

PRESENTED BY: PAUL JOHNSON, DDS



2025 South Dakota Diabetes Coalition

Gums, Glucose, and Good Health



Paul Johnson, DDS



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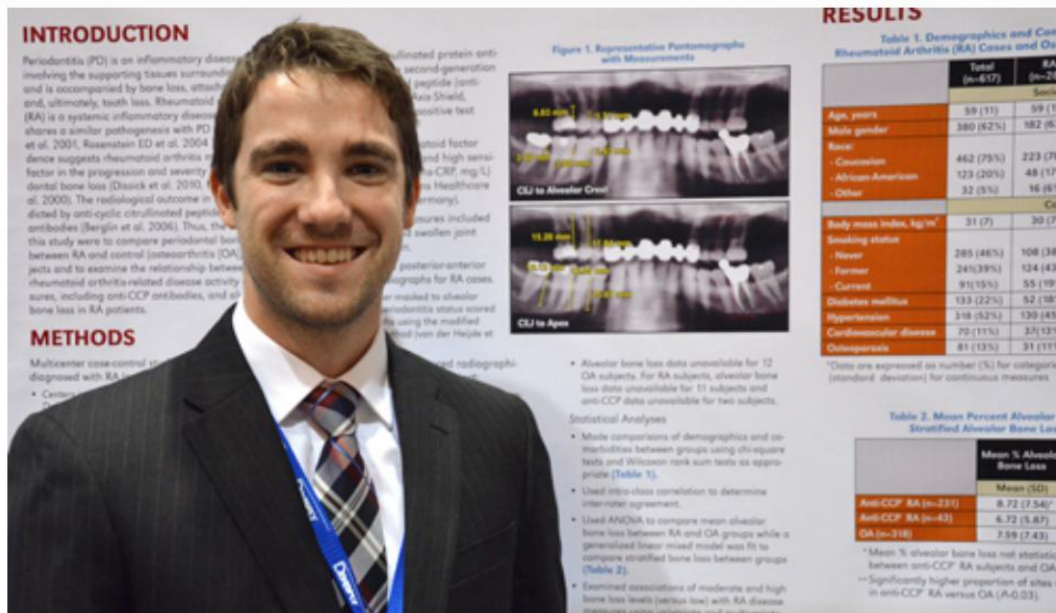
Background:

- South Dakota State University
- University of Nebraska Medical Center - Dental School
- Periodontal Residency (UNMC)
- Private Practice in Sioux Falls

UNMC dental student tops competition with research project

WRITTEN BY [John Keenan](#)

PUBLISHED Nov 26, 2013



INTRODUCTION

Periodontitis (PD) is an inflammatory disease involving the supporting tissues surrounding the tooth and is accompanied by bone loss, attachment loss, and, ultimately, tooth loss. Rheumatoid arthritis (RA) is a systemic inflammatory disease that shares a similar pathogenesis with PD. Evidence suggests rheumatoid arthritis is a risk factor in the progression and severity of dental bone loss (Disack et al. 2010; Disack et al. 2000). The radiological outcome is dictated by anti-cyclic citrullinated peptide antibodies (Berglin et al. 2006). Thus, the purpose of this study was to compare periodontal bone loss between RA and control (osteoarthritis [OA]) subjects and to examine the relationship between rheumatoid arthritis-related disease activity scores, including anti-CCP antibodies, and alveolar bone loss in RA patients.

METHODS

Multicenter case-control study of 12 RA subjects and 12 OA subjects. Radiographs were taken and analyzed for alveolar bone loss. Statistical analyses were performed using SPSS software.

RESULTS

Table 1. Demographics and Clinical Characteristics of Study Groups

	Total (n=24)	RA (n=12)	OA (n=12)
Age, years	59 (11)	59 (12)	59 (12)
Male gender	180 (62%)	182 (63%)	182 (63%)
Race			
Caucasian	462 (79%)	223 (78%)	223 (78%)
African American	123 (20%)	48 (17%)	48 (17%)
Other	32 (5%)	16 (6%)	16 (6%)
Body mass index, kg/m ²	31 (7)	30 (7)	30 (7)
Smoking status			
Never	285 (46%)	108 (38%)	108 (38%)
Former	241 (39%)	124 (43%)	124 (43%)
Current	91 (15%)	55 (19%)	55 (19%)
Diabetes mellitus	133 (22%)	52 (18%)	52 (18%)
Hypertension	118 (19%)	130 (45%)	130 (45%)
Cardiovascular disease	70 (11%)	35 (12%)	35 (12%)
Osteoporosis	61 (10%)	31 (11%)	31 (11%)

Table 2. Mean Percent Alveolar Bone Loss Stratified by Disease Activity

	Mean % Alveolar Bone Loss
Anti-CCP RA (n=23)	8.72 (7.54)
Anti-CCP RA (n=43)	6.72 (5.87)
OA (n=12)	7.99 (7.43)

*Mean % alveolar bone loss not statistically different between anti-CCP RA subjects and OA subjects. **Significantly higher proportion of sites with alveolar bone loss in anti-CCP RA versus OA (P=0.03).

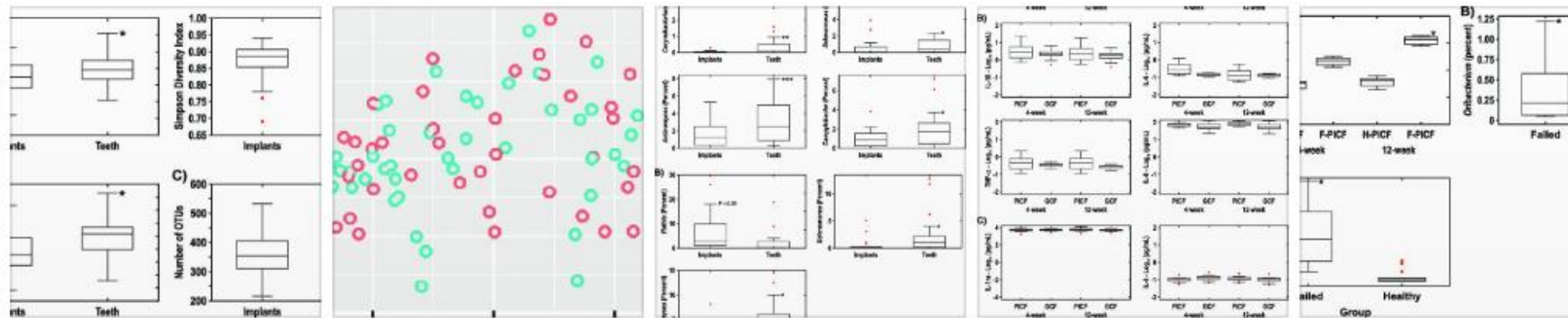
Paul Johnson

Project supporters

Paul Johnson's project was supported by the American College of Rheumatology Research Foundation (Dr. Mikuls, principal investigator) and by the F. Gene and Rosemary Dixon Endowed Chair in Dentistry (Dr. Payne, endowed chair), with additional support provided by the UNMC Clinical Research Center.

Tags

[UNMC Today - Today's Headlines](#)



Subgingival Microbiome Colonization and Cytokine Production during Early Dental Implant Healing

[Article](#)
[Full-text available](#)

Nov 2017

Jeffrey B. Payne · Paul G Johnson · Car Reen Kok · [...] · Robert W. Hutkins

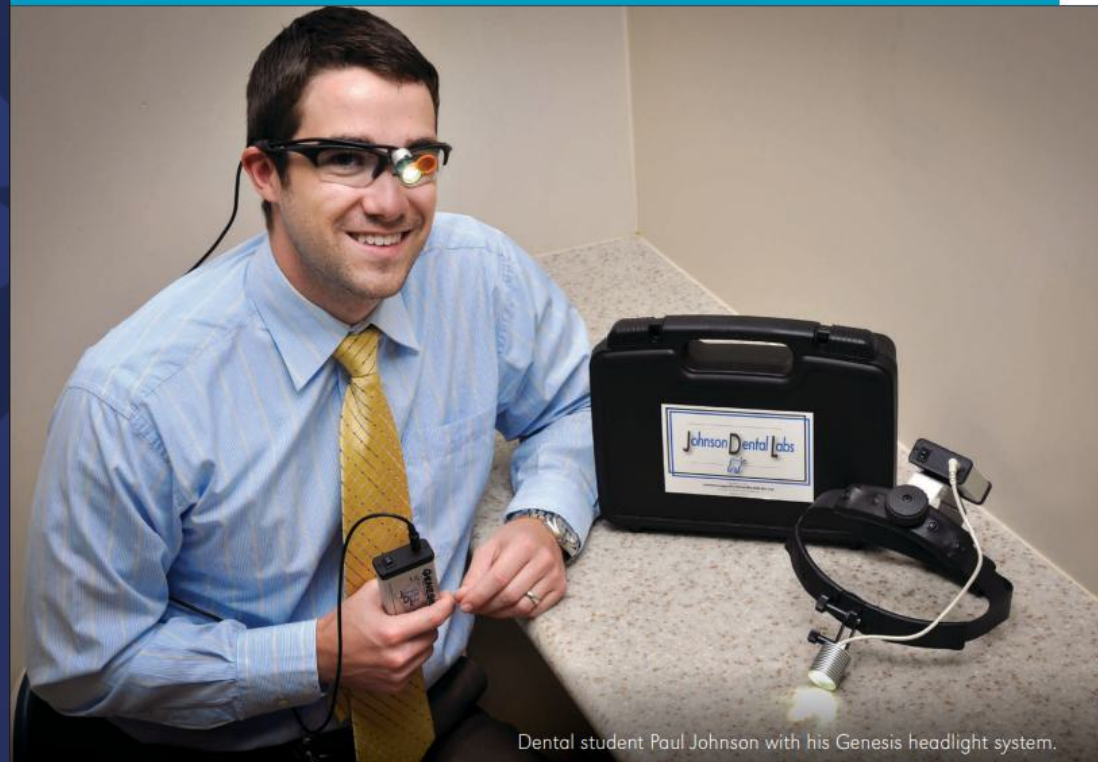
Dental implants are a common treatment option offered to patients for tooth replacement. However, little is known regarding initial colonization of the subgingival microbiome and simultaneous longitudinal cytokine production in humans during the early healing phase following implant placement. We report findings from an vivo study that assessed...



UNIVERSITY OF NEBRASKA MEDICAL CENTER unmc.edu

Cornhusker Impressions

for alumni and friends of the University of Nebraska Medical Center College of Dentistry



Dental student Paul Johnson with his Genesis headlight system.

From 'sticker-shocked student to proud inventor'
Paul Johnson's 'little light project'
finds way into COD clinics [see page 4](#)

against

Thiele,
V.,

and

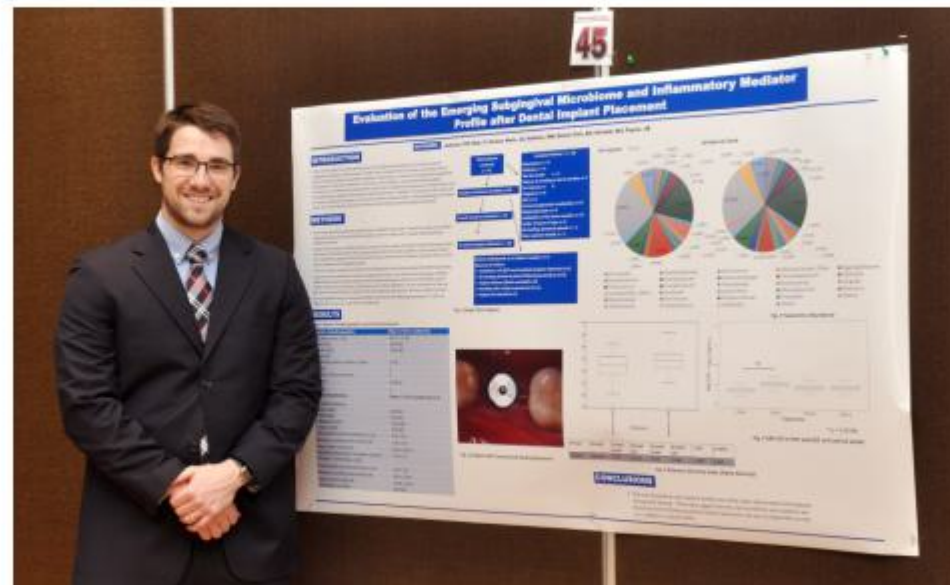
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Years of Periodontal Maintenance Therapy: Clinical Outcomes"
American Academy of Periodontology Annual Meeting, San
Diego, Calif. **NI**

Congratulations!



At the 31st Annual Professionals Day and the 50th Annual Student Scientific Program, our periodontal resident **Dr. Paul Johnson** won first place in the graduate poster competition with his presentation of "Evaluation of the Emerging Subgingival Microbiome and Inflammatory Mediator Profile after

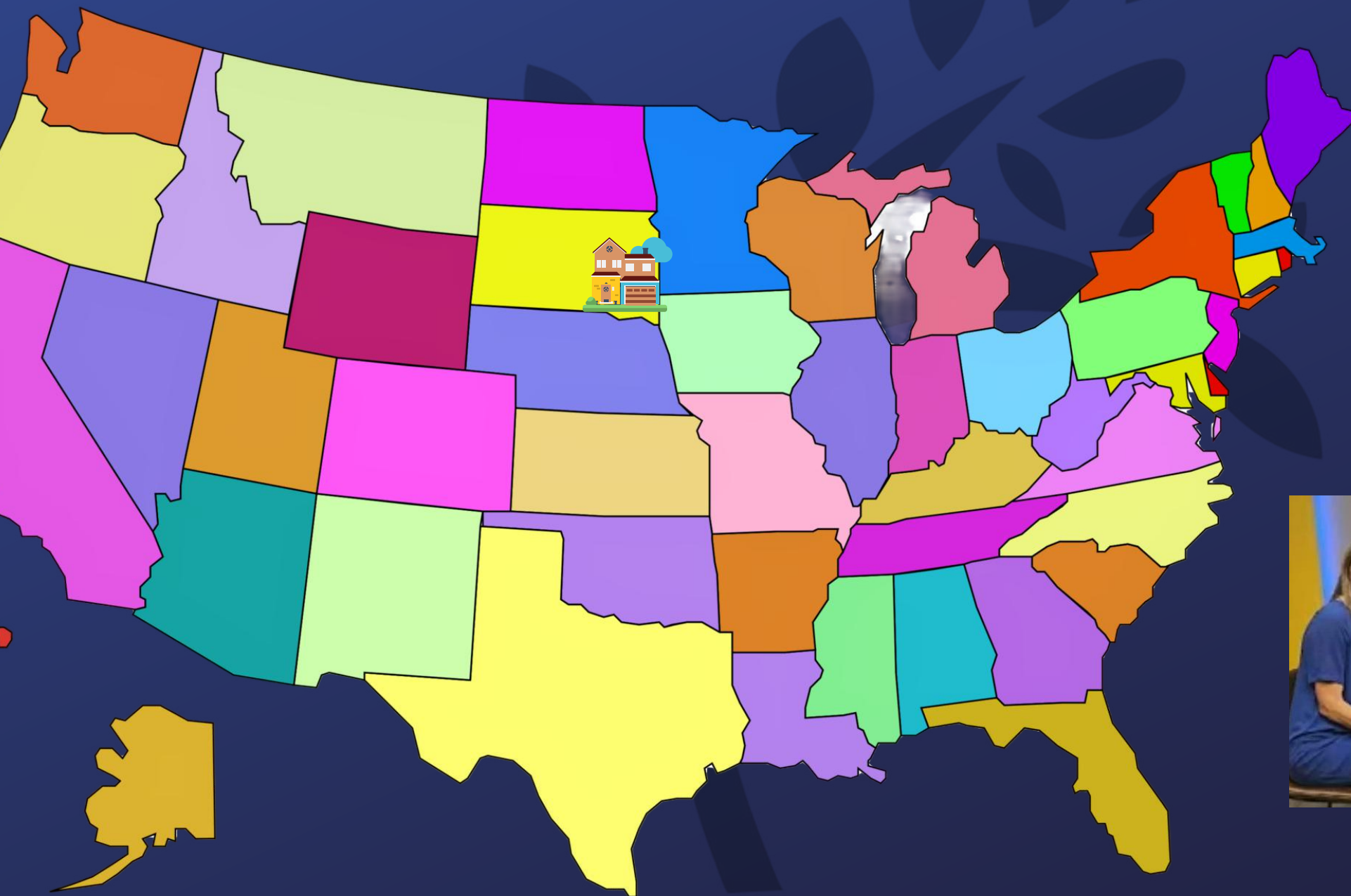


Clinical Science

Alveolar Bone Loss Is Associated With Circulating Anti-Citrullinated Protein Antibody (ACPA) in Patients With Rheumatoid Arthritis

Shawneen M. Gonzalez, Jeffrey B. Payne , Fang Yu, Geoffrey M. Thiele, Alan R. Erickson, Paul G. Johnson, Marian J. Schmid, Grant W. Cannon, Gail S. Kerr ... [See all authors](#) ▾

First published: 01 February 2015 | <https://doi.org/10.1902/jop.2014.140425> | Citations: 39





What is a periodontist???



