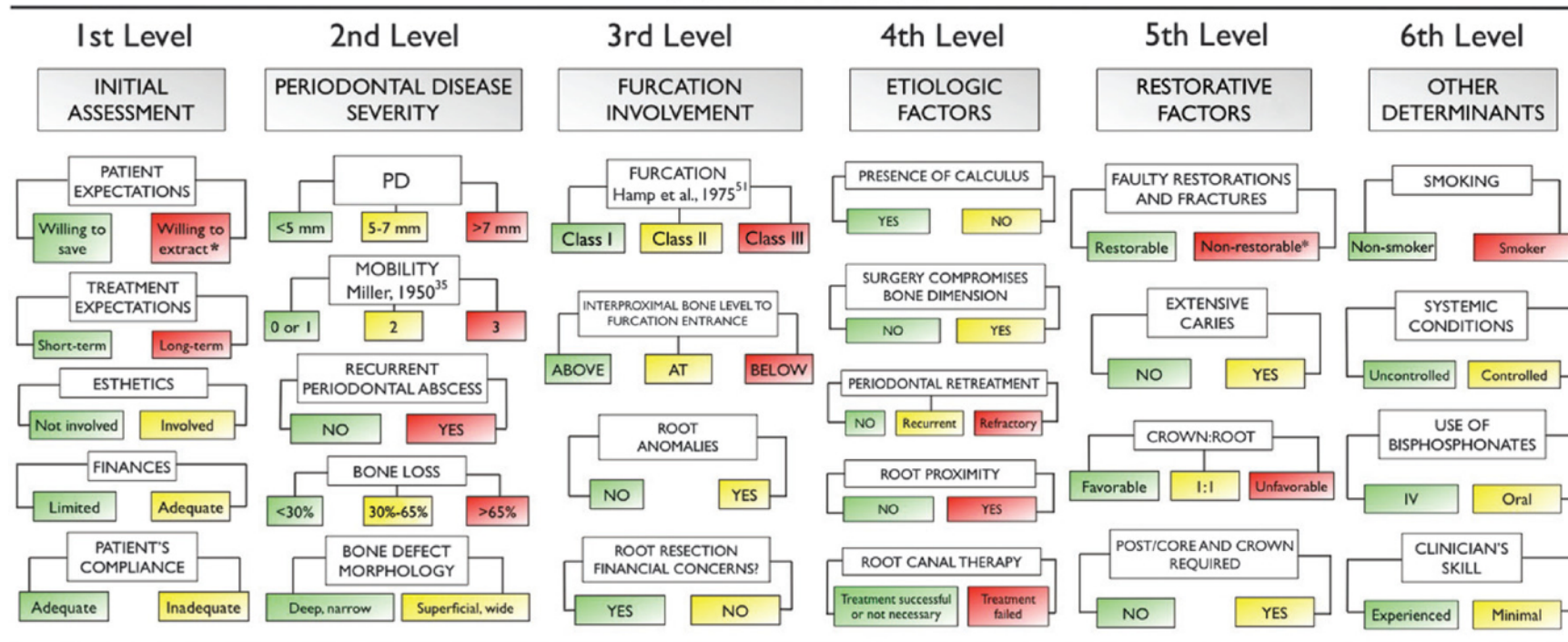
Local/Tooth level factors



Prognosis of A is better than B
Centre of rotation for A is nearer to the crown

Retain or extract - it's complex

EXTRACTION VERSUS CONSERVATION DECISION CHART



■ LONG-TERM SURVIVAL UNFAVORABLE
■ PROCEED WITH CAUTION RECOMMENDED
■ LONG-TERM MAINTENANCE FAVORABLE

≥ 3 ■ or 2 ■ + ≥ 2 ■: Extraction is recommended
 2 ■ + 1 ■ or 1 ■ + ≥ 3 ■ or 4 ■: Consider extraction
 1 ■ + ≤ 2 ■ or 3 ■: Attempt to treat; if fails, then extraction advisable
 2 ■: Tooth maintenance may be compromised but feasible
 All ■ or 1 ■: Tooth conservation is recommended

