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DEPARTMENT OF PROPAEDEUTIC AND SURGICAL DENTISTRY

COURSE OF DENTISTRY

Educational and practical guide for independent work of fourth-year students in specialty "General medicine"

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Educational and practical guide for independent work of fourth-year students in specialty "General medicine “Course of Dentistry” was prepared by docent Y.O. Burega, asst. I.M. Maslova

In educational guide were clarified and systematized the main issues of dental and maxillary anatomy, prevention dentistry, dental and oral diseases, orthodontic and prosthetic equipment, general and local anesthesia, soft tissues injuries, bone fractures, general concept of inflammatory processes, benign and malignant maxillofacial tumors and its treatment.

Content

Introduction

Dentistry is an espessialy and separate branch of medicine that is involved in the study, diagnosis, prevention, and treatment of diseases, disorders and conditions of the oral cavity, commonly in the dentition but also the oral mucosa, and of adjacent and related structures and tissues, particularly in the maxillofacial (jaw and facial) area. Its includes Oral and Maxillofacial surgery specializes in treating many diseases, injuries and defects in the head, neck, face, jaws and the hard and soft tissues of the Oral (mouth) and Maxillofacial (jaws and face) region. It is an internationally recognized surgical specialty.

Prepare a general medical profile is impossible without mastering the basics of dentistry of dental care. To achieve this, students need to pay great attention to the etiology and prevention of dental diseases, the importance of environmental factors, occupational hazards, exposure dental status on the course of systemic diseases, be familiar with congenital and acquired defects of maxillofacial area, course and treatment of dental diseases.

Dentistry as a specialty. **The basics of teeth development and structures. The main teeth non-caries lesion and facial congenital abnormalities.**

The word dentistry comes from Greek – stoma, which means oral cavity, buccal cavity and – logos, which means science. Dentistry means science about oral cavity.
Stomatology / Dentistry is the branch of medicine or dentistry concerned with the structures, functions, and diseases of the mouth.

Stomatology as specialty is devide in:

- Orthopedic dentistry
- Therapeutic dentistry
- OMF (oro-maxillo-facial) surgery
- It has following subdivisions:
    - general dentistry
    - therapeutic dentistry
    - pediatric dentistry
    - prosthetic dentistry
    - orthodontics
    - surgery.

Knowledge of normal development will aid in the understanding of the potential reasons and timing of abnormal occurrences. During the third and fourth weeks of embryonic development the face and mouth form. Three important germ cell layers, ectoderm, mesoderm and endoderm are all essential in developing parts of the face and mouth. Along with the branchial arches the mouth, lips, parts of the nose and jaws will form between weeks three and six. At the same time development of the palate is taking place that encloses the future tongue which appears at four weeks. Clefts of the lips, jaw or palate occur during this early time frame. While heredity plays a major role, nutritional deficiencies, infections, disease, and trauma in utero may contribute. The tongue may show a red rhomboid shape or may be bifid due to fusive irregularities. Thyroid tissue may be present at the base of the tongue.
Teeth begin (around week 6) to develop from a band of oral epithelium on the upper and lower jaws. From this tissue tooth buds form and eventually a tooth germ

develops with ameloblasts (enamel forming cells) and odontoblasts (forms dentin and pulp). With the dentin mineralizing and enclosing the pulp, the ameloblasts will begin to form enamel.

Alterations in the enamel content during development can affect the clinical appearance of the teeth (shape, color, hardness) and the susceptibility to caries development.

At birth, the infant has all the primary teeth and many of the permanent teeth at different stages of development.

Dental enamel consists of 96% inorganic material, 4% organic enamel matrix and water. Its crystalline mineral salts make it the hardest calcified tissue in the body, yet at the same time it is a semi-permeable membrane. It's thickness varies over the tooth (2-2.5mm on cusps of molars, to knife edge at the necks of teeth).

Changes in development of enamel (amelogenesis) can cause hypoplasia (pitting, furrowing or total absence of enamel) and hypocalcification (opaque or chalky areas on normal enamel surfaces). Nutritional deficiencies, endocrinopathies, febrile diseases and certain chemicals (excessive fluoride <1.5ppm antibiotics) may cause this.

Systemic influences causing enamel hypoplasia frequently occur during the 1st year. Therefore, the permanent teeth most frequently affected are incisors, canines, and first molars. The upper lateral incisor, since it develops later, is often not affected.

The dentin, a living tissue, constitutes the bulk of the tooth. It closely resembles bone. It is yellow in color, is highly elastic and is harder than bone. It contains 30% organic material and 70% inorganic. The primary cells of dentin are odontoblasts. By exposing 1mm of dentin 30,000 odontoblast cells are damaged. Dentin is formed throughout the life of the tooth.

The pulp furnishes nourishment to dentin, contains nerves, blood vessels and cells that form dentin.

The third molar is the most common congenitally missing tooth followed by the lateral incisor and second premolar.

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Syndrome and Acquired Immune Deficiency Syndrome (AIDS).

Cleft Lip and Palate - The Team Approach

Congenital malformations, including clefting, are abnormalities of prenatal origin that are present at birth. The causes of these problems fall into five major categories:

- Chromosomal
- Single gene disorders
- Environmental factors (teratogens)
- Multifactorial
- Unknown

About one in every 700 – 1000 infants will have clefting of the lip or palate. This ratio can vary based on race and family. Predictions about recurrence risks for families can be made based on the condition and its etiology.

Genetic counseling is highly recommended for parents of new cleft lip and palate infants.

Clefts of the lip and palate are classified into four major groups:

- Cleft lip
- Cleft palate
- Unilateral cleft lip and palate
- Bilateral cleft lip and palate

Cleft lip generally occurs at about the sixth to seventh week in utero. It is a result of the failure of the epithelial groove between the medial and the lateral nasal processes to be penetrated by the mesodermal cells.

Cleft palate is a result of epithelial breakdown at about the eighth week of embryonic development, with in growth failure of mesodermal tissue and lack of lateral palatal segment fusion.

Varying degrees of clefting can occur ranging from notching of the vermilion border, bifid uvula, soft palate clefting, alveolar clefting and bilateral complete clefts of the lip, alveolus and palate.

Corrective Surgery

Parents are often eager to have corrective surgery done. Most operations are performed during infancy and early childhood. Generally cleft lip repair is performed when the child is stable around 10 pounds, has hemoglobin of 10 mg per dl and/or is 10 weeks of age. Cleft palate closure can occur between 1 to 2 years of age and is often dependent on the severity of the cleft and surgeon's preference. During early childhood, children will often require revision of the lip and possible pharyngeal flap surgery to assist with speech development.

Preventive dental services should begin early and a dental visit is recommended at the site of the first tooth or the infant becoming 1 year old. Scarring after lip and palatal closure procedures can inhibit growth of the dental arches. Orthodontic evaluation is recommended during the primary or mixed dentition. Orthodontic

treatment can be intermittent for several years with the goal of establishing normal arch form. Orthograthic surgery is often recommended after growth has ceased for proper arch alignment, dental function and optimal facial aesthetics.

Early audiologic and speech evaluation is highly recommended. Chronic otitis media and low-frequency hearing loss are results of improper orientation of the Eustachian tubes and inserting muscles resulting in middle ear fluid stasis and retrograde infection.

Plastic surgical procedures to correct aesthetics and function of the vermillion border, lip, philtrum and nose are often recommended. It is important to remember that every child's treatment plan is unique. Surgeons differ in their preferences for surgical techniques and sequence of procedures.

Feeding the Cleft lip/palate infant.

Feeding the cleft lip and palate infant poses challenges to the parents. These infants often have difficulty closing their mouth around the nipple of the mother or the bottle to make a seal. In addition these infants may have excessive air intake, nasal regurgitation and choking. Shorter and more frequent feedings may be necessary in the beginning because the baby tires easily. Special nipples and bottles are available that create an easy flow. A soft bottle can be squeezed gently during feeding to let the baby get enough formula.

Feeding position is important. The infant should be in a sitting or upright position tilted back just slightly to make it easier for the liquid to flow down into the throat. The baby's head should be lined up with the body and not tilted forward or backward.

A feeding appliance may be a favorable option for babies that are having feeding problems. The feeding appliance functions as an obturator in the cleft area. Several benefits are improved sucking, less nasal regurgitation, elimination of naso-gastric tube feedings, and the guiding of dentoalveolar segments into normal anatomic position thus facilitating lip and palate surgical closure.

Velopharyngeal Incompetence

Clefts of the soft palate, including submucosal clefts and severe palatal clefting, can involve velopharyngeal incompetence and Eustachian tube dysfunction. During speech, the soft palate moves up meeting the back wall of the throat (posterior

pharyngeal wall) and at the same time the muscles of the back and sides of the throat (the posterior and lateral pharyngeal walls) contract moving inward and upward to meet the soft palate. This action is called velopharyngeal closure. Velopharyngeal closure closes off the nose from the mouth (the nasal cavity from the mouth) during speech. When velopharyngeal closure is incomplete, the speech mechanism does not work properly. Air may escape through the nose and cause speech that is hypernasal.

Pharyngeal flap surgery may be recommended to correct hypernasal speech. A pharyngeal flap is a wide bridge of tissue that is constructed by the surgeon to separate the nose from the mouth. This helps reduce hypernasal speech by preventing most of the air used during speech from flowing out of the nose.

Dental Abnormalities

The prevalence of dental abnormalities associated with cleft lip and palate is considerable. Both the primary and permanent dentitions can be affected and abnormalities of tooth number, size, morphology, eruption and calcification have been described. The lateral incisor on the side of the cleft is often affected in some way and 50% of the time is congenitally missing. The prevalence of hypodontia in cleft lip and palate patients increases directly with the severity of the cleft. Supernumerary teeth are also common in the site of the cleft.

Cleft Palate Teams

An advantage of the team approach is that team members cooperate to develop a systematic, comprehensive treatment plan for the child during the course of their lives. Most major medical centers have cleft palate teams or a parent/physician can contact the Cleft Palate Foundation for information regarding the nearest cleft palate team.

Craniofacial and Cleft Lip/Palate Team Members - A multidisciplinary team approach: coordinator, parents, pediatrician, otolaryngologist (ear, nose and throat), audiologist, plastic surgeon, psychologist, social worker, speech pathologist, maxillofacial prosthodontist, oral and maxillofacial surgeon, orthodontist, pediatric dentist, geneticist, and dietician.

Dental Caries

Bacterial infections of teeth and gums (gingiva) begin early in life and continue to progress throughout life with the possibility of tooth loss. Caulfield et al showed that mutan streptococci (MS) are transmitted by the mother to the child between 19 and 28 months of age. (If during this "window of infectivity" the child does not acquire MS the child was caries free.) It is important to note that mutan streptococci can be present without cavities being noted. Less than 10,000 CFU's of MS in saliva coincided with caries free children. It is only when the infection overwhelms the host that demineralization of enamel begins.

The bacteria involved are many, but most frequently the species mutans streptococci is associated with the caries infection. The most often mentioned bacteria in gingival infections are gram negative anaerobes. The bacteria form a complex community on the teeth. This biofilm, called plaque, adheres to tooth surfaces and increases in amount unless disrupted daily. The film is made up of bacteria that can ferment sugars and other carbohydrates producing lactic acids. Continued production of acid can lead to demineralization of the enamel. If preventive interventions are not in place or initiated early and daily, cavitation (a cavity) will result. Therefore many preventive recommendations attempt to disrupt the process of demineralization, neutralize the acid attack and remineralize the early lesions.

In pediatric patients cavitation can begin as soon as teeth erupt (5-6 months of age) and increases in intensity especially in at-risk and vulnerable children. If allowed to continue, severe destruction of teeth can occur. Early childhood caries (ECC) is the presence of one or more decayed, missing or filled tooth surface in any primary tooth in a child 71 months of age or younger. ECC is associated with feeding practices that include prolonged use of the bottle during the day and night with carbohydrate containing liquids.

Not all children with habitual and prolonged use of the bottle are susceptible to this type of caries infection. Other risk factors have been identified and include tooth enamel abnormalities, altered saliva production and composition, defects in immune defense mechanisms, insufficient or inappropriate exposure to fluoride, absence of daily oral hygiene, lack of professional dental intervention, frequent liquid medications, and finally a number of social, educational, and cultural factors.

Epidemiology

Since the 1970s national surveys have reported on the oral health status of US citizens. For this study guide we will only report on findings of pediatric patients of both preschool and school age.

As background information, to measure oral health a number of indices are used. The most common for dental decay is to count the number of decayed, filled, or missing teeth or surfaces. With the primary dentition it is reported as dfmt or dfs. In the permanent dentition it is reported as DFS or DMFT.

Because most studies use representative samples from schools, reports of children below age six are less available. Studies from Head Start and WIC children reported that 6.4% of infants one year old had cavities; 20% of two year olds; 25% of three year olds, and 49% of four year olds. In another study of Medicaid eligible children in a school clinic, 56% of children between 24 – 36 months had cavities.

Federally funded studies most often reported are the National Institute of Dental Research (NIDR) surveys. The National Health and Nutrition Examination Surveys (NHANES I, II, and III), and the National Center for Health Statistics (NCHS) surveys. All give us a good idea of the prevalence of oral disease in given populations conducted by seasoned examiners at different time periods. This allows us to track progress being made in community wide and professionally recommended preventive interventions. The report stated that 97.3% of five year olds were free of decay in their permanent teeth while only 15.6% of seventeen year olds were free of decay, clearly demonstrating the progress of decay through the school years.

Over 40% of five year olds had decay in their primary teeth and by age nine the percent with decay was almost 60%, again demonstrating the progress of decay over time.

The good news is that since the 1960s reduction in decay in pediatric patients has been reduced dramatically probably due to the use of fluorides. Nevertheless dental decay continues to be one of the most common diseases in children – more common than asthma.

Furthermore, we also know that some populations are at greater risk than others. These include children of families living in poverty, young Mexican-American

children, some immigrant children, Native American infants and toddlers and non-Hispanic black children.

Early childhood caries (ECC) is reported in six of ten children by age five. A type of ECC, nursing caries or baby bottle tooth decay in up to 10% of children and 50% of native American and Eskimo children.

Other Infections

Decay that is not treated will progress through the enamel and into the dentin, the layer of tooth with sensory innervations. Complaints of sensitivity and discomfort will follow. Without intervention the disease process will progress through the dentin and into the pulp of the tooth. Discomfort and pain will increase. Pulpitis is a bacterial infection in the pulp, and in early stages, can be treated and the tooth restored. If allowed to continue, the infection can progress out of the tooth into the surroundin bone. It can further progress with the development of an intra or extra-oral fistula that allows for drainage of pus into the oral cavity.

If the infection spreads to the surrounding facial tissues, a cellulitis can result with swelling and inflammation. The sites can be on the neck or on the face. Cellulitis requires immediate intervention to prevent serious progression. Treatment involves removal of teeth (if the cellulitis is tooth related), antibiotics and may require incision and drainage.

While water fluoridation, the use of fluoride products, dietary modification including sugar restriction, improved oral hygiene, and regular professional care have led to dramatic reductions in dental caries over the past 30 years, the disease remains a major public health problem.

