Welcome!

Thank you for joining! The program will begin shortly.

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Disclaimers

- Immune Deficiency (IDF) education events offer a wide array of educational presentations, including presentations developed by healthcare and life management professionals invited to serve as presenters. The views and opinions expressed by guest speakers do not necessarily reflect the views and opinions of IDF.

- The information presented during this event is not medical advice, nor is it intended to be a substitute for medical advice, diagnosis or treatment. Always seek the advice of a physician or other qualified health provider with questions concerning a medical condition. Never disregard professional medical advice, or delay seeking it based on information presented during the event.

Oral Health & Primary Immunodeficiencies (PI)

Understanding immune dysfunction & dental/periodontal health

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American Board of Periodontology
Associate Professor, The University of Texas MD Anderson-UTHealth Graduate School of Biomedical Sciences, UTHealth Houston School of Dentistry

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Why PI Affect Oral Health?

Reduced ability to control microbes in the mouth

Higher susceptibility to other infections, such as bacteria, viruses and fungi

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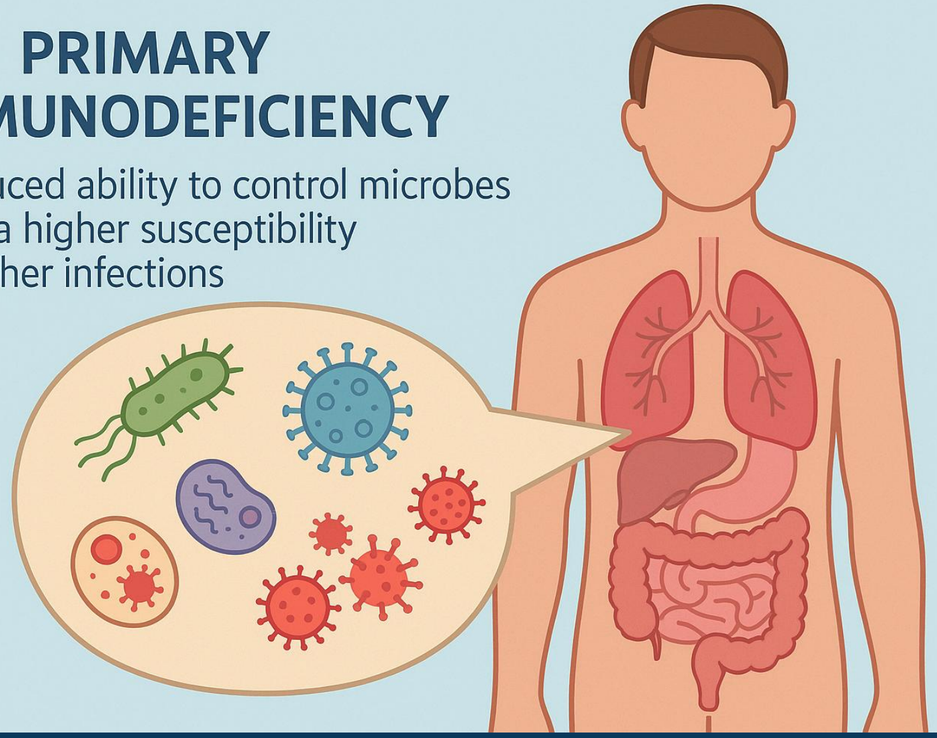
PI affect Oral Health by facilitating infection

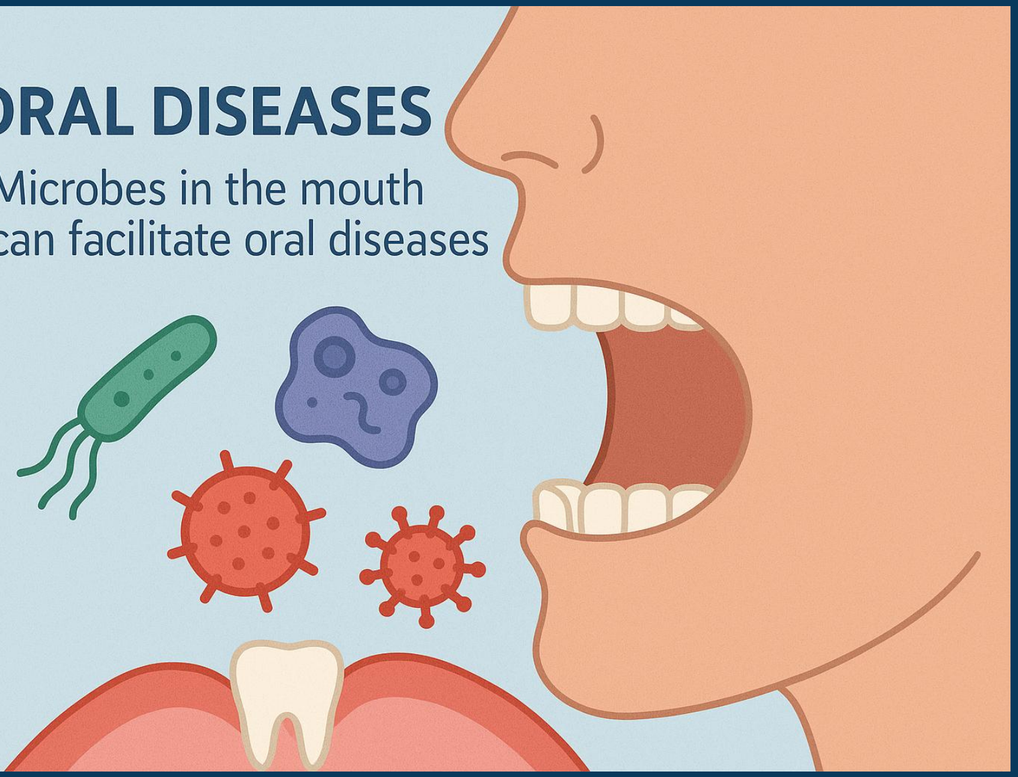
PRIMARY IMMUNODEFICIENCY

Reduced ability to control microbes and a higher susceptibility to other infections



ORAL DISEASES

Microbes in the mouth can facilitate oral diseases



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Are Individuals with PI at Higher Risk for oral disease?

Yes — unfortunately :(

Clinical evidence shows increased complications:

More inflammation, ulcers, and gum disease

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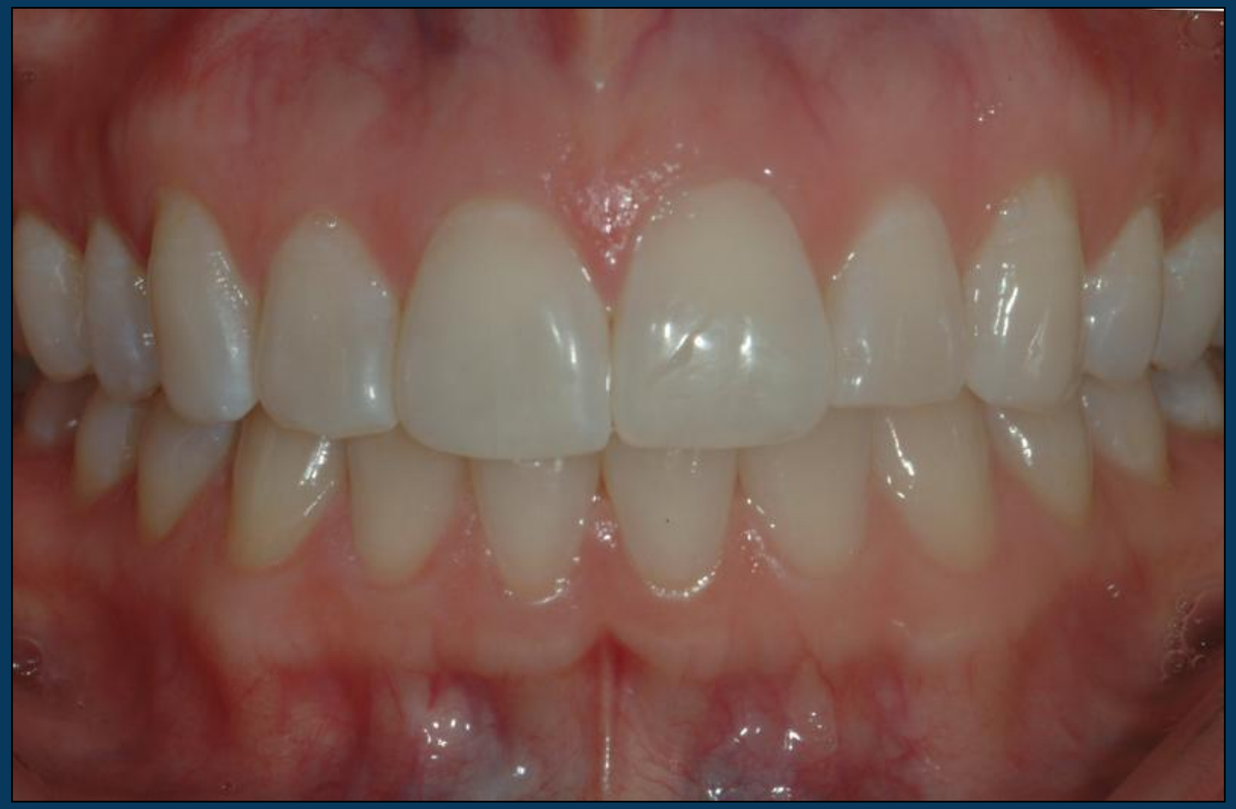
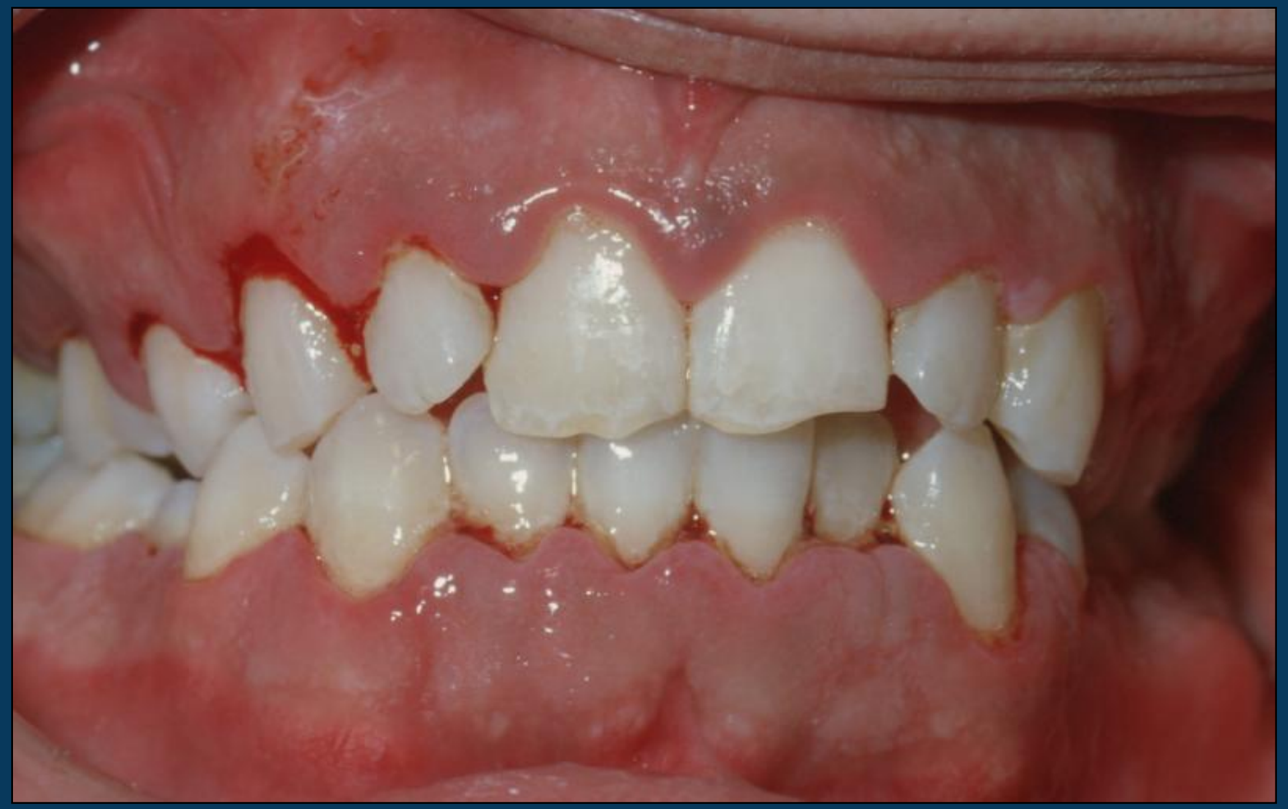
More inflammation and bleeding (swelling)