■* Strongly suggest extraction

Previous prognosis systems

- Several proposed since the 1970s
- Main limitations
 - Based exclusively on tooth level factors
 - Patient level modifiers/factors generally not considered
 - Subjective measures instead of objective and quantifiable, (“extensive”, “marked”, “poor”...)
 - Complex systems
- Often inaccurate due to input data and complexity of use

Previous prognosis systems

Output from a model is only as good as the input and interpretation



An ideal prognosis system

- Include objective, quantifiable measures of clinical parameters
 - % bone loss
 - Grade of furcation involvement
 - Grade of mobility
 - ...
- Include patient level modifiers
- Include only factors reported in the literature shown to influence tooth loss
- Provide short-term (< 5 year) and long-term (> 5 year) prognosis
- Define expected outcome in a way that is relevant to other treating practitioners
- As simple as possible
- Validated prospectively

McGowan et al 2017

Previous prognosis systems

Study	L (AvY)	N (P)	N (T)	Classification System	Limitations & Strengths
Hirschfeld & Wasserman 1978	22	600	15,666	Favorable Questionable	+ Simple – Subjective measures – Relatively accurate in WM group, but inaccurate in DG and irrelevant in EDG – No PLM considered
Becker et al. 1984a, b	a: 6.5 b: 5.25	a: 95 b: 44	a: 2,414 b: 1,117	Good Questionable Hopeless	+ Accurate in WM group – Qualitative measures – Complex – All patients had ≥1 quadrant of pocket reduction Surgery – No PLM considered – Hopeless teeth extracted during APT
McGuire & Nunn 1996	9.97	100	2509	Good Fair Poor Questionable Hopeless	+ 81% accurate at 5-8 years – When teeth with a good prognosis excluded, accuracy drops to ~50% – Hopeless category determined by subjective criteria only – PLM considered but not included in determination of individual tooth prognosis – Complex – Hopeless teeth extracted during APT
Cecchi et al. 2002	6.7	92	2310	Good Questionable Hopeless	+ Straightforward – Radiographic evaluation only – Removed 126 teeth during APT and no information is available on prognosis of these teeth – PLM considered but not included in determination of individual tooth prognosis
Kwok & Caton 2007	N/A	N/A	N/A	Favorable Questionable Unfavorable Hopeless	+ PLM can be factored into individual tooth prognosis + Considers the stability of the periodontium – Not validated – Subjective measures
Faggion et al. 2008	11.8	198	4559	Provides probability of tooth survival in 10% increments	+ PLM (diabetes) can be factored into individual tooth prognosis, but does not consider smoking – Does not stratify diabetic patients according to level of diabetic control – Complex
Miller et al. 2014	24	102	816	Provides a score between 1-11	+ PLM considered (smoking) + Simple – Molar teeth only – Subjective measures
Nibali et al. 2016	6.6	100	2494	Good Fair Questionable Unfavorable	+ Includes quantitative measure of periapical status – Do not appear to validate the model in the study, instead uses PRA & PRC – Complex – PLM considered (used PRA) but not included in determination of individual tooth prognosis

L (AvY), length of study in average years; N (P), number of patients; N (T), number of teeth; WM, well maintained; DG, downhill group; EDG, extreme downhill group;
PLM, patient level modifiers; APT, active periodontal treatment; PRA, periodontal risk assessment; PRC, periodontal risk calculator.

Proposed new prognosis system

	Secure	Doubtful	Poor	Irrational to treat
Prognosis	Future loss of periodontal supporting tissues is unlikely over 10 years (long term)	The periodontal tissues are expected to remain stable over 5 years (short term); IF patient-, tooth- and site-level factors are able to be managed	Breakdown of the periodontal supporting tissues is likely over the next 5 years (short term)	No periodontal support remaining
Tooth-level assessment ≥1 of the following:	BL/Age <0.5 PD ≤ 5 mm	BL/Age 0.5-1 PD 6-7 mm Degree II furcation Untreated infrabony defect Anatomic factors Tooth mobile >1 mm in transverse direction	BL/Age >1 PD ≥ 8 mm Degree III furcation Progressive tooth mobility	Circumferential bone loss to the apex Tooth mobile in axial direction
Patient-level assessment	The tooth-level assessment is downgraded by 1 level to a maximum of poor ^a if ≥ 1 of the following factors are present: Smoking: ≥1/d Poorly controlled diabetes: HbA1c ≥ 9 BOP at ≥30% of sites at review appointment			
Treatment recommendations	Tooth is suitable for prosthodontic, endodontic, and restorative therapy	Tooth may be suitable for prosthodontic, endodontic, and restorative therapy, but definitive treatment is best delayed until SPT	Tooth is not suitable for prosthodontic work. Endodontic and restorative therapy can be considered but tooth is not expected to survive over 5 years	Most appropriate course of clinical care is extraction

