1.Infection Control

2. Health History

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Disease condition:

Disease (pathological condition of the body, abnormal condition) manifests its presence through **symptoms** (perceptible change in the body or body function), which may be objective or subjective.

The study of disease is called **pathology**.

Pathologists search for disease **etiology** (cause of disease).

symptoms and signs are used to form a **diagnosis** (denoting name of disease)and a **prognosis** is a prediction about the course of the disease.

Disease terms:

Some terms used to describe the status of a current disease are:

Acute: describes immediate symptoms such as high fever and pain or distress.

Chronic: describes a condition present over a long time ,such as chronic anemia.

Epidemic: a condition prevalent over a wide population, such as many cases of flu.

Classification of disease:

Some terms used to denote the origin or manifestation are:

Exogenous: refers to cause out side the body, such as illness arising from trauma, radiation.

Endogenous: refers to cause arising from within the body, such as infections and tumors..

Congenital: refers to condition inherited from parents, such as cystic fibrosis.

Degenerative: refers to conditions resulting from natural aging of the body , such as arthritis.

opportunistic: refers to disease or infection occurring when body resistance is lowered, such as with fungal, bacterial and viral infection.

Causes of Diseases and Infection:

Diseases may be caused by a number of pathogenic microorganisms, including bacteria , viruses, and other pathogens.

Forms of Bacteria		
oval/round	**Rod-Shaped**	**Spiral**
single form=monococci	called bacilli if oval in shape =coccobacilli	rigid,spiral=spirilla
paired form: diplococci		
cluster form= staphylococci		flexible= spirochetes
chain form = streptococci		
group of eight = sarcinae		curved rod = vibrios

Bacteria

Bacteria (singular, bacterium) .

Other terms pertaining to specific characteristics of bacteria are:

Aerobic: designates bacteria that require oxygen to live.

Facultative aerobes: bacteria that can live in the presence of oxygen but do not require it.

Obligate or strict aerobes: Bacteria that cannot survive without oxygen, such as diphtheria.

Anaerobic: bacteria that do not need oxygen for survival.

Facultative anaerobes: bacteria that grow best without oxygen but can survive in its presence , for example, bacterium fusiform (trench mouth).

Obligate or strict anaerobes: Bacteria that cannot survive in the presence of oxygen.

Flagella: small, whip-like hairs that provide movement for some bacteria.

Viruses

Viruses are tiny parastic organisms that cause disease such as hepatitis, smallpox, herpes, and influenza,. Viruses require living matter to reproduce and grow.

Fungi

Fungi (singular,**fungus**): some fungi are beneficial, and other are pathogenic, the letter of which cause thrush, athlete`s foot, or ringworm, for example, fungi grow in two forms: filamentous (molds) and unicellular (yeasts).

Commensal: microbes that live together on a host without harming it, such as mouth flora

Port of Entry Disease

Droplet infection: airborne infection in which pathogens discharged from the mouth or nose by coughing or sneezing are carried through the air and settle on objects.

Indirect infection: infection resulting from improper handling of materials, contamination of articles, or **fomes**

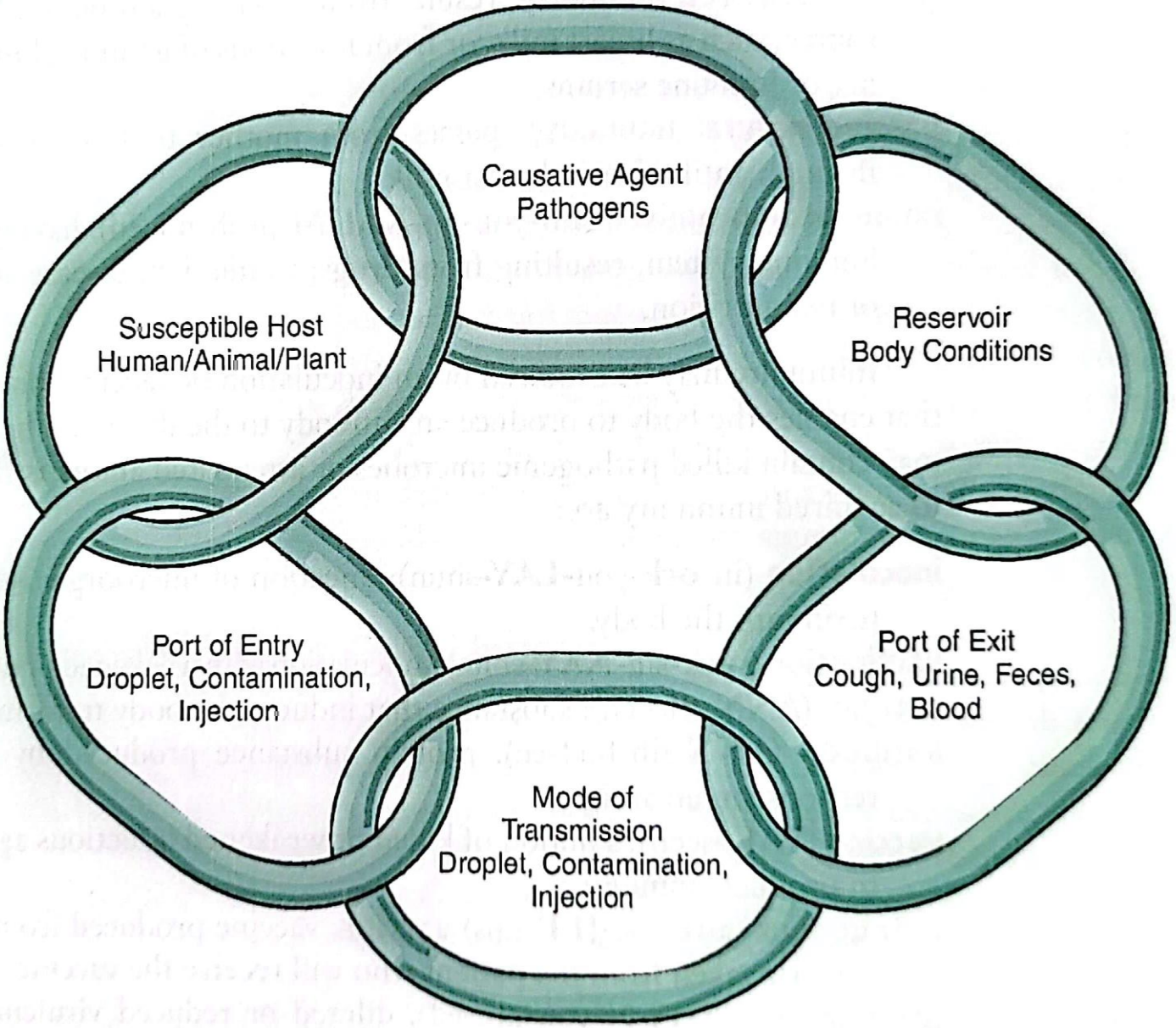
Contact infection: infection that is passed directly through intimate relationship-cotact with saliva, blood, or mucous membranes.