Early phases of tooth decay are currently difficult to detect. While radiographs, or x-rays, can disclose established cavities, particularly those that occur between the teeth, they are not effective in detecting early decay, or caries in the roots of teeth. The ongoing development of more sensitive diagnostic techniques to detect dental caries in its earliest phases will pave the way for the use of noninvasive treatment options to stop or reverse the caries process. Current data support the following treatment options: fluorides, dental sealants, combinations of chlorhexidine, fluoride, and sealants; xylitol and health education.

Water fluoridation and the use of fluoridated toothpaste are highly successful in preventing dental caries. There is also evidence to support the use of fluoride varnishes in permanent teeth, as well as fluoride gels, chlorhexidine gels, sealants, and chewing gum containing xylitol, a sugar substitute. Combined interventions may be more effective in preventing caries in children.

Early identification of children at high risk for extensive caries is important so that they may receive early and intense preventive intervention. Children at low risk also need to be identified to reduce unnecessary care and expenditures. The most consistent predictor of caries risk in children is past caries experience. Children who experience early childhood caries are more likely to develop caries on their permanent molars. Low socioeconomic status (SES) is also associated with higher caries rates**.**

Prevention Techniques (brushing, fluoride, diet)

It is important for non-dental health practitioners to understand the basic concepts and historically proven preventive methods that have been available to the profession to decrease the negative outcomes of dental disease. To date, all preventive interventions recommended are based on principles established by early research, and most noteworthy the work of Keyes. Because dental disease is a bacterial infection, all interventions are aimed to affect the causative bacteria, increase the resistance of the host (teeth and gums) and reduce the substrate required by bacteria. This section will address those concepts primarily in the preschool child, where the primary care provider can have an influence in recommending preventive strategies. By five years of age the majority of children will have had a first professional dental intervention and the pediatric dentist or family dentist will be supervising the oral health of the child.

Plaque

Plaque (biofilm) is a sticky film of many bacteria, food debris and salivary components that adhere to the tooth. General components of plaque are calcium and phosphorus. The cariogenic bacteria produces polysaccharides that improve adherence of the plaque to the tooth enamel. Although plaque can initially protect enamel because of its mineral content, if left undisturbed, it will increase in size and

in the number of bacteria. When a substrate is available, such as sugars and other fermentable carbohydrates, an acid is produced that attacks the enamel with loss of calcium and phosphate. This initial demineralized area is referred to as a white spot lesion. Depending on many factors including saliva pH, presence of fluoride, removing plaque and modifying the substrate, this lesion can either become remineralized, or with time can lead to cavitation.

Plaque Removal

Plaque removal should begin early, as soon as the teeth erupt. Some reports suggest "wiping" the edentulous alveolar ridges with a washcloth or wet gauze. There is no evidence in the literature that would suggest that this is of any preventive value. Cariogenic bacteria requires tooth surfaces to adhere to and do not adhere to tissue. Possibly an advantage of wiping the alveolar ridge would be to begin to develop a habit of oral hygiene. Again, there are no reports to suggest that infants who have had their edentulous alveolar ridges wiped leads to better oral hygiene after the teeth erupt.

Plaque removal is a fine motor activity that infants, toddlers and even preschoolers cannot be expected to perform initially. Therefore, the care provider will be responsible for cleaning the teeth at least until the child enters first grade. With proper positioning and a toothbrush that is comfortable for the caregiver to use, removing plaque can be fun and quickly accomplished. With increasing number of teeth more time will be necessary.

Initial brushing of teeth can be accomplished in the bath, on the changing table or in a setting where two adults sitting knee to knee create a cradle for the infant to lie in. In this supine position there is stability and good access to the oral cavity .With gentle pressure from fingers, the jaws can be spread apart and the brush inserted for cleaning. Minimal, if any, fluoride containing toothpaste should be used and a system developed to try and clean all surfaces of the teeth. With increase in age and socialization children will be provided treats at daycare, friends' homes and parties. Parents should be proactive and work to find an appropriate balance between acceptable and unacceptable foods.

Oral Pathology

Common soft tissue lesions of infants and toddlers and young school children will be described. Treatment choices, intervention or referral will be suggested. For further in-depth review of pediatric oral pathology, references are listed at the end of this section.

Shortly after birth and at the first examination, the physician or nursing staff may note round white nodules on or near the midline on the palate or on the alveolar ridges.

These are Palatal and Dental Lamina Cysts (Epstein's Pearl's – palate; Dental Lamina Cysts – alveolar ridges; Bohn's nodules – lateral hard & soft palate). They usually spontaneously exfoliate and require no treatment.

A localized, pedunculated or sessile smooth surface pink to red in color lesion may be present at birth usually in the upper anterior jaw and is called congenital epulis. The CONGENITAL EPULIS may cause feeding problems. This lesion may resolve on it's own over a short period of time or may be excised depending on it's size and interference with function. This lesion is most commonly located in the anterior maxillary and 90% occur in females.

CANDIDIASIS (Thrush). In infancy, the tongue, buccal mucosa and palate may be coated with a soft white plaque. If able to be removed with a gauze pad or tongue blade and a red raw undersurface is noted, the diagnosis most likely is PSEUDOMEMBRANOUS This is a fungal infection that should be treated with antifungal medication. Nystatin suspension is the first choice for initial intervention and it can be applied to the oral mucosa by the parent with a gauze or swab.

THRUSH

At birth, or shortly after, there may be a tissue swelling in the midline of the lower jaw. Upon palpation, calcified tissue may be noted or there may be a tooth like object visible. These are NATAL TEETH (at birth) or NEONATAL TEETH (after birth) and 90% of the time are one of the primary teeth and not a supernumerary (extra) tooth. Usually poorly formed and quite mobile, they can interfere with feeding and consideration should be given to extract. If the decision is made to keep the teeth, feeding (breast or bottle) can be performed on either side of the tooth

(teeth). This will avoid irritation to the mother's breast and or irritation to the infant's tongue. To date, no report of tooth aspiration has been reported in the literature.

A bluish, translucent, elevated, compressible lesion may appear on the alveolar ridge that is associated with an erupting tooth. The ERUPTION CYST or ERUPTION HEMATOMA is blood or fluid filled and may cause discomfort. This lesion may be compared to a blood blister. If the lesion interferes with function, intervention should be considered. Before intervention, a HEMANGIOMA should be ruled out. Parents can be instructed to massage the alveolar ridge with a moist cloth several times a day or have the infant chew on a soft teething ring. The parent should not be alarmed if the lesion pops and blood is mixed with the released fluid.

ERUPTION HEMATOMA

A mucosal ulcer secondary to trauma may be noted in infants and toddlers.TRAUMATIC ULCERATION on the ventral surface of the tongue in infancy has been referred to as RIGA FEDE'S DISEASE and is due to irritation from the erupting mandibular anterior teeth. Symptomatic treatment is usually recommended. Riga Fede's Disease that is found in children with neurological disorders or oral desensitization should be followed closely.

TRAUMATIC ULCER

Other ulcers can be due to trauma, accidental or aggravated (child abuse), or herpes simples virus, (HERPETIC ULCERS), systemic deficiencies and/or probable immune defects (APTHOUS ULCERS). Most often located on non-kerantinized movable tissues with a crater surrounded by an erythematous halo (except for ulcers secondary to a blunt object or a force as in child abuse). Ulcers can be painful especially when eating and talking with symptomatic relief recommended and heal in usually 7-10 days.

HERPETIC ULCERS are usually proceeded by prodromal tingling followed by vesicles that coalesce into a small ulcer without an erythematous halo. They are usually located on the hard palate, the vermilian border of the lips and the attached ginigval tissue. Healing occurs in 7-14 days and intervention is symptomatic.

A common tumor-like raised lesion is a FIBROMA, with usually a pedunculated firm surface and usually located on the mucosa, lips or tongue. Another common tumor-

like raised lesion is a PAPILLOMA, which has a soft, pedunculated, cauliflower-like surface, is pink to white in color, and is usually a solitary lesion that can be located almost anywhere in the mouth. Surgical excision is the usual treatment of choice for these tumors with recurrence uncommon. (Figure III-14)

A localized, compressible, fluid-filled module with smooth surface, fluctuating in size and clear to bluish in color is called a MUCOCELE. Children who have a mucocele located in the lower labial mucosa, buccal mucosa or ventral tongue may continually play with and traumatize this lesion. Referral for evaluation and treatment is recommended. If found on the floor of the mouth it is called a RANULA and is associated with the sublingual salivary gland. Recurrence is common if not completely excised. Marsupalization is the treatment of choice for the ranula. Some of these lesions are associated with a history of trauma. (Figure III-15)

MUCOCELE/RANULA

A wide-spread oral and perioral infection associated with fever, discomfort, malaise, lymphadenopathy, intense red gingiva and multiple vesicles located throughout the mouth that rupture resulting in ulcers, drooling and halitosis is PRIMARY HERPETIC GINGIVOSTOMATITIS. Occurrence is common during periods of seasonal changes (early spring/summer). It is a self-limiting disease secondary to the Herpes Simplex Virus (HSV) with dehydration and high temperatures a major concern. Supportive therapy, forced hydration, and antipyretics are indicated. A recommended mouthwash for children who cannot expectorate is: Diphenhydramine Hydrochloride liquid 12.5 mg/5 ml and Maalox oral suspension; mixed in a 1:1 ratio Disp: 200ml Sig: rinse 1 to 2 teaspoons (5-10 ml) every 4 hours for 2 minutes; swish and spit or swish and swallow. Shake well before use and store at room temperature. It can be used for 60 days. For children who cannot expectorate, the suspension can be swabbed inside the mouth with a cotton tipped applicator. Viscous lidocaine is not recommended for children who cannot expectorate.

The current FDA recommendation is that systemic acyclovir is approved for children who are immunocompromised. For children who can expectorate the following can be recommended: Rx: Peridex, PerioGard, or generic (chlorhexidine gluconate

0.12%) oral rinse. Disp: 480 ml (16 fl. oz) Sig: rinse with 15 ml for 30 seconds and expectorate. Use twice daily after breakfast, and before bed for 7 days for gingivitis.

Chlorhexidine is very effective in the management of gingival inflammation that occurs secondary to herpetic infection. This rinse can irritate extensive ulcerations as most products contain 11.6% alcohol. The anti-inflammatory effects can be beneficial to help improve oral hygiene, eating and oral comfort.

Parents should be informed that this condition can be easily given to other family members and should avoid sharing utensils, toothbrushes and foods. It usually resolves in 7-10 days. (Figure III-16)

PRIMARY HERPETIC GINGIVOSTOMATITIS

Erythema Multiforme is an acute, sometimes recurrent, inflammatory disease of the skin and mucous membranes. Erythema Multiforme is described as a hypersensitivity reaction triggered by drugs, infections and exposure to toxic substances. Oral lesions occur in 25% of patients and consist of erythematous macules followed by vesicular bullae that rapidly form painful necrotic ulcers, often with a pseudomembranous membrane. These lesions can be found on the lips, tongue, palate, buccal mucosa and gingiva. Skin lesions begin as macules or wheals and evolve into papules or plaques. The center of the lesion may be vesicular, purpuric or necrotic. “Multiforme” refers to this changing pattern of a fixed lesion over several days.

Iris or target lesion are pathognomonic for erythema multiforme and have dusky centers that may develop concentric rings of variable color that may blister when the reaction is intense. Pruritus can be minimal or absent. There are two forms of this disease: Erythema Multiforme Minor, the most common type, may present as an immune-mediated response to Herpes Simplex Virus; Erythema Multiforme Major, or Stevens-Johnson Syndrome, is a serious systemic disorder involving at least two mucous membranes and the skin.

Treatment is local and symptomatic. Opthamologic evaluation is important because of possible visual impairment. Oral lesions can be managed with mouthwashes, glycerin swabs or chlorhexidine rinses. Topical anesthetics can be applied prior to eating. Skin lesions should be cleaned and antibiotic therapy may be appropriate to prevent secondary bacterial infection. Prophylactic acyclovir may be indicated in

cases of herpes associated Erythema Multiforme. Treatment of Stevens-Johnson Syndrome requires an intensive care setting.

A lingual frenum is usually attached at the base of the tongue. When attached to the ventral tip of the tongue it may restrict tongue movements causing ANKYLOGLOSSIA (tongue tied).

Infants and children with feeding or speech problems should be referred to a feeding or speech therapist to evaluate the etiology of the problem prior to surgical intervention. Most infants adapt early. Frenectomy may be indicated.

Periodontal disease

The periodontal diseases also initiated by bacteria in the plaque. As the plaque increases, the response to the bacterial products is tissue inflammation. Children generally only manifest the mild forms of gingival disease called gingivitis. The clinical presentation is usually puffy and red tissues surrounding the necks of the teeth. Bleeding of the tissues may be present. Fortunately, this inflammatory response is reversible with daily disruption of the biofilm. Localized and temporary alteration of gingival tissue in children may occur secondary to habits, trauma and during the transition from the primary dentition to the permanent dentition.

Seldom is there gingival disease with bone loss (periodontitis) in healthy children. When diagnosed it is associated with defects in neutrophil function (localized juvenile periodontitis and prepubertal periodontitis).

Gingival overgrowth can occur in children with certain medical diagnoses and their required medications. For exampl: seizure disorder (phenytoin), transplants (cyclosporins) and heart disease (calcium channel blockers). Children on these medications have to monitore by the dentist. Furthemore to appropriate daily hygiene and oral care intervention initiated.

Little data is available on the prevalence of periodontal disease of young children. Although commonly reported in children by clinicians, gingivitis (the intermediate form of periodontal disease) is easily reverse in children with appropriate intervention. Gingival bone loss is uncommon. One study reported 7.6% of four years old low-income Hispanic children with bone resorption in addition to high rates of decay.

Gingivitis

Gingival inflammation etiology: plaque accumulation, traumatic injury, pulpal condition, herpes simplex virus, systemic illnesses.

Gingival tissues become to red and swollen and will bleed on probing or brushing.

Gingivitis rarely progresses to periodontitis in the preshooler.

Primary Herpetic Gingivostomatitis

Vesicular eruption may seen on the skin, vermillion or oral mucous membranes. Intraorally, these lesions may appear on any mucosal surface, which is in contrast to the recurrent form of the disease whereby vesicular lesions are confine to the palate and gingiva. These lesions are accompanie by fever, malaise, decreased appetite, severe gingival inflammation, halitosis, headache and cervical lymphadenopathy. This systemic primary infection will usually last for 1-10 days and the lesions will heal without scarring. Symptoms should be treate palliatively. Patients should be encouraged to drink and eat to avoid dehydration and oral hygiene should be encouraged. It is unknown what percentage of children will develop recurrent herpetic lesions.

Localized Prepubertal Periodontitis.

Clinical findings:

- effects on some of the primary teeth, if left untreated can progress to the mixed dentition
- rapid bone loss
- minimal plaque
- minor gingival inflammation despite abnormal probing depths.

Consider abnormalities in host defense function, extensive interproximal caries and family history. Children may have chemotaxis dysfunction but show no history of recurrent or chronic infection. The reported prevalence of localized prepubertal periodontal deseases is 0.84% in the general population.

Generalized Prepubertal Periodontitis.

Clinical findings:

- severe gingival inflammation
- rapid bone loss around nearly all the teeth (primary and permanent teeth)

- mobility
- tooth loss

Autosomal recessive trait resulting in a profound abnormality of the CDll - family leukocyte adherence receptors on the surface of the phagocytic blood cells.