Why Dental Issues Are Common in PI?

Impaired immune cells work inappropriately

Chronic inflammation accelerates tissue damage and persistence

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Periodontitis (gum disease) is painless but very chronic and destructive

The Immune System & the Mouth

Swollen, ulcerated gums (surface area) is equivalent to a big sore covering the palm of your hand

***AI-generated image for illustration purposes only

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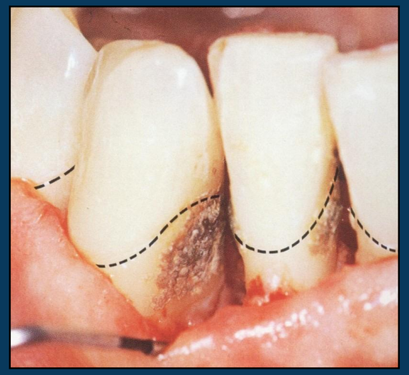
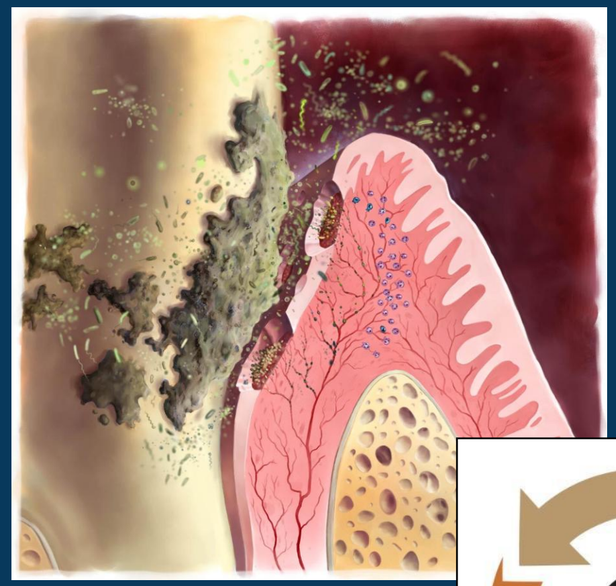
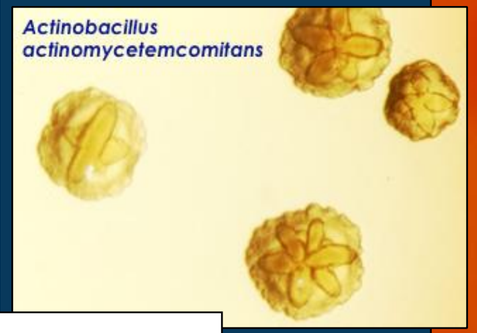
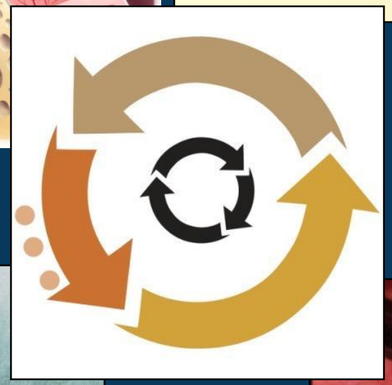
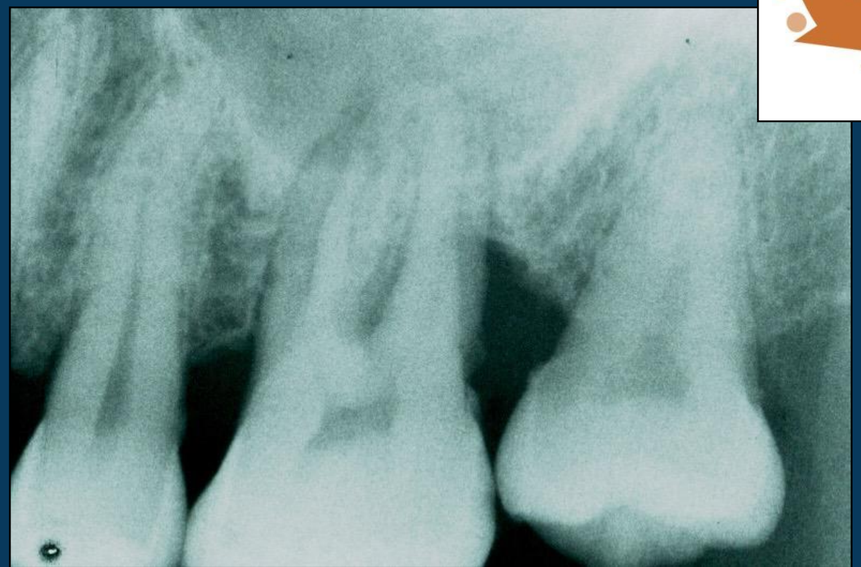
How does Periodontitis start?
Multifactorial

