INFECTIOUS DISEASES TRANSMITTED AT THE DENTAL CLINIC

"MICRO-HYGENIOUS SQUAD"

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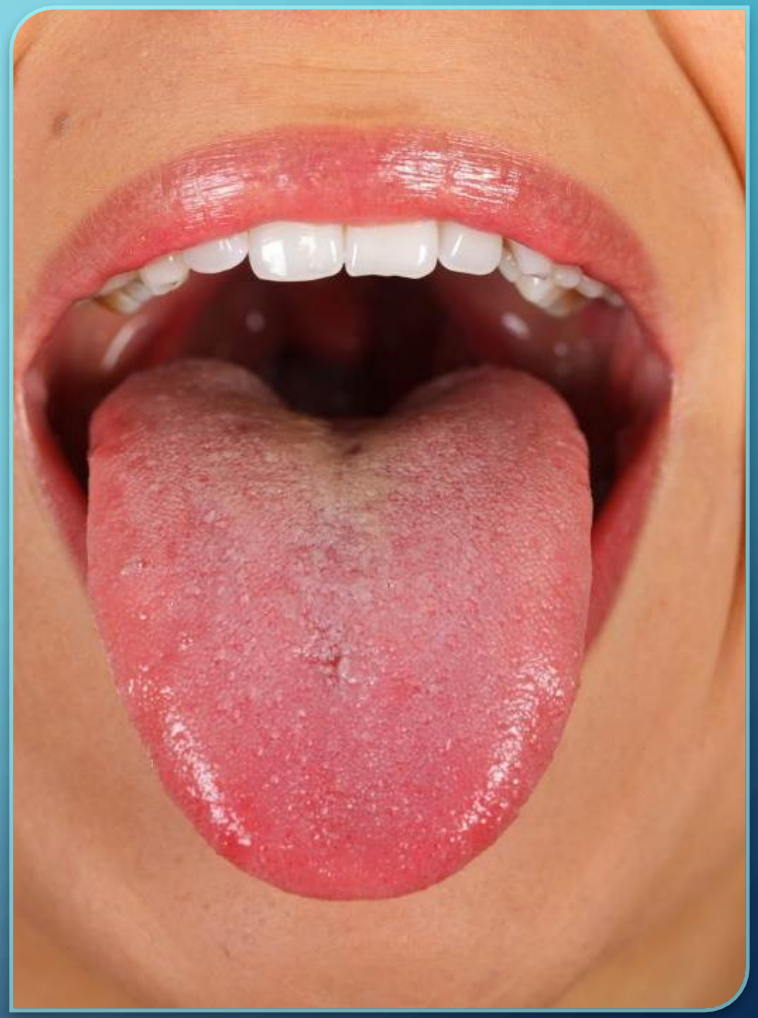
INTRODUCTION

- Microbes are microorganisms, that are too small to be seen by human naked eye. Microbes can cause infectious diseases; however, some of them can be beneficial for the human body.
- Transmission of infectious agents among patients and dental health providers rarely happen. Nevertheless, failure to maintain contamination under control can lead to dangerous transmission diseases, such as Tuberculosis, Herpes and Hepatitis A and C.
- Acknowledge of these diseases, will allow the dental health care to recognized associated lesions and also to take appropriate steps, to minimized the risk of transmission in the dental office.

ORAL CAVITY

- Oral cavity or as best known mouth, it is a crucial part of the digestive system; since digestion begins in the mouth with the help of the teeth to properly grind food. Enzymes that are in charge of breaking food into smaller particles and the tongue that helps to swallowed food and liquids.
- Every part plays an important role to provide a healthy quality of life. However, the oral cavity is a very susceptible part to acquire lesions and body auto response against bacteria that can lead to pathologies within the mouth or throughout the body.



DENTAL DISEASES

DENTAL CARIES

Over time, bacteria in the mouth break down food deposits left on the teeth. This process produces acid, which can erode the hard substances from which the teeth are made. Over time,, holes or cavities develop.

GINGIVITIS

Gingivitis is a non-destructive disease, that causes inflammation of the gums. This is a response to bacterial biofilm that is attached to the tooth surface. While some cases of gingivitis never progress to periodontitis,; periodontitis is always proceeded from gingivitis.

PERIODONTITIS

Chronic periodontitis is a common type of chronic periodontal disease and it spreads from gingivitis to deep periodontal tissues. Dental plaque bacteria are the main factors of periodontal disease. Plaque includes plaque and subgingival plaque, which is a micro-ecological system with bacteria on the tooth surface or periodontal pocket.