Affected children are highly susceptible to periodontal disease and other chronic or recurrent infections including those of the upper respiratory track, middle ear, and skin. The reported prevalence is between 7.7%-11% in selected populations.

Diseases that are associated with periodontitis in the prepubescent child: Hypophosphasia, Papillon LeFevre, Langerhans Cell Histiocytosis, Diabetes, Neutropenia, Acrodynia, Leukocyte Adhesion Deficiency, Leukemia, Downs

Orthodontics

Orthodontics is a type of dentistry that aims to improve the appearance, position and function of crooked or abnormally arranged teeth.

The name comes from a Greek word that literally means "to straighten teeth".

Healthcare professionals who specialise in orthodontics are known as orthodontists.

Orthodontics uses devices such as a brace to correct the position of the teeth. Your exact treatment will depend on the problems with your teeth.

In some cases, you may have to wear headgear at night as well as a brace, and you may also need to have some teeth removed as part of your treatment.

If worn correctly, you are likely to achieve good results, usually within 18-24 months. If the problem is more complicated, treatment may take longer.

An orthodontist specializes in perfecting smiles using orthodontic appliances, such as:

- bands
- brackets
- wires
- headgear
- rubber bands
- retainers

Orthodontics, formally **Orthodontics and Dentofacial Orthopedics**, is the first specialty of dentistry that is concerned with the study and treatment of malocclusions (improper bites), which may be a result of tooth irregularity, disproportionate jaw relationships, or both. Orthodontic treatment can focus on dental displacement only, or can deal with the control and modification of facial growth. In the latter case it is better defined as "dentofacial orthopaedics".

Methods

For comprehensive orthodontic treatment, most commonly, metal wires ("Jushi") are inserted into orthodontic *brackets* (see dental braces), which can be made from stainless steel or a more aesthetic ceramic material. The wires interact with the brackets to move teeth into the desired positions. Other methods may include Invisalign, which consists of clear plastic aligners that move teeBraces are a type of orthodontic treatment appliance used to correct the position of the teeth

A common complication of orthodontics is tooth decay.

This can happen because orthodontic appliances can sometimes stimulate the production of saliva, which combines with small particles of food and bacteria that have not been cleaned from the teeth properly to form a sticky film known as plaque.

The plaque causes the enamel to decay. This effect is worsened by the fact that many people with appliances find it difficult to keep their teeth clean, so additional brushing is essential during treatment.

To reduce risk of enamel decay, orthodontist may recommend use toothpaste with high levels of fluoride or a mouthwash that contains fluoride фтв to avoid sugary foods and fizzy drinks.

Neglect oral hygiene caused not effective orthodontic treatment and could even make things worse. If this is the case, treatment will be stopped.

Dental braces, with a powerchain, removed after completion of treatment.

Additional components—including removable appliances ("plates"), headgear, expansion appliances, and many other devices—may also be used to move teeth and jaw bones. *Functional appliances,* for example, are used in growing patients (age 5 to 14) with the aim of modifying the jaw dimensions and relationship if these are

altered. This therapy, termed *Dentofacial Orthopedics,* is frequently followed by fixed multibracket therapy ("full braces") to align the teeth and refine the occlusion.
Hawley retainers are the most common type of retainers. This picture shows retainers for the top and bottom of the mouth.

Orthodontics is the study of dentistry that is concerned with the treatment of improper bites, and crooked teeth. Orthodontic treatment can help fix the patient's teeth and set them in the right place. Orthodontists usually use braces and retainers to set the patient's teeth. There are, however, orthodontists who work on reconstructing the entire face rather than focusing exclusively on teeth. After a course of active orthodontic treatment, patients will typically wear retainers, which maintain the teeth in their improved positions while surrounding bone reforms around them. The retainers are generally worn full-time for a period, anywhere from just a few days to a year, then part-time (typically, nightly during sleep) for as long as the orthodontist recommends. It is possible for the teeth to stay aligned without regular retainer wear. However, there are many reasons teeth will crowd as a person ages, whether or not the individual ever experienced orthodontic treatment; thus there is no guarantee that teeth will stay aligned without retention. For this reason, many orthodontists prescribe night-time or part-time retainer wear for many years after orthodontic treatment (potentially for life). Adult orthodontic patients are more likely to need lifetime retention.

Diagnosis and treatment planning

In diagnosis and treatment planning, the orthodontist must (1) recognize the various characteristics of a malocclusion or dentofacial deformity; (2) define the nature of the problem, including the etiology if possible;(3) design a treatment strategy based on the specific needs and desires of the individual; and (4) present the treatment strategy to the patient in such a way that the patient fully understands the ramifications of his/her decision.

Orthodontics (Prosthetic Dentistry)

Clinical orthopedic dentistry study clinical picture and therapy of morphofunctional disturbances through using different restorative techniques (dentures and devices manufacturing).

The word orthopedics comes from Greek:

Ortos – straight, to straighten; to correct;

Pedio – to educate, to train.

This term proposed in 1971 by French surgeon Henry. This term understood as a skill to prevent and correct body deformities through education, training and exercises.

The term prosthesis (denture) means to restore, to replace a part of harmed human body, or to replace a missing organ.

- **Dental prosthesis -** it is an artificial part that replace a missing organ.
- **Device** is a medical remedy used in tissues affections without loss of substance.
- **Device-denture** is a mix medical remedy (it treat and replace a missing organ).

Orthopedic dentistry is a science which study the causes (etiology), pathogeny (how disease occurs), clinical picture and prophylactic methods and treats the affections of dentition' system using following methods:

1. functional
2. device method
3. surgical devices
4. prosthetic

The subject of orthopedic dentistry:

1. Propediutics of orthopedic dentistry (the general notions about orthopec dentistry)
2. Clinical orthopedic dentistry (treatment of patient)

Tasks of orthopedic dentistry:

- Biological task (medical task) is performe by dentist in treatment room and establish the disturbance (disease) and methods of treatment.
- Laboratory task – foresees the manufacturing of prosthesis and dental devices are performe by technician in dental laboratory.

The aim of orthopedic dentistry outcomes from definition and includes etiology, pathogeny and methods of restorative treatment.

Prosthodontics:

- Fixed Prosthodontics
- Removable Prosthodontics
  - Partial
  - Complete
- Implant Prosthodontics
- Maxillofacial Prosthodontics

Prosthetics - The art and science of supplying artificial replacements. Replacements for missing parts of the human body.

Prosthesis :

- An artificial replacement of an absent part of human body.
- A therapeutic device to improve or alter function.
- A device used to aid accomplishing a desired surgical result.

Dental prosthesis - Artificial replacement of missing dental and oral structure (used for function, aesthetics/cosmetics, phonetics).
Prosthetist - Person skilled in prosthetics and practicing its application.
Prosthodontist - Dentist that specializes in Prosthodontics.
Prosthodontics, also known as dental prosthetics or prosthetic dentistry, is one of nine dental specialties recognized by the American Dental Association, Royal College of Dentists of Canada, and Royal Australasian College of Dental Surgeons. Prosthodontics is the dental specialty pertaining to the diagnosis, treatment planning, rehabilitation and maintenance of the oral function, comfort, appearance and health of patients with clinical conditions associated with missing or deficient teeth and/or oral and maxillofacial tissues using biocompatible substitutes. A bridge - is a fixed dental restoration used to replace a missing tooth by joining an artificial tooth permanently to adjacent teeth or dental implants.
Types of bridges may vary, depending upon how they fabricated and the way they anchor to the adjacent teeth. Conventionally, bridges made using the indirect method

of restoration. However, bridges can be fabricate directly in the mouth using such materials as composite resin.

A bridge is fabricate by reducing the teeth on either side of the missing tooth or teeth thought a preparation pattern determined by the location of the teeth and by the material from which the bridge is fabricated. In other words, the abutment teeth are reduce in size to accommodate the material to be used to restore the size and shape of the original teeth in a correct alignment and contact with the opposing teeth. The dimensions of the bridge defined by Ante's Law: "The root surface area of the abutment teeth has to equal or surpass that of the teeth being replaced with pontics".
The materials used for the bridges include gold, porcelain fused to metal, or in the correct situation porcelain alone. The amount and type of reduction done to the abutment teeth varies slightly with the different materials used. The recipient of such a bridge must be careful to clean well under this prosthesis.
When restoring an edentulous space with a fixed partial denture that will crown the teeth adjacent to the space and bridge the gap with a pontic, or "dummy tooth", the restoration referred to as a bridge. Besides all of the preceding information that concerns single-unit crowns, bridges possess a few additional considerations when it comes to case selection and treatment planning, tooth preparation and restoration fabrication.
In dentistry, **centric relation** is the mandibular jaw position in which the head of the condyle is situated as far anterior and superior as it possibly can within the mandibular fossa/glenoid fossa.
It is defined as, "The maxillo-mandibular relationship in which the condyles articulate with the thinnest avascular portion of their respective discs with the complex in the anterior-superior position against the slopes of the articular eminences. This position is independent of tooth contact. This position is clinically discernible when the mandible is directed superiorly and anteriorly. It is restricted to a purely rotary movement about the transverse horizontal axis". — GPT.
This position is used when restoring edentulous patients with removable or either implant-supported hybrid or fixed prostheses. Because the dentist want to be able to

reproducibly relate the patient's maxilla and mandible, but the patient does not have teeth with which to establish his or her own vertical dimension of occlusion, another method has been devised to achieve this goal. The condyle can only be in the same place as it was the last time it was positioned by the dentist if it is consistently moved to the most superior and anterior position within the fossa.

Centric relation is an old concept in dentistry based on an old mechanical viewpoint of dentistry. There are over 26 different definitions of Centric Relation since the term was first developed as a starting point for making dentures. It is not a physiologic position but rather a border position that is used for reproducibility. The Temporomandibular Joint, does not normally function in a Centric Relation position. Long centric is a term that describes a functional position that patients restored in Centric Relation frequently migrate to. Centric Relation is a border position that is inherently unstable. Mandibular fossa is put anterior and superior as possible. (First aid for the NERB I)

Centric Relation believers state that the relationship of the mandible to the maxilla when the properly aligned condyle-disc assemblies are in the most superior position against the eminentiae irrespective of Occlusal Vertical Dimension (OVD) or tooth position. Centric Relation concepts have largely been replaced by Neuromuscular Dentistry concepts that are considered far more physiologic.

At the most superior position, the condyle-disc assemblies are braced medially, thus centric relation is also the midmost position. A properly aligned condyle-disc assembly in centric relation can resist maximum loading by the elevator muscles with no sign of discomfort.

A crown is a type of dental restoration which completely caps or encircles a tooth or dental implant. Crowns are often needed when a large cavity threatens the ongoing health of a tooth. They are typically bonded to the tooth using a dental cement. Crowns can be made from many materials, which are usually fabricated using indirect methods. Crowns are often used to improve the strength or appearance of teeth. While inarguably beneficial to dental health, the procedure and materials can be relatively expensive.

The most common method of crowning a tooth involves using a dental impression of a prepared tooth by a dentist to fabricate the crown outside of the mouth. The crown can then be inserted at a subsequent dental appointment. Using this indirect method of tooth restoration allows use of strong restorative materials requiring time consuming fabrication methods requiring intense heat, such as casting metal or firing porcelain which would not be possible to complete inside the mouth. Because of the expansion properties, the relatively similar material costs, and the aesthetic benefits, many patients choose to have their crown fabricated with gold.

Anesthesia

The choice of a particular anesthetic technique is normally a decision made by the anesthesiologist, taking into account the type of surgery and the condition of the patient, as well as the needs and preferences of both the patient and the surgeon.

General Anesthesia

Purpose

General anaesthesia has many purposes including:

Analgesia — loss of response to pain,

Amnesia — loss of memory,

Immobility — loss of motor reflexes,

Unconsciousness — loss of consciousness,

Skeletal muscle relaxation.

Biochemical mechanism of action.

The biochemical mechanism of action of general anaesthetics is not yet well understood. To induce unconsciousness, anaesthetics have myriad sites of action and affect the central nervous system (CNS) at multiple levels. Common areas of the central nervous system whose functions are interrupted or changed during general anesthesia include the cerebral cortex, thalamus, reticular activating system, and spinal cord. Current theories on the anesthetized state identify not only target sites in the CNS but also neural networks and loops whose interruption are linked with unconsciousness. Agents used in context of a general anesthetic have the GABA and the glutamate-activated ion channels NMDA receptor families as potential

pharmacologic targets, but others such as voltage-gated ion channels, glycine and 5-hydroxytriptamine (5-HT) receptors, are also involved.

Among the inhaled anesthetic agents, halothane has been found to be a GABA agonist and ketamine is an NMDA receptor antagonist.

Preanaesthetic evaluation

Prior to planned operation or procedure, the anaesthetist reviews the medical record and/or interviews the patient to determine the best combination of drugs and dosages and the degree to which monitoring will be required to ensure a safe and effective procedure. Key factors of this evaluation are the patient's age, body mass index, medical and surgical history, current medications, and fasting time. Thorough and accurate answering of the questions is important so that the anaesthetist can select the proper anaesthetic drugs and procedures. For example, a patient who consumes significant quantities of alcohol or illicit drugs could be undermedicated if s/he fails to disclose this fact. This in turn could then lead to anaesthesia awareness or dangerously high blood pressure.Commonly used medications (e.g., sildenafil) can interact with anaesthesia drugs; failure to disclose such usage can also increase the risk to the patient.There are some situations (where patients are on a certain medication and must undergo a given procedure) in which local anaesthesia or regional anaesthesia can be given, but instead general anaesthesia is chosen, though this is not extremely common due to the fact that general anaesthesia is by nature more dangerous and the agents used react with many more medications.

An important aspect of the preanaesthetic evaluation is that of the patient's airway, involving inspection of the mouth opening and visualisation of the soft tissues of the pharynx. The condition of teeth and location of dental crowns and caps are checked, neck flexibility and head extension observed. If a tracheal tube is indicated and airway management is deemed difficult, then alternative methods of tracheal intubation, such as fibreoptic intubation, may be required as part of the anaesthetic management.

Premedication

Anaesthesiologists may prescribe or administer a premedication prior to administration of a general anaesthetic. Anaesthetic premedication consists of a drug

or combination of drugs that serve to complement or otherwise improve the quality of the anaesthetic.

One example of this is the preoperative administration of clonidine, an alpha-2 adrenergic agonist. Clonidine premedication reduces the need for anaesthetic induction agents, as well as the need for volatile anaesthetic agents during maintenance of general anaesthesia, and the need for postoperative analgesics. Clonidine premedication also reduces postoperative shivering, postoperative nausea and vomiting and emergence delirium. In children, clonidine premedication is at least as effective as benzodiazepines, in addition to having a more favourable side effect profile. It also reduces the incidence of post-operative delirium associated with sevoflurane anaesthesia. As a result clonidine has become a popular agent for anaesthetic premedication. Drawbacks of oral clonidine include the fact that it can take up to 45 minutes to take full effect] hypotension, and bradycardia.

Midazolam, a benzodiazepine characterized by a rapid onset and short duration relative to other benzodiazepines, is effective in reducing preoperative anxiety, including separation anxiety associated with separation of children from their parents and induction of anaesthesia. Dexmedetomidine and certain atypical antipsychotic agents are other drugs that are used in particular in very uncooperative children.