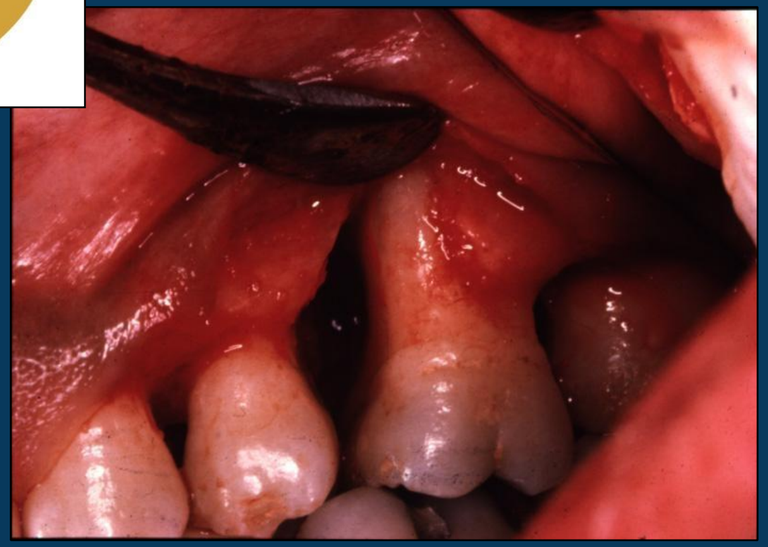






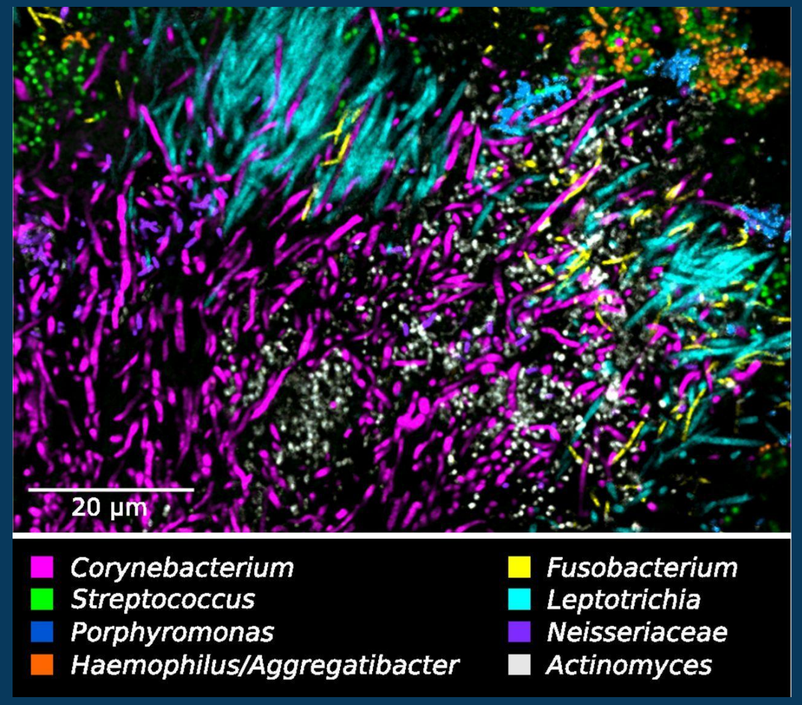


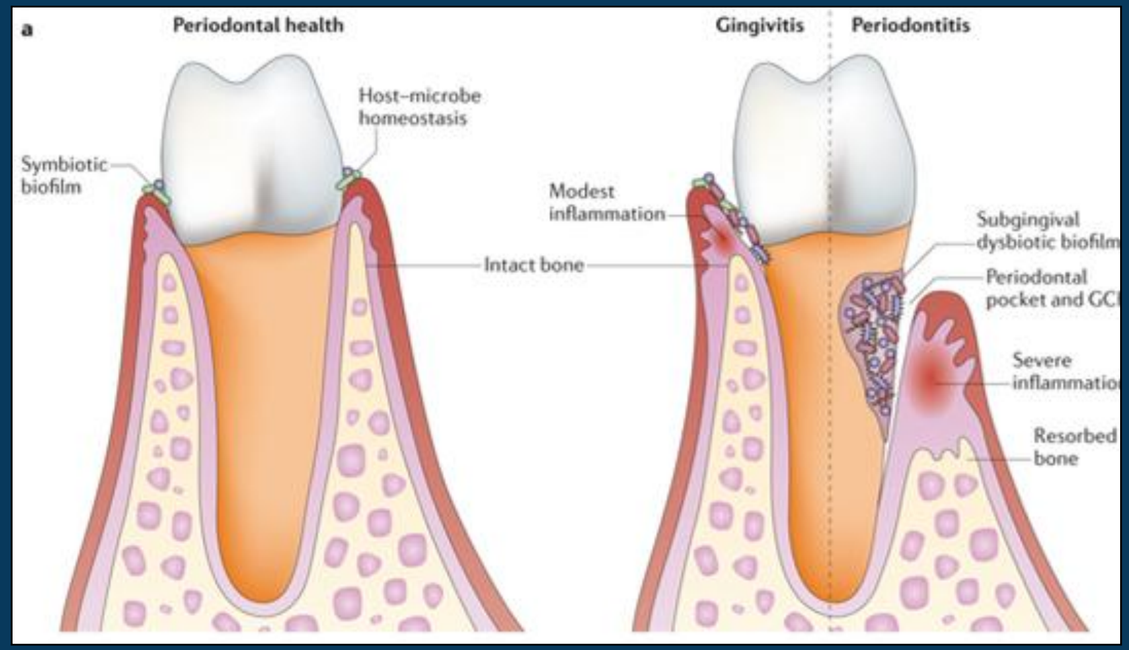




The Immune System & the Mouth interaction never stops

- Constant exposure to bacteria
- Defense via innate & adaptive immunity





Innate Immune Defects

Neutrophil dysfunction → severe gum disease

Examples:

LAD (Leukocyte Adhesion Deficiency)

SCN (Severe Congenital Neutropenia)

Cyclic neutropenia

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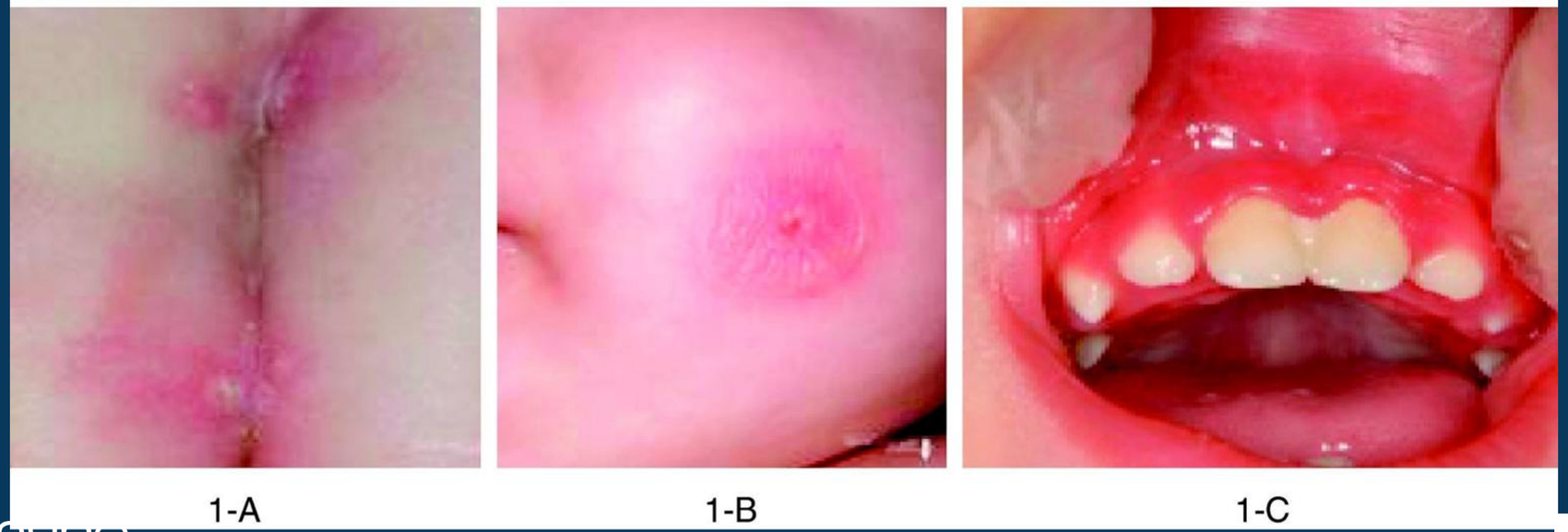
Innate Immune Defects

LAD (Leukocyte Adhesion Deficiency)

1-A: Ulceration of the genital area.
1-B: Cheek impetigo.
1-C: Periodontitis.



1-A 1-B 1-C

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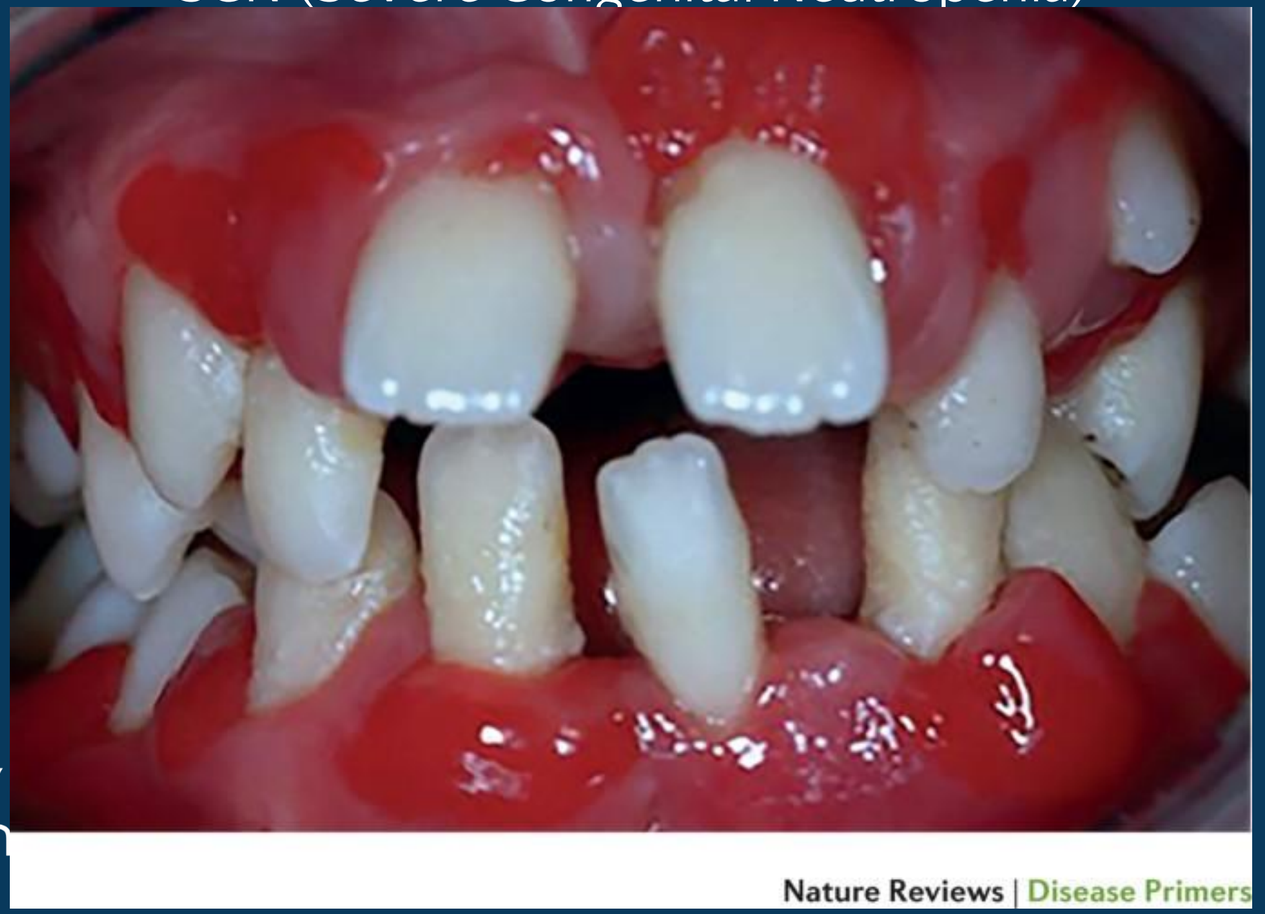
Innate Immune Defects