Compliance is mandatory: accuracy of prognosis cannot be relied upon for poorly compliant patients (as determined by attendance at SPT)

BL, bone loss; BOP, bleeding on probing; HbA1c, glycated hemoglobin; PAI, periapical index; PD, pocket depth; SPT, supportive periodontal therapy.

^a A secure prognosis is downgraded to doubtful, and doubtful to poor, but poor cannot be made irrational to treat.

An ideal prognosis system

- Include objective, quantifiable measures of clinical parameters 
 - % bone loss
 - Grade of furcation involvement
 - Grade of mobility
 - Probing depths
- Include patient level modifiers 
- Include factors reported in the literature shown to influence tooth loss 
- Provide short-term (< 5 year) and long-term (> 5 year) prognosis 
- Define expected outcome in a way that is relevant to other treating practitioners 
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? Validated ?

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- “Hopeless”
- Insufficient remaining tooth structure to support a restoration
- Vertical root fracture
- Concurrent endo-perio disease with communication and Grade III mobility, 100% bone loss
- Inaccessible, non-functional third molars

- **Advances in periodontal therapy**
 - Diagnostics (volumetric analysis)
 - Surgical approaches, lasers, regeneration
 - Longer term reviews
 - Understanding the value of long term maintenance (SPT)
- **Advances in endodontic therapy**
 - Improved diagnostics
 - Use of microscopes
 - New instrumentation and disinfection techniques
- **Risk assessment** and understanding the risk factors in implant therapy
 - **Redefining success**
 - Absence of persistent signs/symptoms,
 - No radiolucency/progressive bone loss
 - Patient satisfaction with restoration... rather than **survival**

Prognosis at OHCWA



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Oral Health Centre
of Western Australia

Kwok & Caton	Mcguire & Nunn	Description
Favourable/Certain	Good	Control of the etiologic factors and adequate periodontal support as measured clinically and radiographically to ensure the tooth would be relatively easy to maintain by the patient and clinician assuming proper maintenance
	Fair	Approximately 25% attachment loss as measured clinically and radiographically and/or Class I furcation involvement. The location and depth of the furcation would allow proper maintenance with good patient compliance
Uncertain	Poor	50% attachment loss and Class II furcations. The location and depth of the furcations would allow proper maintenance, but with difficulty
Unfavourable	Questionable	>50% attachment loss resulting in a poor crown/root ratio. Poor root form. Class II furcations not easily accessible to maintenance care, or Class III furcations. $\geq 2+$ mobility. Significant root proximity
Hopeless	Hopeless	Inadequate attachment to maintain the tooth in health, comfort, and function. Extraction was performed or suggested. i.e., Grade III mobility or vertical mobility with extensive attachment loss

Prognosis at OHCWA

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Hopeless	Hopeless	Inadequate attachment to maintain the tooth in health, comfort, and function. Extraction was performed or suggested. Gr 3 mobility or extensive attachment loss.