Parenteral entry: refers to piercing of the skin or mucous membrane; also called "needle stick".

Carrier infection: exchange of disease by direct or indirect contact with an infected human or animal.

Vector-borne infection: an infection that is transmitted by an organism such as a fly or mosquito.

Food, soil, or water infection: infection passed along by microbes present in these media..



Chain of infection

Immunity factors

Immunity may be affected by the **virulence** of a disease, the number or concentration of pathological organisms, and the patient's immune system.

Various types of immunity are:

Natural immunity: inherited and permanent.

Natural acquired immunity: obtained when a person is infected by a disease, produces antibodies, and then recovers from that disease.

Artificial acquired immunity: obtained from inoculation or vaccination against a disease.

Passive acquired immunity: results from receiving antibodies from another source, such as breast milk.

Passive natural immunity: passes from mother to fetus, congenitally or through antibodies in breast milk.

Immunocompromised: having a weakened immune system, resulting from drugs, irradiation, disease such as AIDS, or malnutrition.

Terms related to acquired immunity are:

Inoculation: injection of microorganisms, serum, or toxin into the body.

Vaccination: inoculation with weakened or dead microbes.

Antigen: substance that induces the body to form antibodies.

Antibody: protein substances produced by the body in response to an antigen.

Vaccine: **solution** of killed or weakened infectious agents injected to produce immunity.

Autogenous vaccine: vaccine produced from a culture of bacteria taken from the patient who will receive the vaccine.

Attenuated: diluted or reduced virulence of pathogenic microbes.

Disease Prevention

Prevention is the best protection method to combat disease and infection in the dental facility.

Relevant terminology includes the following:

Asepsis: free from germs.

Disinfection: application of chemicals to kill, reduce, or eliminate germs.

Sterilization: the process of destroying all microorganisms.

Universal precautions: assuming all patients are infections and applying every method of combating disease and infection.

Sterilization and Disinfection of Dental Instruments and Materials

All instruments and dental equipment should be sterilized after each use.

Sterilization **is the total killing of all microbes;** ***disinfection*** **is obtaining a germ-free area as much as possible.**

After use, instruments should be cleaned of debris .

.Methods used to sterilize or disinfect are the following:

Autoclave: apparatus for sterilization by steam pressure. Temperature (121°C, 250°F), pressure (15 psi), and time (20 minutes) are regulated.

"flash" autoclave: smaller autoclave with higher temperature setting (132°C, 270°F) will lessen exposure time (3-5 minutes) required to obtain sterilization.

Dry heat sterilization: oven apparatus used for a hot air bake at high temperature (170°C, 340°F) for a longer period of time (2 hours). This method is not useful for plastic materials or some paper objects

Molten metal or glass bead heat: devices holding superheated (234°C, 450°F) molten metal or small glass beads; used mainly in endodontic practice.

Chemical vapor sterilization: use of chemicals and heat of (132°C, 270°F) unit for 20 minutes. Noncorrosive method that is used on unwrapped articles, particularly metals.

Ethylene oxide: sterilizing unit used at room temperature and requires prolonged exposure and devaporization time (10-12 hours). Heated units (49°C or 120°F) require less time (2-3 hours). Useful for plastics and materials that do not tolerate heat.

VPH (vaporized hydrogen peroxide): sterilization using hydrogen peroxide that is ionized to release vaporized gas molecules capable of killing microorganisms and endospores in a short period (less than 1 hour) .

Chemical agents: liquids containing chemicals that kill microbes and spores and require longer immersion time. Some chemicals may be disinfectants and/or sterilizers. Chemicals classified as sterilants require long (6-10 hours) soaking to kill spores.

Disinfection is the application of chemicals to kill, reduce, or eliminate germs through soaking, spraying or foams Choice of a disinfectant depends on the item to be processed. Terms related to the disinfection process are:

Disinfectant: chemical or agent that kills many microbes. Choice of type, concentration, and use in necessary for each item.

Antiseptic: usually a diluted disinfectant that prevents the growth or inhibits the development of microbes.

Bacteriostatic: inhibiting or retarding bacterial growth.

Germicide: substance that destroys some germs.

Holding solution: disinfectant solution with biodegradable ingredient that is used to soak instruments until they are properly and sterilized.

Ultrasonic cleaner: mechanical apparatus with a reservoir to contain a solution that cavitates or bubbles off debris, this machine cleanses items prior to sterilization.

Agencies Concerned with Disease Control:

- **OSHA (Occupational Safety and Health Administration):** issues and enforces restrictions and guidelines for infection control; sets standards and regulates conditions for employers to provide safety to their employers at work.
- **CDC (Centers for Disease Control and Prevention):** sets regulations and issues suggestions for infection control, which are enforced by OSHA.
- **EPA (Environmental Protection Agency):** regulates and approves materials, equipment, medical devices, and chemicals used in dental practice. Local EPA agencies regulate dental waste disposal.
- **FDA (Food and Drug Administration):** regulates and approves marketing products and solutions used in infection control.
- **OSAP (Organization for Safety and Asepsis Procedures):** national organization of health professionals that studies and makes suggestions for regulations and guidelines for infection control.

Health History

The health history, as reported by the patient and reviewed by the dentist, includes the following:

- The chief complaint .
- General medical condition.
- Allergies .
- Medication schedule to help plan appointment timing.
- Past history of surgeries and illnesses .
- Lifestyle and habit concerns.
- Medical doctor's name for backup information or consultation.
- Emergency contact numbers for family member involvement.

Visual Assessment

During the initial visit, the dentist assesses the condition of the head structures, looking to determine if the face is symmetric or asymmetric. A facial imbalance may suggest various disease:

Trismus: tension or contraction of the mastication muscles; may results from mouth infection, inflamed glands, and some disease, such as tetanus.

Dysphagia: difficulty swallowing, another term for swallowing is deglutition.

Sialadenitis: an inflamed condition of a salivary gland.

Tic douloureux: a degeneration or pressure on the trigeminal nerve that cause neuralgia and painful contraction of facial muscles; also known as *trigeminal neuralgia*.

Bell's palsy: a sudden but temporary unilateral facial paralysis from an unknown cause but may involve swelling of the facial nerve from an immune or viral infection.