SCN (Severe Congenital Neutropenia)



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Innate Immune Defects

Cyclic neutropenia

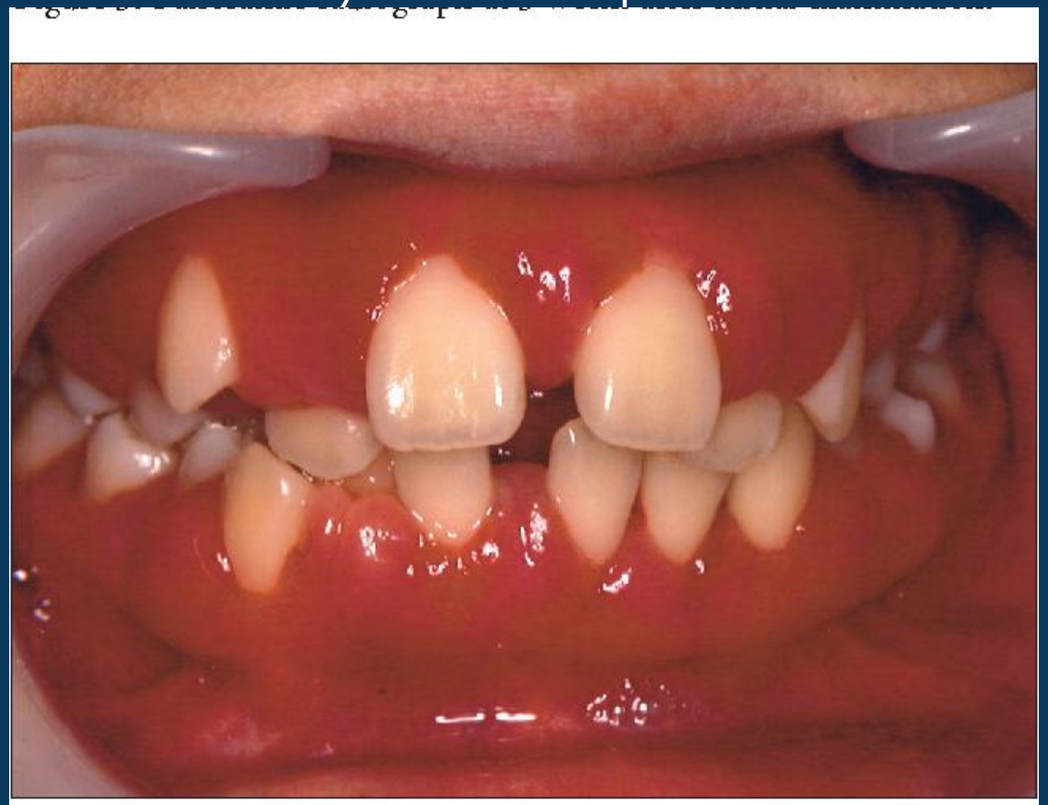

Figure 4. Intraoral view at age 10 (neutropenic period).

Innate Immune Defects

Other Immune Dysfunctions

Chronic Granulomatous Disease (CGD): Mucosal ulcerations, Gingivitis and periodontitis

Chediak–Higashi Syndrome: Recurrent oral ulcers, Candidiasis, Early aggressive periodontitis

Papillon-Lefèvre Syndrome: Severe early periodontitis → early tooth loss

APECED (APS-1): Chronic oral candidiasis, Enamel hypoplasia

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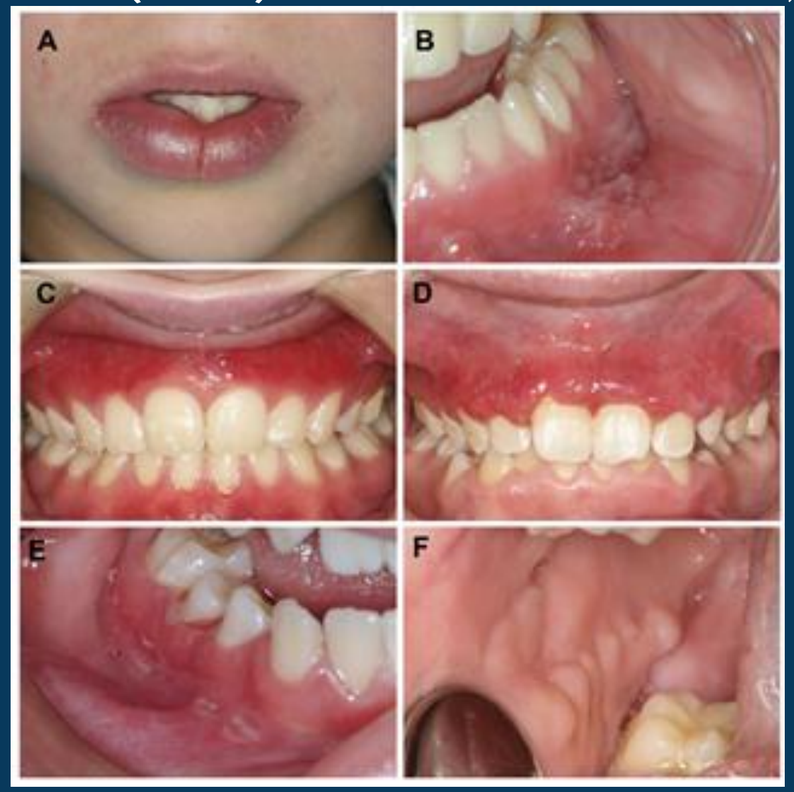
Innate Immune Defects

Other Immune Dysfunctions

Chronic Granulomatous Disease (CGD): Mucosal ulcerations, Gingivitis and periodontitis



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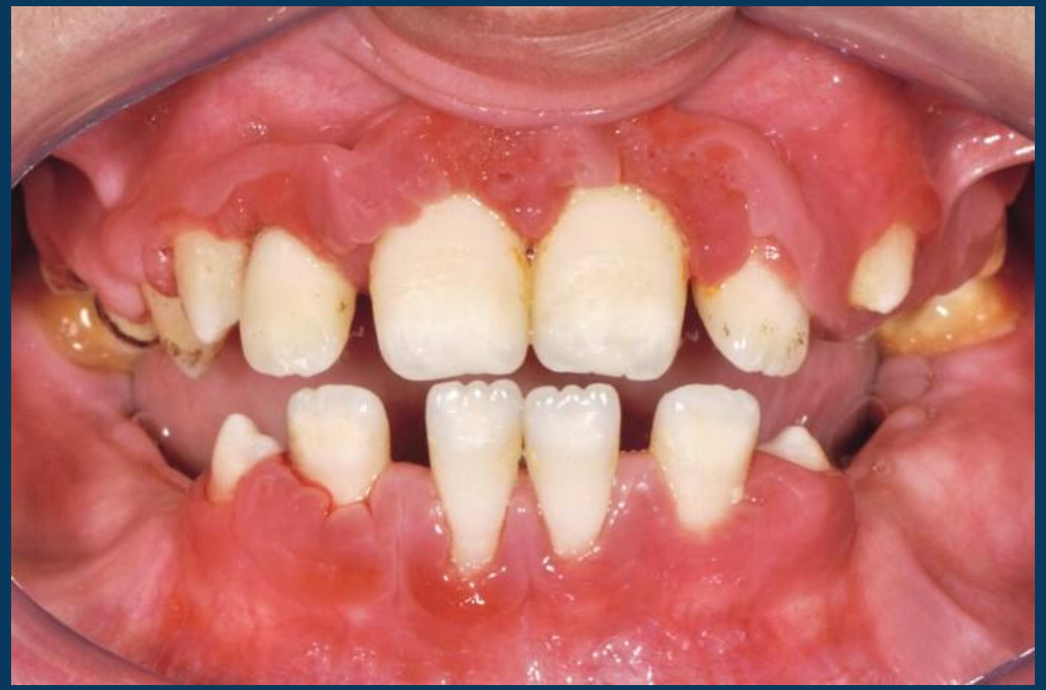
Innate Immune Defects