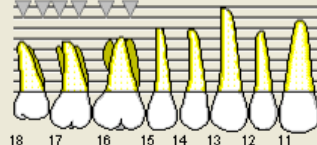
Prognosis at OHCWA

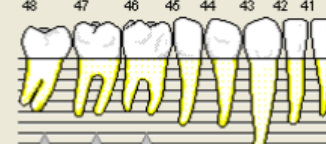
Prognosis

Prognosis scores are recorded on the upper palatal and lower lingual charts in the corresponding 'Prog' rows

Palatal

Prog	
AL	000 000 000 000 000 000 000 000
Rec	000 000 000 000 000 000 000 000
PD	000 000 000 000 000 000 000 000



	48	47	46	45	44	43	42	41	3
									
PD	000	000	000	000	000	000	000	000000	
Rec	000	000	000	000	000	000	000	000000	
AL	000	000	000	000	000	000	000	000000	
Prog									

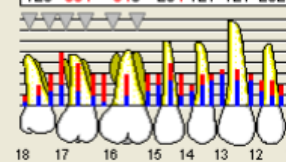
Lingual

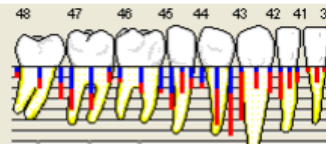
Left click, using the mouse, above the first tooth, then using the digits on the keyboard record the prognosis, as you type the cursor will automatically move along the chart. Any teeth, which are charted as missing, will be omitted when recording the scores.

To record:	Use the following on the keyboard:
Prognosis score	Enter the required letter using the keyboard. As each letter is entered the cursor will automatically move to the next measurement.
G- Good	
F- fair	
P- Poor	
H- Hopeless	

Palatal

Prog	G G F P H F G
AL	246 086 666 686 466 776 554
Rec	123 432 123 452 345 655 322
PD	123 654 543 234 121 121 232



	48	47	46	45	44	43	42	41	3
									
PD	123	432	121	342	178	934	532	131	
Rec	123	451	234	512	345	111	111	000	
AL	246	883	355	854	413	045	643	131	
Prog	G	F	F	P	P	H	H	F	

Lingual

OHCWA Perio eForm

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EVIDENCE OF BONE LOSS	% BONE LOSS / AGE	CASE PHENOTYPE	SMOKING	DIABETES	
☐ Grade A	☐ NO LOSS 5 YEARS	☐ < 0.25	☐ HEAVY FILM DEPOSITS LOW DESTRUCTION	☐ NON SMOKING	☐ NORMO GLYCEMIC
☐ Grade B	☐ < 2 mm 5 YEARS	☐ 0.25 TO 1.0	☐ FILM DEPOSITS CORRESPOND TO DESTRUCTION	☐ < 10 CIGARETTES DAY	☐ HbA1c < 7.0 %
☐ Grade C	☐ ≥ 2 mm 5 YEARS	☐ > 1.0	☐ LOW FILM DEPOSITS HIGH DESTRUCTION	☐ ≥ 10 CIGARETTES DAY	☐ HbA1c > 7.0 %

☐ CURRENTLY STABLE PERIODONTITIS: (REDUCED PERIODONTIUM: BOP < 10% POCKETS 4 mm OR LESS)

☐ CURRENTLY REMISSION PERIODONTITIS: (LINGUAL INFLAMMATION ON A REDUCED PERIODONTIUM: BOP > 10% ON A TREATED PERIO CASE POCKETS 4 mm)

☐ CURRENTLY UNSTABLE PERIODONTITIS: BOP > 10 % AND POCKETS 4-5 mm OR MORE)

☐ OTHER FORMS OF PERIODONTITI

☐ PERI-IMPLANT HEALTH

☐ PERI-IMPLANT MUCOSITIS

☐ PERI-IMPLANTITIS

☐ PERI-IMPLANT ANOMALIES

Control of the etiologic factors and adequate periodontal support as measured clinically and radiographically to ensure the tooth would be relatively easy to maintain by the patient and clinician assuming proper maintenance.

Approximately 25% attachment loss as measured clinically and radiographically and/or Class I furcation involvement. The location sea depth of the furcation would allow proper maintenance with good patient compliance.

50% attachment loss and Class II furcations. The location and depth of the furcations would allow proper maintenance, but with difficulty.

>50% attachment loss resulting in a poor crown-root ratio. Poor root form. Class II furcations not easily accessible to maintenance care, or Class III furcations. Gr 2+ mobility. Significant root proximity.