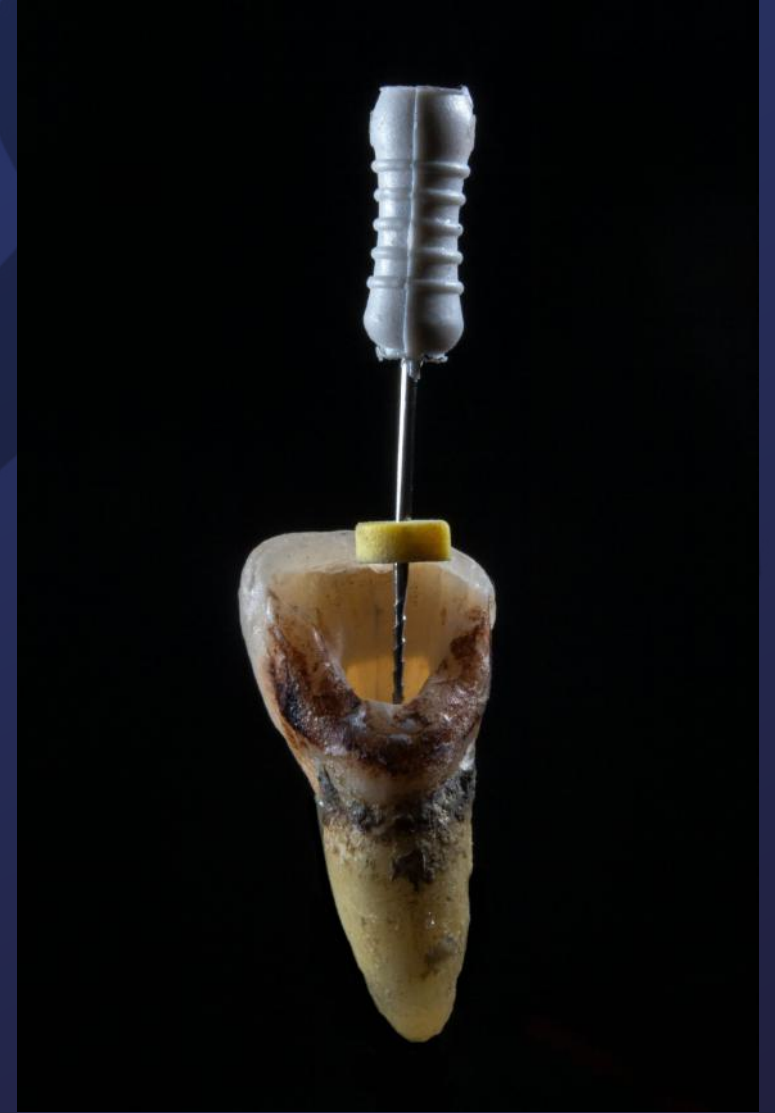
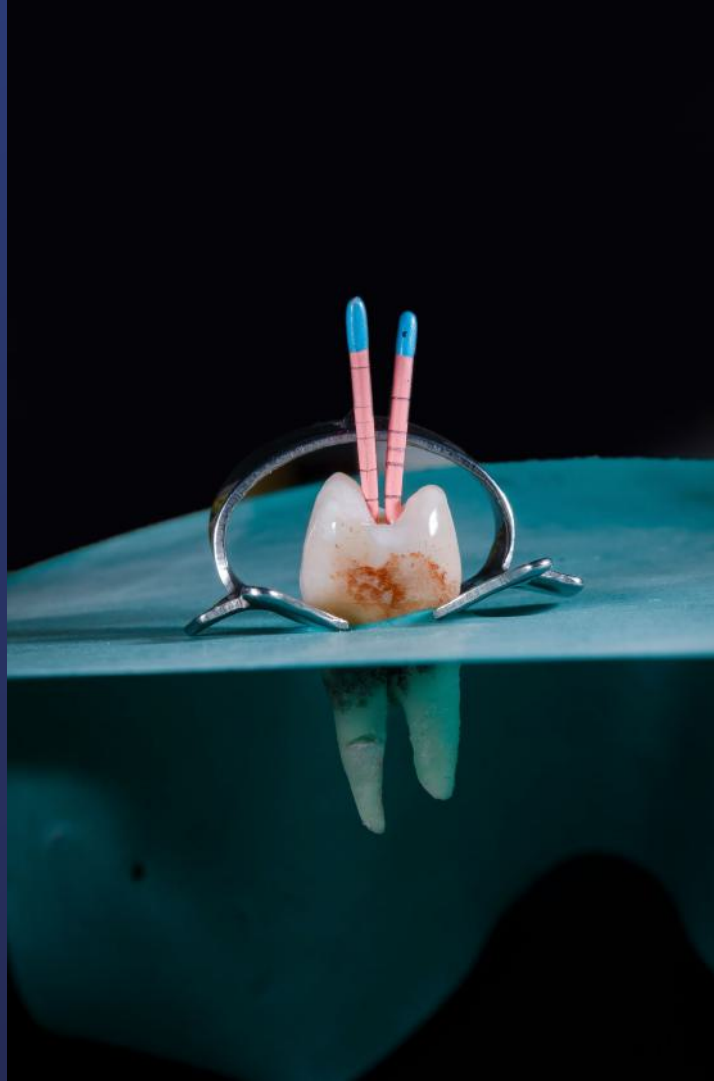
Did you know....



12 Dental Specialties Recognized by the ADA

- Dental Anesthesiology
- Dental Public Health
- Endodontics
- Oral and Maxillofacial Pathology
- Oral and Maxillofacial Radiology
- Oral and Maxillofacial Surgery
- Oral Medicine
- Orofacial Pain
- Orthodontics
- Pediatric Dentistry
- ★ • Periodontics ★
- Prosthodontics

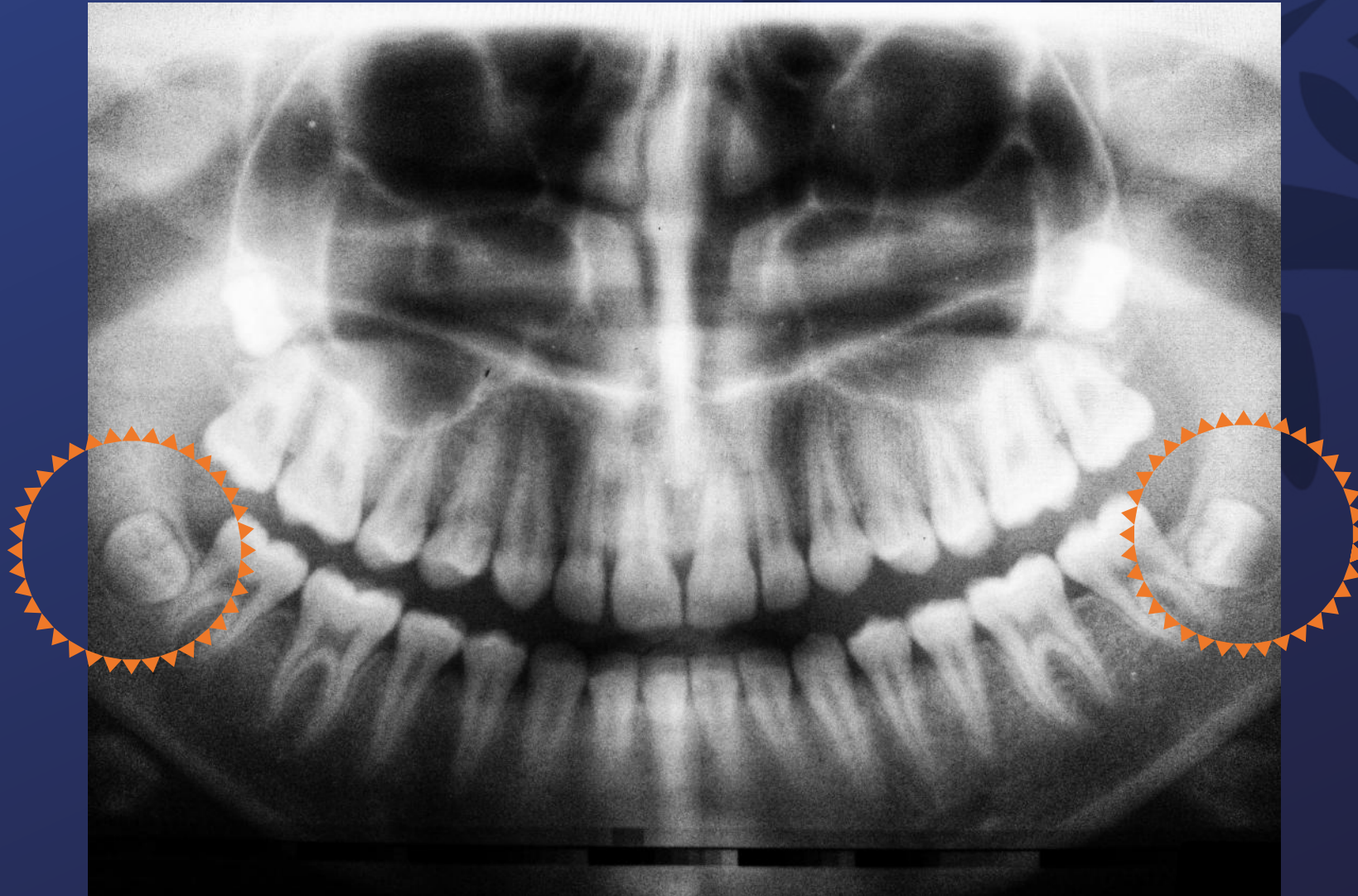
Endodontics



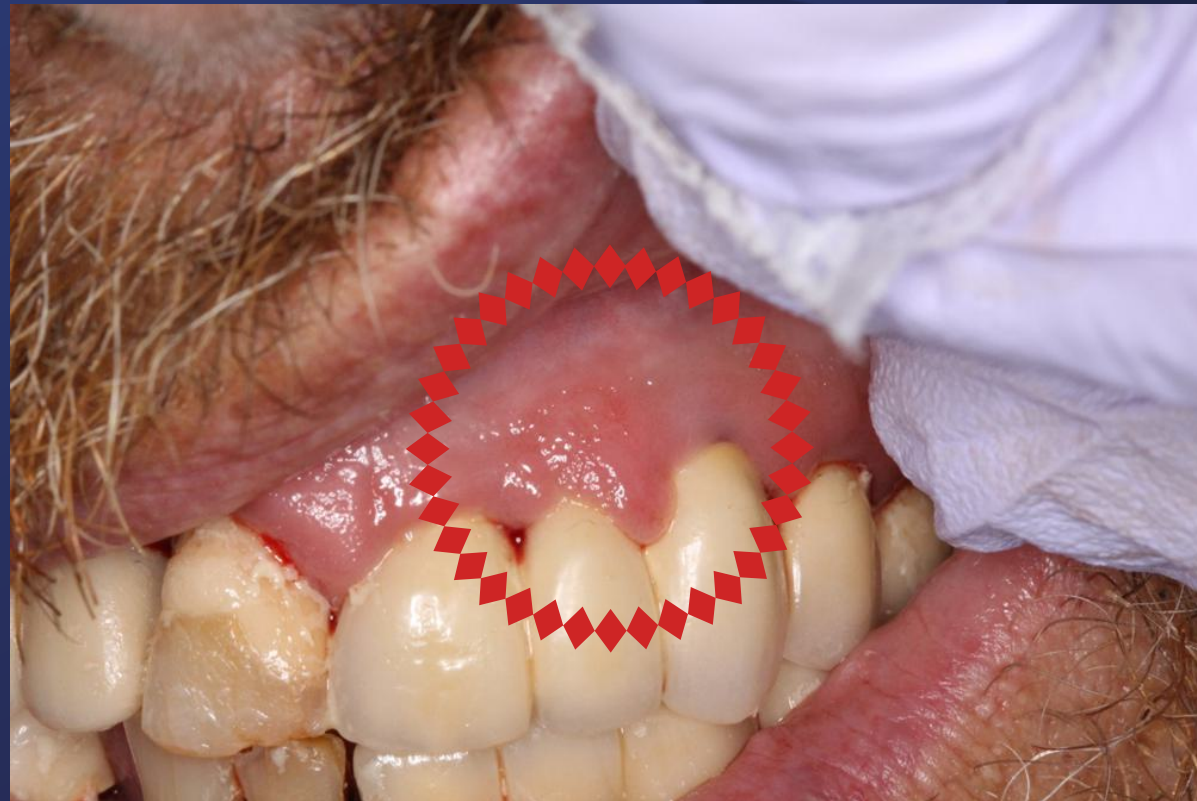
Orthodontics



Oral Surgery



Oral Pathology

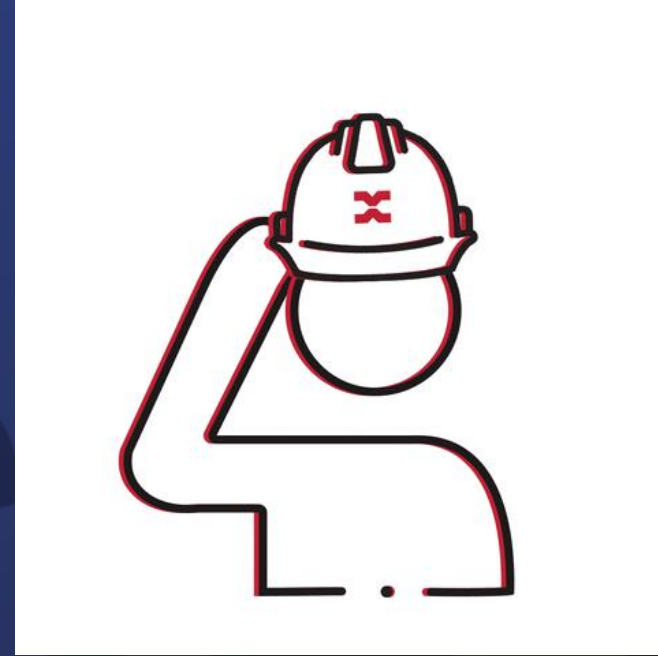


Pediatrics



Periodontics





Periodontics





Why Does a Healthy Foundation Matter?