MICROBIOTA OF THE MOUTH

- Microbiota: the microorganisms of a particular site, habitat, or geological period.
- Composition:

  Oral bacteria are the main components of the oral microbiota.

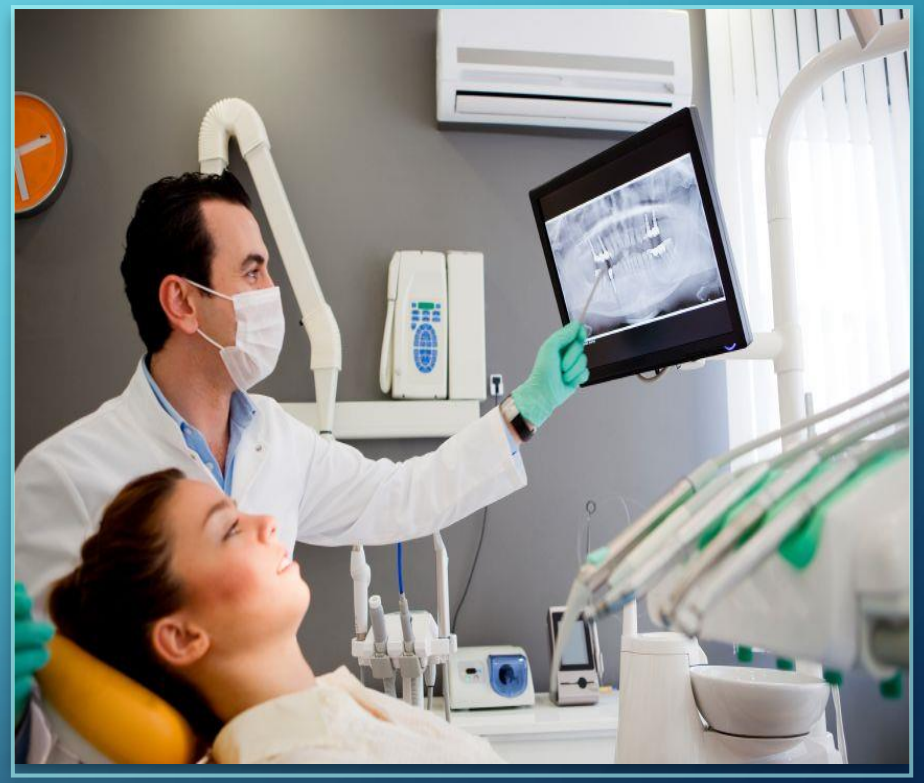
Common oral bacteria include:

- *Streptococcus mutans*
- *Porphyromonas gingivalis*
- *Staphylococcus*
- *Lactobacillus*
- *Candida (fungus)*

- Role: The **microbiota** plays a fundamental **role** on the induction, training, and function of the host immune system. In return, the immune system has largely evolved as a means to maintain the symbiotic relationship of the host with these highly diverse and evolving microbes.

WHY VISIT THE DENTIST?

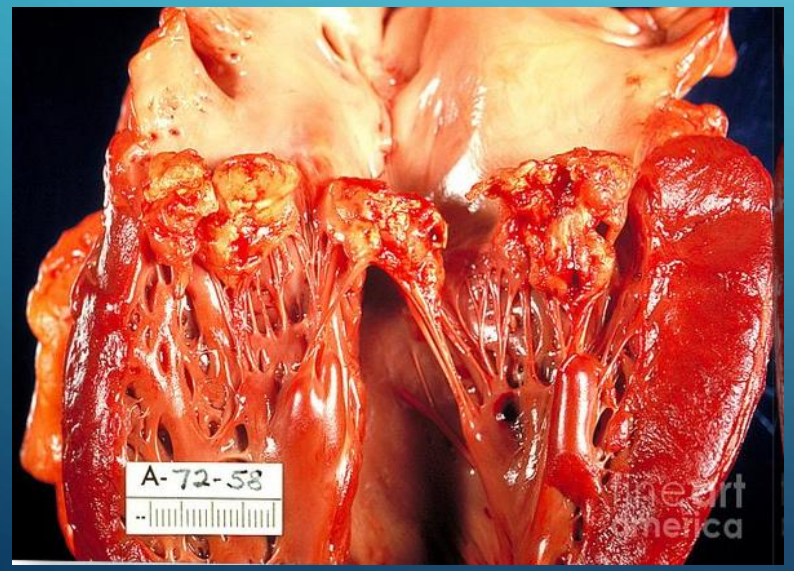
- It is important to visit the dentist regularly, to maintain a good oral health by getting cleanings at least twice a year so the oral plaque can be under control.
- To prevent dental cavities, gum disease and detection of any oral pathology.
- To maintain an overall physical health.