Inadequate attachment to maintain the tooth in health, comfort, and function. Extraction was performed or suggested. Gr 3 mobility or extensive attachment loss.

OVERALL PERIODONTAL PROGNOSIS

☒ Good
 ☐ Fair
 ☐ Poor
 ☐ Questionable
 ☐ Hopeless

REFERRAL REQUIRED *describe unit and needs*

Student Signature

Tutor Signature

McGuire & Nunn 1996

Kwok & Caton 2007

An ideal prognosis system

- Include objective, quantifiable measures of clinical parameters 
 - % bone loss
 - Grade of furcation involvement
 - Grade of mobility
 - Probing depths
- Include patient level modifiers
- Include factors reported in the literature shown to influence tooth loss
- Provide short-term (< 5 year) and long-term (> 5 year) prognosis
- Define expected outcome in a way that is relevant to other treating practitioners
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☐ CLINICAL GINGIVAL HEALTH BOP < 10% PROBING < 3mm

☐ CLINICAL GINGIVAL HEALTH ON A REDUCED PERIODONTIUMBOP < 10% ON TREATED PERIODONTITIS PATIENT PROBING < 3mm

☐ GINGIVITIS BOP MORE 10% NO POCKETS ☐ LOCALISED ☐ GENERALISED

☐ GINGIVAL INFLAMMATION ON A PERIODONTITIS PATIENTBOP > 10% TREATED PERIODONTITIS PATIENT RECESSON PROBING < 3mm

☐ OTHER FORMS OF GINGIVITIS:

PERIODONTITIS:			
INTERDENTAL CAL	RADIOGRAPHIC BONE LOSS	TOOTH LOSS	COMPLEXITY
TWO OR + NON-ADJACENT TEETH			
☐ STAGE I	☐ 1-2 mm	☐ < 15% HORIZONTAL BONE LOSS	☐ NO TOOTH LOSS
☐ STAGE II	☐ 3-4 mm	☐ 15 - 33% HORIZONTAL BONE LOSS	☐ NO TOOTH LOSS
☐ STAGE III	☐ >= 5 mm	☐ MIDDLE ROOT THIRD AND MORE	☐ ANGULAR
☐ STAGE IV	☐ >= 5 mm	☐ MIDDLE ROOT THIRD AND MORE	☐ ANGULAR
		☐ < 4 TEETH	☐ >= 5 TEETH
			☐ MAX PROBING DEPTH < 4 mm
			☐ MAX PROBING DEPTH < 5 mm
			☐ MAX PROBING DEPTH > 6 mm
			☐ FURCATION GRADE II
			☐ GRADE III
			☐ MODERATE RIDGE DEFECT
			☐ MAX PROBING DEPTH > 6 mm
			☐ FURCATION GRADE II
			☐ GRADE III
			☐ SEVERE RIDGE DEFECTS
		☐ LESS THAN 20 TEETH REMAINING	☐ MASTICATORY DYSFUNCTION
			☐ 2ry OCCLUSAL TRAUMA
			☐ BITE COLLAPSE
DISTRIBUTION:			
☐ LOCALISED	☐ GENERALISED	☐ INCISIVE MOLAR	
30% AND LESS TEETH	MORE THAN 30 % TEETH		

[illegible]

An ideal prognosis system

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Relevant Medical History

HbA1c % level

Number a day: Years: Quit date:

☐ Yes ☐ No

Relevant Dental History

Brush Type: Manual ☐

Electric ☐

Interdental Clean: Floss ☐

Brushes ☐ Other

Biofilm Amount

min abundant

Chart in Perio Tab and input result here

CALCULUS DISTRIBUTION

Abundant

0 1 2 3 4 5 6 7 8 9 10

An ideal prognosis system

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McGowan et al 2017

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Clinical Extraoral & Intraoral Examination

TMJ & PARAFUNCTION

☐ Bruxism ☐ Clicking ☐ Occusal Wear ☐ =<20 Teeth ☐ Pain / Locking ☐ Referral

Occusal Interferences & Fremitus

8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

PROSTHESES

Prostheses Created:

Material Type:

Patient Satisfied: ☐ Yes ☐ No

Condition:

SOFT TISSUE FINDINGS

Lining Mucosa:

Palate:

Cheeks:

Tongue:

Lips:

Floor of Mouth:

Other:



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OTHER BIOFILM RETENTIVE FACTORS

Gingival Enlargement:

Overhangs:

Overcontoured Restorations:

Pontics:

Caries:

Root Anomalies:

Other:

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Dental Caries	
Endodontic	
Overhangs	
Open Contacts	
Deficient Restorations	
Other Findings	

An ideal prognosis system

- Include objective, quantifiable measures of clinical parameters 
 - % bone loss
 - Grade of furcation involvement
 - Grade of mobility
 - Probing depths
- Include patient level modifiers 
- Include factors reported in the literature shown to influence tooth loss 
- Provide short-term (< 5 year) and long-term (> 5 year) prognosis 
- Define expected outcome in a way that is relevant to other treating practitioners
- As simple as possible
- Validated prospectively

McGowan et al 2017

Received: 2 June 2020 | Revised: 18 August 2020 | Accepted: 26 August 2020
DOI: 10.1002/JPER.20-0411

ORIGINAL ARTICLE



Analyzing the predictability of the Kwok and Caton periodontal prognosis system: A retrospective study

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this study.

Abstract

Background: The aim of this study was to analyze the predictability of the Kwok and Caton periodontal prognosis system by investigating tooth survival within a 64-month period and to compare this to other well-established prognosis systems.

Methods: This retrospective study included the records of patients who had a minimum of two dental exams at least 12 months apart at a single University-affiliated Dental Center. Data including patients' age, sex, length of follow-up period, initial tooth prognosis, revised tooth prognosis, tooth type, and number of teeth lost at the latest exam were recorded. Descriptive analysis was used for data interpretation.

Results: A total of 4,046 teeth from 174 patients qualified for the study. Teeth with initial poorer prognosis had a higher chance of being extracted compared with those with a better initial prognosis. Tooth survival rate at the latest follow-up for those with an initial favorable, questionable, unfavorable, and hopeless prognosis was 97.9%, 90.7%, 62.5%, and 17.7%, respectively. Teeth initially assigned to a poorer prognosis category had a higher proportion that changed to a worse prognosis at the latest periodontal exam.

Conclusions: The Kwok and Caton prognosis system can predictably determine tooth survivability within a 5-year period. The defined categories of this prognosis system are more reliable than that of other systems in the short-term. However, long-term (>5 years) prediction accuracy of this prognosis system needs further investigation.

KEYWORDS

dentistry, diagnosis, periodontitis, prognosis, risk factor(s)

5 | CONCLUSIONS

Our study investigated the predictability of the Kwok and Caton prognosis system and found that this system can accurately determine tooth survivability within a 5-year period. The defined categories of this prognosis system are more reliable than other previously published systems for short-term predictions. However, the long-term (≥ 5 years) prediction accuracy of this prognosis system has to be further investigated.



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Prognosis at OHCWA

Control of the etiologic factors and adequate periodontal support as measured clinically and radiographically to ensure the tooth would be relatively easy to maintain by the patient and clinician assuming proper maintenance.

Approximately 25% attachment loss as measured clinically and radiographically and/or Class I furcation involvement. The location and depth of the furcation would allow proper maintenance with good patient compliance.

50% attachment loss and Class II furcations. The location and depth of the furcations would allow proper maintenance, but with difficulty.

>50% attachment loss resulting in a poor crown-root ratio. Poor root form. Class II furcations not easily accessible to maintenance care, or Class III furcations. Gr 2+ mobility. Significant root proximity.