Objectives

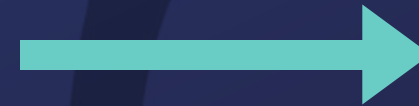
Connections

Relationship between oral health and systemic health



Impact

Poor oral health and
glycemic control



Strategies

Promoting oral health and
treatment strategies



Healthy



Gingivitis



Periodontitis



Periodontitis



Periodontitis



Periodontitis



Periodontitis



Periodontitis



Periodontal Disease



Edentulous





"Go to the periodontist!"

First visit to the periodontist



They told me to come here!
....and nothing hurts!

Periodontal Exam at Midwest Periodontics

- 1.5 hour appointment
- Medical history review
- Periodontal charting
- Radiographs as needed
- Photos as needed (evaluate for pathology)
- Address patient chief concerns
- Review oral hygiene instructions as needed
- Develop a treatment plan to best control bone loss and minimize inflammation in the mouth
 - Send correspondence letter to the referring office (99% of patients are referred)

The background of the slide is a photograph of a dental office. It shows a dental chair with a white top and a black control arm. A water spray nozzle is attached to the control arm, and a yellow tube is visible. The background is slightly blurred.

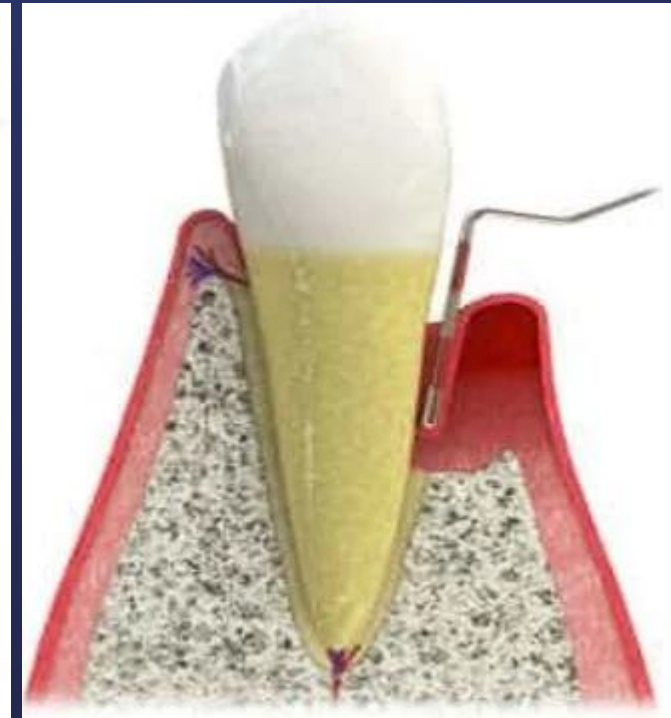
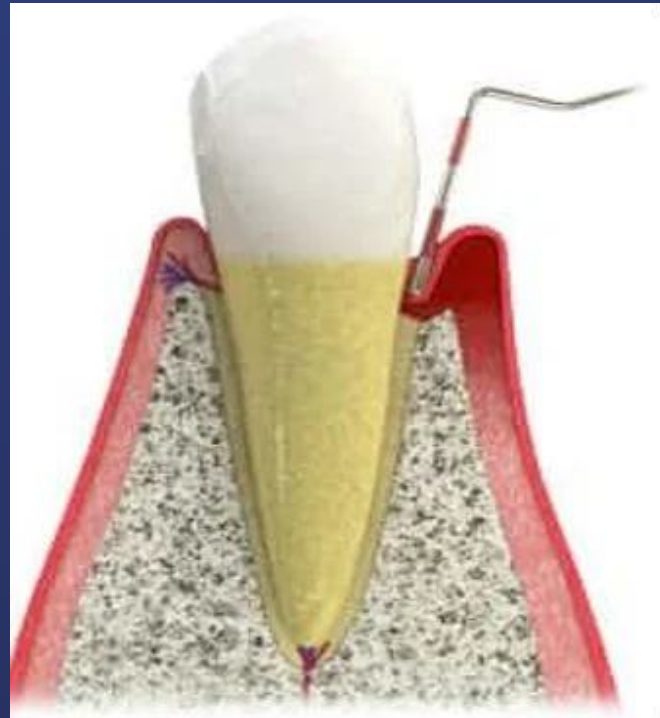
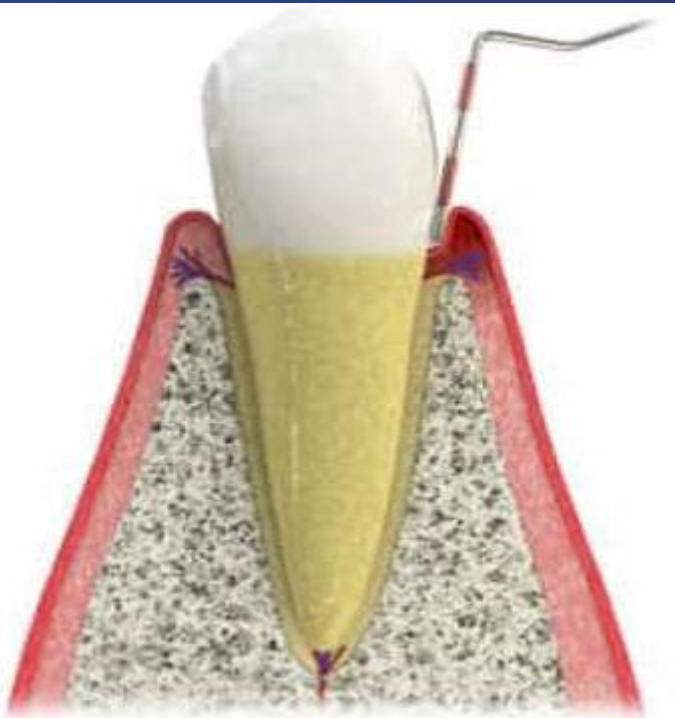
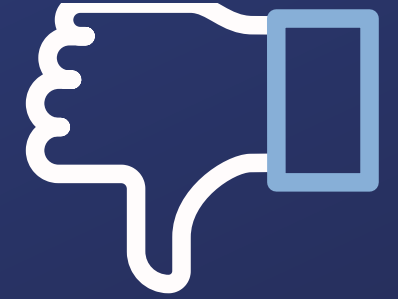
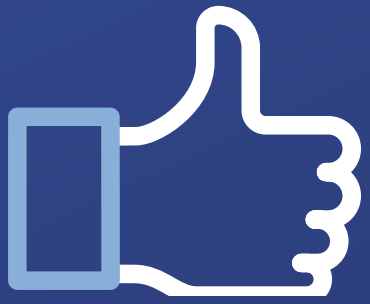
Periodontal Diagnosis

Periodontal disease is often a "silent disease."