Palpation

One method of determining the condition of a tissue is to palpate an area. The dentist uses finger pressure to sense swellings, softness, irregularities, or movement in skin and mouth tissues.

Lymph nodes and neck muscles are tested for lumps or swellings, and lip, cheek, tongue, and mouth tissues are also examined for irregularities. The temporomandibular joint (TMJ) area is palpated for movement and tenderness. The dentist may also use a stethoscope to auscultate (listen to movement)the joint area and the blood flow in the carotid arteries in the neck.

Examination of the Oral Tissues

Before the dentist examines the teeth, an inspection of the oral tissues is done to determine the condition of the mouth. This usually is performed by visual observation.

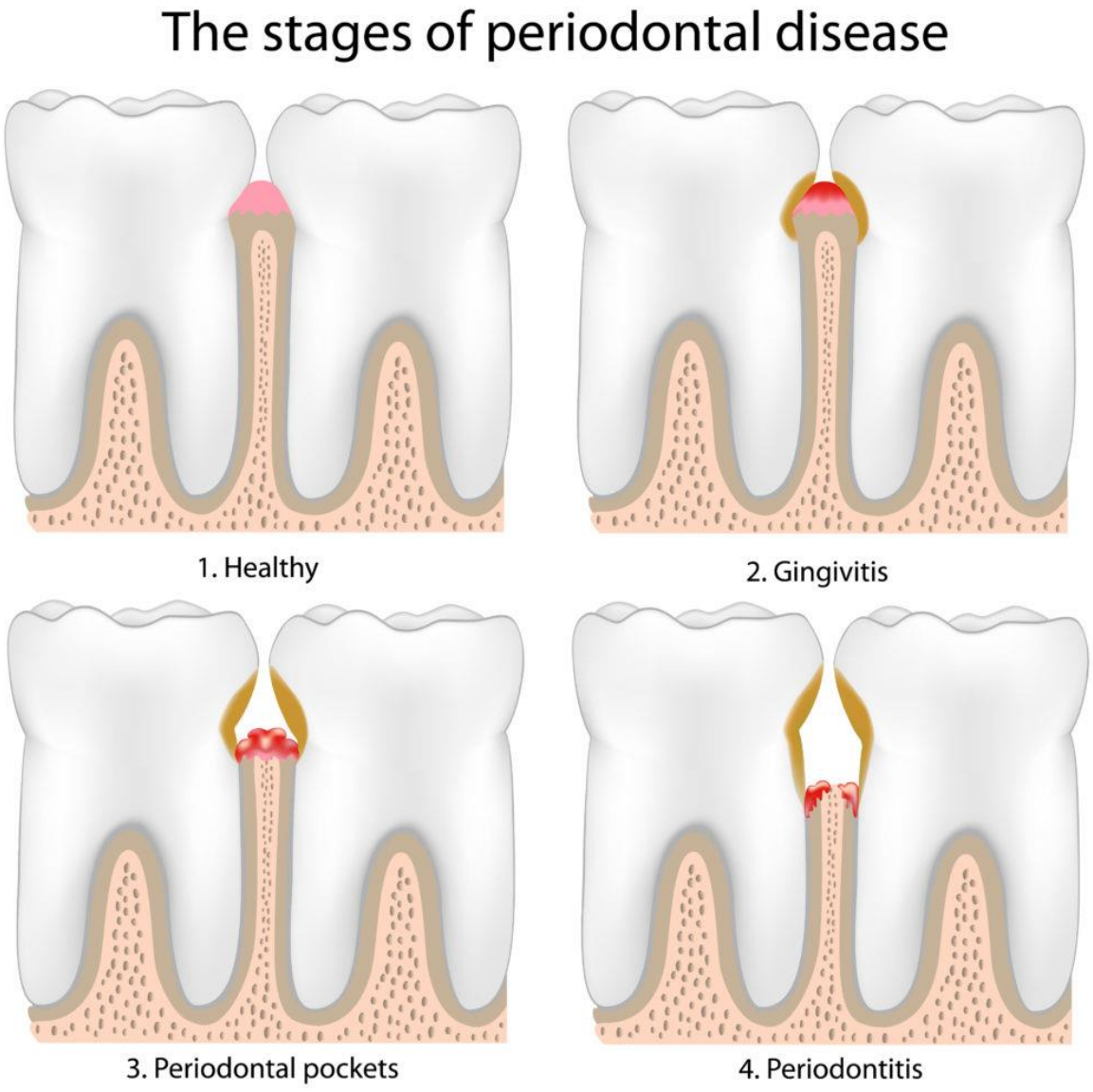
A variety of disease may be found in the oral cavity such as: Oral lesion.

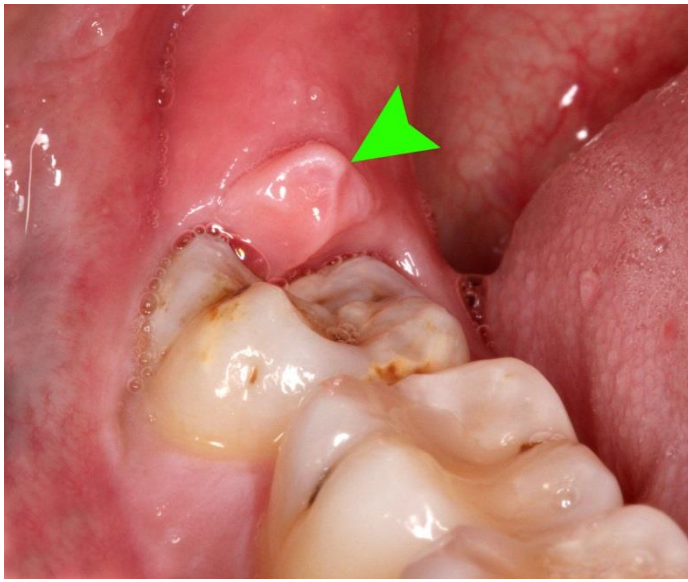
Gingivitis: redness and swelling of the gingival tissues that may be caused by irritants, disease, habits, improper hygiene, and poor general or nutritional health.

Periodontitis: inflammation of the gingiva with involvement of deeper periosteal tissues indicated by formation of pockets and bone loss. A common name for this disease condition is called pyorrhea(pus collection).

Periodontal abscess: originating in and progressing from inflammation of periodontal tissues; differs from periapical abscess, which originates in the pulp and progresses to the apical tip.

Pericoronitis: inflammation around the crown of a tooth. Pericoronitis happens quite often with erupting third molar teeth.