Other Immune Dysfunctions

Chediak–Higashi Syndrome: Recurrent oral ulcers, Candidiasis, Early aggressive periodontitis



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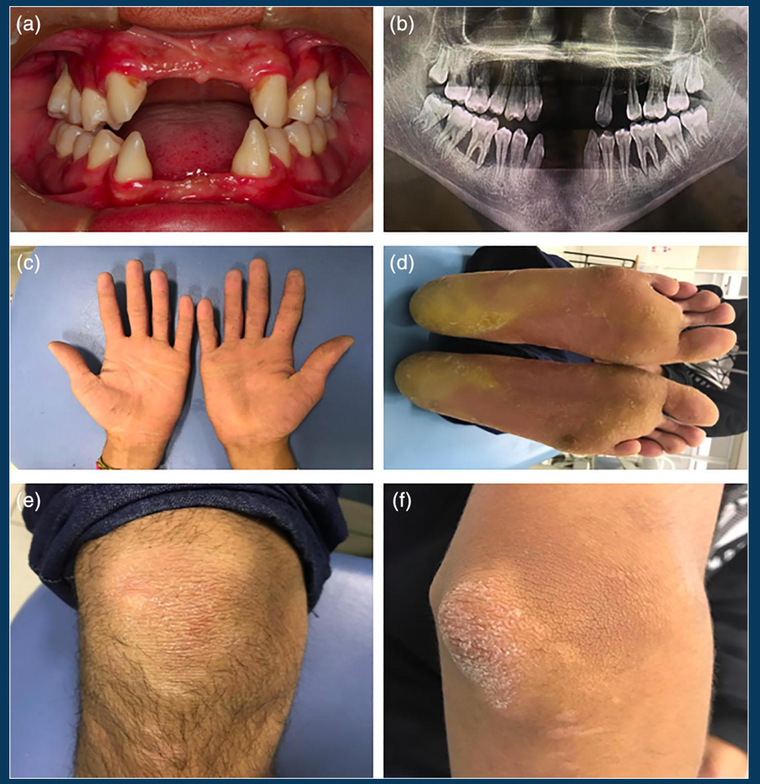
Innate Immune Defects

Other Immune Dysfunctions

Papillon-Lefèvre Syndrome: Severe early periodontitis → early tooth loss



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Adaptive Immune Defects

Low antibodies → infections, ulcers

Examples:

Common Variable Immunodeficiency (CVID)

BTK deficiency (X-linked Agammaglobulinemia, XLA)

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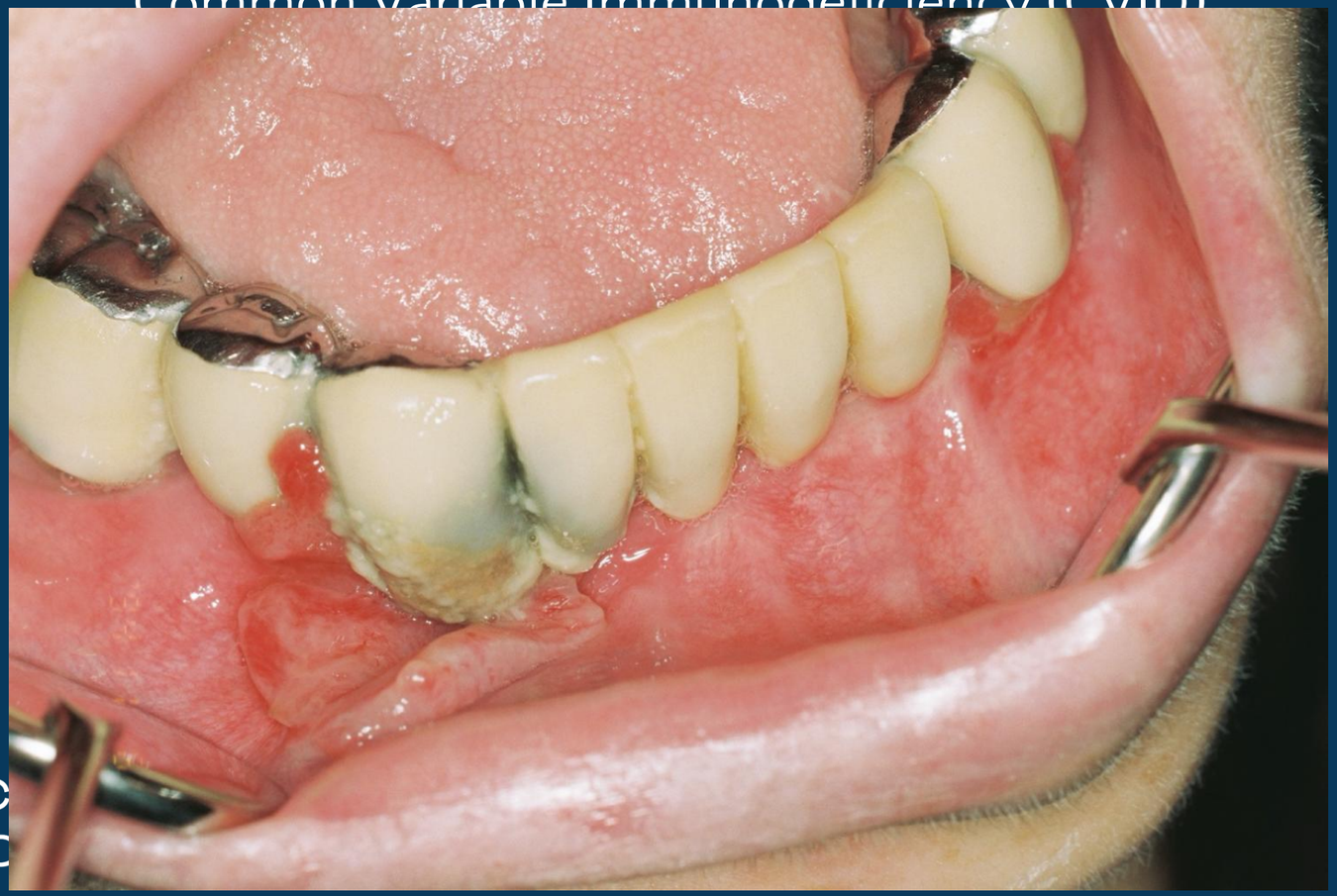
Adaptive Immune Defects

Common Variable Immunodeficiency (CVID)



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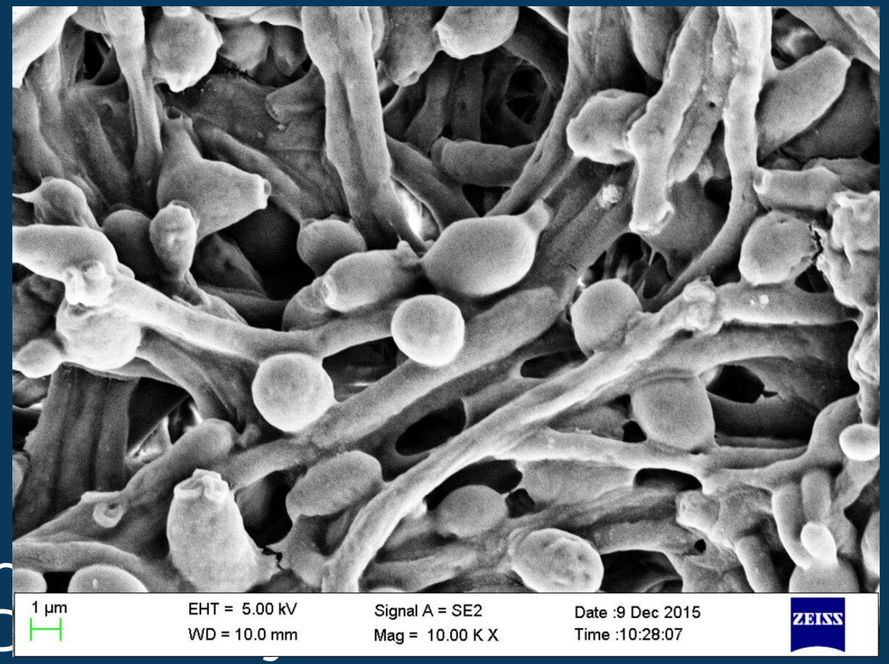
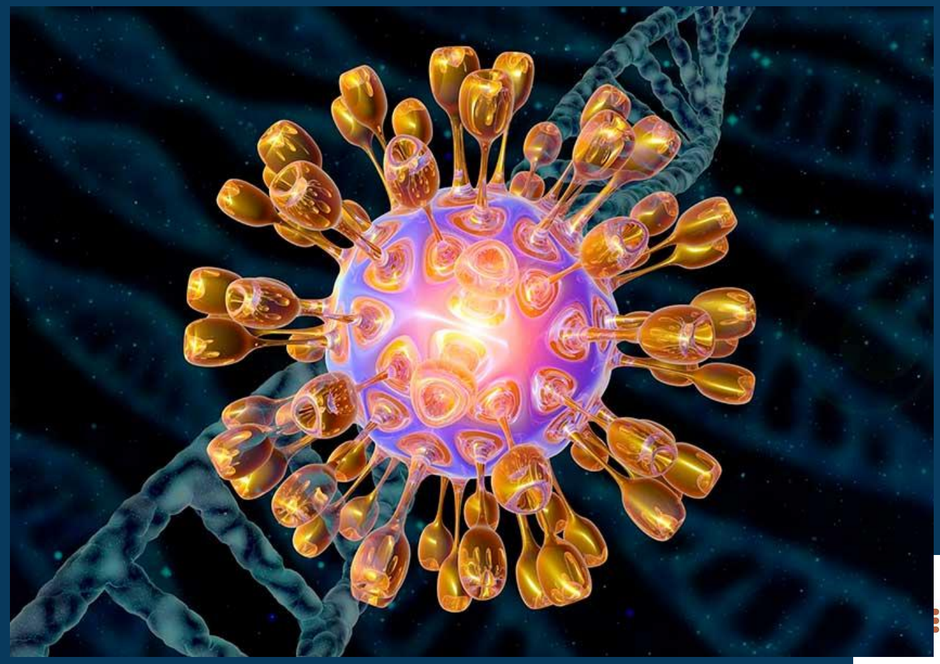
Fungal & Viral Susceptibility