DISEASES THAT CAN ARISE FROM DENTAL PROCEDURES

• Endocarditis

- ❖ Bacterial caused inflammation of the Endocardium, the inner layer of the heart. The agents are usually alpha hemolytic, *Staphylococcus aureus causes acute bacteria endocarditis which leads to rapid destruction of heart vales.*
- ❖ The infection arises from a specific infection, such as tooth extraction, dental caries or tonsillectomy.



• Colorectal cancer

- ❖ *Fusobacterium nucleatum* is an oral bacterium indigenous to the human oral cavity, that plays a role in periodontal disease. The bacterial species *Fusobacterium nucleatum* is associated with a subset of human colorectal cancers, but its role in tumorigenesis is unclear.
- ❖ Studies have shown that *Fusobacterium nucleatum* and certain co-occurring bacteria were present not only in primary tumors but also in distant metastases. Preliminary evidence suggests that the bacterium is localized primarily within the metastatic cancer cells rather than in the stroma.

- Throat cancer

❖ *Porphyromonas gingivalis* is another pathogenic oral microbe found to be linked to cancer – specifically cancer of the esophagus.

❖ *Porphyromonas gingivalis* accelerates cell cycling and suppresses apoptosis in cultures of primary oral epithelial cells. Also, promotes distant metastasis and chemoresistance to anti-cancer agents and accelerates proliferation of oral tumor cells by affecting gene expression of defensins, by peptidyl-arginine deiminase and noncanonical activation of β-catenin.

- Infections of lungs

❖ *Prevotella intermedia is an anaerobic pathogenic bacterium involved in periodontal infections, including gingivitis and periodontitis, and often found in acute necrotizing ulcerative gingivitis.*

❖ *It has been shown that patients with autoimmune lung diseases, are more prominent to be affected by Prevotella intermedia since it's a* periodontopathic bacterium, if it's not well control it can lead to major complications.

Organ System	Bacteria	Disease	Virus	Disease
Digestive System	*Streptococcus mutans-Gingiviti* *Fusobacterium neonaturum-dental abscesses* *Prevotella intermedia* *Staphylococcus aureus*	Gingivitis Dental Abscess Periodontitis Endocarditis	*Mumps virus*	Mumps
The Skin	*Pseudomonas aeruginosa*	Dermatitis and otitis externa	Herpes simplex virus Type HPV	Herpes Papillomavirus
The Eye	*Haemophilus influenza*	Conjunctivitis		
Cardiovascular System		*CMV (HHV-S)*	Cytomegalic infection	
Upper Respiratory System	*Streptococcus pyrogenes*	Strep throat		
Lower Respiratory System	*Mycobacterium tuberculosis* *Bordetella pertussis* *Burkholderia pseudomallei* *Chlamydophila psittaci*	Tuberculosis Bronchitis Pneumonia Chlamydophilia	Hepatitis A Virus Hepatitis B Virus Hepatitis C Virus Influenza	Hepatitis A Hepatitis B Hepatitis C Flu
Nervous System	*Neisseria meningitides* *Haemophilus influenza meningitis* *Streptococcus pneumoniae meningitis*	Meningitis		

Organ System	Fungal	Disease	Protozoa	Disease
Digestive System			*Entamoeba histotilyca*	Amoebic Dysentery
The Skin	*Candida albicans*	Candidiasis		
The Eye			*Acanthamoeba protozoa*	Keratitis
Cardiovascular System				
Upper Respiratory System				
Lower Respiratory System	*Histoplasma capsulatum Aperguillus, Rhizopus and Mucor*	Ohio Valley Mycoses		
Nervous System			*Naegleria*	Meningitis

CONCLUSION

- In conclusion, oral health is vital for the functioning of the human body; with the prevention of infections and control of bacteria located in the mouth, many health problems can be avoided. In any way, there is always a minimum risk of contracting some type of secondary effect based on our immune system and an overall response of the body.

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* Microbiology Lecture Homework 2 Materials_Infect.Dis By Organ Systems. Professor Nihrane PH.D

Images

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