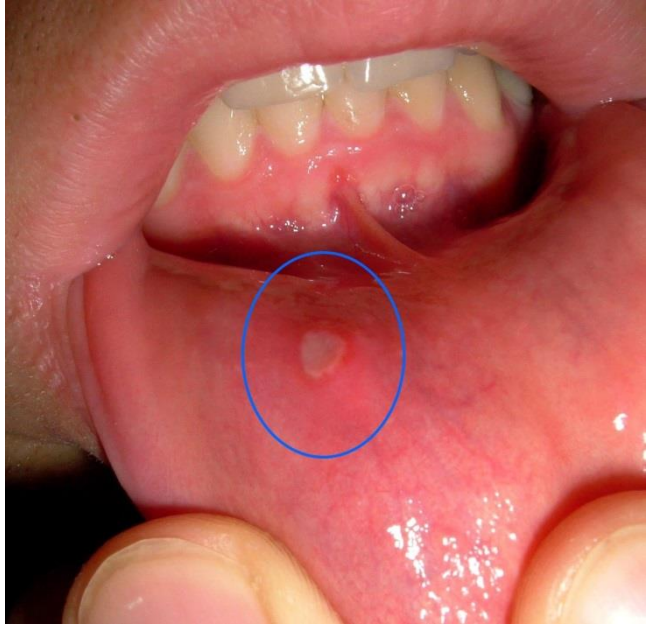
Pericoronitis

ANUG: acute necrotizing ulcerative gingivitis highly inflamed and dying gingival tissues. ANUG is also called **trench mouth** or **Vincent's infection.**

Cellulitis: infection and inflammation extending into adjacent connective tissues.

Fistula: tissue opening for pus drainage, providing some pain relief from buildup of pulpal pressure.

Aphthous ulcer: small, painful ulcer within the mouth; also called *canker sore*.



Fordyce granules: small, yellow spots on the mucous membrane, usually the soft palate and buccal mucosa.

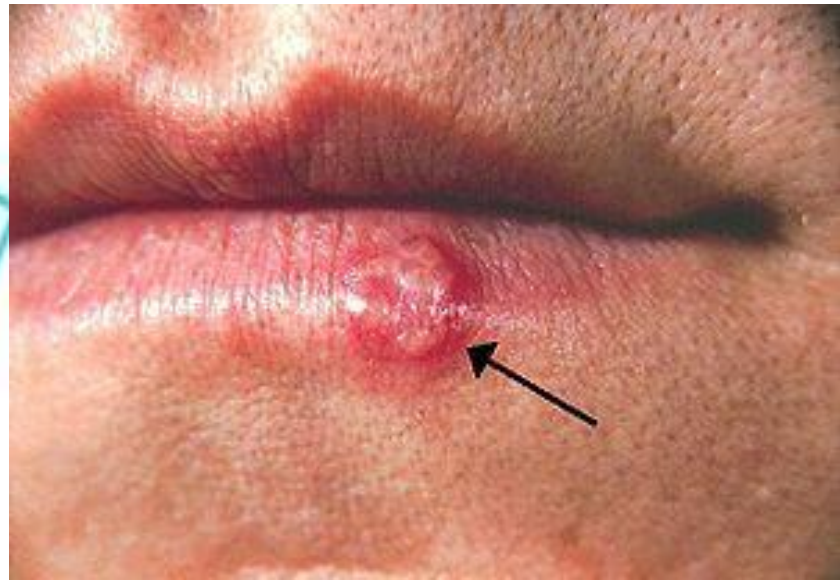
Thrush: fungus infection of mouth and/or throat; appears as white patches or ulcers on tissues and is caused by *candidiasis* infection of the oral mucosa.

Candida albicans: sore, white plaque areas resulting from long-term antibiotic therapy permitting fungus buildup.

Herpes simplex virus (HSV): vesicles or watery pimples that burst and crust; caused by a virus; also called fever blisters or cold sores when on the lips, and gingivostomatitis when present on the oral mucosa. Types of herpes simplex are:

Primary herpes: occurs in young children in the mouth or on the lips.

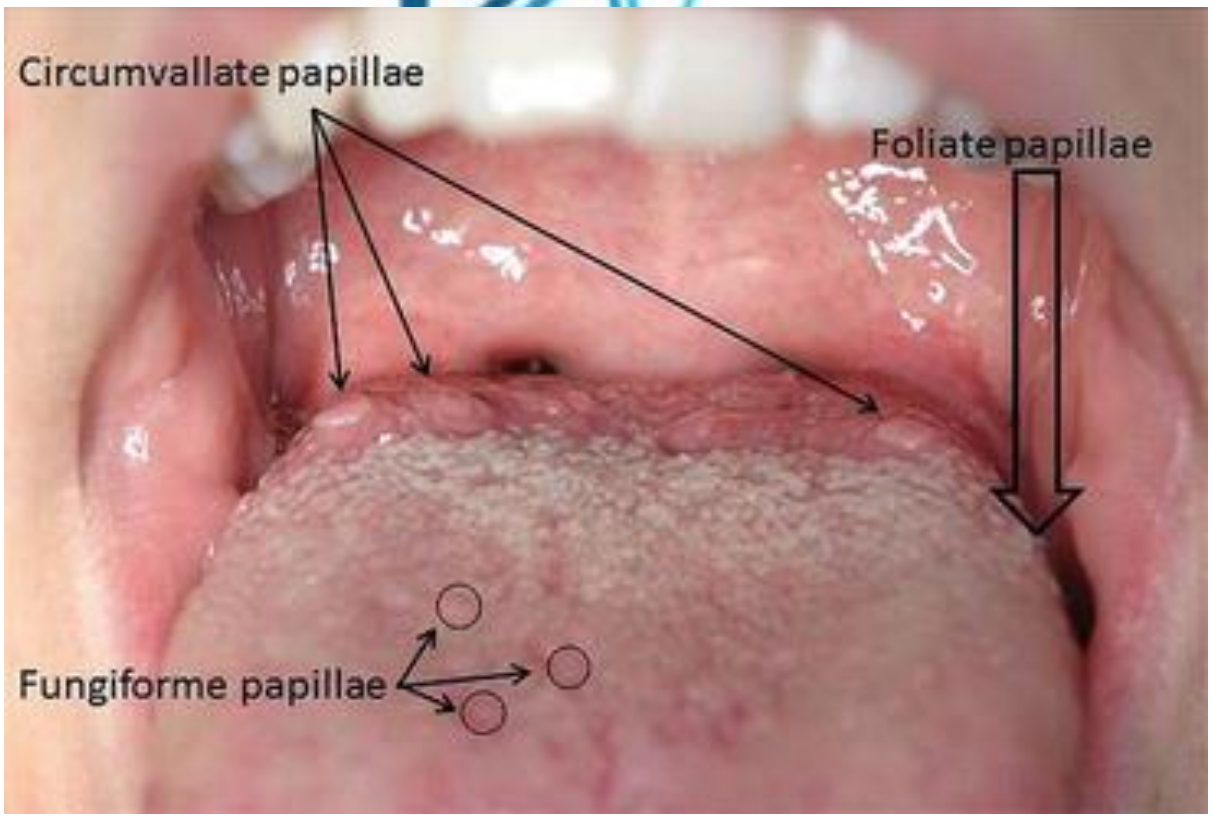
Recurrent herpes: reappears on the lip area throughout life.



