

# **Types of Bacterial Infections of The Oral Mucosa**

**By: Prof. Dr. Maha Adel**

# Oral Mucosa and Infections

- ⦿ The oral mucosa serves as a protective lining in the mouth, acting as a barrier to pathogens, toxins, and injuries. Despite its protective role, it is vulnerable to bacterial infections due to constant exposure to oral bacteria.
- ⦿ Factors like poor oral hygiene and immune suppression can lead to bacterial overgrowth, causing infections ranging from mild to severe. Prompt diagnosis and treatment are essential.

# Risk Factors for Oral Bacterial Infections

- ⦿ **Poor Oral Hygiene:** Bacteria accumulation due to insufficient brushing/flossing.
- ⦿ **Smoking:** Reduces immune response and blood flow, increasing susceptibility.
- ⦿ **Dry Mouth (Xerostomia):** Lack of saliva increases bacterial growth.
- ⦿ **Immunosuppression:** Conditions like HIV/AIDS, diabetes, and immune-suppressing medications heighten infection risk.
- ⦿ **Malnutrition:** Vitamin deficiencies, especially Vitamin C, weaken the mucosa.

# Diagnosis of Bacterial Oral Infections

- ⦿ **Patient History:** Medical/dental history and lifestyle factors.
- ⦿ **Clinical Examination:** Visual inspection, palpation, identification of signs like ulcers, pus, and gum recession.
- ⦿ **Microbiological Testing:** Swab/biopsy for bacterial identification.
- ⦿ **Radiographic Imaging:** X-rays/CT scans for deeper infections.

# Types of Bacterial Infections of the Oral Mucosa

## A- Periodontitis

- ◉ Severe gum infection damaging tissue and bone.
- ◉ Caused by bacteria like *Porphyromonas gingivalis*, *Tannerella forsythia*, and *Aggregatibacter actinomycetemcomitans*.
- ◉ **Symptoms:** Red, swollen gums, bleeding, bad breath, gum recession, and tooth loss.

# Aetiology of Periodontitis

- ⊙ Caused by plaque accumulation leading to tartar, causing inflammation.
- ⊙ **Risk factors:**
  - > Poor oral hygiene
  - > Smoking
  - > Genetic predisposition
  - > Systemic conditions like diabetes
  - > Medications reducing saliva flow

# Pathophysiology of Periodontitis

- ⦿ Bacterial infection in the gingival sulcus triggers immune response, destroying gum tissue and bone.
- ⦿ Deep pockets form, harbouring bacteria, leading to tooth loss if untreated.

# Clinical Features and Diagnosis of Periodontitis

- **Symptoms:** Swollen red gums, bleeding, bad breath, gum recession, loose teeth, pain.
- **Diagnosis:** Clinical examination and X-rays. Periodontal pockets deeper than 4mm indicate periodontitis.



# B- Stomatitis

- ⦿ Inflammation of the mouth's mucous membranes affecting cheeks, gums, tongue, etc.
- ⦿ Causes include bacterial infections like angular cheilitis caused by *Staphylococcus aureus* or *Streptococcus* species.

# Types of Stomatitis

- ① **Aphthous Stomatitis (Canker Sores):** Small painful ulcers inside the mouth.
- ① **Herpetic Stomatitis:** Caused by herpes virus, leading to painful blisters, common in children.
- ① **Denture Stomatitis:** Caused by prolonged denture wear.
- ① **Allergic/Irritant Stomatitis:** Triggered by irritants like mouth wash or allergens.

# Causes of Stomatitis

◎ Causes include:

- > **Infections** (viral, bacterial, fungal)
- > **Poor oral hygiene**
- > **Nutritional deficiencies**
- > **Medications** (e.g., antibiotics)
- > **Autoimmune conditions** (e.g., lupus)
- > **Irritants** (tobacco, spicy foods)

# Symptoms and Diagnosis of Stomatitis

- ◎ **Symptoms:** Painful sores, redness, swelling, difficulty eating, bad breath.
- ◎ **Diagnosis:** Physical exam, medical history, and possibly blood tests or biopsies for recurrent cases.

# C- Ludwig's Angina

- Severe, rapidly spreading cellulitis under the tongue.
- **Aetiology:** Arises from untreated dental infections, typically lower molars. Caused by *Streptococcus* and *Staphylococcus*.

# Pathophysiology of Ludwig's Angina

- Infection spreads from the teeth to the connective tissues of the lower jaw.
- Swelling can obstruct the airway, leading to respiratory failure if untreated.

# Clinical Features and Diagnosis of Ludwig's Angina

- ❖ **Symptoms:** Severe swelling under the chin, pain, difficulty breathing/swallowing, fever.
- ❖ **Diagnosis:** Clinical examination and CT scans to assess the extent of infection.

# D- Necrotizing Ulcerative Gingivitis (NUG)

- Caused by bacterial overgrowth, particularly Fusobacterium and Prevotella. Associated with poor oral hygiene, stress, smoking, and malnutrition



# Aetiology and Risk Factors of NUG

- **Risk factors include:**
  - Poor hygiene
  - Smoking
  - Stress
  - Immunosuppression
  - Fatigue

# Pathophysiology of NUG

- ❑ Bacteria invade gingival tissues, causing inflammation, necrosis, and ulceration. Rapidly progressing infection causing necrosis of gum tissue.
- ❑ Progression can lead to deeper periodontal involvement and bone loss.

# Clinical Features of NUG

- **Symptoms:** Sudden onset of gum pain, ulcerations, bleeding, foul breath, grey pseudomembrane, fever.

# Diagnosis of NUG

- ⦿ Diagnosis is based on clinical presentation of symptoms such as necrotic ulcerations and foul breath.
- ⦿ Further tests may be required in severe cases

## E. Pericoronitis

- Infection of soft tissue surrounding a partially erupted tooth, usually wisdom teeth.
- **Symptoms:** Pain, swelling, trismus, bad breath. Severe cases can spread to cheek and throat.

# Complications of Bacterial Oral Infections

- **Abscess Formation:** Severe pain, swelling, fever. Can spread to jawbone or other organs.
- **Sepsis:** Life-threatening infection, causing organ failure. Symptoms: Fever, rapid heart rate, confusion.
- **Systemic Spread:** Bacteria can infect organs like the heart or lungs, causing secondary infections.
- **Loss of Teeth and Bone Resorption:** Advanced infections can destroy bone, causing tooth loss and complicating future dental treatments

**Thank You**