Higher rates of candidiasis

Frequent viral ulcers





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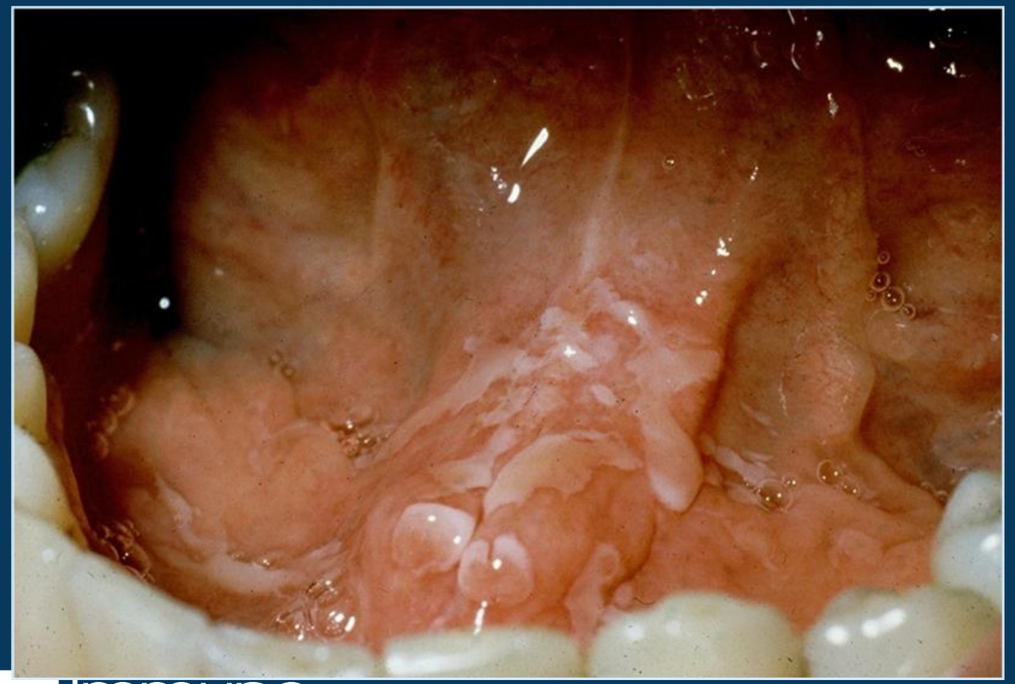
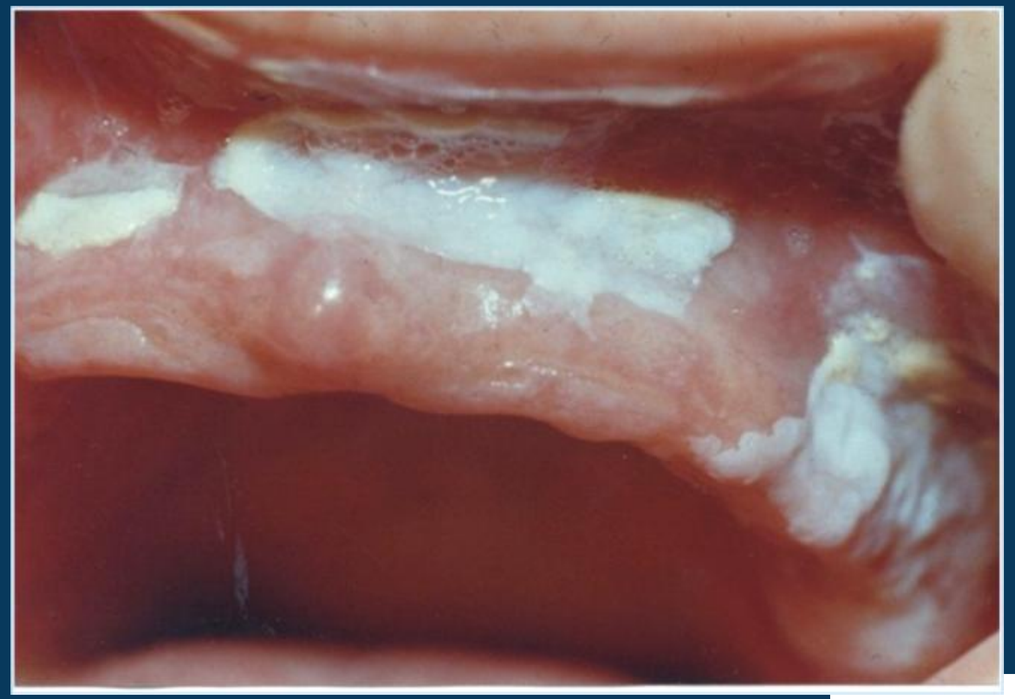
Fungal & Viral Susceptibility

Candidiasis





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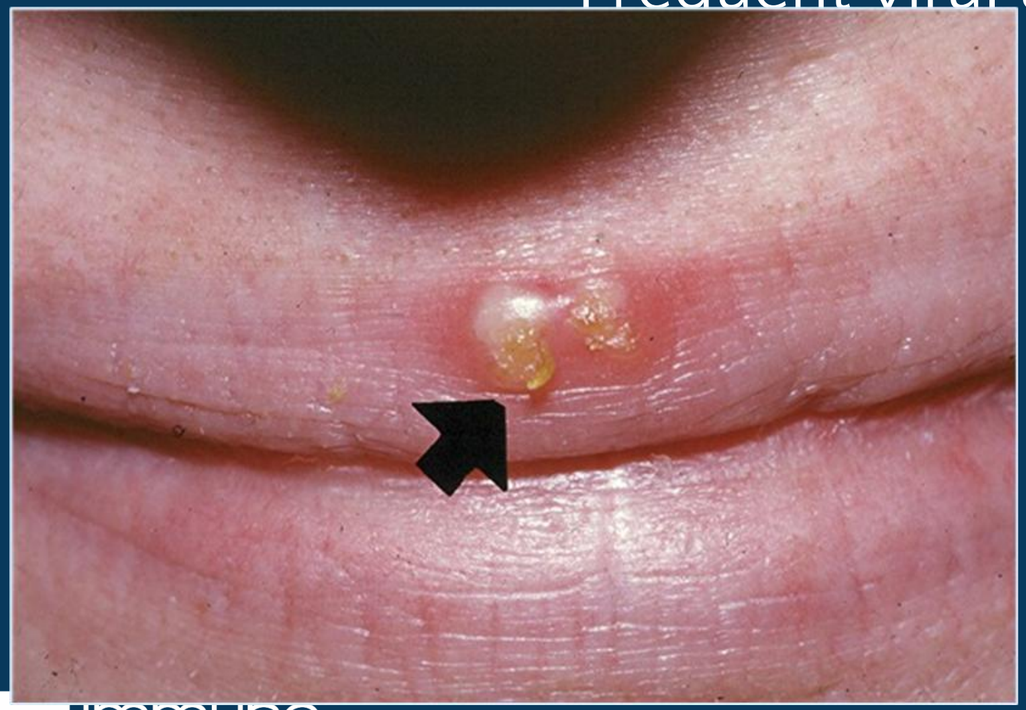
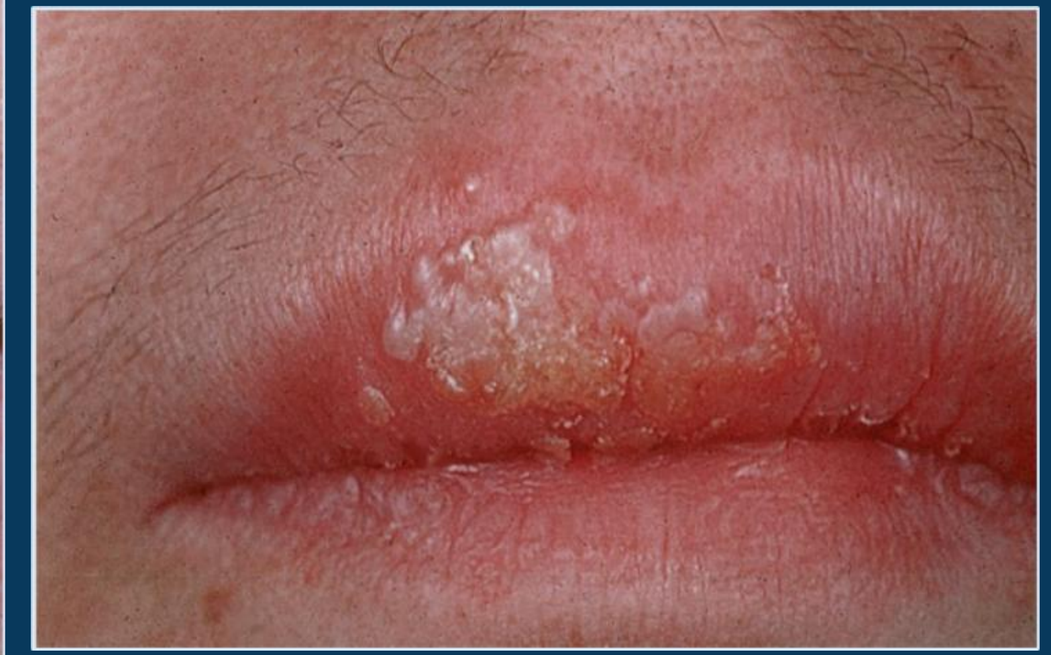
Fungal & Viral Susceptibility