Cheilosis: inflammation of the lip, particularly at the corners of the lips. Primary causes include candidiasis, vitamin B deficiency, or lack of vertical dimension at the commissures because of ill-fitting dentures.

Mucocele: soft nodule commonly found on the lower lip, caused by trauma to accessory salivary gland.

Circumvallate papillae: large, mushroom-shaped papillae on the posterior dorsum area of the tongue.

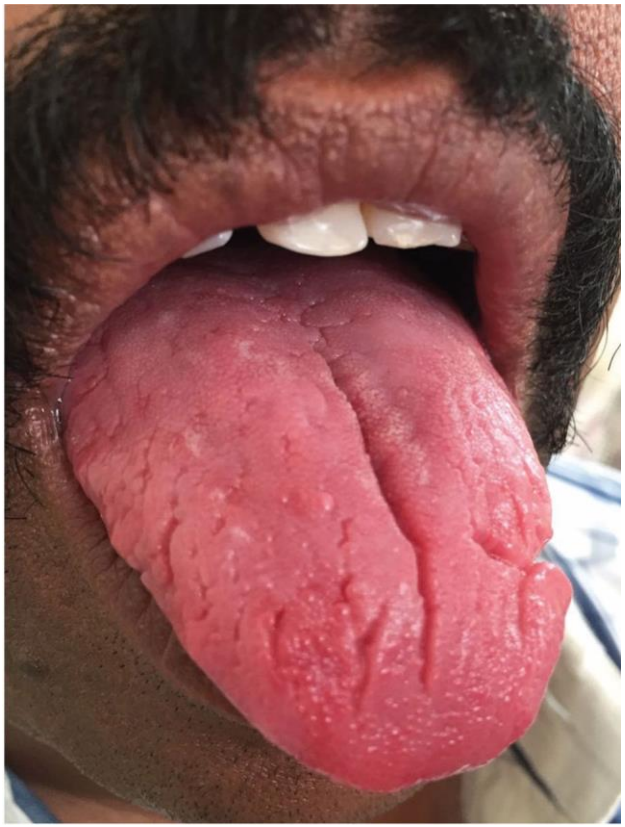


Glossitis:

inflammation of the tongue from various reasons, topical and systemic.

Hairy tongue: black or dark brown projections resembling hairs arising from the tongue dorsum; may be caused by medications or drug treatment.

Fissured tongue: deep crack in center of tongue dorsum; considered a developmental cause.



Ankyloglossia: shortness of the lingual frenum; tongue tied.

Geographic tongue: flat, irregular, red lesions on the dorsum of the tongue.


Oral Cancer

Oral Cancer

Some lesions of a suspicious nature can be detected in the mouth and are examined more closely with excision and biopsy to determine if they are malignant or premalignant. A malignancy is a cancerous tumor with the ability to infiltrate and spread to other sites.

Conditions that should be investigated are:

Leukoplakia: white patches on oral tissues, particularly the tongue that may become malignant.

Erythroplakia: red tissue patch on oral mucosa of palate, or mouth floor; may be precancerous.

Neoplasm: all unusual or abnormal tissues, which should be tested to determine if the condition is benign or malignant. Some common neoplasms are:

Fibroma: benign tumor of connective tissue

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Sarcoma: a malignant tumor arising from underlying tissues.

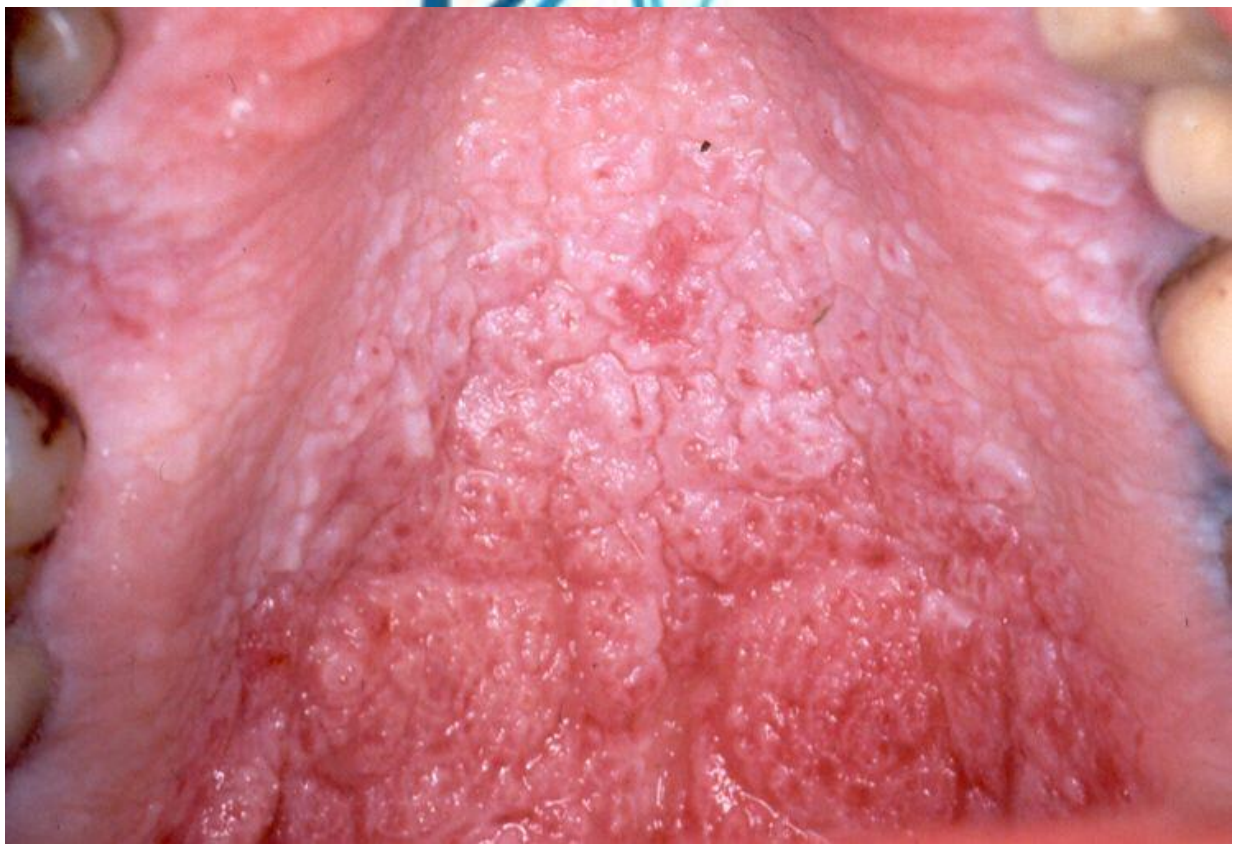
Carcinoma: malignant tumor of epithelial origin that may infiltrate and metastasize.