Melatonin has been found to be effective as an anaesthetic premedication in both adults and children due to its hypnotic, anxiolytic, sedative, antinociceptive, and anticonvulsant properties. Unlike midazolam, melatonin does not impair psychomotor skills or adversely affect the quality of recovery. Recovery is more rapid after melatonin premedication than with midazolam, and there is also a reduced incidence of post-operative agitation and delirium. Melatonin premedication also reduces the required induction dose of propofol and thiopental.

Another example of anaesthetic premedication is the preoperative administration of beta adrenergic antagonists to reduce the incidence of postoperative hypertension, cardiac dysrhythmia or myocardial infarction. One may choose to administer an antiemetic agent such as droperidol or dexamethasone to reduce the incidence of postoperative nausea and vomiting, or subcutaneous heparin or enoxaparin to reduce the incidence of deep vein thrombosis. Other commonly used

premedication agents include opioids such as fentanyl or sufentanil, gastrokinetic agents such as metoclopramide, and histamine antagonists such as famotidine.

Non-pharmacologic preanaesthetic interventions include playing relaxing music, massage, and reducing ambient light and noise levels in order to maintain the sleep-wake cycle.These techniques are particularly useful for paediatric and mentally retarded patients. Other options for children who refuse or cannot tolerate pharmacologic premedication include interventions by clowns and child life specialists. Minimizing sensory stimulation or distraction by video games may also help to reduce anxiety prior to or during induction of general anaesthesia.

Stages of anaesthesia

The Guedel's classification by Arthur Ernest Guedel described four stages of anaesthesia in 1937. Despite newer anaesthetic agents and delivery techniques, which have led to more rapid onset and recovery from anaesthesia, with greater safety margins, the principles remain.

Stage 1

Stage 1 anaesthesia, also known as the "induction", is the period between the initial administration of the induction agents and loss of consciousness. During this stage, the patient progresses from analgesia without amnesia to analgesia with amnesia. Patients can carry on a conversation at this time.

Stage 2

Stage 2 anaesthesia, also known as the "excitement stage", is the period following loss of consciousness and marked by excited and delirious activity. During this stage, respirations and heart rate may become irregular. In addition, there may be uncontrolled movements, vomiting, breath holding, and pupillary dilation. Since the combination of spastic movements, vomiting, and irregular respirations may lead to airway compromise, rapidly acting drugs are used to minimize time in this stage and reach stage 3 as fast as possible.

Stage 3

Stage 3, "surgical anaesthesia". During this stage, the skeletal muscles relax, vomiting stops, and respiratory depression occurs . Eye movements slow, then stop, the patient is unconscious and ready for surgery. It has been divided into 4 planes:

eyes initially rolling, then becoming fixed

loss of corneal and laryngeal reflexes

pupils dilate and loss of light reflex

intercostal paralysis, shallow abdominal respiration

Stage 4

Stage 4 anaesthesia, also known as "overdose", is the stage where too much medication has been given relative to the amount of surgical stimulation and the patient has severe brain stem or medullary depression. This results in a cessation of respiration and potential cardiovascular collapse. This stage is lethal without cardiovascular and respiratory support.

General anesthesia provides unconsciousness so that the patient does not feel, see, or hear anything during a surgical procedure. The anesthetic medications are given through an intravenous (IV) line or as a breathing gas, and patients are monitored by an anesthesia provider - an anesthesiologist (MD), or a certified registered nurse anesthetist (CRNA) or anesthesia assistant under appropriate supervision.

The state of decreased consciousness achieved during general anesthesia reduces, or eliminates completely, the observed response to a painful stimulus, like a surgical knife. The responses that are blocked are not only muscle movements, but also reactions of the so-called autonomic nervous system - like increased heart rate and blood pressure, and sweating. During general anesthesia we believe that pain, as such, is not felt. In many cases, drugs with pain-killing properties, such as morphine, are used as part of the "mix" of anesthetic drugs. Paralyzing drugs are often given to make sure the muscles do not naturally contract which would make surgery difficult. The muscles of breathing then also become paralyzed and therefore an artificial airway must be inserted and breathing achieved with a machine - a mechanical ventilator.

The anesthesiologist or anesthetist monitors the patient very closely throughout the entire procedure with a variety of sophisticated monitors as well as with close "hands-on" observation with the human senses.

Anesthesia must be maintained until the surgical procedure is over. Recovery from anesthesia occurs through removal of the anesthetic from the brain and, ultimately, the body. The gases are removed from the body mainly by breathing them out, and the intravenous drugs by the action of the liver and kidneys. The action of the paralyzing drugs is usually be ended by giving other "reversal" drugs. After waking up from anesthesia, patients are usually transferred to a recovery area where they are monitored closely by specially trained nurses. After certain major surgeries, patients may be taken to an intensive care unit for recovery.

Some patients may experience nausea and vomiting afterwards. Other after-effects or problems that can occur after general anesthesia include sore throat, tooth damage, headache, drowsiness or dizziness. Severe problems or even death can occur with general anesthesia but are rare.

Depending on the surgery and the type of anesthesia used, many patients may be able to go home within a few hours. It is important however that any patient who has had anesthesia has a responsible adult companion to provide an escort home and care at home for the first 24 hours or so after surgery.

Sedation Techniques

Sedation techniques include mild, moderate and deep sedation. A variety of other terms are used, such as "monitored anesthesia care" (MAC), "conscious sedation" and "twilight sleep". These techniques differ from general anesthesia in that patients are more responsive to painful stimuli, are able to breathe more easily without the assistance of a breathing tube or ventilator, and show less effect on the heart and blood pressure.

Sedation techniques usually involve:

Administration of intravenous anesthetic drugs

Oxygen (given with a nasal cannula or face mask)

Standard patient monitoring procedures similar to those used during a general anesthetic

Because sedation usually entails the administration of lower doses of anesthetic drugs than with a general anesthetic, the recovery period tends to be shorter. The

drugs that are used affect one's ability to remember the procedure, but periods of awareness can occur.

There is no fixed dose of anesthetic agent that produces a particular effect in all patients. A particular patient's response depends on age, weight, sex, general state of health or disease, genetic factors, drug interactions, and other factors. Because there is this degree of unpredictability a patient undergoing sedation may on occasion experience the effects associated with general anesthesia. The anesthesiologist must be able to provide support for the airway (such as a breathing tube), breathing (such as a mechanical ventilator) and the heart and blood pressure (such as a resuscitation drugs). This is known as the ability to "rescue" and is one of the main reasons why sedation is risky when undertaken by unqualified hospital personnel or lay people.

Regional Anesthesia

In this form of anesthesia, so-called "local" anesthetic medications are injected to numb the nerves that supply sensation to the operated-on body part. Lidocaine, and the old "Novocain" (procaine) are examples of local anesthetics.

The nerves are "blocked", meaning that they cannot transmit their signals during the time the anesthetic is active.

Regional anesthesia relies on the anesthetic drug being placed in exactly the right part of the body, close to the nerve, or bundle of nerves, or the spinal cord. Anesthesiologists use two main kinds of technology to assist in the location of the nerves. Ultrasound equipment can provide good images of many superficial nerves, and via the monitor the anesthesiologist can observe the local anesthetic as it is injected. Nerve stimulators pass small amounts of electrical current through a needle causing any nerve that is in proximity to conduct impulses to muscles, and specific patterns of muscle contraction that identify the needle as being in the right position. It is also possible to achieve regional anesthesia simply through sound applied knowledge of human anatomy. If good positioning is not achieved, the regional anesthesia will not work well or may not work at all. General anesthesia may then be necessary.

Other problems that can occur with regional anesthesia include, temporary or permanent nerve injury (rare), headache, backache, infection, reactions to the medication ("toxicity") or allergic reactions. Severe problems are as uncommon as with general anesthesia but can occur.

This technique is the use of local anesthetic at the surgery site. By definition, there is no anesthesiologist providing sedation and monitoring the patient, who is therefore completely conscious.

The local anesthetic agent is applied either on the surface of the skin or via injection. Sometimes a drug such as epinephrine (adrenaline) is administered so that the blood flow to that area of the body is reduced. This allows the anesthetic drug to remain in effect in the area longer.

Local anesthesia is a good option when surgery is very minor and the patient does not mind being fully awake during the procedure. The patient is normally able to get up and go home without escort, although the effects of the local anesthetic itself can take up to a few hours to wear off.

Local anesthetic instruments:

• Carpules Carpules:

– 1.7 or 1.8cc

– Pre Pre-made in blister
packs or canisters

– Contains preservatives
for epinephrine and
local anesthetic

Local anesthetics:

Agent: Dose: Onset/Duration:
Lidocaine with epi (1 or 2%) 7mg/kg Fast/medium
Lidocaine without epi 4.5mg/kg Fast/short
Mepivacaine without epi (3%) 5.5mg/kg Fast/short

Bupivacaine with epi (0.5%) 1.3mg/kg Long/long
Articaine with epi (4.0%) 7mg/kg Fast/medium

*adult doses in patients without cardiac history

Inflammatory diseases of maxillofacial region.

Odontogenous stomatologists call the infection, which localized in the teeth or around them. It is at present proven that the chronic inflammatory center in the tooth or in its surrounding cloths influences the general state of organism and can be the reason for the development of allergic states and heavier systemic reactions of organism to the infection in the form of pyo- resorptive fever and even sepsis.

According to the data of scientists, at present more than 60 diseases connected with the focal odontogenous infection. The rheumatism stands among them in the first place. The diseases of gastrointestinal tract and liver, kidneys, eyes further follow. Here are involved eczema, neuritis, neuralgias, blood' diseases.

In patients with the centers of the infection of the oral cavity after the conditions of clinic infectious-allergic focus myocarditis, rheumatic polyarthritis, were revealed, hemorrhagic (vaskulit), atherosclerosis of the heart's coronary arteries with the inclination to their spasms, neutrophilic leukocytosis, neuritis of facial nerve, lymphadenitis of submaxillary units, lymphogranulomatosis, asthenic state, and also number of eye, skin and other diseases.

Inflammatory diseases of maxillofacial region.

Periostitis of jaw - inflammatory process, which appears as the complication of the diseases of teeth and tissues of periodontist. More frequent it flows in the form limite inflammation of the periosteum of alveolar, thinner frequent inflammatory phenomena apply to the periosteum of the body of jaw.

The initial period of disease flows stormily, inflammatory phenomena increase with each hour. However, one should remember that in some patients the pathologic process isdeveloped slowly, during 1-2 days. During this period health deteriorates, appears weakness, the temperature of body rises, headache appears, appetite disappears, sleep is disrupted. Pains in the region "causal" tooth become unbearable

and they extended into appropriate half of jaw with the irradiation on the off branching of the trigeminal nerve: in the temple, the ear, the neck, the eye. Subsequently the pain decreases.

In the cavity of mouth are developed hyperemia, edema of gum, mucous membrane of transitional fold and sections of cheek for the elongation of several teeth adjacent to it. Transitional fold in this case occurs smoothed, and in it more thickly palpates dense sharply unhealthy infiltration, with the purulent form is formed roller-shaped buckling - subperiosteal abscess. The center of fluctuation is determined. Gradually pus melts periosteum and it issues itself under the mucosa, forming intragingival abscess. With a studies “causal” tooth it revealed, that its cavity and root channels filled with the putrefactive disintegration of pulp. Tooth can sealed, in a number of cases is a deep pathologic dental -gingival pocket. During this period painful reaction with the percussion of tooth is expressed not sharply, but sometimes it is absent. It is not reveale in the X-ray photograph of alveolar branch and body of jaw with acute periostitis of changes.

The complex therapy, when timely surgical intervention is combined with the conducting by medicinal and physiotherapy, gives the best results during the treatment of patients with sharp purulent odontogenous periostitis. For the successful fulfillment of operational interference it is necessary to attain a good anesthetization of cloths on the spot of future section. Conduction and infiltration anesthesia more frequently uses. Section with periostitis makes with the length of 1,5-2,5 cm, cutting mucosa and periosteum on the transitional fold at entire depth of cloths of up to the bone. For the free draining of purulent exudate and warning of gluing it is boundary the wound into it introduce to 1-2 days the thin rubber drainage, which can be prepared from the surgical gloves or the polyethylene film. Simultaneously with the dissection of subperiosteal center is produced the removal “causal” tooth, which served as the source of infection, if its further retention is inexpedient.

Osteomyelitis - this is the inflammation of bone tissue and bone marrow. Inflammation usually is developed as a result of the penetration of infection into the bone tissue. Osteomyelitis of jaw on the prevalence occupies approximately third of all osteomyelitis.

Depending on the source of infection is distinguished odontogenous (source - sick tooth), hematogenic (drift of infection with the blood stream from any organ) and traumatic (including bullet) osteomyelitis of jaw.

Odontogenous osteomyelitis of jaw - sufficiently terrible complication of the neglected caries. This form of osteomyelitis is encountered approximately in 75% of cases of all osteomyelitis of jaw. Osteomyelitis in this case is developed as a result of the penetration of infection from the carious cavity first into the pulp, and then through the tooth root into the bone tissue. About 70% of cases of osteomyelitis are fallen to the lower jaw and of about 30% of cases of osteomyelitis to the upper jaw. Etiology of odontogenous osteomyelitis - microorganisms of three groups: streptococci, staphylococci and some anaerobic bacteria. Microorganisms can penetrate the bone tissue both on the bone ducts and on the lymphatic vessels.

Acute osteomyelitis of jaw is characterized by the expressed reaction of entire organism for the infection. Patients complain about the overall indisposition, the headache, the weakness, the poor sleep. Temperature rises, but it is sometimes possible and the higher rise in temperature of body to 38 absence of temperature when other signs of sharp process are present, speaks about weakening of the shielding forces of organism and requires special approach to the treatment of patients. The state of patients can be both the lung and heavy. The first sign with acute osteomyelitis is pain in the region of the infected tooth. Sharp sickliness during the rapping on the tooth is observed, its moderate mobility is revealed. The mobility of adjacent teeth moreover, is observed. The mucous membrane next to the tooth is edematic, is friable and is red, unhealthy with the touch. Possibly the development of subperiosteal abscess, inflammatory contracture (decrease of mobility) of lower jaw. During the palpation of the region of neck the increased and unhealthy lymph nodes note. The common form of patient usually indicates the signs of the intoxication: adynamia (apathy), the gray color of the skin, the pointed features of face, rise in temperature). Is possible the yellowness of the sclera of eyes (if intoxication affects the spleen and the liver), squirrels and erythrocytes in the urine (due to the toxic defeat of kidneys). Sometimes is revealed a change in the arterial pressure both to the side of lift and to the side of a decrease. The picture of the blood is characteristic for

the inflammation: leukocytosis with the shift of leukocyte formula to the left and increased ESR. During the first day of sharp reaction diagnostics of osteomyelitis of jaw can be hindered as a result of the predominance of the general symptoms above the local.

Treatment implies the required removal “causal” tooth (this an example of the case of absolute indication to the removal of tooth). Is shown the early wide of [periosteotomiya] (cuts of periosteum) for guaranteeing the draining of exudate (inflammatory liquid). Are assigned antibiotics, detoxification therapy, symptomatic therapy, and also local therapy (washing bone cavity with antiseptics). Is sometimes shown surgical intervention (removal of sequestrations), and also bone plastic.