Inadequate attachment to maintain the tooth in health, comfort, and function. Extraction was performed or suggested. Gr 3 mobility or extensive attachment loss.



relatively easy to maintain

proper maintenance with good patient compliance

maintenance, but with difficulty

not easily accessible to maintenance care

Inadequate attachment to maintain the tooth

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Case examples

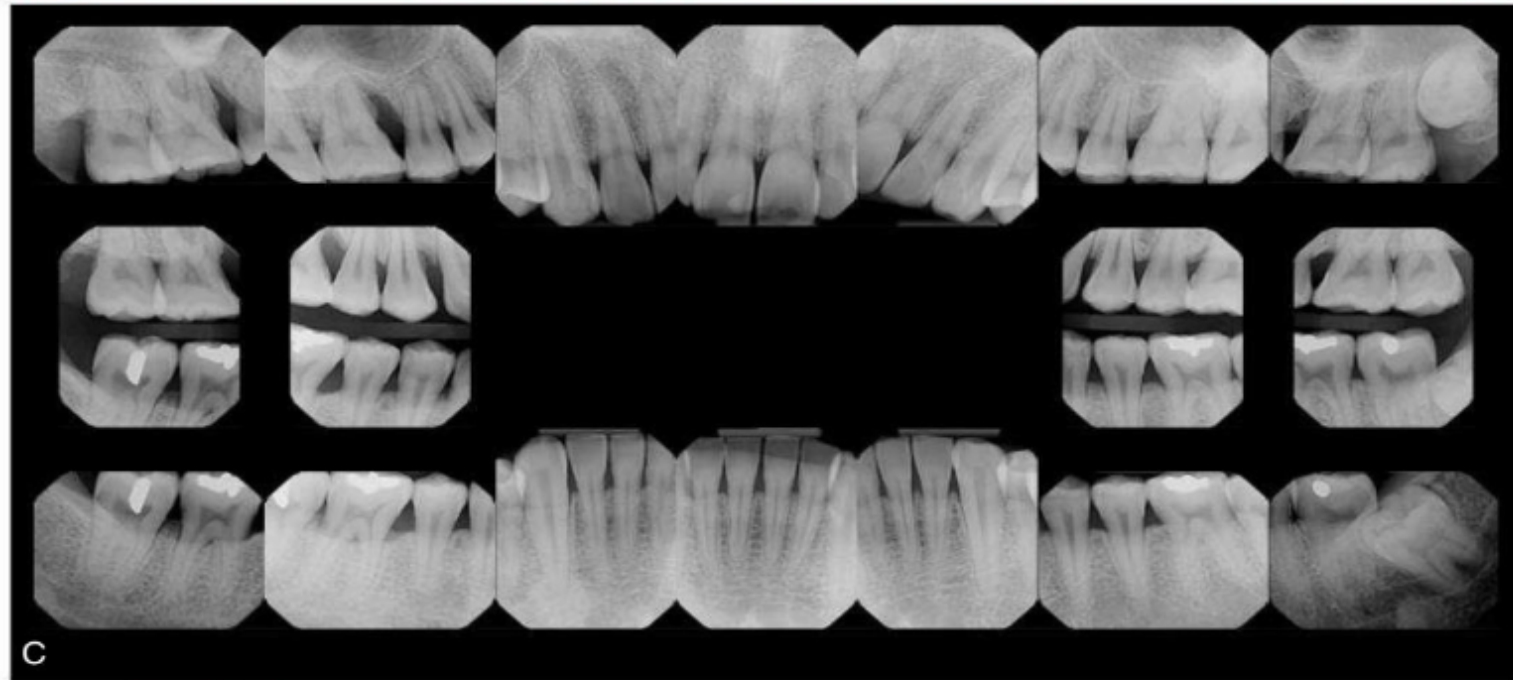


Fig. 41.10 Clinical photos (A and B) and full mouth radiographic series (C) of a patient who had molar-incisor pattern of periodontitis (used to be called "localized aggressive periodontitis"). The overall prognosis is favorable except for the maxillary right first molar (unfavorable), maxillary left first molar (questionable), and mandibular right first molar (questionable).

Case examples



Fig. 41.2 Generalized, stage III, grade C periodontitis in a healthy, nonsmoking 49-year-old female. (A and B). Moderate clinical biofilm, calculus, and gingival inflammation. (C) Moderate to severe radiographic bone loss. Overall prognosis is questionable/unfavorable. (Copyright Jonathan H. Do, DDS. All rights reserved.)