Lymphoma: new tissue growth within the lymphatic system.

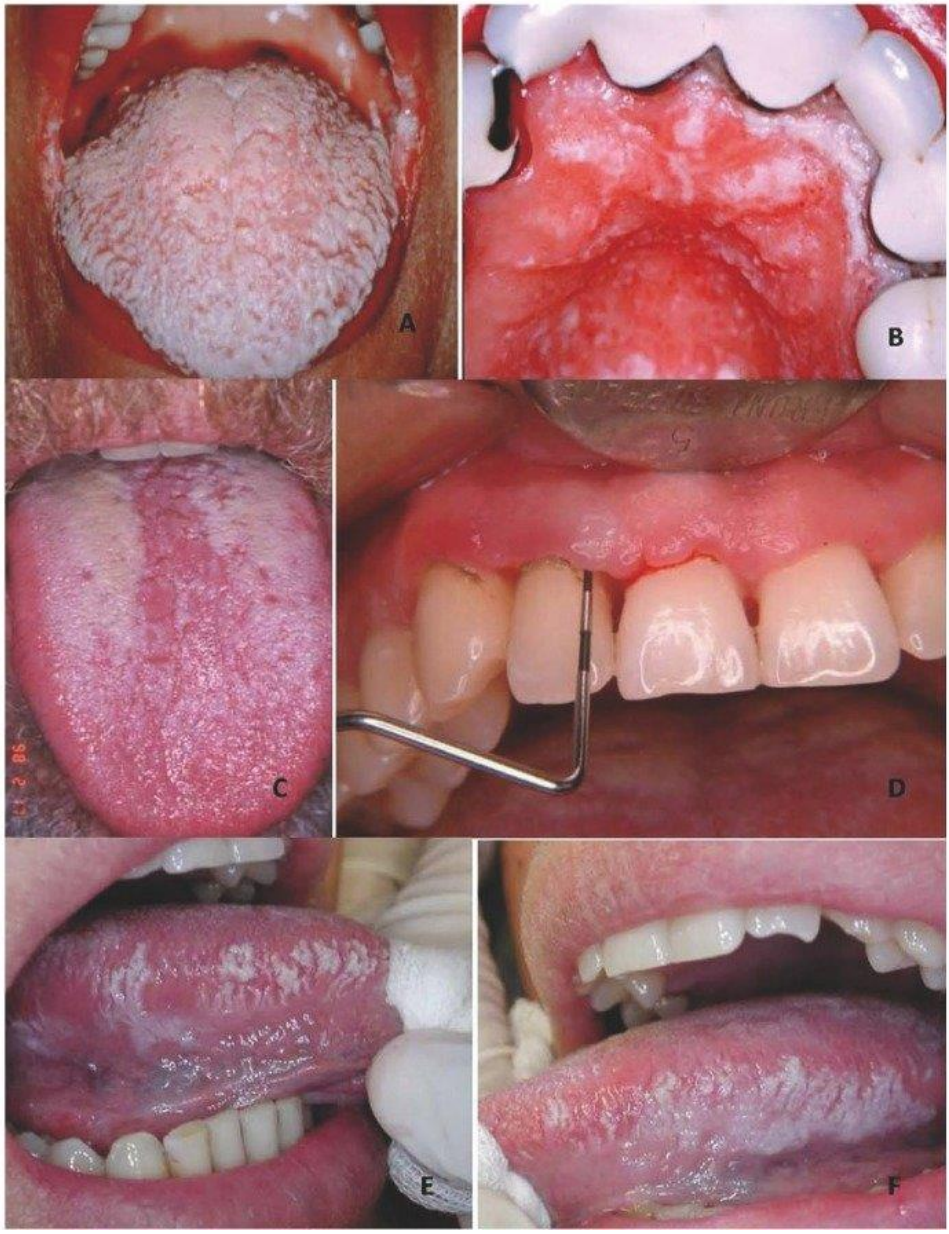
Hemangioma: benign tumor of dilated blood vessels.

Neurofibroma:
neoplasm of nerve sheath cell; may be single or multiple nodules.

Nicotine stomatitis: malignant leukoplakia of the hard palate, caused by smoking.



AIDS: acquired immune deficiency syndrome related symptoms include gingival lesions, thrush, swollen glands, and herpes lesions. There may be indications of Kaposi's sarcoma.



Examination of the Teeth:

Dental Caries

Dental caries are also known as decay or carious lesions. One cause of decay is the *Streptococcus mutans* bacteria, which produce acid to destroy tooth tissues through decalcification and demineralization of the enamel tissue and its matrix, and later moves into other tissue structures.

Assorted types of dental decay include:

Incipient caries: beginning decay.

Rampant caries: widespread or growing decay.

Recurrent caries: decay occurring under or near repaired margins of tooth restorations.

Arrested caries: decay showing no progressive tendency.