It perikoronitis - this is inflammatory the infectious disease of gingival cloths, which appears with the incomplete eruption of the teeth (teeth of wisdom, moreover more frequent than lower) or with the incorrect position of the cut through teeth. In the second case occurs the inclination of the incorrectly located tooth of wisdom, which begins to press to the adjacent tooth and it is possible to lead to its destruction, and also to the traumatization of gingival and bone cloths.

Inflammatory process with pericoronitis it is accompanied by the following clinical symptoms: in patient in the region of the cut through tooth appears the severe pain, which irradiates into the region of ear or temple, the mouth is opened with this patient with difficulty, it swallows; its gums are hyperemized. An increase in the temperature of body is possible; frequently appears unpleasant smell from the mouth or unpleasant aftertaste in the mouth.

The neglected disease can lead to the development of the complications: the subperiosteal abscess of lower jaw. From the center of infection can begin the secretion of purulent exudate diagnostics of perikoronitis it does not cause difficulties - it is based at the clinical manifestations: the eruption of the teeth of wisdom, the inflammation of cloths.

During the treatment of disease for the stoppage of the propagation of inflammatory process is performed working gingival pocket and cloths, which surround tooth, by antiseptic preparations, with the complexity of the same is necessary the surgical carving of gingival hood and its subsequent working. Sometimes to patient is

prescribed the physical therapy treatment of perikoronitis (for example, Uhf-therapy). In the heavy cases the removal of the tooth, which served as the reason for the development of disease, is required.

Lymphadenitis - the inflammation of lymph nodes, which is frequently combined with lymphangitis.

Lymphadenitis, which arose as a result of the penetration of infection from the odontogenous center of inflammation, is called odontogenous lymphadenitis. It is caused by usual pyogenic and putrefactive microflora (streptococci, staphylococci, diplococcuies or anaerobic gram-negative rods and other) bears the nature of unspecific inflammation.

Odontogenous lymphadenitis is observed with acute and chronic periodontitis, gingivitis, osteomyelitis, to the festered near-root cyst and other; sometimes primary center remains unrecognized or manages to be diluted and then is created impression, that lymphadenitis arose independently.

Clinic. The purulent melting of lymph nodes makes it possible to establish further growth of their sickliness, increase of the swelling in their circle, in the majority of the cases slow - in the course of several days, and sometimes 1-2 weeks. Simultaneously can be observed the progressive infiltration of the adjacent to the lymph node cloths, which leads to the limitation of its mobility, the soldering of several units into one packet, and then already softening and fluctuation.

With acute lymphadenitis overall phenomena - indisposition, breakdown - can be absent or are expressed insignificantly. The gradually on the spot inflamed lymph node is formed ulcer. The general state of patients depends on the volume of the struck cloths and sharpness of process. The temperature of body rises, but not in all patients, approximately to 37,6-37,8°C. Only in separate patients with the rapid growth of local phenomena is observed an increase in the temperature, predominantly in the evening hours, by 1,5-2°C. In the blood are observed the same changes, as with the odontogenous abscesses of maxillofacial region.

Treatment: the removal of the odontogenous source of infection (removal of tooth, the treatment of periodontitis). Conservative treatment adapts only with acute serous

lymphadenitis. They adapt: dry heat-, Uhf- therapy, short novocaine -antibiotics blockade, which warm bandage- compresses. If the source of infection is not established and occurred festering unit, produce the dissection of abscess and its drainage, drug action on the center of inflammation. With all forms is shown the treatment with antibiotics and with sulfanilamides.

Sialadenitis- the inflammation of salivary glands.

In the etiology of sialadenitis large role plays the infection. In the ducts of salivary glands with sialadenitis finds the mixed flora, which consists of the staphylococci, pneumococci, streptococci. The reason for inflammation can be the agents of actinomycosis, tuberculosis, syphillis, the viruses of epidemic parotitis, [tsitomegalii] and others The agents of infection fall into the salivary gland through the mouth of excretory duct, what sometimes precedes introduction into the duct of foreign body (fiber from the toothbrush, rinds from the apples and others), and also lymphogenically or hematogenic. To appearance of s. contribute infectious diseases, operational interference, especially on the organs of abdominal cavity, the stagnation of secret in the ducts of salivary gland.

Is distinguished sharp and chronic sialadenitis.

Sharp sialadenitis it is characterized by edema, infiltration, purulent melting and necrosis of the tissues of gland, on the spot which subsequently is formed scar. However, sharp inflammation does not always conclude with festering or necrosis, more frequent process calms down at the earlier stages. Pain in it and its increase are the basic clinical signs of the sharp inflammation of large salivary gland; can be noted worsening in the health, increase in the temperature of body. The gland at the beginning of disease is soft, is unhealthy; dense infiltration is formed during the progression of process, the fluctuation is determined with the purulent melting above the struck region. As characteristic feature serves the disturbance of the function of gland in the form hypo- or hypersalivation, and also appearance in the saliva (flakes of mucus, pus, large number of cells of the gone down epithelium. Sharp sialadenitis it can be complicated by abscess and phlegmon of surrounding soft tissues, by

stenosis of salivary ducts, by formation of salivary blowholes, by steadfast reduction in the function of gland.

With the sharp inflammation of the small salivary glands (more frequent than the mucous membrane of lips) appears the limited unhealthy packing in the region of the struck gland; on the surface of mucous membrane it is possible to see the gaping mouth of duct. Process can be completed also by abscess formation.

Treatment is carried out by antibacterial, antifungal, antiviral (depending on the form of agent) and hyposensitizing means, and also by preparations, which increase the resistance of organism (vitamins, nucleate of sodium and others). With the presence of purulent duct separable from the mouth it is expedient to introduce directly antibiotics into the duct of gland. With the formed infiltration a good action render novocaine blockade, applications of the solution of [dimeksida]. In the case of abscess formation the dissection of center is shown. Forecast during in proper time initiated treatment is favorable. Preventive maintenance consists in the observance of the rules of the hygiene of the cavity of mouth, especially with the infectious diseases and after operational interference

Odontogenous maxillary sinusitus - inflammatory disease of the mucous membrane, which lines upper maxillary cavity.

Pathogenesis: the source of inflammation - acute, aggravated chronic periodontitis of the teeth of upper jaw, the festered radicular cyst, osteomyelitis of upper jaw, the traumatic removal of teeth. Factors of risk - close arrangement of tooth roots to the bottom of upper maxillary cavity, reduction in the shielding reactions of organism.

Clinical picture of odontogenous maxillary sinusitus:

- Sharp pains in the region of the struck cavity, in the suborbital, cheek regions or in entire half of face; a feeling of gravity, the obstruction of corresponding half of nose.
- Irradiation be ill into the frontal, temporal, occipital regions, the teeth of upper jaw.
- Pains in the region of large and small molar.
- Isolations of mucous, purulent nature from the appropriate nasal passage.

- Overall indisposition, headaches, weakness, the loss of appetite, the disturbance of sense of smell up to the total loss.
- Pains during the palpation of the front wall of maxillary sinus, with the percussion of causal tooth, edema in the cheek and suborbital regions, regional lymph nodes on the side of defeat are increased, unhealthy.
- The threshold of the cavity of mouth is hyperemized, it is edematic.
- In the nasal cavity from the appropriate side - edema and hyperemia of mucous membrane, an increase in the average or lower shell, isolation from the nasal passage.

Treatment of acute odontogenous maxillary sinusitus: the liquidation of the periapical inflammatory center, which was been the reason for disease. Puncture with the washing and the introduction into the cavity of antibiotics, ferments, its washing through the dental alveolus is produced. In the cavity of the nose - of vasoconstricting means for the anaemisation mucous membranes and creation of draining from the cavity through the nasal passages. Physical therapy procedures: UHF, diathermy, helium-neon laser.

Is assigned the course of treatment with sulfanilamides, by antibiotics, the over-all strengthening and stimulating therapy

Furuncle - sharp pyonecrotic inflammation of hair follicle and surrounding connective tissue, caused most frequently by golden (90,6%) less frequently is thinner frequent white streptococcus (9,4%) in the form of monoculture or in the association with other microorganisms. The predisposing factors of the appearance of furuncles include the violation of hygienic requirements with the shave, working of blackheads, the extrusion of abscesses (45%), professional factors of medium (pollution of the skin by petroleum residue, with the particles of cement, lime, coal), bad weather conditions (supercooling or the superheating of organism). Special importance in the appearance of disease is given to the disturbances of exchange of substances (diabetes mellitus, hypovitaminosis).

Clinic.

As a whole the development of furuncle occurs during 8-10 days and are passed three stages: infiltration, formation and the rejection of pyonecrotic rod, cicatrization.

Signs.

Most frequently the furuncle appears on the skin of neck, back of the head, face, back. The appearance of plural furuncles is called furunculosis, and the pyonecrotic inflammation of the skin and subcutaneous cellular tissue around the group of hair sacks and sebaceous glands - by carbuncle. With the localization of furuncle on face severe complications are possible (purulent meningitis, sepsis).

At first around the hair follicle appears the raised, solid infiltration of clear red color with the blurry boundaries, which is accompanied by a feeling of tingling or by insignificant sickliness. Gradually infiltration acquires the form of dense tumor, which is enlarged, it becomes more unhealthy; the surrounding cloths swell (in the regio palpebralis, cheeks, lips swelling it can be sharply pronounced). On 3-4- e twenty-four hours begins the second stage: furuncle reaches from 1 to 3 cm in the diameter, in its center pyonecrotic rod with the pustule on the surface is formed. Furuncle acquires the form of cone-shaped tumor with the smooth, being been glossy skin. During this period pains become sharp, temperature can increase to 37-38° [s], can appear the symptoms of intoxication (overall indisposition, breakdown, headaches and others). Further the casing of pustule spontaneously or artificially is revealed also from the furuncle is separated purulent, sometimes with the admixture of the blood contained, and then yellowish-green necrotic “plug” (necrotic rod). After removal or rejection of rod swelling, the infiltration and pains disappear, the remaining crater of furuncle is carried out by granulations and during 2-3 days cicatrizes. Scar at first blue- red, gradually becomes white, sometimes hardly noticeable. With the usual flow of process the cycle of the development of furuncle continues 8-10 days.

Treatment.

Antiseptic the working of the skin around the inflammations. Treat the formed furuncle with the aid of the resolving and antipyretic means and the methods - clean ichthyol, the dry heat, UHF. On the revealed furuncle are superimposed the moist-drying bandages with the hypertonic solution (for the best removal of pus), and after the departure of pus and necrotic cloths, the bandage with the antibacterial ointments is superimposed on the remained small ulcer. The designation of antibiotics is

necessary with the localization of precipitations on face (in the region of upper lip, nose and cheeks) and the complications of furuncle, active against the staphylococci (methicillin, oxacillin, erythromycin and other) also in certain cases in the fight with the furunculosis is used autohemotherapy.

Preventive maintenance.

Personal hygiene, warning the micro-injuries of the skin, the timely the working of the traumatized sections of the skin.

Near-maxillary abscesses and phlegmons are observed comparatively frequently - in 20-30% sick, entering the hospital.

Abscess - limited center of purulent inflammation, which leads to the melting of the section of cellulose tissue or another cloth with the formation of cavity.

Phlegmon - sharp spilled purulent inflammation of subcutaneous, intermuscular and interfascial cellular tissue.

The sources of infection with abscesses and phlegmons of maxillofacial region can be odontogenous and noodontogenous nature. More frequent the entry gate of infection are the defects of solid and soft tissues of tooth and boundary periodontist. Therefore such abscesses and phlegmons call odontogenous. If abscesses and phlegmons accompany odontogenous osteomyelitis and complicate its flow, then them they call osteogenic. Abscesses and phlegmons, which appear as a result the infection of the damaged skins of face or mucous cavity of mouth, and also complication of such illnesses as furunculosis, sialadenitis, ulcerous stomatitis and others, they relate to noodontogenuos.

It is accepted to distinguish: abscess and the phlegmon of suborbital region; abscess and the phlegmon of malar region; abscess and the phlegmon of eye socket; abscess and the phlegmon of cheek region; abscess and the phlegmon of subtemporal and pterygopalatine pits; abscess and the phlegmon of temporal region; abscess and the phlegmon of parotid- masticatory region; abscess and the phlegmon of [pozadichelyustnoy] region; abscess and the phlegmon of [krylochelyustnogo] space; the abscess of maxillary- tongue groove; abscess and the phlegmon of parapharyngeal space; abscess and the phlegmon of submental region; the phlegmon of the bottom of the cavity of mouth; the putrefactive- necrotic phlegmon of the

bottom of the cavity of mouth (anaerobic infection); abscess and the phlegmon of language; the abscess of the hard palate.

Abscesses and phlegmons of maxillofacial region are manifested by a number of general disorders, by the symptoms of pyo- resorptive fever, and also by the local changes, in many respects caused by localization of the center of purulent inflammation. Disease more frequently begins suddenly. The phenomena of inflammation rapidly increase. As a result the intoxication of organism appears headache, are disrupted sleep, appetite, the temperature of body rises. In the heavy cases a chill appears, the general state sharply deteriorates. In the peripheral blood are determined leukocytosis, neutrophilia. In the blood serum S-reactive protein is revealed. The diffuse unhealthy infiltration, on top covered with the hyperemized skin or mucous membrane, is characteristic of the developing phlegmon. The infiltration increases in proportion to further development of inflammatory process, in its central divisions appears the melting of cloth - fluctuation. These local signs are less expressed with the deeply located ulcers.

For the majority of phlegmons are characteristic pain, the disturbance of the mobility of lower jaw, the increased salivation, the difficulty of mastication, ingestion, speech and respiration. With the involvement in the process of masticatory muscles appears the information - contracture of jaws. The manifestations of disease depend on localization of phlegmon in one, two, three or more spaces.

Diagnostics is based on the data of anamnesis and objective study. During the surface arrangement of purulent centers, the determination of last difficulties does not cause, whereas the recognition of deep ulcers frequently requires conducting diagnostic puncture. Abscesses and the phlegmons of maxillofacial region must be differentiated with furuncle and carbuncle of face in the initial stage of disease; by erysipelatous inflammation; by the sharp inflammation of parotid salivary glands; festered by the middle and lateral cysts of neck; by specific chronic inflammatory processes; by tumor formations.

Complex treatment is conducted with abscesses and phlegmons of maxillofacial region. It includes the surgical intervention (surgical treatment of infectious- inflammatory center for purposes of the guarantee of evacuation of pus

and purification of purulent wound); the antibacterial, desensitizing, detoxification, immunocorrecting, over-all strengthening therapy; physiotherapy (currents OF UHF, SHF). The therapeutic exercise is assigned after the calming of sharp inflammatory phenomena and resolution of infiltrations.

Tumors. Imaging appearance of bone tumors of the maxillofacial region

A spectrum of benign and malignant bone tumors may be seen in the maxillofacial region. Knowledge of the pathologic features of these tumors and how these features are reflected in their imaging appearance is essential for diagnosis. Familiarity with the imaging appearance, common location, age and gender of bone tumors of the maxillofacial region facilitates the diagnosis and helps radiologists to narrow the list of differential diagnoses and allows for definitive diagnosis in some cases. Early diagnosis of bone tumors is crucial in promoting aggressive treatment, often allowing complications to be avoided.

Computed tomography (CT) is commonly used for imaging the maxillofacial region. A bone window algorithm better delineates the details of a bony lesion. CT scanning is sensitive for detecting calcified tumor matrix, bone changes and cortical destruction. Magnetic resonance (MR) imaging is not frequently used for the diagnosis of bony maxillofacial lesions. Routine T2- and T1-weighted images and a post-contrast study may be used for the diagnosis of soft tissue lesions with bony tumors.