Frequent viral ulcers (Herpes)





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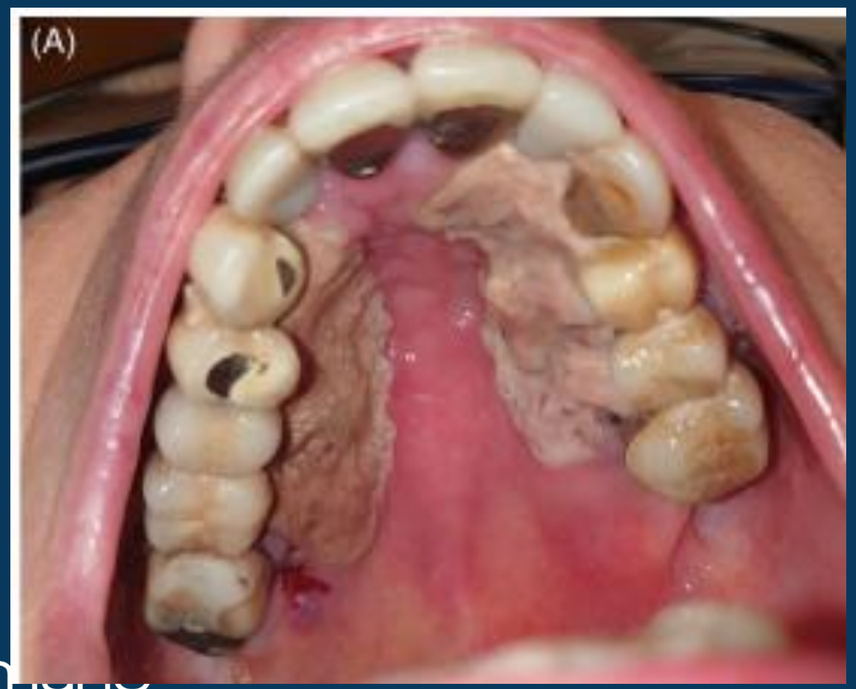
Fungal & Viral Susceptibility

Epstein-Barr Virus



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Impact of Ig Therapy

The impact of immunoglobulin replacement therapy (IRT) on oral infections and oral healing in primary immunodeficiency is not well-documented in the available medical literature, which focuses predominantly on respiratory and systemic infections.

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Impact of Ig Therapy

However, there are some **promising** reports:

Altered oral and oropharyngeal microbiota, characterized by reduced diversity and expansion of pathogenic taxa, is strongly associated with increased susceptibility to respiratory infections in patients with primary immunodeficiency, particularly those with low residual IgA and IgM levels.

This relationship appears bidirectional, with dysbiosis both reflecting and potentially driving respiratory infection risk.

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Berbers RM, Mohamed Hoesein FAA, Ellerbroek PM, van Montfrans JM, Dalm VASH, van Hagen PM, Paganelli FL, Viveen MC, Rogers MRC, de Jong PA, Uh HW, Willems RJL, Leavis HL. Low IgA Associated With Oropharyngeal Microbiota Changes and Lung Disease in Primary Antibody Deficiency. Front Immunol. 2020 Jun 19;11:1245. doi: 10.3389/fimmu.2020.01245. PMID: 32636843; PMCID: PMC7318304.

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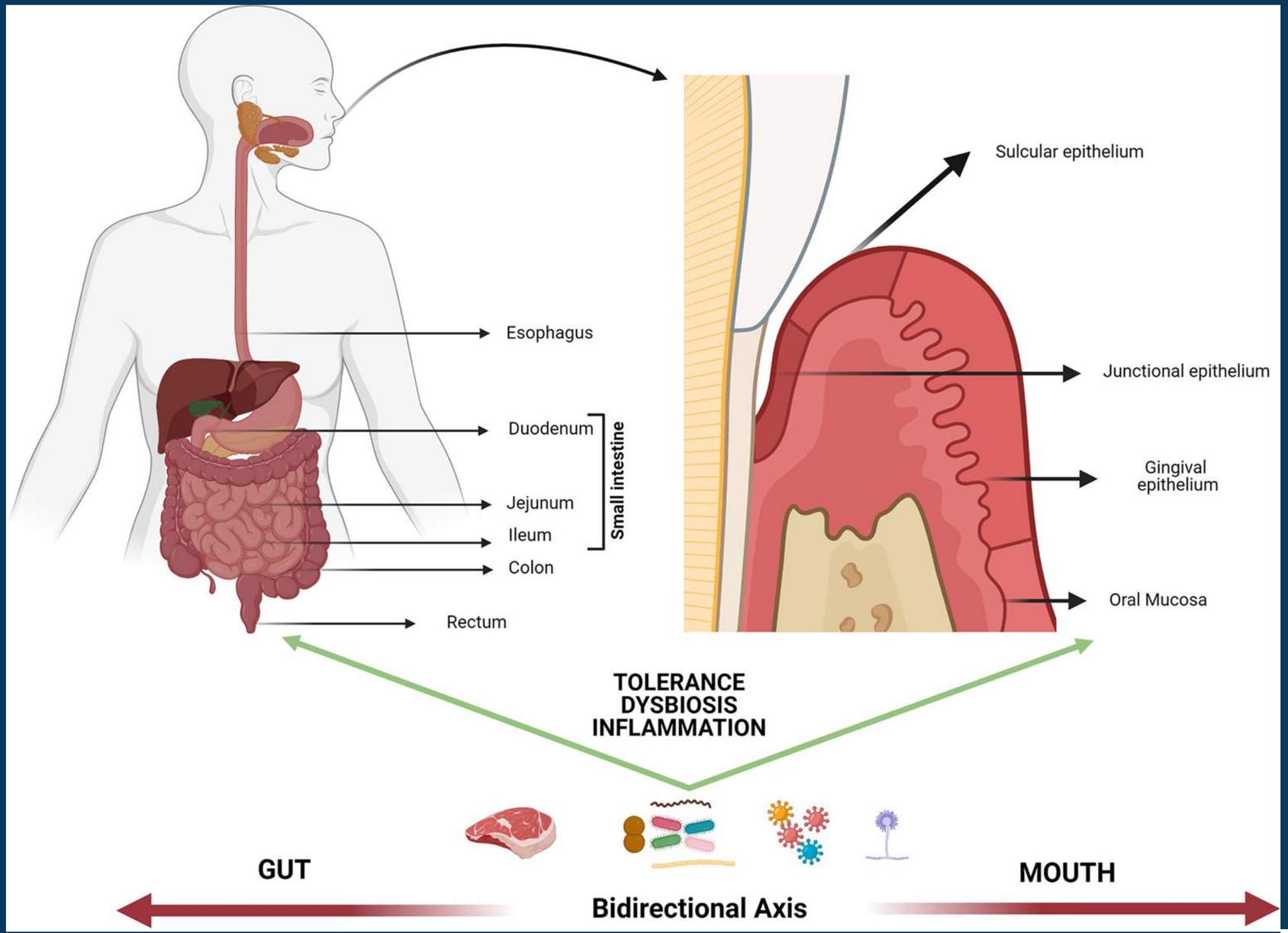

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Suárez LJ, Arboleda S, Angelov N, Arce RM. Oral Versus Gastrointestinal Mucosal Immune Niches in Homeostasis and Allostasis. Front Immunol. 2021 Jul 5;12:705206. doi: 10.3389/fimmu.2021.705206. PMID: 34290715; PMCID: PMC8287884.

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Impact of Ig Therapy

However, there are some **promising** reports:

IV IgG administered as a mouthwash three times daily for 2 weeks reduced oral Candida infection by 70–98%

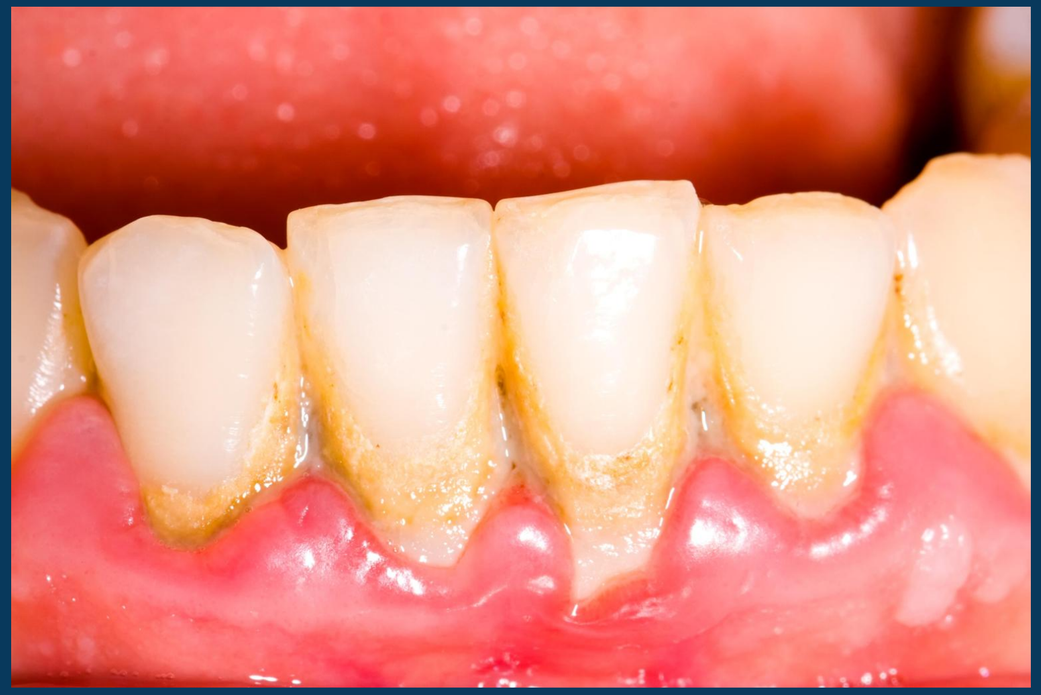
This suggests that immunoglobulin can provide local mucosal benefit when applied topically.