○ Periodontal Diagnosis & Maintenance

Losing teeth is NOT a natural part of the aging process

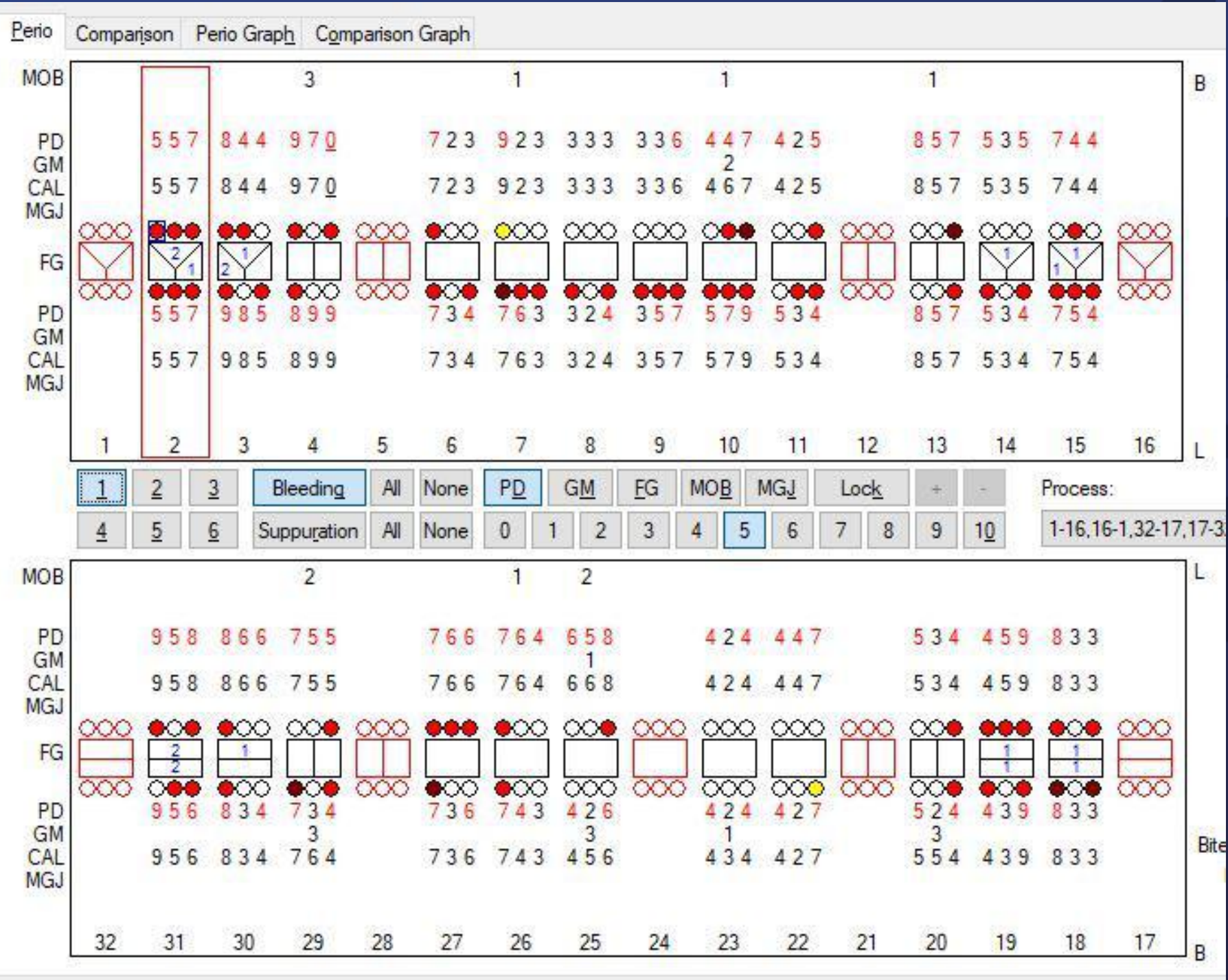


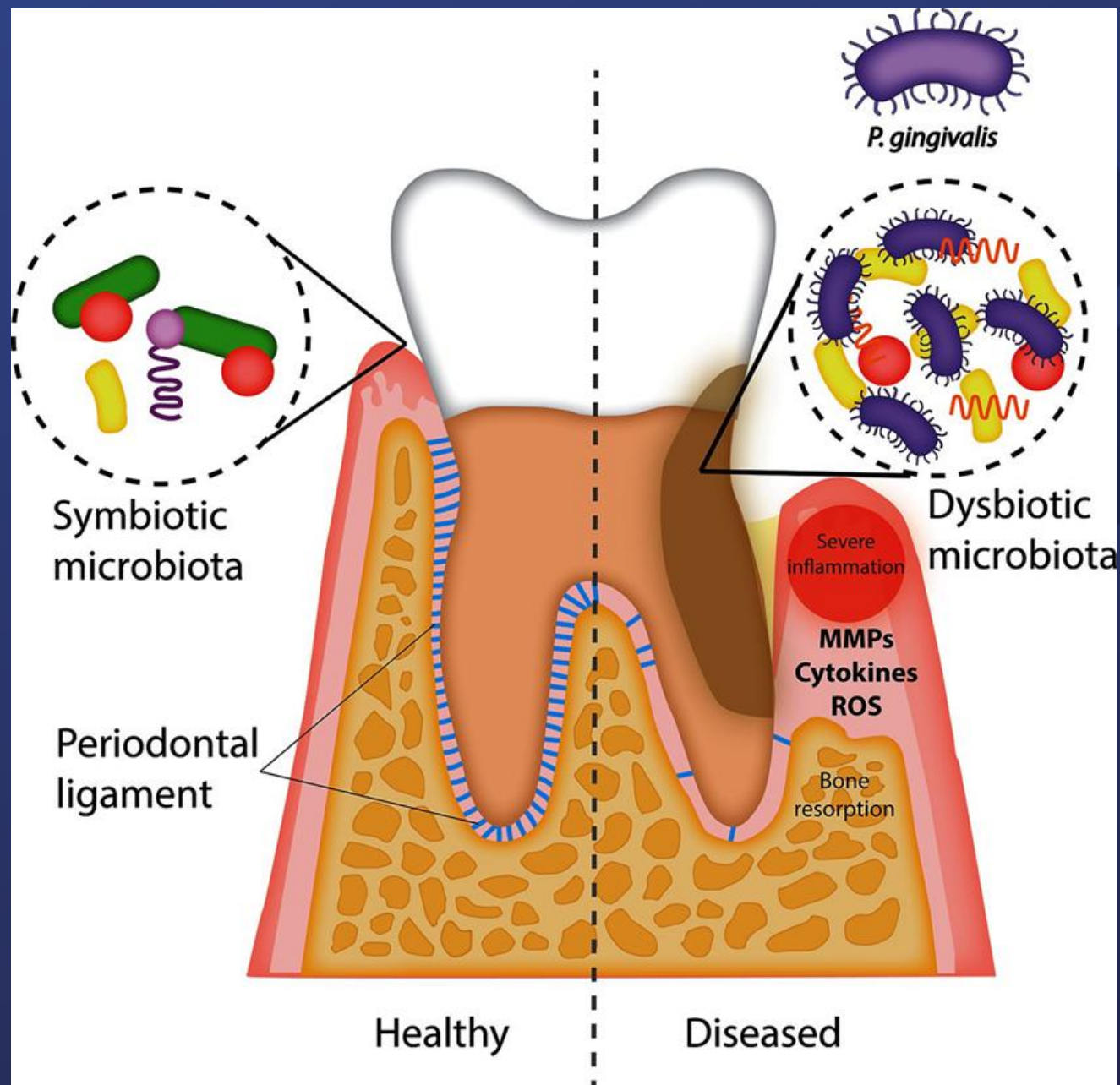


Starts with a comprehensive periodontal exam
AKA: periodontal probing

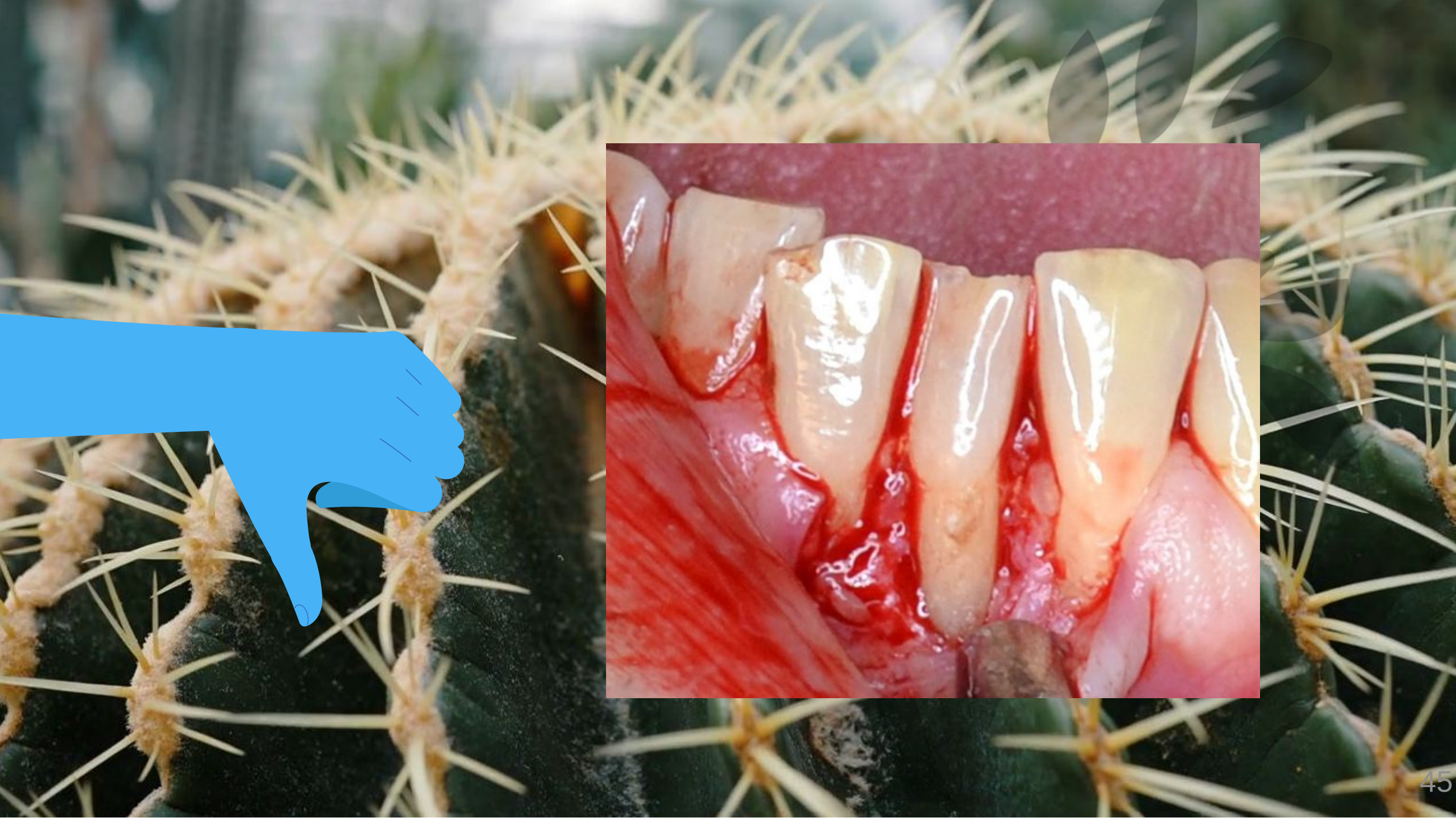
No probing?

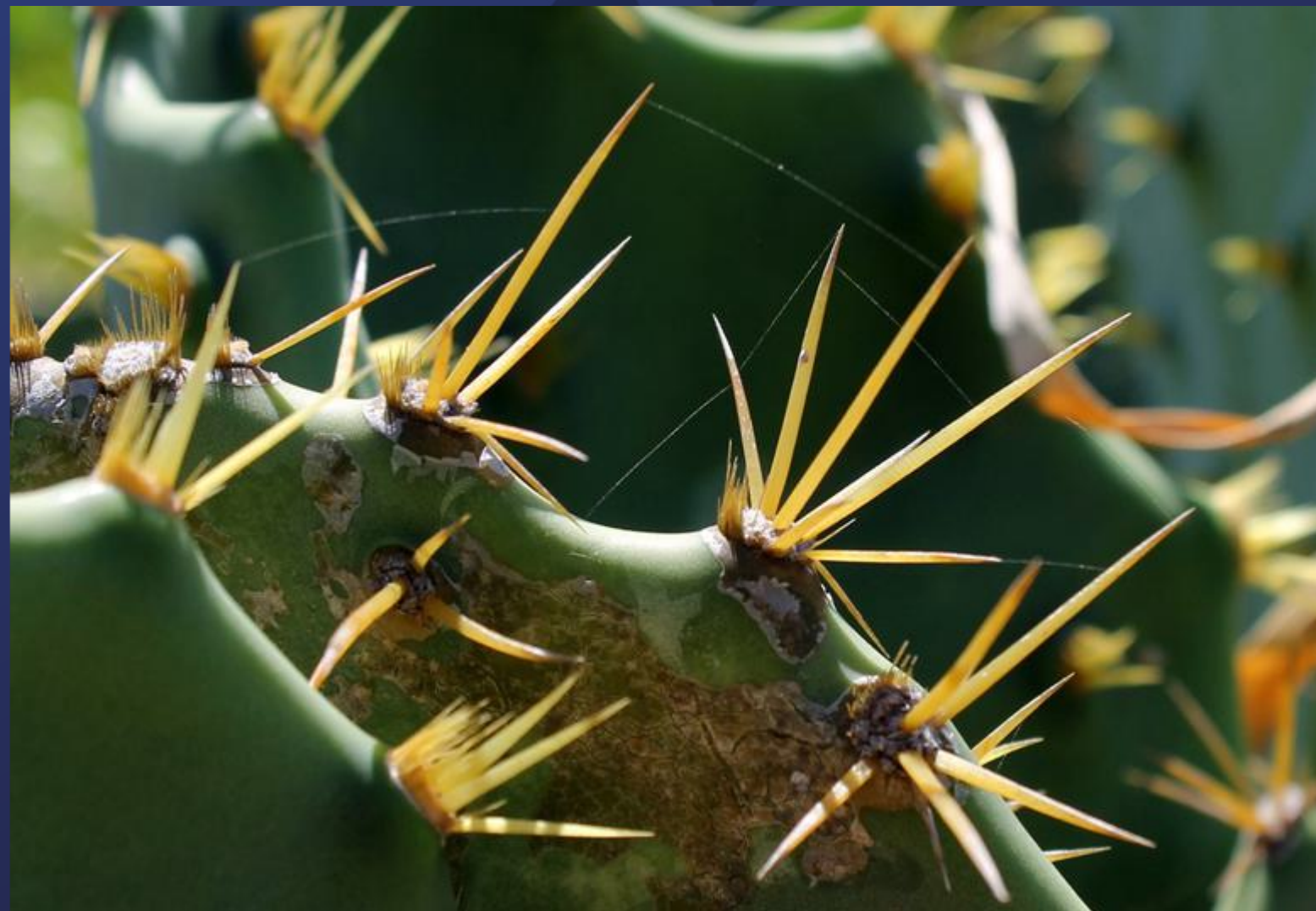




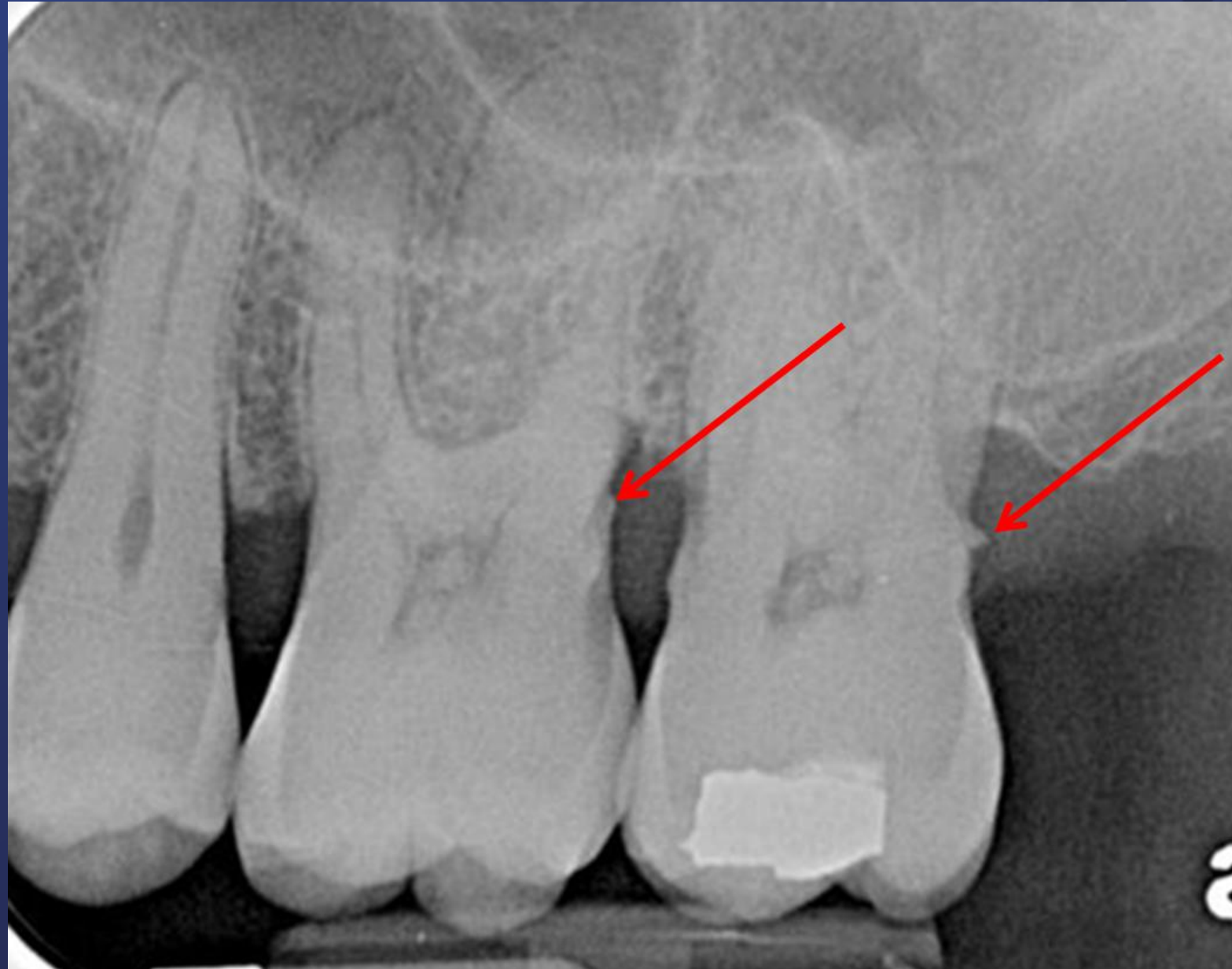




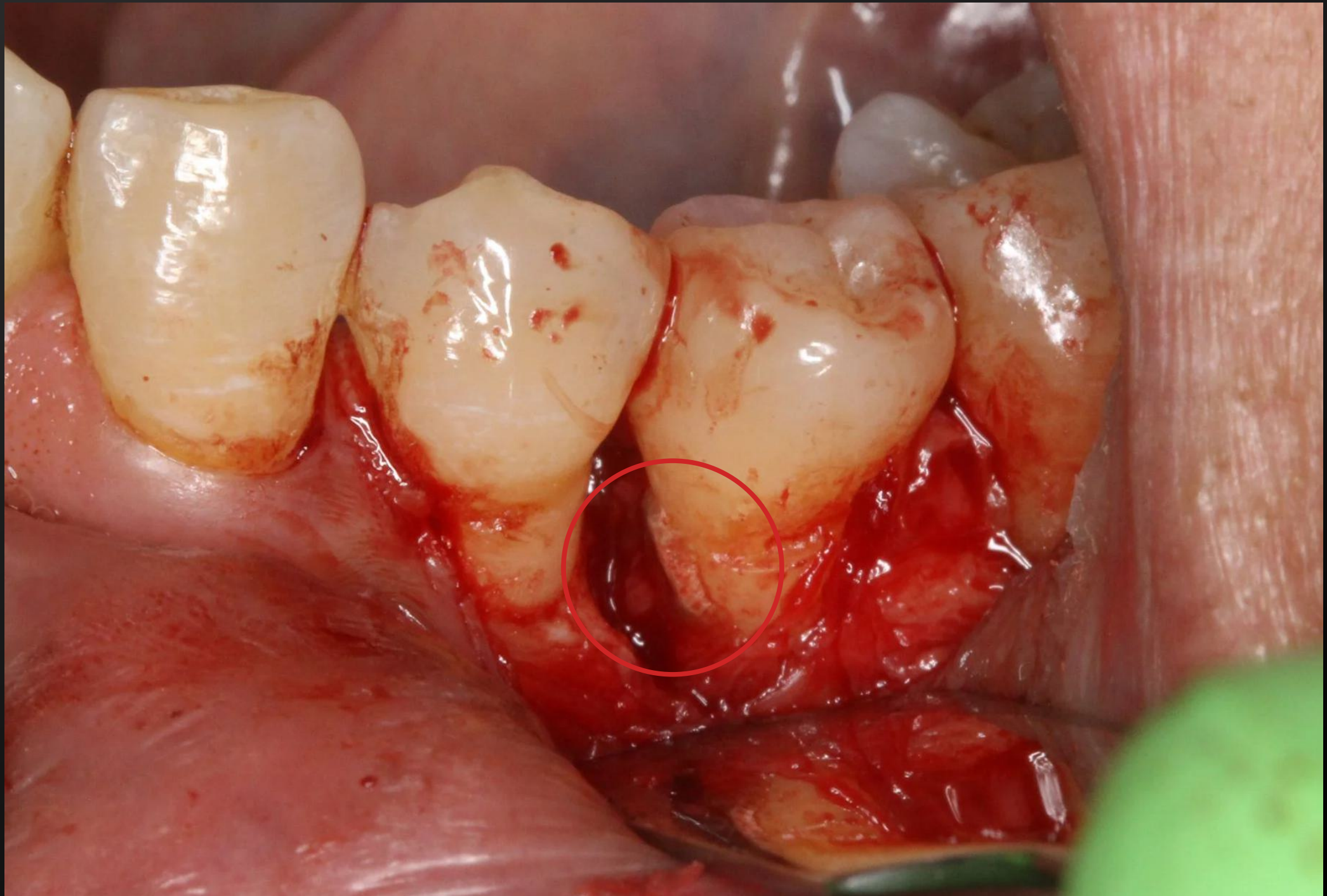




Calculus (enemy #1)