Benign tumor

Osteoma

Osteoma is the most common osseous tumor in the maxillofacial region. Osteoma is most commonly seen in the 5th to 6th decades of life and the male-to-female ratio is 1.3:1. Osteoma occurs more commonly in the fronto-ethmoidal sinus and is rarely seen in the maxillary and sphenoid sinuses. All osteomas contain three main components: compact bone (ivory), cancellous bone (trabeculae), and fibrous (spongy) tissue. Osteomas are named according to the dominant component. Compact osteomas most often involve the frontal sinus and grow gradually. Cancellous osteomas are located mostly in the maxillary and ethmoid sinuses and

grow relatively quickly. Osteomas are slow growing benign tumors. Multiple craniofacial osteomas may be a part of Gardner syndrome. It is usually asymptomatic but may be associated with facial swelling, deformity, mucocele, proptosis, ocular disturbances and pneumocephalus. Osteoma appears as a characteristic sharp, well delineated sclerotic lesion attached by a broad base or pedicle to the bone. Osteoma composed exclusively of compact bone is radiodense while those containing cancellous bone show evidence of internal trabecular

structure. CT multiplanar reconstructions allow the precise identification of the site of origin of the lesion, to fully depict course and patency of all sinus paths, and to correctly assess the integrity of thin bony walls such as the lamina papyracea or the cribriform plate. Compact osteomas produce a complete signal void on all MR sequences, so they are often indistinguishable from the surrounding air in the paranasal sinuses and are thus overlooked. Fibrous osteomas have low to absent signal intensity on all MR sequences.

Compact Osteoma. Axial computed tomography scan of the paranasal sinus shows a pathognomonic dense sclerotic mass (arrow) in the frontal sinus.

Osteoid osteoma

Osteoid osteoma is a rare tumor in maxillofacial regions (with a few case reports in the ethmoid region) that affects young males in the 2nd to 3rd decades of life. It is a benign osteoblastic lesion characterized by varying intermixtures of osteoid, newly formed bone, and highly vascular supporting osseous tissue (nidus) surrounded by a distinctive surrounding zone of reactive bone formation. Osteoid osteoma appears on CT scan as a characteristic radio-opaque lesion with a nidus (less than 1.5 cm in diameter) which has a radiolucent center surrounded by dense sclerosis. Occasionally, the nidus may have a radio-opaque calcified center with a surrounding radiolucent area. The osteoid osteoma may even be completely sclerotic. MR appearance of osteoid osteoma depends upon the amount of calcification within the nidus, the size of the fibrovascular zone and reactive sclerosis; so it may not be diagnostic. The mass demonstrates patchy enhancement.

Osteoblastoma

Osteoblastoma is typically seen in male patients during the 2nd decade of life. It may be seen in the maxilla, ethmoid, nasal cavity and orbit. It shows a marked amount of osteoid tissue produced by osteoblasts. The osteoclasts are numerous and the background is highly vascular. Histologically, osteoblastoma show some similarity to osteoid osteoma, but they are larger without nidus or zonal architecture and show a stronger, more progressive, occasionally even destructive growth; thus, they are sometimes called aggressive osteoblastoma. The patient presents with pain, facial swelling and asymmetry of the face. It is commonly seen as an expansile lytic lesion with cortical shell or it may show as mixed lytic and sclerotic or predominately sclerotic bone forming a lesion.

Ossification foci with ground glass appearance, cloudy confluent mineralization in the central part of the lesion (75%) may be seen. It exhibits intermediate to low signal intensity on T1-weighted images and high to low signal intensity on T2-weighted images depending upon the amount of ossification. Areas of mineralization appear as zones of low signal intensity on T2-weighted images. It shows variable patterns of contrast enhancement.

Osteoblastoma. A: Coronal computed tomography shows a nonspecific expansile lesion (arrows) seen in the the right frontoethmoid air cells with extension into the right orbit. It shows ossific foci; B: Coronal T2-weighted image shows a well-defined mass.

Chondroblastoma

Chondroblastoma is an extremely rare tumor of the maxillofacial region with few case reports. Eighty-three percent of patients with skull chondroblastoma are more than 30 years of age, whereas 92% of patients with chondroblastomas in long bones are less than 30 years of age. It is more commonly seen in the sphenoid and ethmoid and rarely in the maxilla. The tumor is a locally aggressive, well-demarcated expansile lesion. The matrix of the tumor revealed chondroblast and areas of calcification. CT scan confirms the lytic nature of the lesion and shows areas of calcifications in the center and the periphery of the tumor. Areas of low signal intensity on T2-weighted images are secondary to chondroid matrix mineralization.

Chondroblastoma of the peripheral skeleton appears to show a different age predilection and characteristically is surrounded by striking peritumoral edema

Chondromyxoid fibroma

Chondromyxoid fibroma of the maxillofacial region is typically seen in patients in the 2nd-3rd decade of life with slight female predominance. It is more commonly seen in the maxilla and is unusual in the sphenoid and ethmoid sinuses. The tumor is composed of hypocellular chondroid or myxochondroid tissue with multinucleated giant cells. The CT findings of chondromyxoid fibroma are non specific and almost always suggest a benign lesion. They typically have a lobulated outline with sharp margins, and the majority has a sclerotic rim. The cortex of the bone is usually thinned and expanded. In approximately 50% of cases, a portion of the cortex may be absent. Up to one-third of cases show radiographic evidence of soft tissue extension. The majority of tumors have purely lucent matrix. However, approximately 13% of tumors show some discrete areas of calcification. It exhibits low signal intensity on T2-weighted images due to chondroid and myxoid tissue with an inhomogeneous pattern of enhancement.

Chondromyxoid fibroma. Coronal computed tomography shows expanded mass in the sphenoid sinus with pathognomonic discrete areas of calcification (arrows).

Chondroma

Chondroma occurs in patients less than 50 years old of either gender. The most frequent sites of occurrence are the nasal cavity (septum) and ethmoid air cells. It is a polypoid firm, smooth surface nodule measuring from 0-5 to 2 cm and rarely greater than 3 cm. Histologically, it is a lobulated tumor composed of chondrocytes, resembling the normal histology of the hyaline cartilage. The differentiation of chondroma from a well-differentiated chondrosarcoma may at times be difficult if not impossible. It may be differentiated from chondrosarcoma by pathology. It shows discrete areas of calcification on CT scan.

Osteochondroma

Osteochondroma is an extremely rare tumor of the maxillofacial region. The age of incidence ranges between 10 and 40 years, with most patients presenting in the 3rd decade. The male to female ratio ranges from 1:1 to 2:1. It is located in the facial

bones, nasal septum, sphenoid sinus, ethmoid cells and zygomatic arch. The reason for the rare occurrence of osteochodroma in the maxillofacial skeleton is the intramembranous development of these bones. It is a benign cartilage-capped osseous growth composed of compact and cancellous bone. Osteochondromas are characterized by the presence of a cartilage cap on top of the tumor; with time, cartilage tissues gradually undergo endochondral ossification and are replaced by bone. It may be multiple in patients with hereditary multiple exostoses. Osteochondroma usually has a pathognomonic pedunculated mushroom shaped bony outgrowth with peripheral cortex and central cancellous bone that arises from the surface of the bone. The cartilaginous cap may or may not be focally calcified. On MR imaging, it shows a peripheral rim of low signal intensity of the cortical bone and central high signal intensity within the cancellous region. A thin hyperintense cartilagenous cap on T2-weighted images may be seen.

Fibrous dysplasia

Fibrous dysplasia (FD) represents 2.5% of all osseous and 7% of all benign osseous neoplasms. The craniofacial bones are the affected sites in 10%-25% of patients with monostotic FD and in 50% of patients with polyostotic FD. In addition, the craniofacial region may be affected by a form of FD that is not restricted to a single bone, but may be confined to a single anatomical site. This type of the disease has been termed craniofacial FD. In addition, FD may be a component of McCune-Albright syndrome or it may exhibit cherubism phenotype. The monostotic and polyostotic types are known to be related to mutations in the guanine nucleotide-binding protein gene located on chromosome 20q and the craniofacial subtype has not been localized to this chromosome. It is more commonly seen at the 1st to 2nd decade of life at the floor of the anterior cranial fossa. It is located in the frontal bone (82%), sphenoid (71%), ethmoid (68%), and maxillary (28%) bones. Histologically, FD consists of varying amounts of spindle cell bundles and trabeculae of immature woven bone. There is replacement of normal spongiosa and filling of the medullary cavity of affected bones by an abnormal fibrous tissue that contains trabeculae of poorly calcified primitive bone formed by osseous metaplasia. It may be associated with aneurysmal bone cyst. Spontaneous malignant transformation of FD is estimated

to occur in less than 1% of cases, and osteosarcoma is the most common histological type, followed by fibrosarcoma, chondrosarcoma and malignant fibrohistiocytoma. These malignancies are most commonly found in the maxilla. Most reported cases of malignant degeneration in FD have occurred after radiation therapy.

The imaging appearance of FD depends upon the amount of fibrous and bony element. CT remains the ‘‘gold-standard’’ imaging modality for FD, allowing characterization of the three main imaging patterns of expanded bone. The cortical bone tends to remain intact, with the FD changes most often found in the medullary bone. The CT findings include: pathognomonic ground glass appearance with bone expansion and alternative radiolucent and radiodensity areas (56%), sclerotic pattern with homogenous radiodensity (23%) and lytic appearance with solitary round or oval, well-defined radiolucent with sclerotic margins (21%). Sclerotic lesions are homogeneously dense, whereas cyst degeneration is the least common finding and is characterized by a spherical or ovoid lucency surrounded by a dense bony shell. On T1-weighted images, the signal intensity is usually low to intermediate depending on the ratio of fibrous tissue to mineralized matrix. On T2-weighted images, lesions with a highly mineralized matrix show low signal intensities, whereas lesions with high fibrous tissue content and cystic spaces return high signal intensities. The lesion may enhance after contrast administration.

Coronal computed tomography scan shows a well-defined expansile bony lesion involving the left maxilla with characteristic ground glass appearance.

Cherubism is a rare autosomal-dominant disorder resulting from different mutations to FD and is therefore a distinct entity at the molecular level. It occurs in children (2-5 years) and is more common in males. It commonly appears as a bilateral and symmetrical multilocular cystic swelling of the mandible with expansion of the maxilla and involvement of the maxillary sinuses. The signal characteristics on MR imaging of cherubism are non-specific. Cherubism has been reported in association with neurofibromatosis type 1 and Noonan-like/multiple giant-cell lesion syndrome.

Giant cell tumor

Giant cell tumors occur more commonly during the 3rd and 4th decades of life and are more commonly located in the sphenoid but rarely in the ethmoid bones and the

maxilla. It is a benign, locally aggressive tumor characterized by osteoclast-like giant cells. Multicentric tumors with an aggressive course or malignant giant cell tumor with metastasis have been reported. There is a high recurrence rate (40%-60%) after resection[24]. Classically, the tumor destroys the bone and appears as a non-specific rarified area, being a lytic lesion. Although fairly well circumscribed, some cystic changes, ballooning and perforation of the bony cortex may be noted. The area of destruction has a “soap bubble” appearance, with normal trabeculae and little reactive bone at the margin. On MR imaging, it shows fairly low signal intensity on all pulse sequences, and shows moderate to marked contrast enhancement.

Aneurysmal bone cyst

Aneurysmal bone cyst occurs more commonly in the 2nd decade of life and may be seen in the maxilla, ethmoid, sphenoid bone and periorbital region. These cysts are composed of blood-filled, anastomosing cavernous spaces, separated by cyst-like walls. The precise nature and histogenesis of the aneurysmal bone cyst remains unclear. A primary type has to be differentiated from a secondary form; the latter develops on a preexisting bone lesion such as giant cell tumor, osteoblastoma, or chondroblastoma in 1/3 of patients. It appears as an expansile, multi-locular “soap bubble” (honey comb) radio-lucency, causing expansion of the bony cortex. It is surrounded by a marginal thin shell. MR imaging commonly shows cystic spaces with internal septa and septal contrast enhancement. Fluid-fluid levels of varying intensities might be present and should not be considered diagnostic, as this finding might be present in giant cell tumor, telangiectatic osteosarcoma, and chondroblastoma.

Aneurysmal bone cyst. Axial T2-weighted image shows an expans

Intraosseous (central) hemangioma

Intraosseous hemangioma can occur at any age with the peak incidence being in the 2nd decade of life. An estimated 2:1 female to male ratio has been documented. These tumors occur more commonly in the maxilla and nasal bones and may be found in the orbit. It is a hamartoma with anomalous proliferation of endothelial-lined vascular channels. Hemangiomas are classified into capillary, cavernous and mixed sub-types, depending on the predominant type of vascular channel. It is

usually asymptomatic. The characteristic “spoke-wheel”, “wagon-wheel”, “corduroy” or “sunburst” appearance on CT scan arises from thickening of pre-existing trabeculae, secondary to intramembranous bone affected by the vascular channels. T1-weighted images characteristically show hypointensity of the lesion. T2-weighted images reveal heterogeneous hyperintensity within the lesion. A stippled appearance is seen in the tumor matrix. The tumor enhances, intensely or heterogeneously, after the administration of contrast material.

Intraosseous (central) meningioma

Intra-osseous meningioma forms 1% of all meningiomas that typically occur in the 4th decade of life with female predominance. It is more commonly seen in the orbit and sphenoid ridge and rarely involved in the paranasal sinuses. It is more commonly seen as an osteoblastic or mixed sclerotic lesion. It shows a hyperostotic form that may be associated with inward bulging of the inner table and surface irregularity of the hyperostotic bone. CT is the investigation of choice to detect the tumor, cortical destruction and both intra- and extra-osseous extension. At MR imaging, there is bone thickening that exhibits low signal intensity on all pulse sequences with intense contrast enhancement.

Malignant tumors

Osteosarcoma

Fewer than 10% of osteosarcomas arise in the craniofacial bones with most such tumors developing in the mandible and maxilla. Typically, the tumor affects males in the 3rd decade and one or two decades later in the appendicular skeleton. Osteosarcomas may involve the mandible or maxilla and rarely the ethmoid region. The most common sites of involvement are the body of the mandible and the alveolar ridge or the antral area of the maxilla. The majority of tumors arise within the medullary cavity of the affected bone with rare examples developing on the bony surfaces. It may be secondary to radiation, fibrous dysplasia, Paget disease, trauma, osteomyelitis, ossifying fibroma and giant cell tumor. Osteosarcoma after radiation typically develops after a latency period of 5-10 years after doses in excess of 3000 Gy. These tumors characteristically occur at the edge of the radiation field because the administered radiation is unable to cause cell death but is sufficient to induce

malignant transformation. Osteosarcoma can be classified on location into intramedullary, intracortical, periosteal and parosteal (surface) and extraosseous. It can be further categorized according to the prominent type of matrix tissue observed microscopically such as osteoblastic, chondroblastic, fibroblastic, telengectatic and osteoclast-rich types. On CT, the tumor displays a spectrum of bone changes from well demarcated borders, notably the low grade osteosarcoma (uncommon), to lytic bone destruction with indefinite margin and variable cortical bone erosion, to the ostoeblastic form, where the bone is sclerotic. The majority of osteosarcomas have matrix mineralization, calcifications of the osteoid or osteoid-Iike substance within the tumor and some tumors show a sunburst effect caused by radiating mineralized tumor spiculae. Cortical breakthrough and interruption of alveolar margin is common in advanced cases. On MR imaging, osteosarcoma is of low to intermediate signal intensity on T1-weighted images and is of high signal intensity on T2-weighted images. Calcifications and new bone formations appear as signal void regions within the lesion that show inhomogeneous patterns of contrast enhancement.