Incipient Tooth Caries

Rampant caries

Recurrent caries

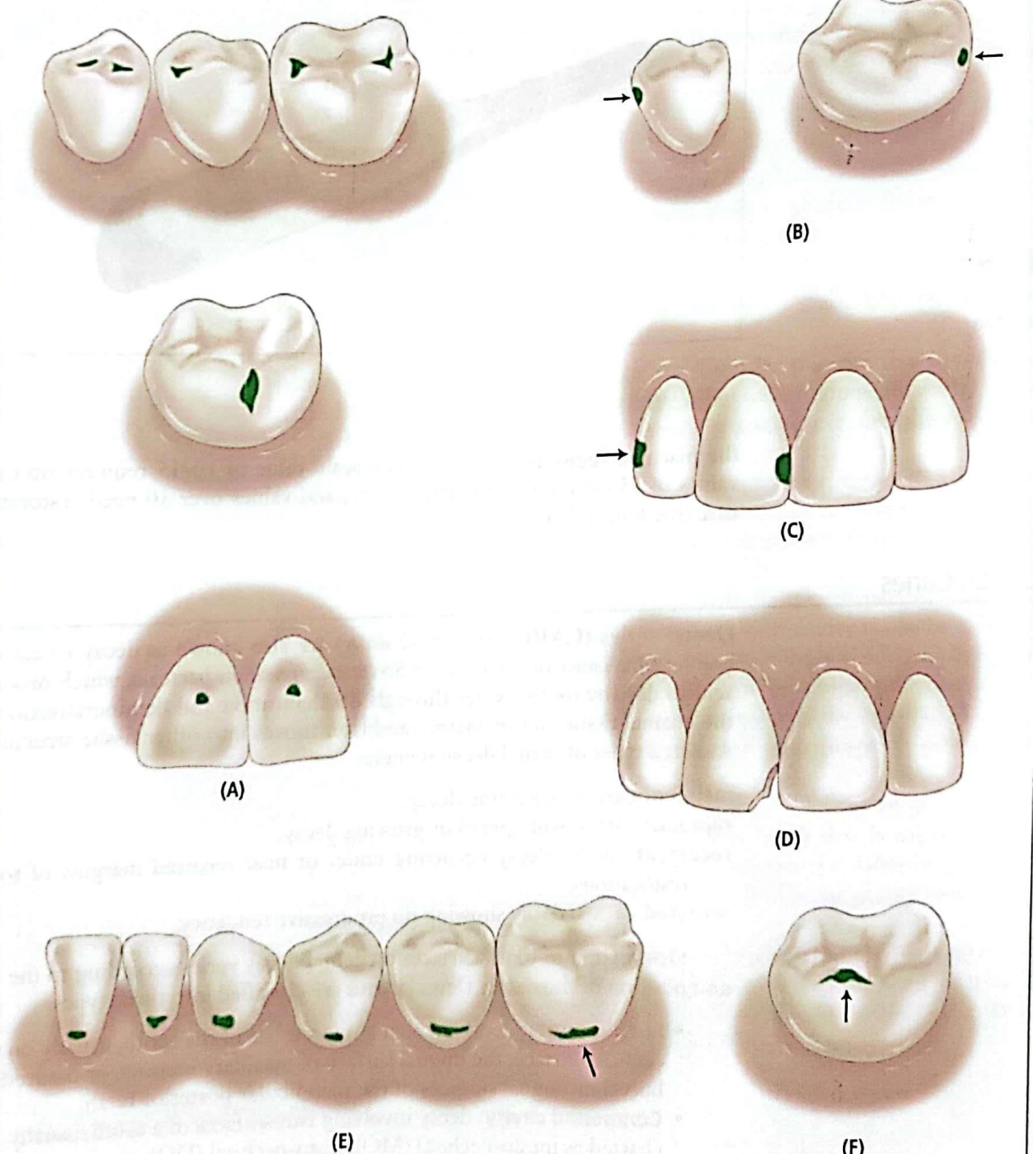
Arrested caries

Destruction of tooth surfaces by dental decay varies according to the size and position of the decay. Dental caries are classified into three types:

Simple cavity: decay involving one surface of the tooth.

Compound cavity: decay involving two surfaces of a tooth, usually charted as mesio-occlusal (MO), disto-occlusal (DO), or any other two surfaces.

Complex cavity: decay involving more than two surfaces, usually charted as mesiocclusodistal (MOD) or any other three or more surfaces.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Periapical Abscess

A periapical abscess :An abscess results from necrosis of pulp tissues. The three stages of pulp irritation are:

Hyperemia: an increase in blood and lymph vessels, as a result of irritation from decay.

Pulpalgia: tooth pain or toothache resulting from irritation and infection the pulp chamber.

Pulpitis: inflammation and swelling of pulp tissue, leading to necrosis or death of the pulp.

Miscellaneous Maladies

In addition to dental caries and periapical abscesses or pulpal irritations, common dental maladies that may be observed during the dental examination are:

Abrasion: wearing away of tooth structure from abnormal cause such as malocclusion or bad habits.

Attrition: wearing away of tooth structure from normal cause such as usual tooth chewing or mastication.

Erosion: wearing away or destruction of tooth structure as a result of disease or chemicals such as stomach acid from bulimia vomiting; also termed *acid etching*.

Ankylosis : tooth fixation, retention of a deciduous tooth past the exfoliation time, or retention of permanent teeth that are fixed in the tooth socket because of an absence of periodontal ligaments; may be a result of heredity, disease, or constant trauma.

Avulsion: tearing or knocking out; forcible removal of tooth.

Bruxism: grinding of teeth, especially during sleep or from bad habits.

Malocclusion: imperfect occlusion, or irregular meeting of teeth; malposition of teeth.

Abfraction: loss of teeth surface in the cervical area, caused by tooth grinding and compression forces, resulting in hypersensitivity of the area.

Attrition

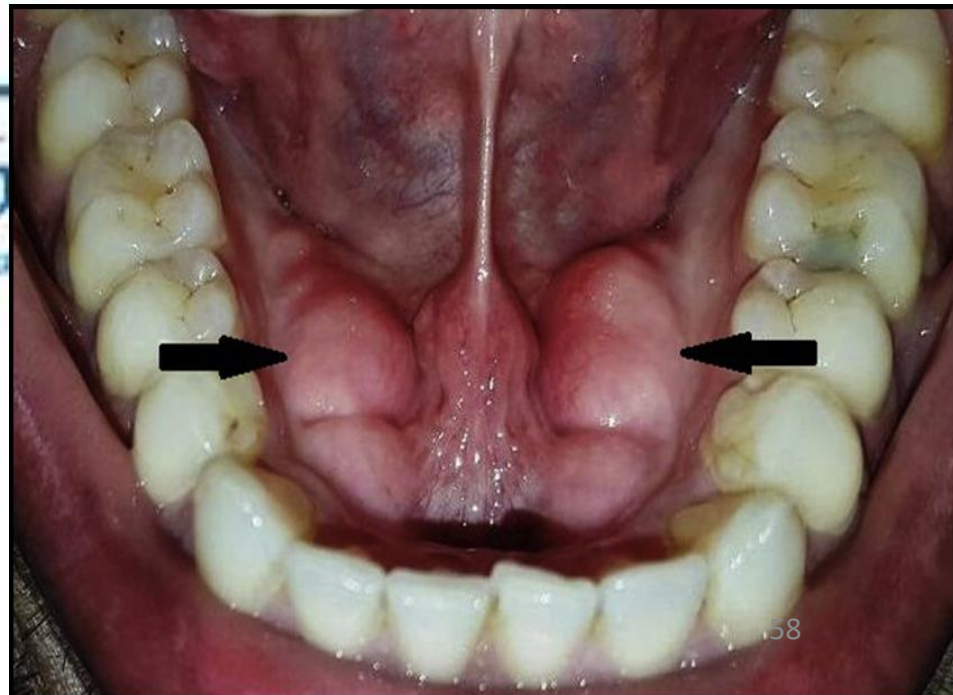
Abfraction

Erosion

Abrasion

Torus palatinus: bony overgrowth or elevations in the roof of the mouth.