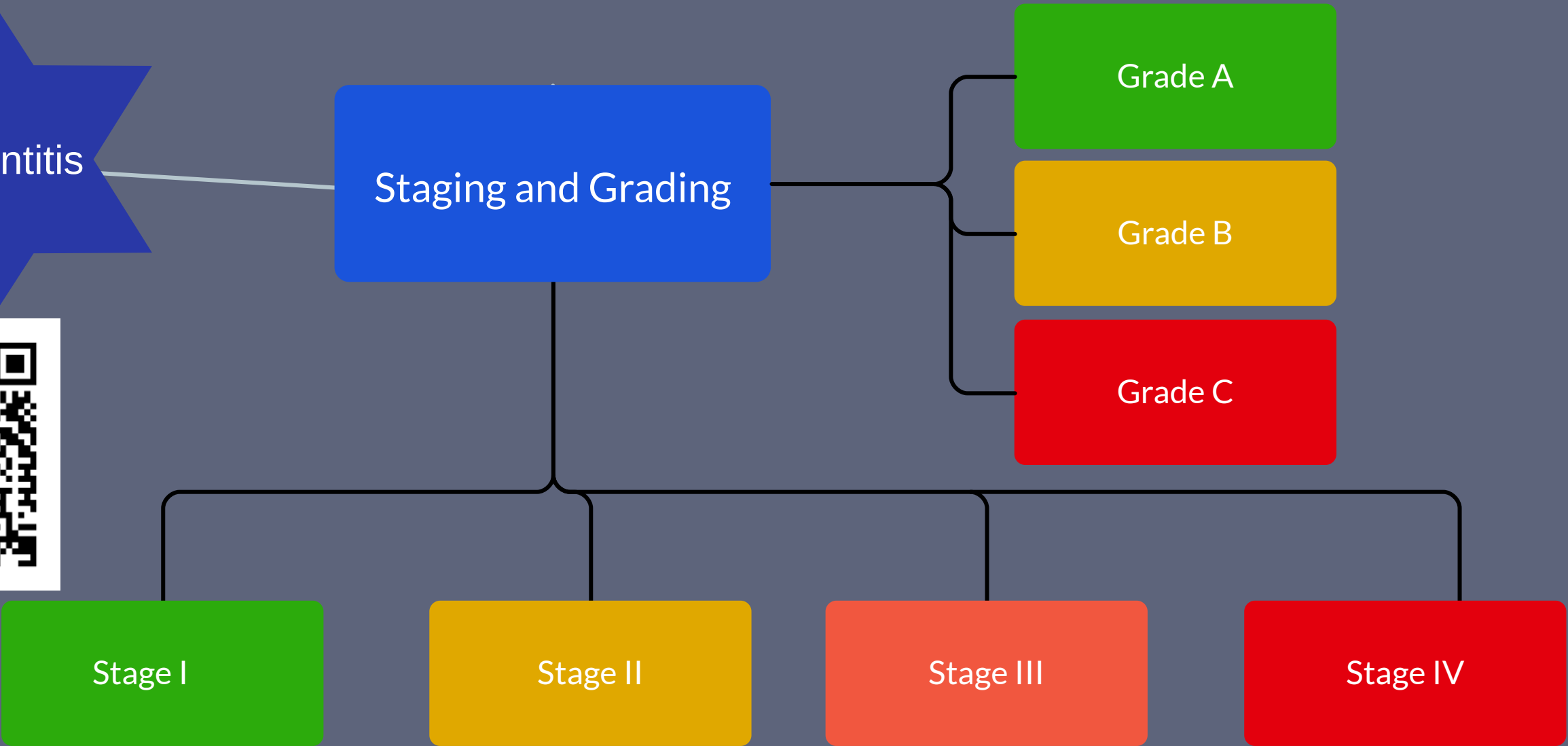
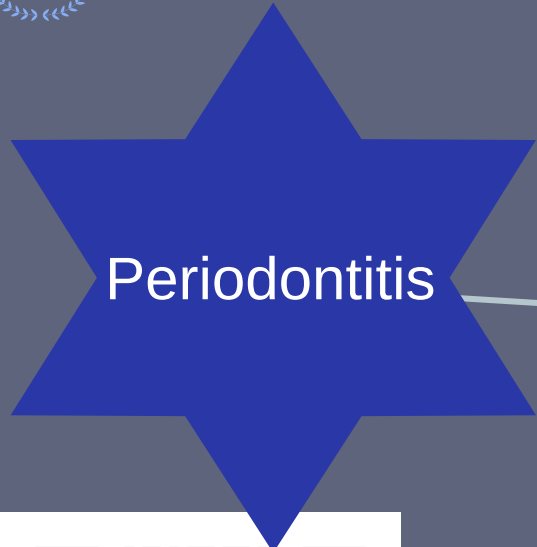


A decorative background element consisting of a stylized, dark blue leaf pattern that curves from the bottom right towards the top right, partially overlapping the text.

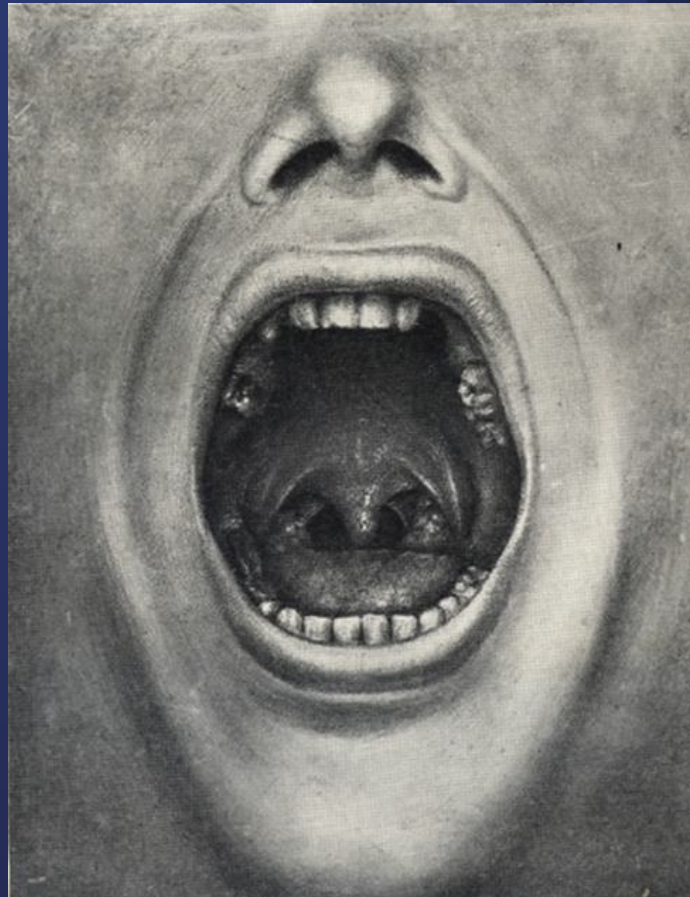
**How do we measure the severity
of periodontal disease????**



2017 Classification system



Periodontal disease is a potential risk for other systemic diseases



**Acute
Inflammation**

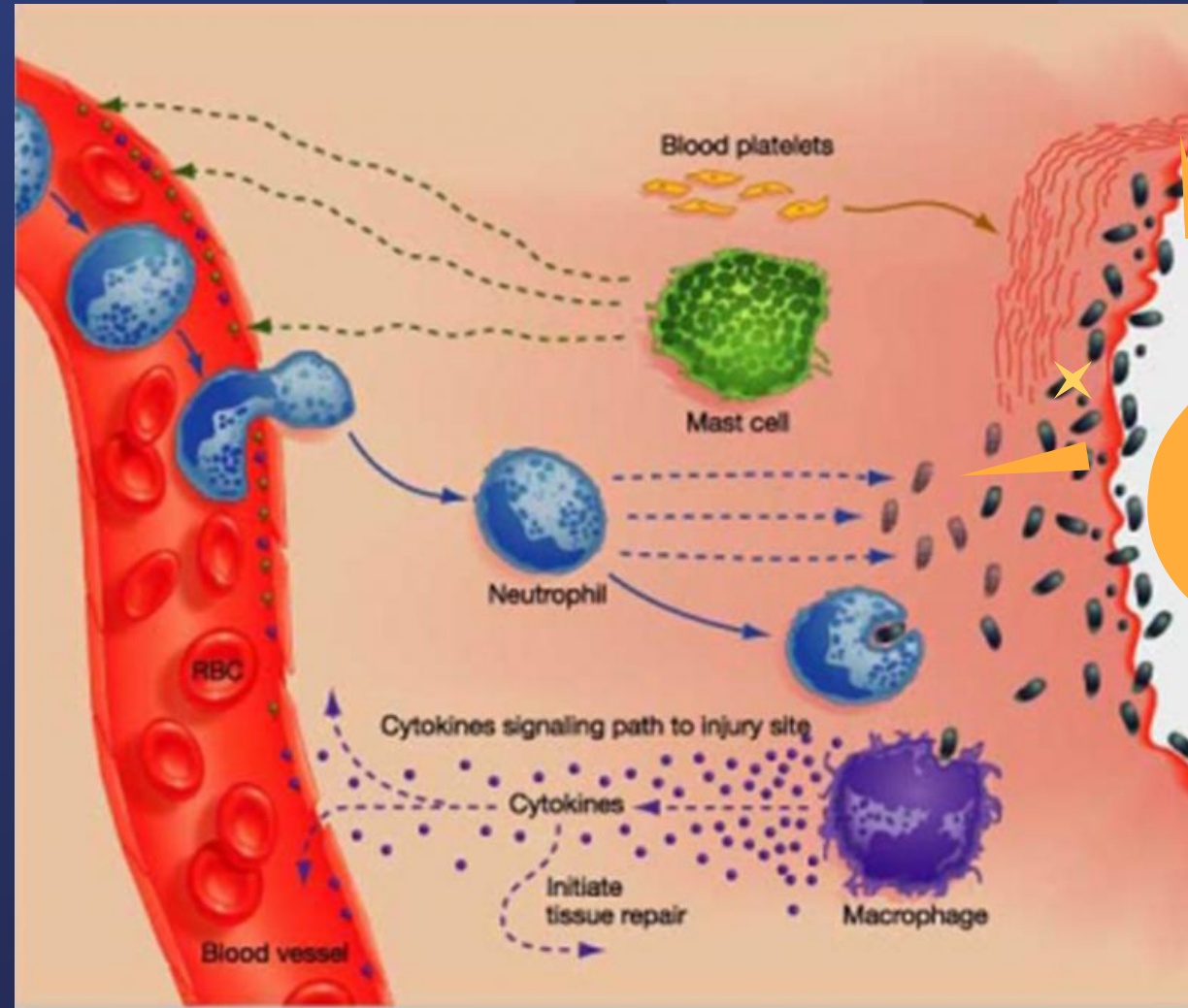
**Chronic
Inflammation**



Let's take a closer look!

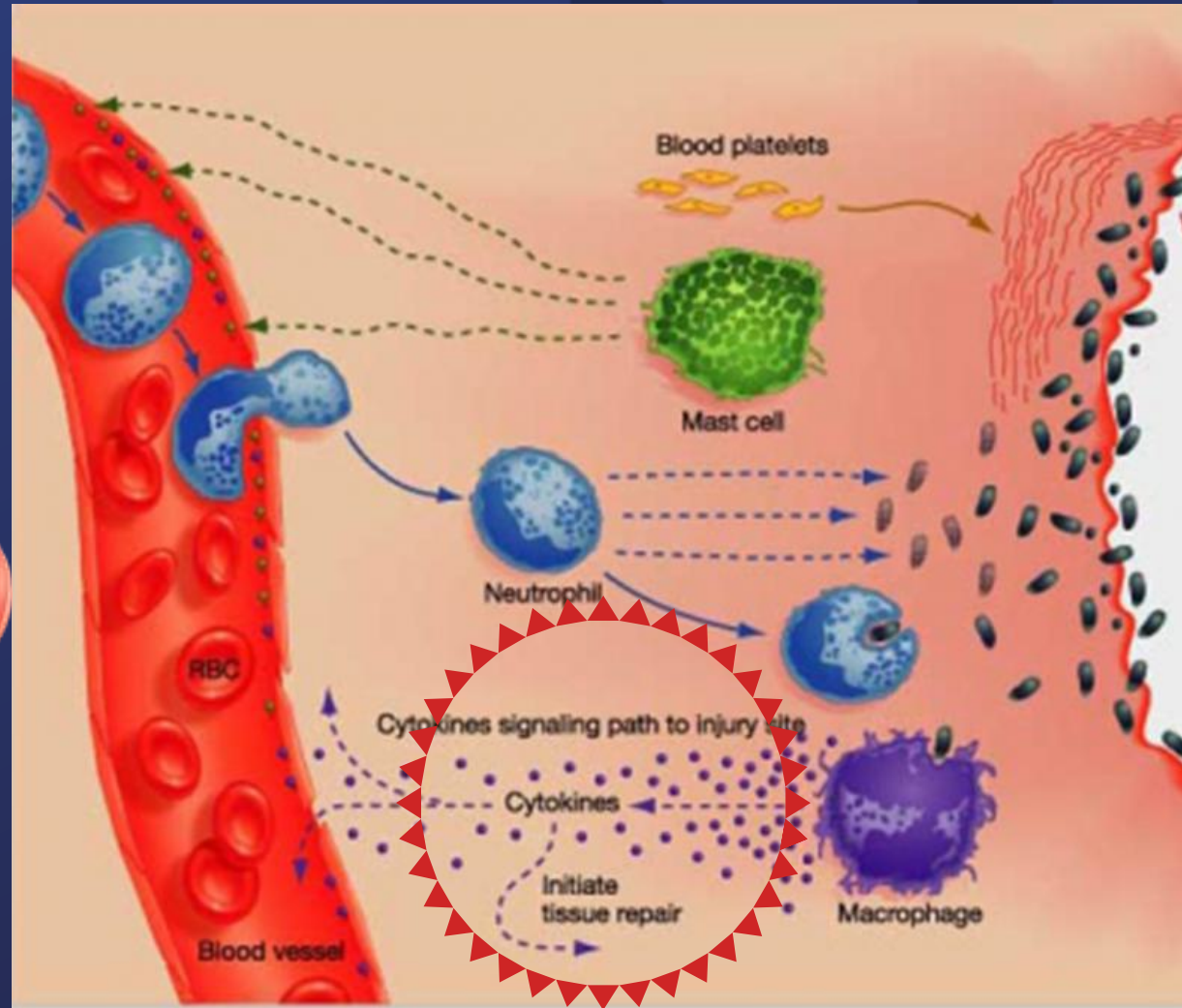


Cellular response to injury = inflammation



Cellular response to injury = inflammation

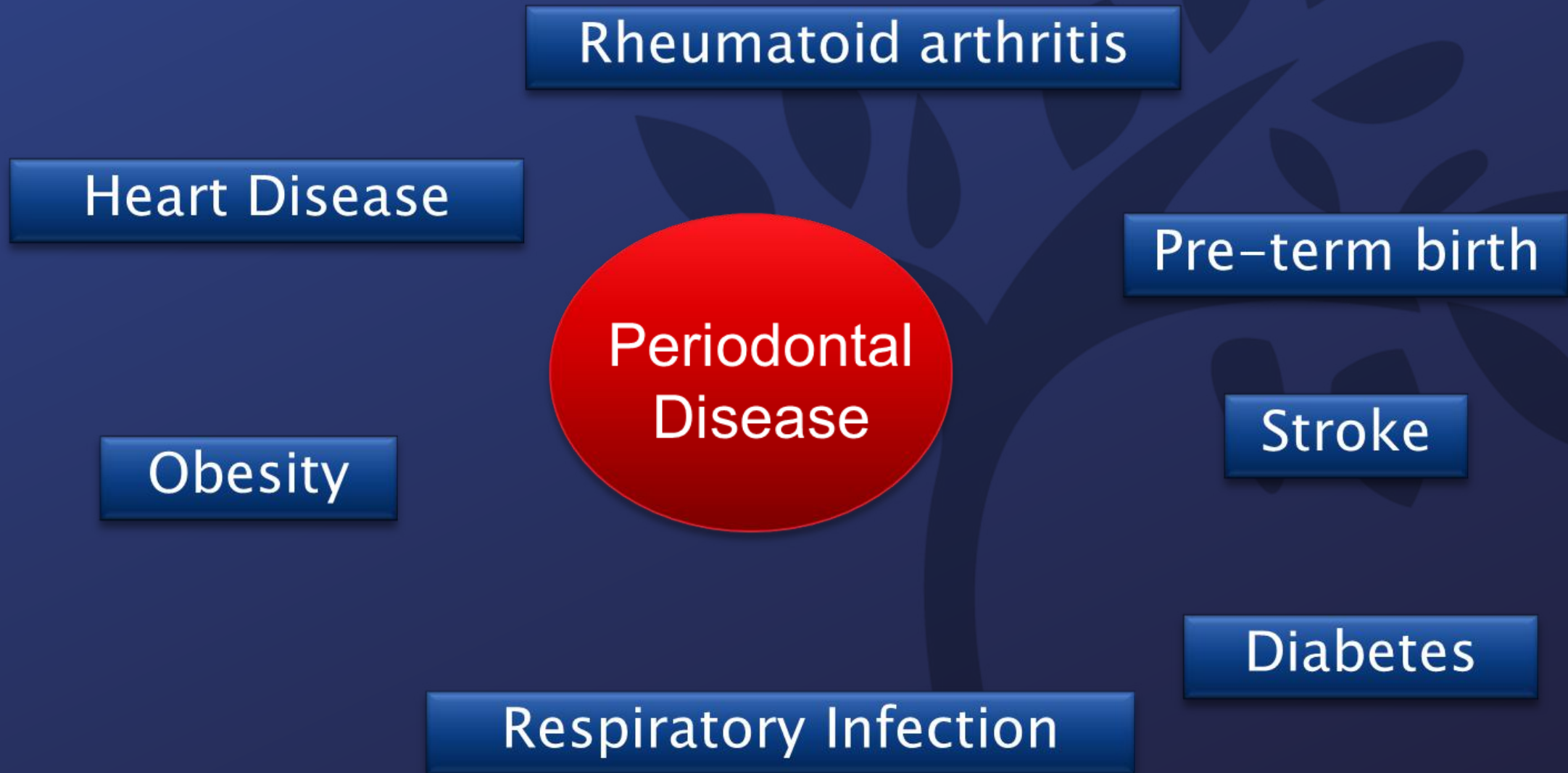
Inflammatory Mediators



Inflammation is like a wild fire. It does not stay localized and its effects travel throughout the body