Pedraza-Sánchez S, Méndez-León JI, Gonzalez Y, Ventura-Ayala ML, Herrera MT, Lezana-Fernández JL, Bellanti JA, Torres M. Oral Administration of Human Polyvalent IgG by Mouthwash as an Adjunctive Treatment of Chronic Oral Candidiasis. Front Immunol. 2018 Dec 21;9:2956. doi: 10.3389/fimmu.2018.02956. PMID: 30627128; PMCID: PMC6309162.

Limits of Ig Therapy

Does not replace oral hygiene

Does not prevent plaque-driven disease



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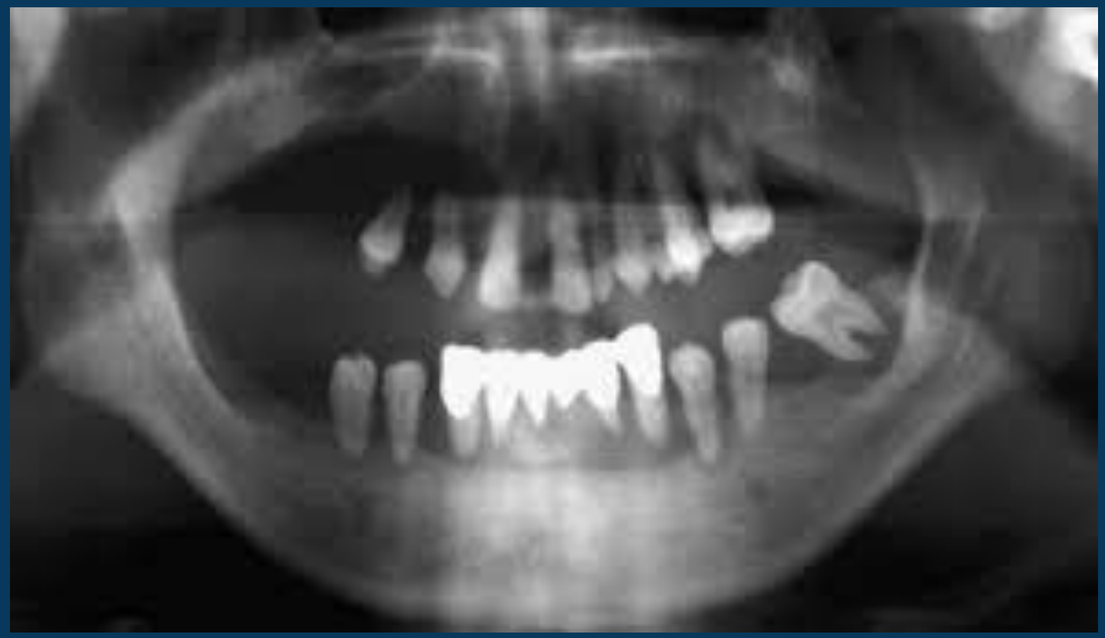
How PI Affects Oral Health Over Time

Earlier onset of issues

Faster progression



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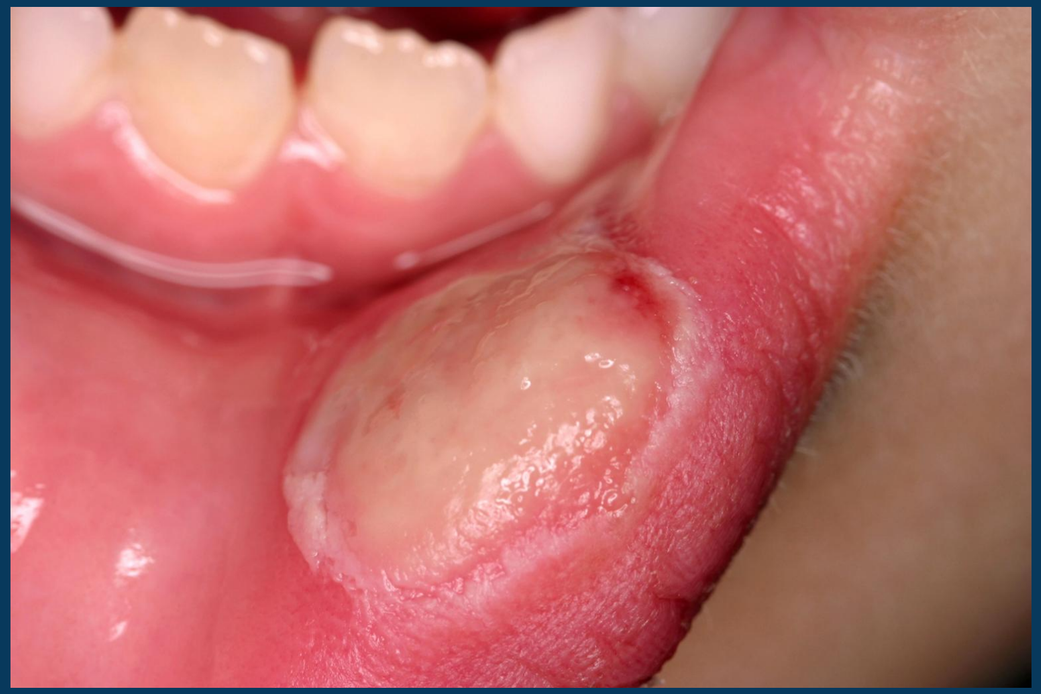
Common Long-Term Patterns

Recurring ulcers

Persistent inflammation



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Preparing for a Dental Visit

Share labs and PI history

Coordinate with immunologist

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Before Procedures

Assess stability

Ask about antibiotic prophylaxis

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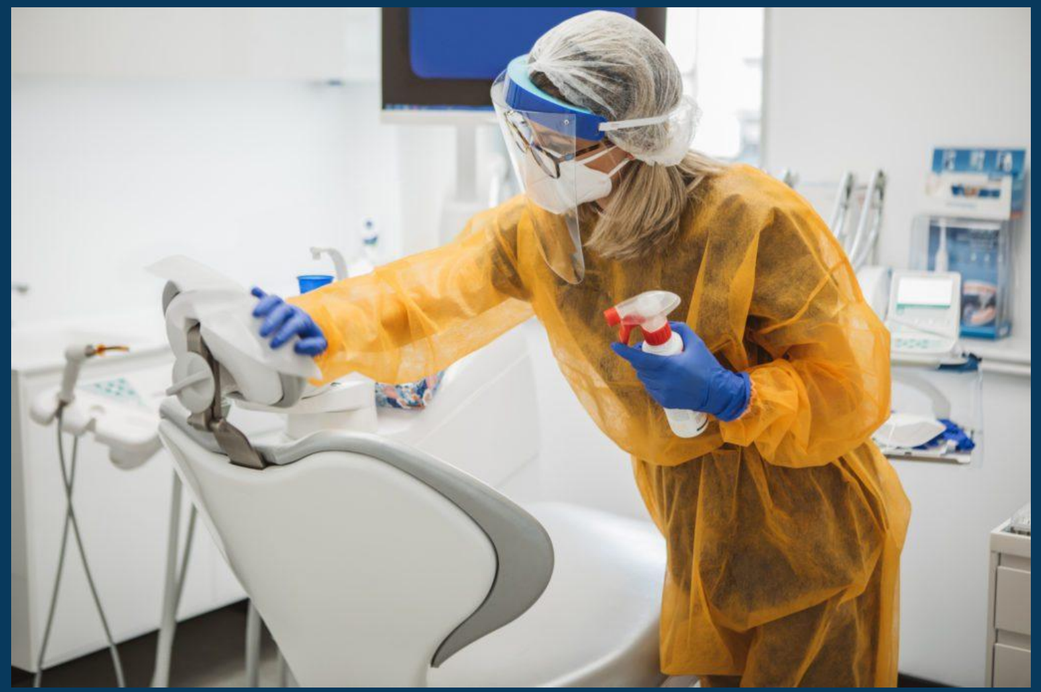
During Dental Treatment

Gentle techniques

Enhanced infection control



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After Dental Procedures

Close monitoring

Report any complications early

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Optimizing Daily Oral Hygiene

Brush twice daily

Clean between teeth with interproximal toothbrushes, electric toothbrushes and water irrigators

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Adjuncts for PI Patients

Alcohol-free rinses

Fluoride products

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Diet & Lifestyle

Limit sugar

Avoid tobacco & vaping

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When to Seek Care

New ulcers

Persistent bleeding

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Collaborative Care

Dentist + periodontist + immunologist

Coordinated care improves outcomes

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Key Takeaways

PI increases oral vulnerability

Prevention by frequent monitoring can be powerful

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Thank You!

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Thank you!

We look forward to seeing you again soon!

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