Case examples

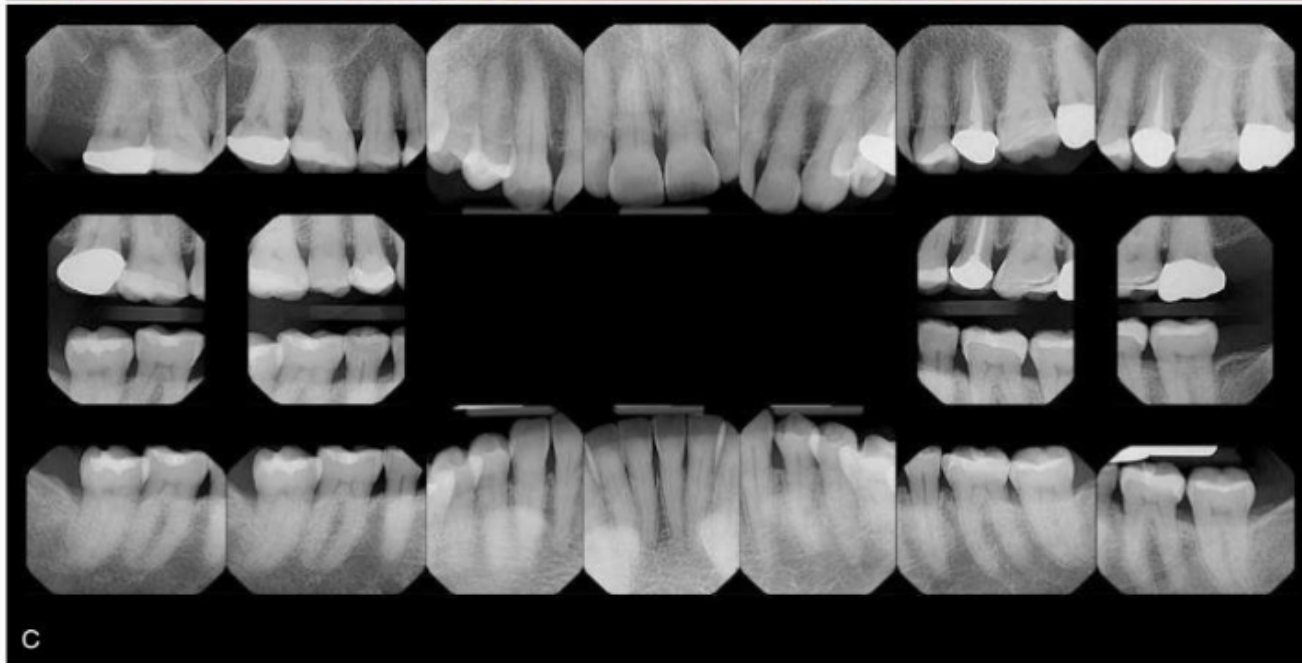


Fig. 41.1 Generalized stage I, grade B periodontitis in a healthy, nonsmoking 67-year-old female. Minimal clinical biofilm and gingival inflammation (A and B) and radiographic bone loss (C). Overall prognosis is favorable. (Copyright Jonathan H. Do, DDS. All rights reserved.)

Irrational to treat - now implants?

“In no way does the longevity of oral implants surpass that of natural teeth even of those that are compromised for either periodontal or endodontic reasons.”

[Holm-Pedersen et al 2007](#)

“However, other colleagues have started to realize that there sometimes is an over-confidence in implant therapy and that expensive treatments with uncertain prognosis are provided when other solutions, saving a greater number of natural teeth, would have been a comparable, or even a better, choice long-term.”

[Lundgren et al 2008](#)

“There is no evidence available to support an aggressive approach in early extraction of teeth, to preserve bone for later implant placement.”

[Chandki & Kala 2012](#)

“Periodontal regeneration can change the prognosis of hopeless teeth and is a less costly alternative to tooth extraction and replacement.”

[Cortellini et al 2020](#)

Irrational to treat - now implants?

- Implants do not survive more than treated periodontally compromised teeth
- Implants have common complications
- Management of implant complications is challenging
- Implants are not cheaper than periodontal therapy
- Tooth complication?
 - Extract and replace with implant
- Implant complication? ...



Questions?



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