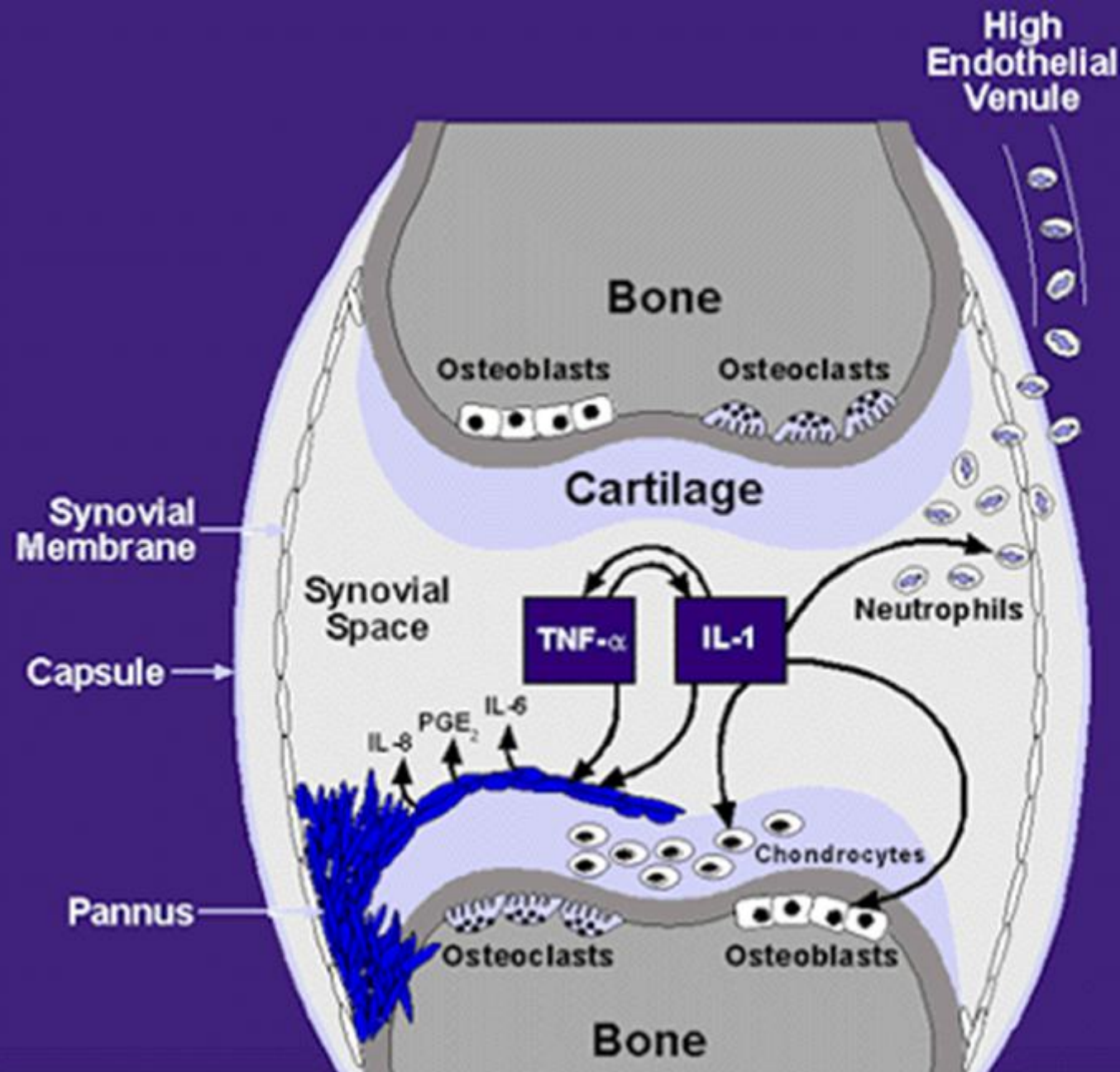
Proposed systemic relationships:



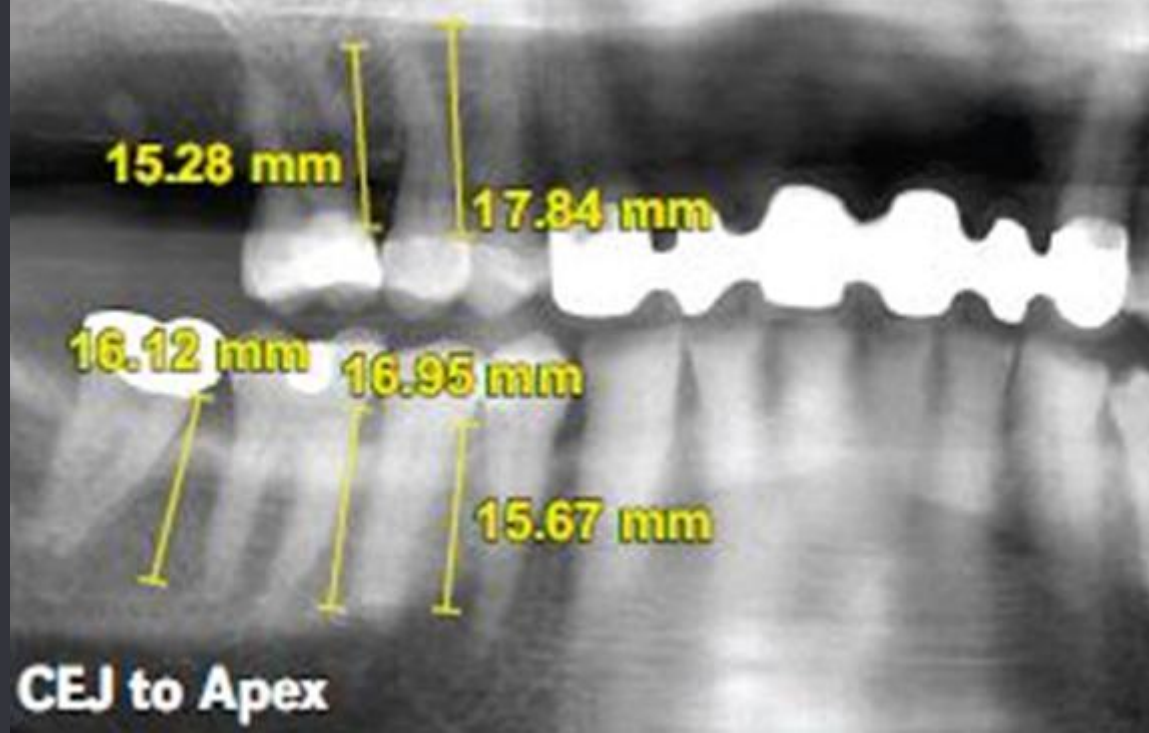
Rheumatoid Arthritis

A chronic inflammatory disorder affecting the joints and supporting structures (bone and tissue)

- ▶ P. GINGIVALIS OFTEN FOUND WITHIN AFFECTED JOINTS
- ▶ DENTAL CLEARANCE OFTEN NEEDED PRIOR TO ORTHOPEDIC SURGERY



Conclusions



Patients with RA had a higher proportion of sites with severe alveolar bone loss than controls