Osteosarcoma. A: Axial computed tomography shows a rather irregular characteristic spiculated mass in the left alveolar margin of the maxilla adjacent to the lateral pterygoid plate; B: Axial contrast T1-weighted image shows inhomogeneous enhancement.

Chondrosarcoma

Craniofacial chondrosarcoma accounts for 2% of all chondrosarcomas with a peak incidence during the 4th to 5th decades of life and a male to female ratio of 2.4:1. It is seen in the skull base (common), maxilla and orbit (less common), and cartilage of the nasal septum (rarely). Chrondosarcoma has been reported to develop in association with malignant conditions, such as osteosarcoma, fibrosarcoma, and leukemia, as well as benign conditions, such as Paget disease and fibrous dysplasia. Histologically, chondrosarcoma of the craniofacial region can be divided into subtypes: the conventional subtype with myxoid and/or hyaline components, the aggressive mesenchymal and dedifferentiated subtype and the extremely rare clear cell subtype. The conventional type, which is the most common form, is slow growing, and rarely metastatic. On the other hand, mesenchymal chondrosarcoma is

more aggressive and tends to metastasize. They slowly increase in size, and the majority of them are already extensive at the time of diagnosis. On CT scan, chondrosarcoma shows a soft tissue mass with characteristic multiple stippled and amorphous areas of calcifications that may be associated with bone destruction and an inhomogeneous pattern of contrast enhancement. The signal intensity of the chondroid matrix is lower than bone matrix on T1-weighted images. There are hyperintense areas (chondroid tissue) and hypointense areas (calcified regions) on T2-weighted images. The tumor may show characteristic curvilinear septal enhancement of fibrovascular tissue and non-ossified cartilage. The development of metastases varies among studies and ratios of metastases are between 14% and 90%, with the lungs being the preferred site. Regional cervical lymph node metastases are reported in not more than 5% of all cases.

Chondrosarcoma. Axial computed tomography shows bulky mass in the nasal cavity and left maxillary sinus with characteristic stippled and amorphous areas of calcification (arrows).

Ewing sarcoma

Craniofacial Ewing sarcoma accounts for 1%-4% of all Ewing sarcomas with peak incidence between 5 and 20 years old in either sex, although it does have a predication for whites[38]. It may be seen in the orbital wall, sphenoid and maxilla. It is an aggressive, malignant, small round cell tumor of bone. Because of the intense vascularity of the tumor, hemorrhage and necrosis are common. Marked tumor necrosis is considered a poor prognostic factor. The commonest sites of metastases are the lungs and the skeleton that occur in the early course of the disease. Ewing sarcomas appear as a destructive aggressive mass with mottled irregular lucent areas interposed with some sclerosis. The margin is diffuse with unsharp edges and extensive cortical destruction. It may be associated with perpendicular bony spicules and shows the characteristic onion peel appearance of periosteal reaction, and less often with a sunburst type of periosteal reaction. The tumor tends to metastasize early, often to multiple other bony sites and the lungs. On MR imaging, the tumor is heterogeneously hypointense on T1-weighted and heterogeneously hyperintense on

T2-weighted scans. On post-contrast T1-weighted images, the lesion shows heterogeneous signal increase with internal hypointense necrotic areas.

Ewing Sarcoma. Axial contrast T1-weighted image shows a large destructive mass occupying the entire left maxillary sinus. The mass shows inhomogeneous non-specific pattern of contrast enhancement.

Fibrosarcoma

Craniofacial fibrosarcoma is very rare and is seen in the 3rd to 6th decades of life with a slight male predominance. The infantile variant that is seen in patients less than 5 years has a better prognosis. It is rarely seen in the maxilla. It may be central (medullary) or peripheral (periosteal). It is a malignant tumor with variable fibrous intracellular substances devoid of bone or cartilage formation. On CT, fibrosarcoma is a destructive lesion of variable size, frequently associated with extra osseous soft tissue mass. On MR imaging, the tumor shows low or intermediate signal intensity on both T1- and T2-weighted images with an inhomogeneous pattern of contrast enhancement.

Hemangioendothelioma

Hemangioendothelioma of the maxillofacial region is a low-grade, malignant vascular tumor. Hemangioendotheliomas account for only 0.5% to 1.0% of malignant primary bone tumors. Most of them arise in the third decade and they are prone to occur in the maxillary sinus. Multifocality is present in 9%-14% of cases. The tumor is often large and aggressive. Multifocal lytic lesions (honeycomb appearance), aggressive bony destruction with expansion, dense sclerotic lesion and soft-tissue mass are seen on CT scan. There is a low to intermediate signal intensity on T1-weighted images and

slightly high signal intensity on T2-weighted images. Tubular signal-void regions represent blood vessels that may be seen within the lesion. It shows moderate to marked contrast enhancement.

Hemangioendothelioma. Axial computed tomography shows a non-specific sclerotic enhanced lesion related to the posterior part of the nasal septum on the right side.

Chordoma

Chordoma forms 1% of all intracranial tumors that are typically seen in male patients during the 4th decade of life. It is commonly located in the clivus and may extend into the sphenoid and maxillary sinus. It is a benign, locally invasive tumor. It appears as a hypodense mass with irregular intratumoral calcifications (30%-50%) that are associated with variable contrast enhancement and bone destruction. The tumor shows intermediate signal intensity with areas of high signal representing hemorrhage or high protein cystic areas on T1-weighted images. The lesion has relatively high signal intensity associated with areas of low signal intensity that may be seen in the lesion that represents residual fragments or sequestrations of bone on T2-weighted images. After contrast administration, it shows inhomogeneous patterns of enhancement.

Lymphoma

Lymphoma of the maxillofacial region occurs over a broad age range (4th-7th decades) with slight male predominance. The vast majority are large B cell non-Hodgkin lymphomas. On CT scan, lymphoma can produce lytic, sclerotic or mixed lesions that may be associated with soft tissue mass. It appears as isointense to muscles on both T1- and T2-weighted images that are associated with soft tissue mass. The mass shows intense patterns of contrast enhancement. Burkitt's lymphoma is a special type that may be seen in Africans during the 1st decade of life. It appears as an osteolytic lesion with periosteal reaction and perpendicular spicules of new bone in the maxilla. An extra-osseous soft tissue mass may develop parallel with bone destruction.

Solitary intramedullary plasmacytoma

Plasma cell disorders are characterized by the accumulation of monoclonal plasma cells that produce the same immunoglobulin. Plasmacytomas are plasma cell tumors. They can occur as solitary tumors outside the bone marrow (solitary medullary (bone) plasmacytomas, solitary extramedullary plasmacytomas, but can also be associated with multiple myeloma. Solitary medullary plasmacytoma occurs more commonly in male patients between the 4th and 7th decades of life. It may be seen in the sphenoid sinus and the maxilla. It is a fairly well defined expansile lesion with contrast enhancement. It exhibits low signal intensity on T1-weighted images and

high or mixed signal intensity on T2-weighted images with marked contrast enhancement that may simulate meningioma.

Metastasis

Metastasis is uncommon in the maxillofacial region. The maxillary sinus is most frequently involved (33%) followed by the sphenoid (22%), ethmoid (14%) and frontal (9%) sinuses. In 22% of cases, multiple sinuses are involved. The most common tumor sites to disseminate to this region are the kidney (40%), lung (9%), breast (8%), thyroid (8%) and prostate (7%). The remaining 28% of cases include multiple miscellaneous sites. In 10-15% of cases, the metastases are limited to the nasal cavity. Although the eventual outcome is usually poor, prognosis depends, in part, on whether the sinonasal metastasis is isolated or part of widespread disseminated disease. Metastasis may appear as a localized, well-defined radiolucent lesion in a slow growing lesion, or it may be associated with cortical destruction in a highly aggressive lesion, osteoblastic in breast cancer or mixed lytic or sclerosis in patients with prostate cancer. The tumor exhibits low signal intensity on T1-weighted images and high signal intensity on T2-weighted images that may be associated with an enhancing soft tissue mass.

General principles of treatment

Treatment varies based on:

- Type of tumor
- Whether it is cancer
- Location of the tumor

You may not need treatment if the tumor is: Noncancerous (benign)

In a "safe" area where it will not cause symptoms or problems with the way an organ works. Sometimes benign tumors may be removed for cosmetic reasons.

If a tumor is cancer, possible treatments may include:

- Chemotherapy
- Radiation
- Surgery
- Targeted cancer therapy
- Biologic therapy

- Other treatment options

Maxillofacial injuries

Maxillofacial injuries can be complex and multi-specialty involvement in their management may be needed. Injury can involve the skin and soft tissues as well as resulting in fractures. Acute and long-term psychological problems can result from maxillofacial trauma and disfigurement. The first human face allograft was successfully performed in 2006 in France and has potential for use in facial reconstructive surgery secondary to maxillofacial trauma.

Anatomy

The maxillofacial region can be divided into 3 parts:

- The upper face - the frontal bone and frontal sinus.
- The midface - the nasal, ethmoid, zygomatic and maxillary bones.
- The lower face - the mandible.

The region of the orbit:

- The superior orbital margin is formed by the frontal bone.
- The lateral orbital margin is formed by the frontal process of the zygoma, the zygomatic process of the frontal bone and the greater wing of the sphenoid bone.
- The inferior orbital margin is formed by the maxilla and the zygoma.
- The medial orbital margin is formed by the frontal process of the maxilla, the lacrimal bone, the angular and orbital process of the frontal bone and the ethmoid bone.
- The orbital floor is formed by the roof of the maxillary sinus.
- Parts of the sphenoid, palatine and ethmoid bones form the apex of the orbit.

Blood and sensory supply:

- Branches of the external carotid artery supply blood to the face.
- The facial nerve supplies the muscles of facial expression.
- The ophthalmic, maxillary and mandibular branches of the trigeminal nerve supply sensation to the skin of the face.

Aetiology

Maxillofacial trauma is usually caused by:

- Assault (most common; domestic violence is an important cause; alcohol may be involved).
- Road traffic accidents (midface fractures can occur).
- Falls.
- Sporting accidents.

The fracture ratio mandibular:zygoma:maxillary is 6:2:1.

General assessment of maxillofacial injuries

- First look for associated life-threatening injuries. There may be associated cervical spine and significant head injury.
- Assess 'Airway, Breathing and Circulation' (ABC) and manage appropriately.

History

Once stable, relevant history may include:

- Mechanism of injury.
- Any loss of consciousness?
- Any visual disturbance, including disturbance of eye movement?
- Any problems with hearing, including vertigo and tinnitus?
- Any discharge from the ears or nose, including blood or cerebrospinal fluid (CSF)?
- Any problems with breathing through the nose?
- Ability to bite down without pain and feeling of whether the teeth come together normally?
- Any numbness or tingling on the face?

Examination

- Look for facial asymmetry. Stand at the head of the bed and look down from above to check the level of the cheekbones. The nasal bridge width is usually half the interpupillary distance.
- Inspect for bruising, swelling, lacerations, missing tissue, foreign bodies and bleeding.
- Palpate for bony injury and crepitus systematically.

- Inspect the eyes. Examine eye movements. Assess pupils.
- Check for foreign bodies and lacerations by everting the eyelids.
- More detailed examination is required by an ophthalmologist if eye trauma is suspected.
- Inspect the nose, looking for dislocation and telecanthus (widening and flattening of the nasal bridge). Palpate for tenderness and crepitus. Look for septal haematoma, lacerations and CSF rhinorrhoea.
- Ears: look for lacerations and CSF in the canal. Assess the tympanic membrane.
- Inspect the tongue and mouth.
- Palpate the mandible and temporomandibular joint, looking for mobility or crepitus. Also, look for bruising.
- Assessment for Le Fort fractures (see below): put one hand on the anterior maxillary teeth, the other on the nasal bridge. Only the teeth will move in a Le Fort I fracture. If the nasal bridge moves, a Le Fort II or III fracture is present.
- Assess the teeth. Look for avulsed or mobile teeth. Look for jaw malocclusion. If a tooth has been avulsed, has it been aspirated?
- Tongue blade test: ask the patient to bite down hard on a tongue blade. They will be in too much pain to do this if the jaw is fractured.
- Place a finger in the patient's ear canal to palpate the mandibular condyle. Ask the patient to open and close the mouth. If there is pain or lack of movement, this indicates a condylar fracture.
- Perform a complete cranial nerve examination.

Investigations

- X-ray and CT scanning provide the mainstay of fracture investigation.
- Specific X-ray views are needed depending on the fracture suspected.

Management

- This depends on injury/fracture (see below).
- Pain control will be needed.

- Early photographs may be helpful both to plan treatment and to counsel the patient.

Specific fractures

Frontal bone fractures

- These usually follow a severe blow to the forehead.
- A dural tear should be considered if the posterior wall of the frontal sinus is fractured.
- There may be tenderness, crepitus or disruption of the supraorbital rim. Look for subcutaneous emphysema and reduced sensation of supraorbital and supratrochlear nerves.
- Surgery is needed if the nasofrontal duct is blocked.
- Non-displaced fractures are sometimes managed by observation.

Orbital floor fractures

- These can occur alone or with medial wall fracture.
- There may be herniation of orbital contents into the maxillary sinus.

There are separate articles entitled Zygomatic Arch and Orbital Fractures and Eye Trauma.

Nasal fractures

- There is a separate article entitled Nasal Injury and Nasal Foreign Bodies.

Nasoethmoidal fractures

- These extend from the nose to involve the ethmoid bones.
- They can lead to damage of the lacrimal apparatus, canthus, nasofrontal duct or dural tear at the cribiform plate.
- If a dural tear is suspected, referral to a neurosurgeon is required.
- Ophthalmology, ear, nose and throat, maxillofacial or plastic surgery referral is required to manage other injuries.

Zygomatic arch and zygomaticomaxillary complex fractures

- There is a separate Zygomatic Arch and Orbital Fractures article.

Maxillary fractures

- Anatomy: the two maxillae form the upper jaw, the anterior part of the hard palate, part of the lateral walls of the nasal cavities, and part of the floors of

the orbital cavities. They meet in the midline at the intermaxillary suture and form the lower margin of the nasal aperture.