Torus mandibularis: bony growths usually in anterior lingual area; interfere with denture fit.



Alginate Impressions

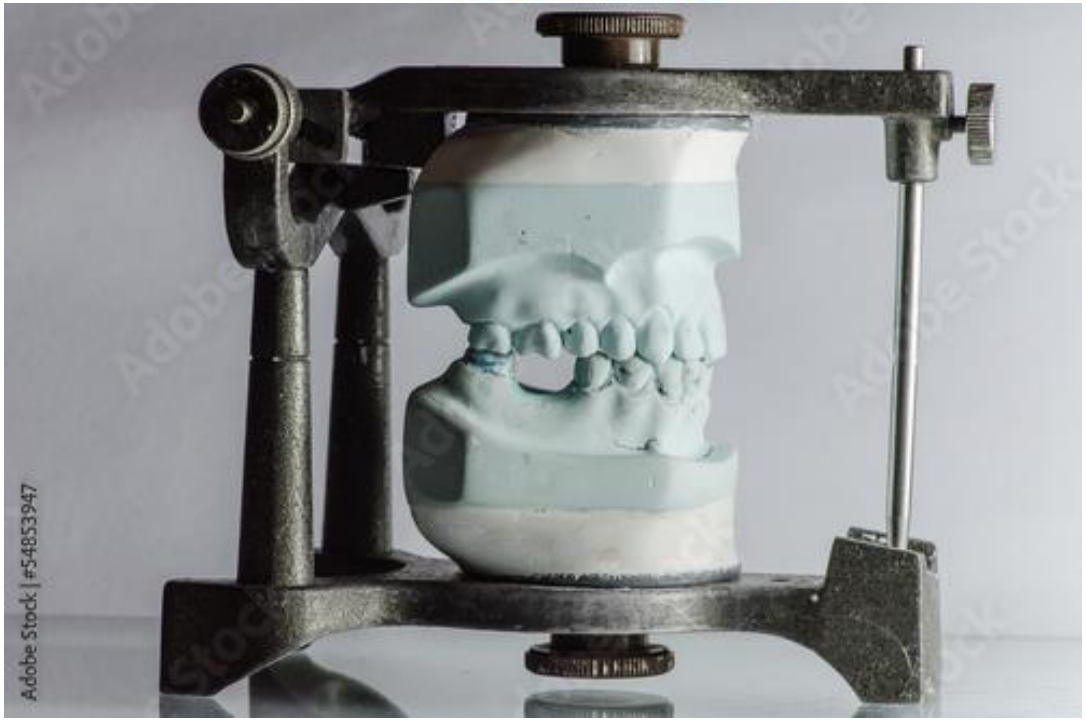
Impressions of the patient's teeth may be completed during the initial visit. The most common material used to make teeth impressions is alginate.

Several terms are used to describe working with this material and the process of taking impressions:

Positive cast: a gypsum reproduction of the patient's mouth; also called a **study model**. This reproduction may be used for diagnosis or preparation of treatment plans. A reproduced cast has two parts:

Bite registration: a piece of wax material, impression material injection, or commercial pad that is placed into the patient's mouth; when the patient's bites down, the material registers the occlusion pattern that is used to put the models together to imitate the patient's normal bite position.

Articulation: placement of positive casts into the patient's bite or articulating position.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Home Preventive Techniques

Dental personnel may instruct the patient in prevention education, including demonstrations of proper tooth brushing and flossing, information on diet correction.

Preventive treatment also may be performed in the dental facility. Use of fluoride, a tooth strengthener, is encouraged. Terms related to fluoride use include:

Regulated fluoride use: regular intake or use of fluorinated water and vitamins, and uses of mouthwashes and toothpastes containing fluoride.

Systemic fluoride: fluoride that is taken orally, in the water supply, drops, or in vitamins.

Topical fluoride: fluoride that is placed on the tooth surfaces, such as liquids, gels, and pastes.

Fluorosis: condition that can cause molting and discoloration of enamel tissue.

Miscellaneous Prevention Aids

Dental personnel also may recommend the use of additional home prevention aids to eliminate decay and gingival problems:

Rinse: anti-plaque mouth rinses containing therapeutic chemicals may reduce the amount of a thin covering on the teeth called plaque.

Mouthwash: breath-freshening rinse may reduce the acquired pellicle on the tooth surfaces.

Disclosing dyes: red/blue food coloring or a sodium fluorescein solution that is placed on tooth surfaces to disclose or stain the acquired pellicle or plaque.

Powered toothbrushes: electric or battery-driven devices used to clean the teeth; may have single or double heads, with or without self-contained dentifrices.

Dentifrice: tooth power or toothpaste used to clean teeth and prevent halitosis, that is, bad breath.

Floss holders/threaders: devices used to hold or insert floss under bridgework and between teeth.

Interdental brushes/picks: handles that hold small brush tips to be inserted between the teeth and into sulcus areas.

Wooden picks/flat wedges: used to stimulate interproximal gingival tissue circulation.

Water irrigation machines: electric water spray devices with pulsating tips to power rinse interproximal areas and bridgework gaps.

Dental Facility Preventive Practices

The dental facility may provide some professional decay-prevention procedures throughout the patient's treatment:

Fluoride application: professional application of fluoride in the form of liquid, gel, foam, or varnish to tooth surfaces. The fluoride is placed on cleaned tooth surfaces, timed, and removed. After 30 minutes or more, the fluoride is rinsed off.

Sealant application: placement of gel or liquid acrylic material on clean and prepared occlusal surfaces of teeth to cover and protect tooth surfaces; sealant may be clear or tinted, auto-cured or self-cured, or may require ultraviolet light to set or become hard.

Selective adjustment: deep occlusal pits or fissures eliminated by selective abrasive or grinding of some enamel surfaces, thereby lessening the chances of deep carious lesions. This procedure is also called enamoplasty.