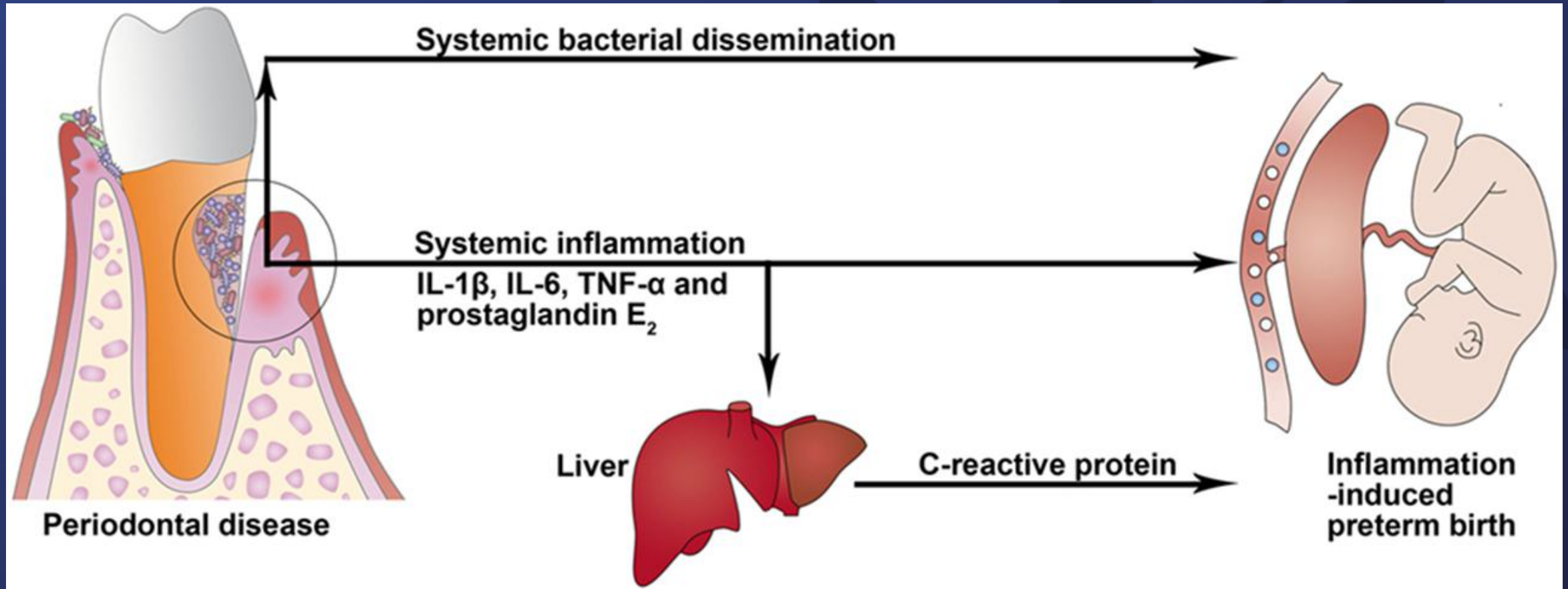


Periodontal bone loss was strongly associated with RA disease activity

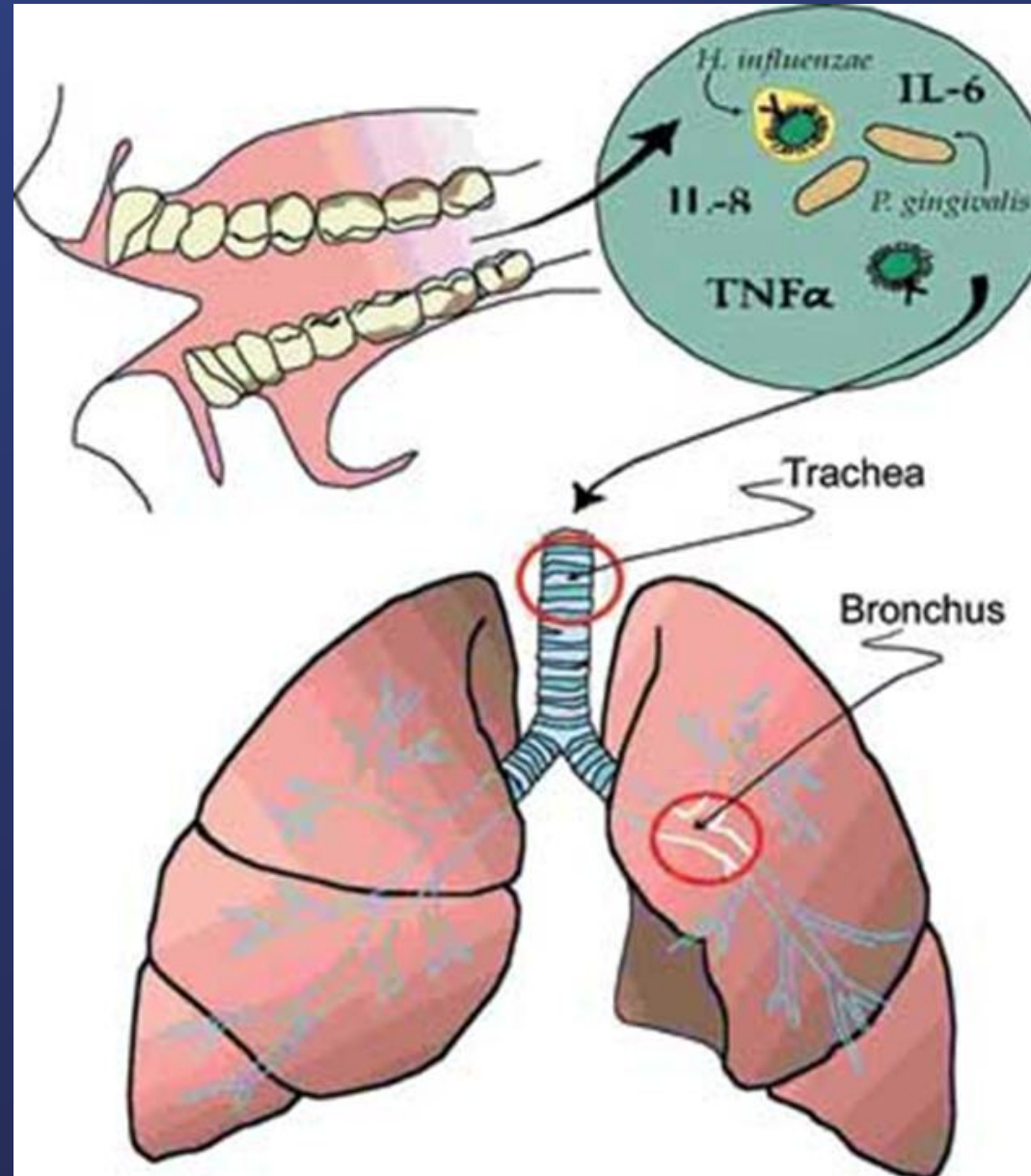


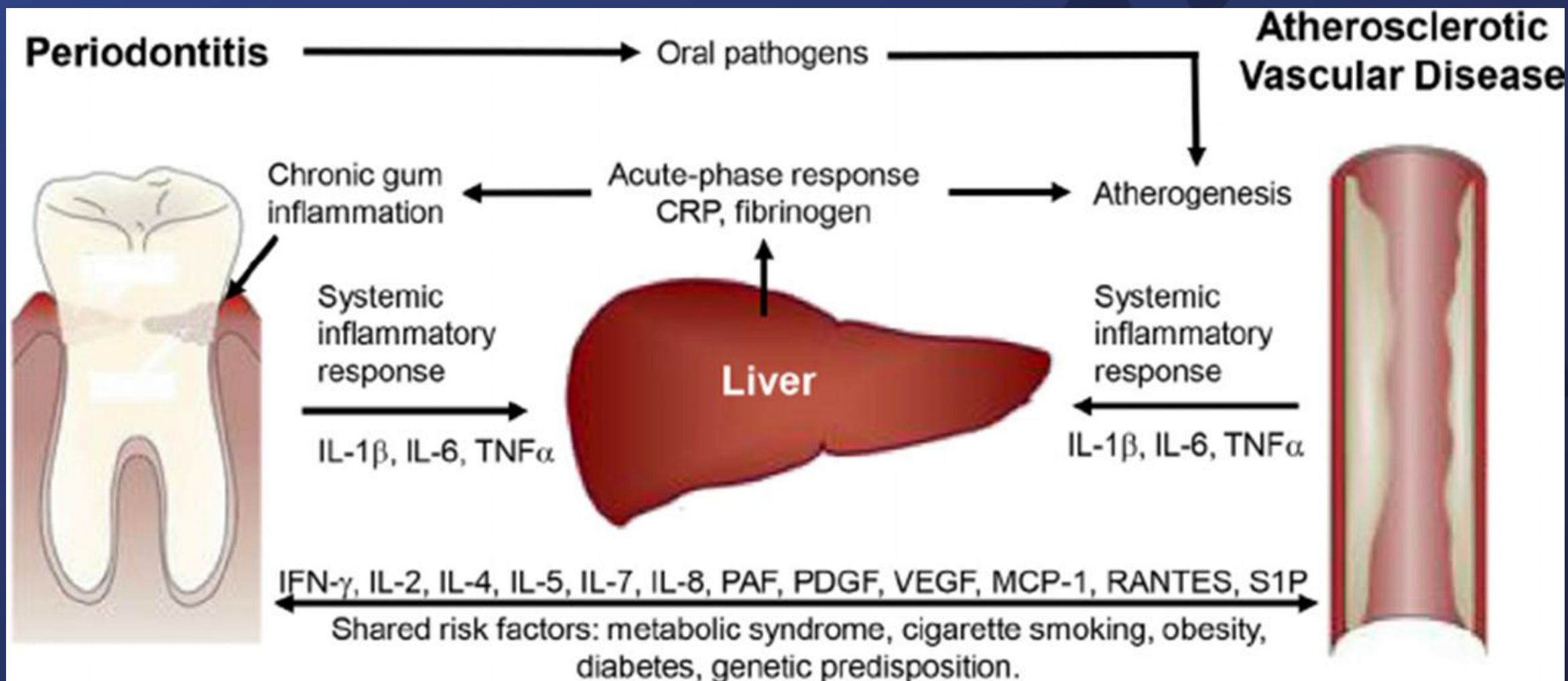
Evidence suggests RA may be a risk factor in the progression and severity of periodontitis

Pre-term birth risks



Asthma

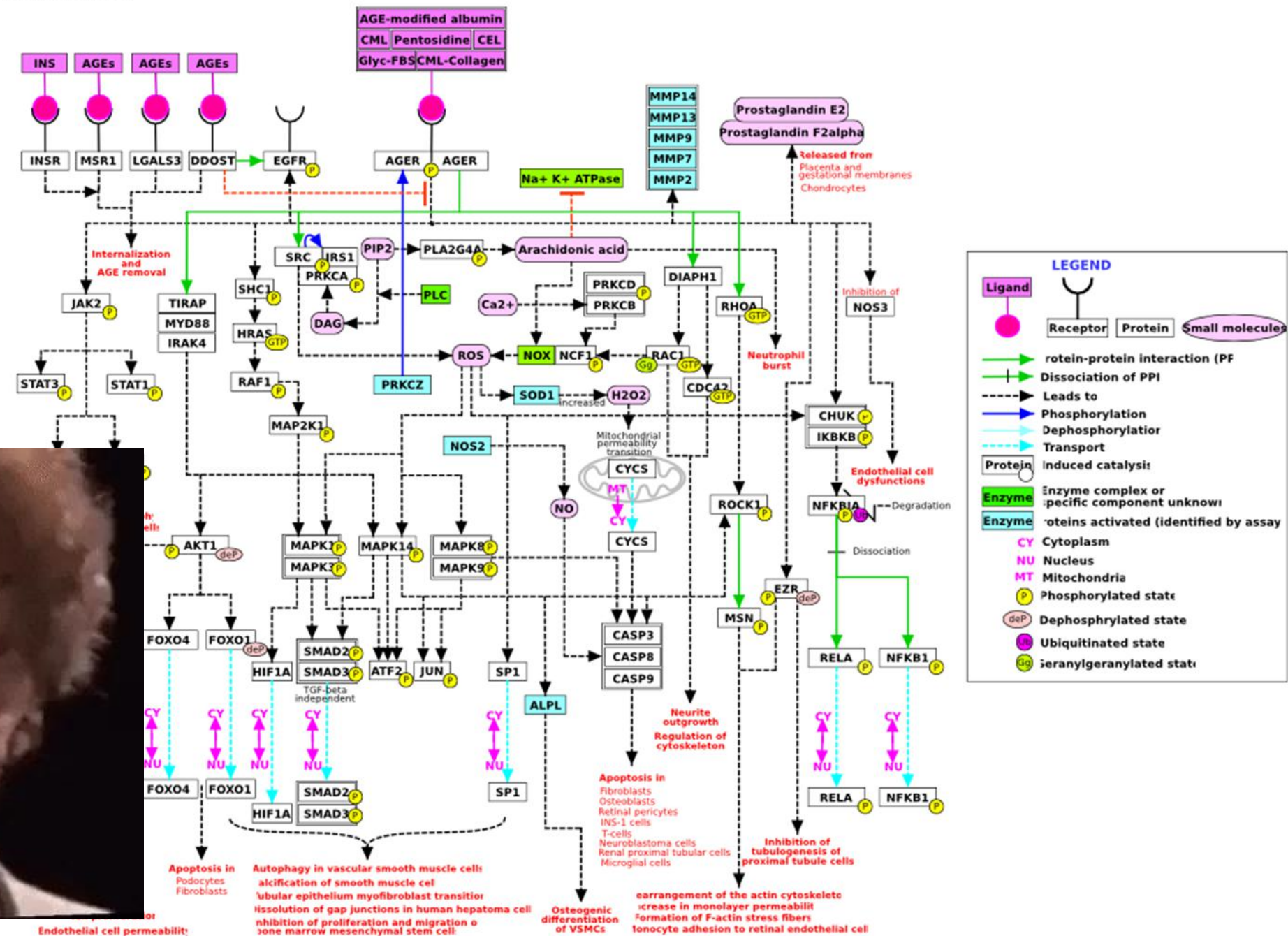




Diabetes and Periodontal Health



AGE/RAGE Signaling Pathway



Proposed Mechanisms

Diabetes and Periodontal Disease

Host inflammatory
response is altered in
diabetics

A



Impaired neutrophil chemotaxis



Mealey, 2006 A1C value/inflammation
Sakurai, 2003 AGE/RAGE
Leeper, 1985 PMN function is inhibited

Proposed Mechanisms

Diabetes and Periodontal Disease

Host inflammatory response is altered in diabetics

A



A1C values greater than 8% had 2x more pro-inflammatory mediators than values below 8%

B



Proposed Mechanisms

Diabetes and Periodontal Disease

Host inflammatory response is altered in diabetics

A



A1C values greater than 8% had 2x more pro-inflammatory mediators than values below 8%

B



Hyperglycemic state causes inhibition of osteoblast proliferation and collagen production (delayed wound healing)

C



Proposed Mechanisms

Diabetes and Periodontal Disease

Host inflammatory response is inhibited in diabetes



state of congestion and blockage

Advanced glycation end products; Proteins that become irreversibly glycated in hyperglycemic states



Diabetes and Perio Takeaway:

Patients who had better oral health
also had improved glycemic control

People with diabetes are at a higher
risk for periodontal disease

Case Examples

A stylized, dark blue tree graphic is positioned on the right side of the slide. It features a thick, curved trunk and several branches with oval-shaped leaves. The tree is rendered in a minimalist, silhouette-like style.







Strategies used to manage inflammation

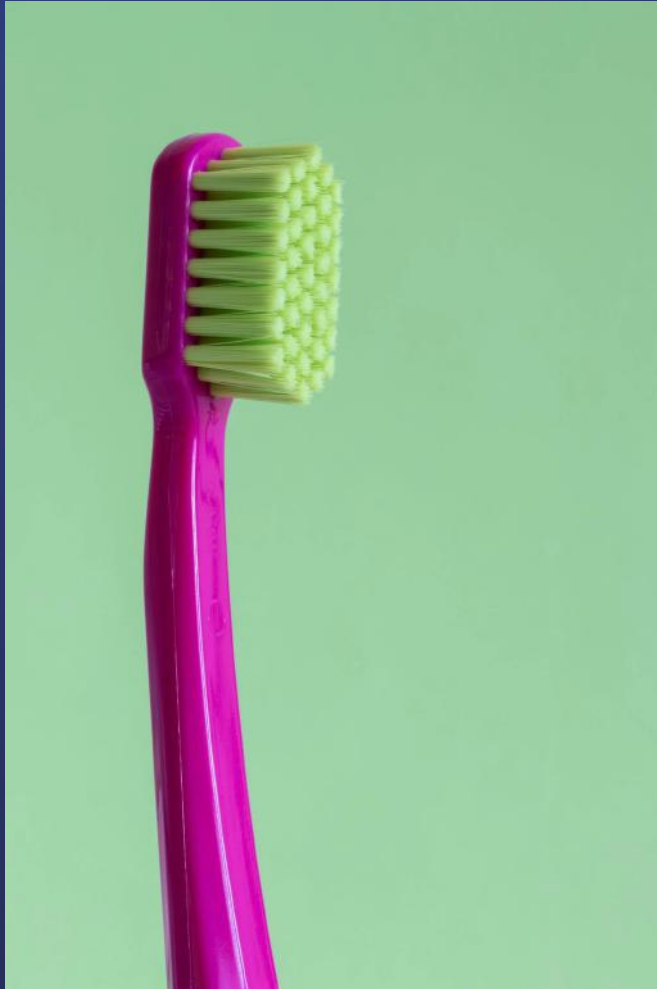


Managing inflammation is the key to oral and systemic health

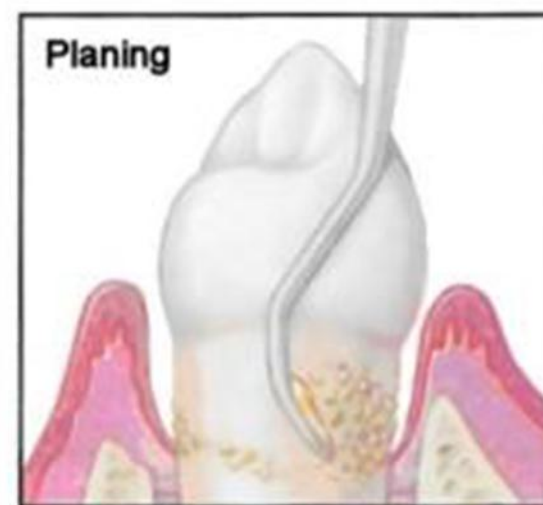
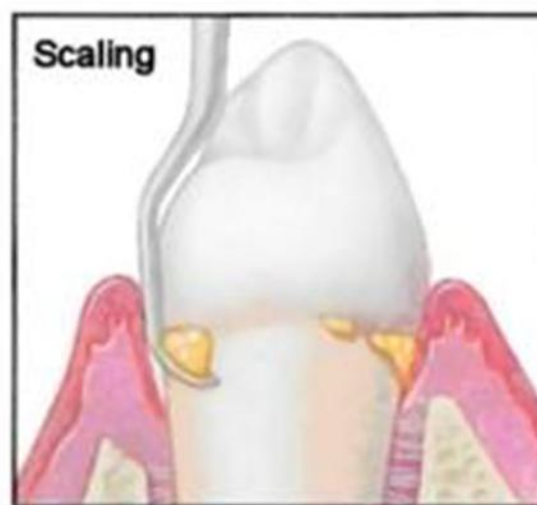
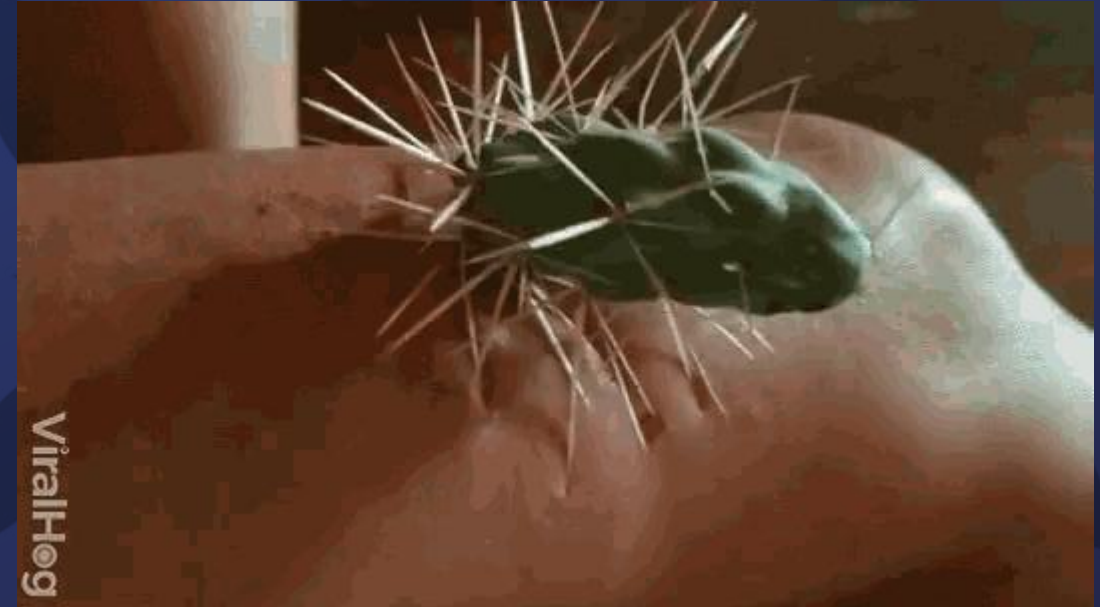


How aggressively that inflammation needs to be managed can be determined through the help of the hygienist, dentist, and periodonttist

Periodontal Treatment Options



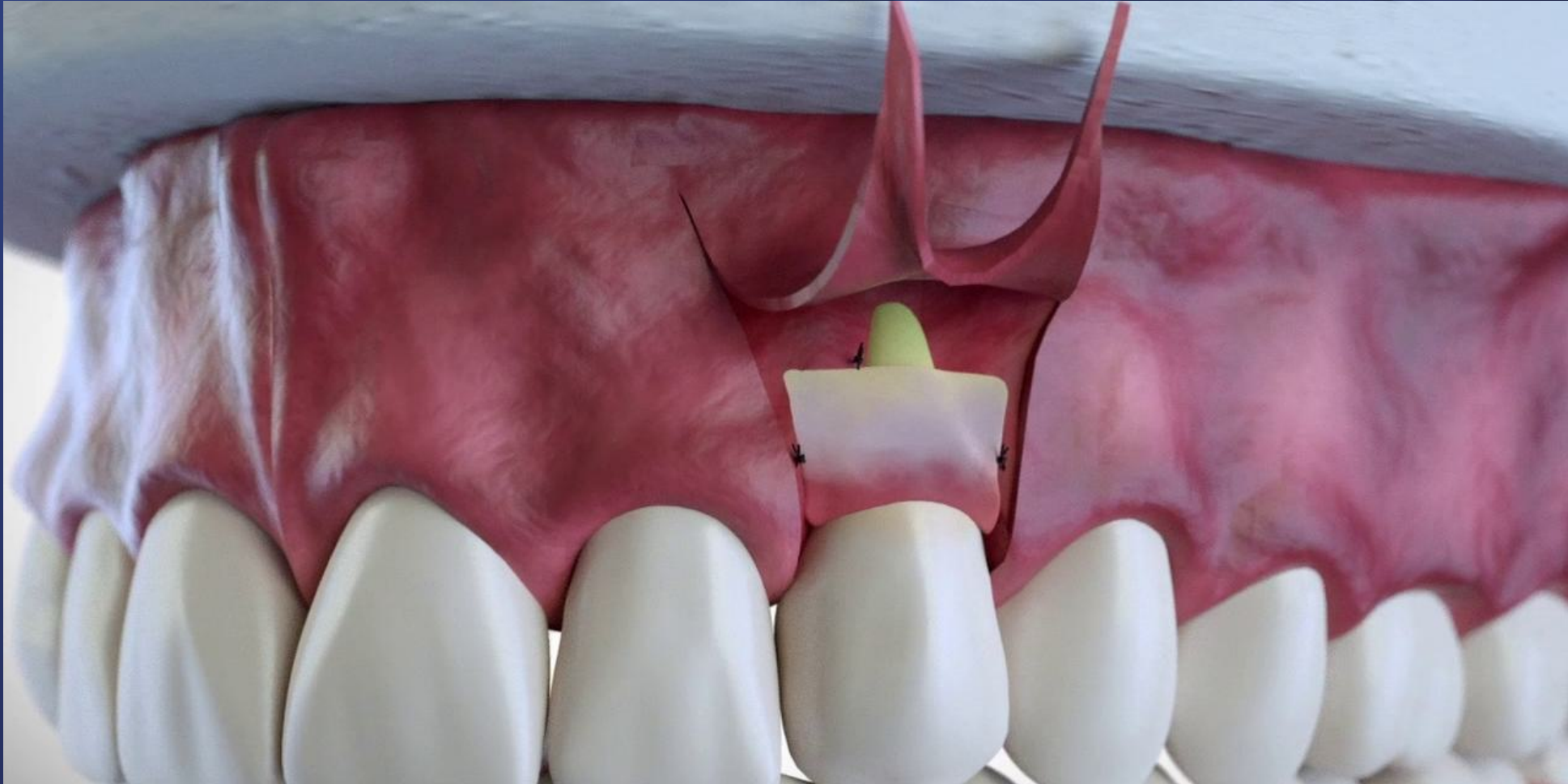
Scaling and Root Planing



Tissue Grafting



Tissue Grafting



Bone Grafting



Gum Flap Surgery

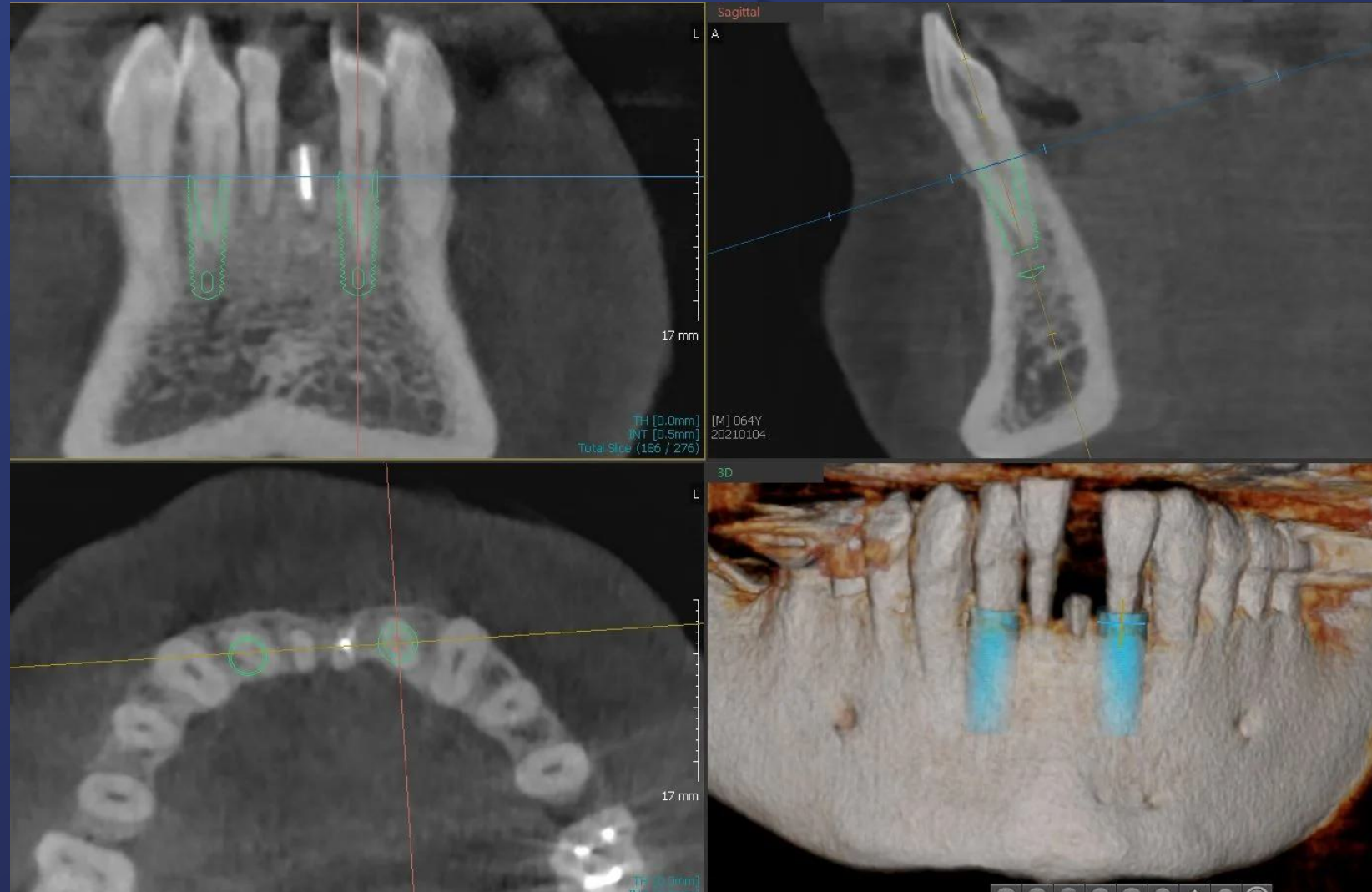


Gum Flap Surgery





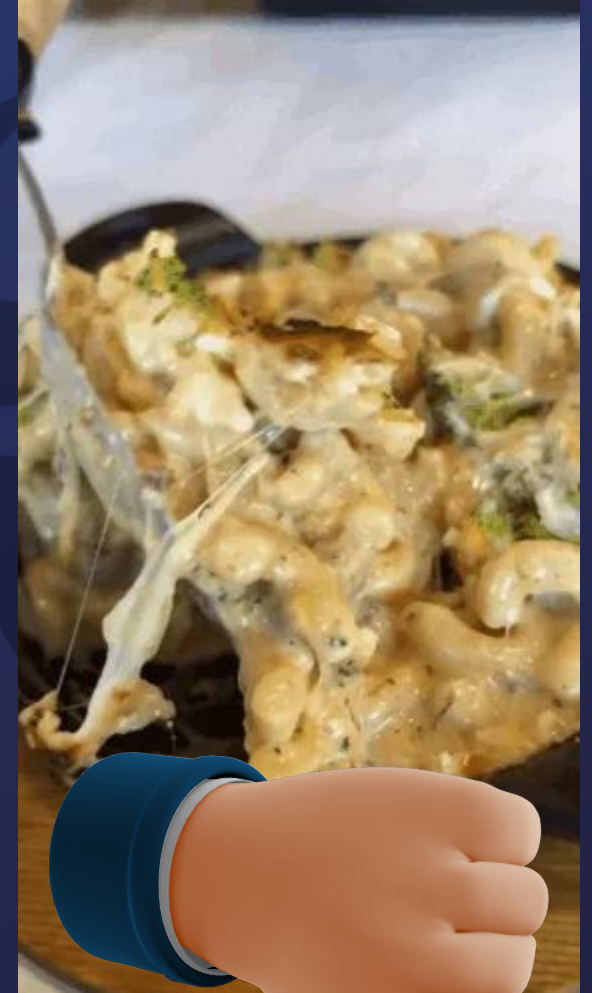
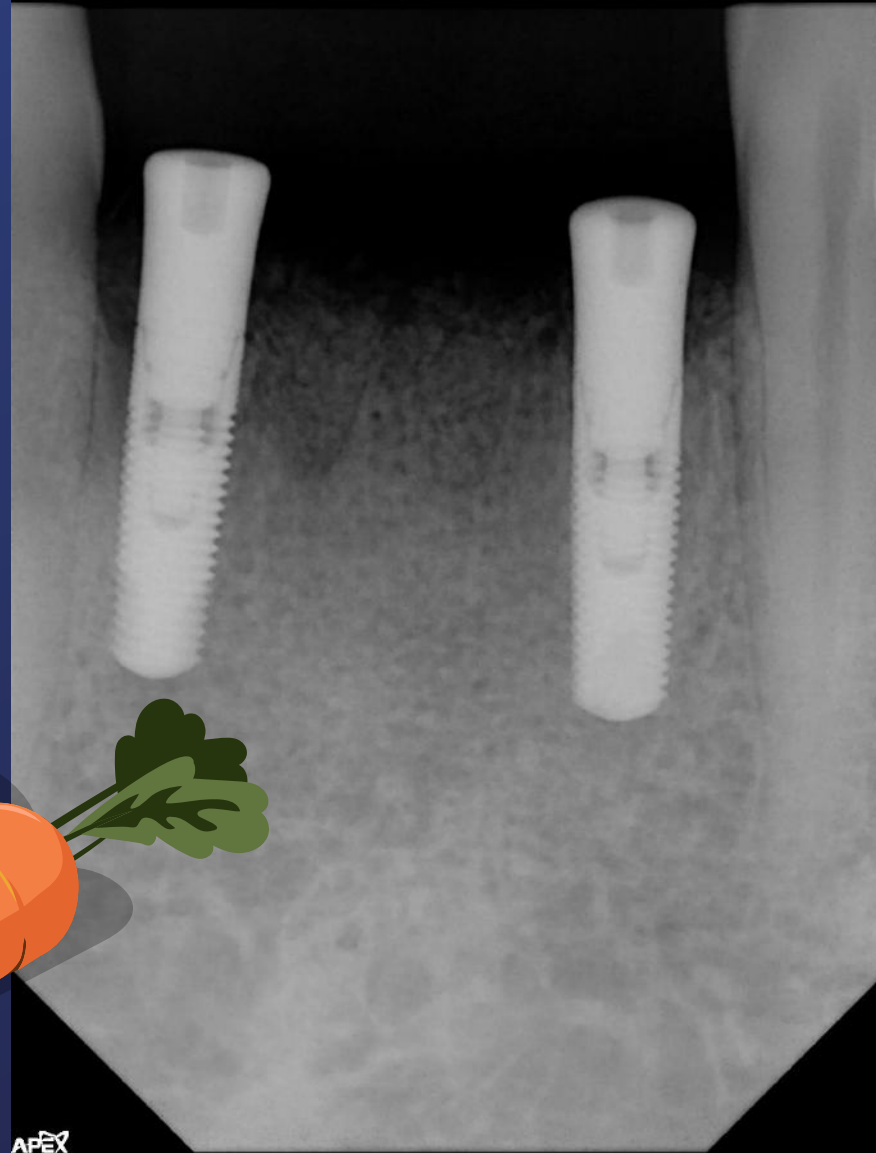
Dental implants



Implant Placement



Implant Placement



Dental considerations for diabetic patients

"Who's your dentist?"

Periodontal disease is often asymptomatic. Seeing your general dentist is the first step in determining the health of your gums and teeth.

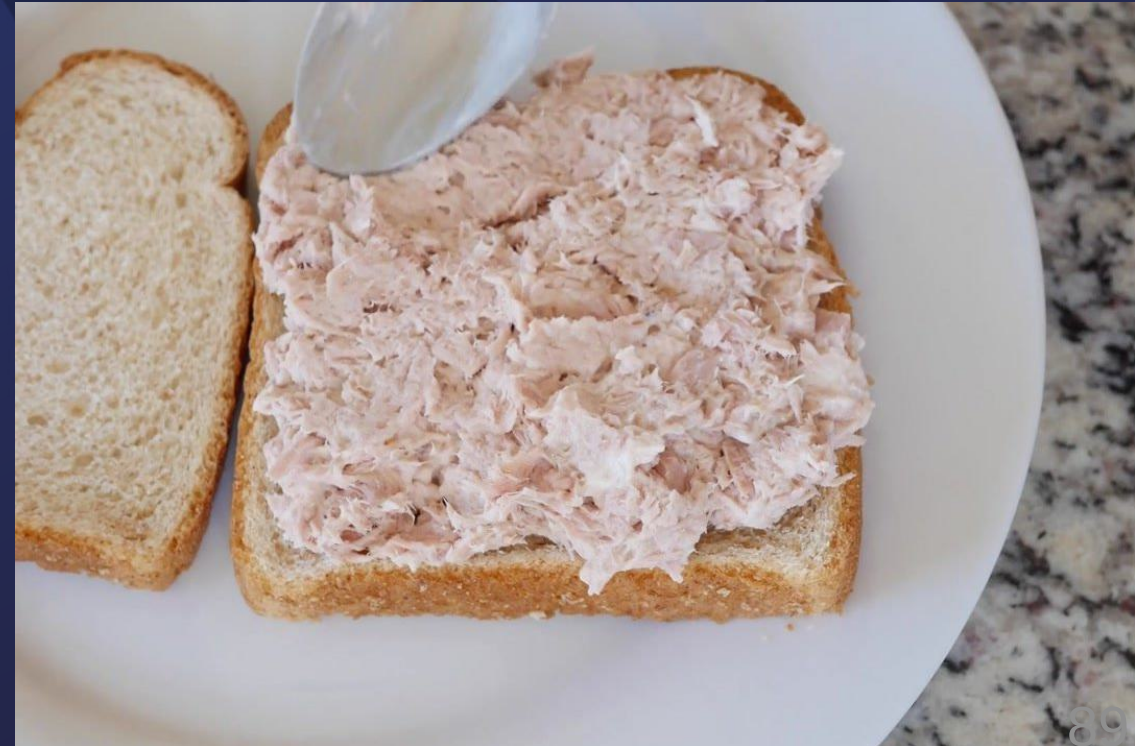
Diabetic patients are at a much greater risk for tooth loss

Hygiene Basics



Plaque is a sticky, colorless substance that forms on the teeth, especially above and below the gums. It's very similar to mayonnaise in consistency.

Removing plaque will reduce the chances of gingivitis, cavities, and periodontal disease



Hygiene Basics



Hygiene Basics

Mechanical removal of plaque





Oral hygiene never takes a holiday!!!

THANK YOU!

Questions???

Email: drpaul@midwestperiollc.com

Paul Johnson, DDS - Midwest Periodontics