- Classification:
  - **Le Fort I** - a horizontal fracture across the inferior aspect of the maxilla. May result from a direct blow on the maxillary alveolar rim in a downward direction. The alveolar process and hard palate become separated from the rest of the maxilla. The fracture extends through the lower nasal septum, the lateral maxillary sinus wall and into the palatine bones and pterygoid plates. It can present with facial oedema, loose teeth and a mobile hard palate.
  - **Le Fort II**- a pyramidal-shaped fracture. It may result from a blow to the lower or mid-maxilla. The fracture extends from the nasal bridge through the frontal processes of the maxilla, through the lacrimal bones and inferior orbital floor and rim, through or near the inferior orbital foramen, and inferiorly through the anterior wall of the maxillary sinus. It then travels under the zygoma, across the pterygomaxillary fissure, and through the pterygoid plates. It can present with facial oedema, epistaxis, subconjunctival haemorrhage, CSF rhinorrhoea, a mobile maxilla and telecanthus (widening and flattening of the nasal bridge).
  - **Le Fort III**- a transverse fracture, also known as craniofacial dysjunction. It may follow a blow to the nasal bridge or upper maxilla. There is separation of all of the facial bones from the cranial base with simultaneous fracture of the zygoma, maxilla, and nasal bones. The fracture line extends through the ethmoid bones, orbits, and pterygomaxillary suture into the sphenopalatine fossa. It presents with massive facial oedema and facial flattening. There may be movement of all of the facial bones in relation to the cranial base.
- Management:
  - Maxillary fractures are usually managed by open reduction and fixation.

- Patients with higher Le Fort injuries have more severe injuries and more frequently need a surgical airway. Those with Le Fort III injuries have a higher chance of needing neurosurgical intervention or experiencing vision-threatening trauma.

Mandibular fractures

- There is a separate article entitled Mandibular Fractures.

Alveolar fractures

- Injuries of the tooth-bearing portion of the mandible are common.
- They can occur after relatively low impact trauma. The alveolus (tooth-bearing portion of bone) and/or the tooth can be damaged. Segmental fractures that involve multiple teeth can occur.
- They can present with loose or lost teeth and bleeding gums.

Panfacial fractures

- These usually result from high-energy trauma to the face.
- Open reduction with repositioning and internal fixation is needed.

Complications of maxillofacial injuries

- Immediate:
- Airway compromise
- Aspiration
- Haemorrhage
- Infection
- Longer-term:
- Scars and permanent facial deformity.
- Chronic sinusitis.
- Nerve damage leading to loss of facial sensation, movement, smell, taste or vision.
- Malocclusion.
- Nonunion/malunion of fractures.
- Malnutrition and weight loss.

Prevention of maxillofacial injuries

- Full-face helmets may offer some protection against maxillofacial injury.

- Airbags, non-lacerating windscreens and seatbelts in cars.
- Safety measures in high-risk occupations (eg farm and forestry workers).
- Gumshields in sports, although it is unclear which offers the best protection for which sport.

Maxillofacial Trauma

Oral and maxillofacial surgeons are trained, skilled, and uniquely qualified to manage and treat facial trauma. They are a vital part of local and trauma city hospitals across the country. They provide emergency room coverage for facial injuries including, but not limited to, facial and oral lacerations, avulsed (knocked out) teeth, fractured jaws, facial bones and orbit, head and neck trauma, treatment of gunshot wounds, dog bites, and motor vehicle crashes that affect the head and face.

Millions of people sustain trauma to the head and face resulting in complex fractures which, if not correctly diagnosed and treated, may cause permanent functional and cosmetic deformities. During the past decade, advances in radiographic procedures, the utilization of craniofacial surgical techniques, and the advent of rigid miniplate fixation have tremendously improved the functional and aesthetic results in facial fracture management.

The accurate diagnosis of facial fractures has been greatly improved by the addition of two- and three-dimensional CT scans which have replaced the plain radiographs. The three-dimensional reconstructions have enhanced preoperative bone analysis and planning by providing a life-like simulation of the fractures.

Injuries to the face, by their very nature, impart a high degree of emotional and physical trauma to patients. The science and art of treating these injuries require special training involving a "hands on" experience and an understanding of how the treatment provided will influence the patient's long term function and appearance.

The Nature of Maxillofacial Trauma

There are a number of possible causes of facial trauma including motor vehicle accidents, accidental falls, sports injuries, interpersonal violence, and work related injuries. Types of facial injuries can range from teeth injuries to extensive injuries of the skin and facial bones. Typically, facial injuries are classified as soft tissue injuries

(skin and gums), bone injuries (fractures), or injuries to special regions (such as the eyes, facial nerves or the salivary glands).

Soft Tissue Injuries of the Maxillofacial Region

When soft tissue injuries such as lacerations occur on the face, they are repaired by suturing. In addition to the obvious concern of providing a repair that yields the best cosmetic result possible, care is taken to inspect for and treat injuries to structures such as facial nerves, salivary glands, and salivary ducts (or outflow channels). Oral and maxillofacial surgeons are proficient in the diagnosing and treating all types of facial lacerations.

Bone Injuries of the Maxillofacial Region

Fractures of the bones of the face are treated in a manner similar to fractures in other parts of the body. The specific form of treatment is determined by various factors, which include the location of the fracture, the severity of the fracture, the age, and the general health of the patient. When an arm or a leg is fractured, a cast is often applied to stabilize the bone allowing for proper healing. Since a cast cannot be placed on the face, other means have been developed to stabilize facial fractures. Certain types of jaw fractures are best treated and stabilized by the surgical placement of small plates and screws at the involved site. This technique, called rigid fixation of a fracture, allows for healing and obviates the necessity of having the jaws wired together. The relatively recent development and use of rigid fixation has profoundly improved the recovery period for many patients, allowing them to return to normal function more quickly.

The treatment of facial fractures should be accomplished in a thorough and predictable manner. More importantly, the patient's facial appearance should be minimally affected. An attempt at accessing the facial bones through the fewest incisions necessary is always made. At the same time, the incisions that become necessary are designed to be small and, whenever possible, are placed so that the resultant scar is hidden.

Injuries to the Teeth and Surrounding Dental Structures

Isolated injuries to teeth are common and may require the expertise of various dental specialists. Oral surgeons usually are involved in treating fractures in the supporting bone or in replanting teeth that have been displaced or knocked out. These types of injuries are treated by one of a number of forms of splinting (stabilizing by wiring or bonding teeth together). If a tooth is knocked out, it should be placed in salt water or milk. The sooner the tooth is re-inserted into the dental socket, the better chance it will survive. Therefore, the patient should see a dentist or oral surgeon as soon as possible. Never attempt to wipe the tooth off. Remnants of the ligament that holds the tooth in the jaw are attached to the tooth root and are vital to the success of replanting the tooth. Other dental specialists may be called upon, such as endodontists, who may be asked to perform root canal therapy, and/or restorative dentists who may need to repair or rebuild fractured teeth. In the event that the injured teeth cannot be saved or repaired, dental implants are often utilized as replacements for missing teeth.

The proper treatment of facial injuries is now the realm of specialists who are well versed in emergency care, acute treatment, long-term reconstruction, and rehabilitation of the patient.

Test items

1. The defeats of the hard tissues of tooth, which arose in the period of its development, include:

A. Erosion of teeth

B. Hyperesthesia of the solid cloths of tooth

C. Fluorosis

D. Hyperplasia

2. The purpose of the ortophedic dentistry is:

A. Substitutions of toothless jaws

B. Substitutions of the partially remote bones of jaw

C. Substitutions of temporal- mandibular joint

D. Substitutions of the defects of the dental numbers

3. Dentist in the plan of preparation for prosthetics carries out:

A. Removal of scar changes in the mucous membrane

B. Treatment of stomatitis

C. Removal of dental deposits

D. Removal of tooth roots

4.To bridge-shaped prostheses are related:

A. detachable prosthetics

B. nondetachable prosthetics

5. Selection and the installation of prosthesis is determined:

A. By desire sick

B. By stage of the destruction of a dental number

C. By technical capabilities

D. By general state of the patient

6. The inherent defects of solid and soft tissues of jaws and face include:

A. Cleft of the solid and soft palate

B. Resorption of bone tissue of jaw as a result of the tumor process

C. Defect of the jaw of as a result transferred lupus

D. Cleft of upper lip

7. The apparatuses for the substitution of the defects, which were being formed after the healing of injuries are used by means of:

A. Fixing

B. Forming

C. Replacing

8. In the case, when prosthesis performs immediately several functions, is called:

A. Forming

B. Replacing

C. Fixing

D. Mixed

9. The tasks of orthodontic dentistry are:

A. Normalization of occlusion

B. Restoration of the normal structure of bone tissue of jaws

C. Correction of an increase in the apical bases of jaws

D. Elimination of the defects of the solid cloths of the teeth

10. Orthodontic treatment consists of:

A. Active stage

B. Functional stage

C. Stabilizing stage

D. Retention stage

11. Name organ, which participate in the formation of food lump:

A. Salivary glands

B. Temporal- mandibular joints

C. Solid and soft palate

D. Language

12. The plan of orthopedic treatment includes:

A. Special preparation of the cavity of mouth for prosthetics

B. Premedication

C. Development of the construction of prosthesis and form of prosthetics

D. General clinical examination (EKG, the total analysis of the blood)

13. Oral surgeon for preparation in prosthetics conducts:

A. Treatment of the inflammation of the mucous membrane of the cavity of mouth

B. Removal of dental deposits

C. Removal of tooth roots

D. Removal of scars on oral mucose

14. Arcuate prostheses are presentented by:

A. Detachable prosthetics

B. Non - detachable prosthetics

15. Maxillofacial orthopedics is occupied:

A. substitution of toothless jaws

B. substitution of the defects of maloclusion

C. substitution of the defects of solid and soft tissues in the region of jaws and face

D. substitution of the defects of the teeth's tissues

16. The acquired defects of hard and soft palate and face include:

A. Cleft of the hard and soft palate

B. Resorption of bone tissue of jaw as a result of the tumor process

C. Defect of the jaw of as a result transferred lupus

D. Cleft of upper lip

17. The apparatuses, which adapt for the fastening of the broken ends of lower jaw with the bone plastic are called:

A. Mixed

B. Fixing

C. Forming

D. Replacing

18. The orthodontia engage in:

A. Damages, which arose as a result injury

B. Disturbances, which arose in the process of the formation of masticatory- vocal apparatus

C. Genetically caused defects

D. Correction of deformations, emergent as a result inflammatory diseases of the jaws

19. Methods of orthodontic' treatment:

A. Apparatus- surgical

B. Palliative

C. Functional

D. Mechanical

20. Apparatuses in orthodontia occur:

A. Mechanical action (active)

B. Mechanical action (passive)

C. Functional action (active)

D. Functional action (passive)

21. It relates to the anesthetization at the level of nervous receptors:

A. Conduction anesthesia

B. Narcosis

C. Premedication

D. Infiltration anesthesia

22. It relates to the anesthetization at the level of cerebral cortex:

A. Infiltration anesthesia

B. Narcosis

C. Nerve block

D. Druk- anesthesia

23. The most frequent combination of preparations for the premedication includes:

A. M-[kholinoblokator], sedative and antihistaminic preparation

B. Sedative preparation and antibiotic

C. Non-narcotic analgetic, antihistaminic preparation and vaso-constrictor

D. Narcotic analgesic, the sedative and antihistaminic preparation

24. Anesthetic in the dispensary stomatological practice is administered:

A. With the intubation of trachea

B. With the aid of the mask

C. Intravenously

D. In a combined manner

25. Relative indications to the use of overall narcosis in stomatology:

A. Pheochromocytoma

B. The childhood

C. Psychic illnesses

D. Alcoholic intoxication

26. Relative contra-evidence to the use of overall narcosis in stomatology:

A. Postmyocardial infarction period (from 1 to 6 months)

B. Postinsultus period (from 6 months to 1 year)

C. Decompensated diabetes mellitus

D. Prolonged method of anticoagulants

27. Action on the cloth is laser for the purpose of surface anesthetization:

A. By application method

B. By physical method

C. By physical chemistry method

28. Thought the intra - ligament anesthesia the injection of preparation achieved:

A. Under the mucous membrane of gum

B. Under the periosteum

C. In the circular bond of tooth

D. It is intraosseous

29. During the damage by the injection needle of nervous it is trunk it appears:

A. Fainting

B. Paresthesia

C. Hematoma

D. Trismus

30. The indications the removal of teeth includes:

A. Teeth on the line of the breaks of jaws

B. The mobility of the teeth of the 2nd degree with periodontitis

C. Pulpitis

D. Breaks of tooth roots

1. It relates to the anesthetization at the level of the conducting ways:

A. Infiltration anesthesia

B. Acupuncture

C. Needleless jet anesthesia

D. Peripheral nerve - block

32. Purpose of premedication in stomatology:

A. Disconnection of peripheral nervous ends

B. Reduction in the secretion of glands

C. Strengthening the action of anesthetics

D. Disconnection of the consciousness of the patient

33. Absolute indications to the use of narcosis in stomatology:

A. Addiction

B. All cases, when interference under the local anesthesia is impossible

C. Intolerance of the locally anesthetizing preparations

D. Defect of heart in the stage of decompensation

34. Absolute contra-evidence to the use of narcosis in stomatology:

A. Acute infectious diseases

B. Suprarenal insufficiency

C. Thyrotoxicosis

D. Expressed bradycardia

35. The surface anesthetization was name:

A. By application anesthesia

B. By anesthesia with the aid of the electrophoresis

C. By the chemical method of local anesthesia

D. By infiltration anesthesia

36. Indications to conducting of the local anesthesia:

A. Expressed lability of psyche sick

B. Respiratory insufficiency

C. Conducting prolonged and traumatic manipulations

D. Any interference in the cavity of mouth and on the person, who accompanied by the pain

37. During the damage by the injection needle of muscular fibers it appears:

A. Spasms

B. Paresthesia

C. Trismus

D. Hematoma

38. With conducting of conduction anesthesia they achieve:

A. Blockade of peripheral nervous ends

B. Blockade of nerve trunk

C. Blockade of the conducting ways of the brain

D. Blockade of cerebral cortex

39. Preparations for the total intravenous anesthesia:

A. Metoksiflyuoran

B. Diprivan

C. Thiopental of sodium

D. Fluothane

40. Contra-evidence to the operation of the removal of the tooth:

A. Lability of psyche sick

B. Myocardial infarction

C. Second term of pregnancy

D. First term of the pregnancy

41. Periostitis it's the:

A. Inflammation of the circular bond of tooth

B. Inflammation of bone tissue and bone marrow

C. Inflammation of periosteum

D. Inflammation of gum with the retention of tooth

42. The surgical treatment of periostitis is implied:

A. Section from two sides of alveolar branch in the limits of mucous membrane

B. Plural sections in the limits of inflammatory infiltration to the bone

C. Section on the transitional fold to the bone

D. Extraction of bone sequestrations

43. Depending on the source of infection osteomyelitis is distinguished:

A. Traumatic

B. Contact

C. Odontogenous

D. Hematogenic

44. The treatment of acute odontogenous osteomyelitis is implied:

A. Treatment of the root channels of causal tooth

B. Removal of causal tooth

C. Dry of heat- to the region inflammation

D. Early wide section of periosteum

45. The most frequent complication of perikoronitis:

A. Destruction of the crown of tooth

B. Subperiosteal abscess of lower jaw

C. Trismus of masticatory muscles

D. Anemia

46. The treatment of purulent odontogenous lymphadenitis is included:

A. Warming bandages

B. Dissection of abscess and its drainage

C. Physiotherapy

D. Removal or the treatment of causal tooth

47. Characteristic features of sharp sialoadenitis:

A. Hypo- or hypersalivation

B. Atrophy of salivary gland

C. Increase in the lymph nodes

D. Appearances in the saliva of flakes of mucus or pus

48. The acute odontogenic maxillary sinusitis characterized by:

A. Increase in the temperature of body to 39

B. Irradiation of pain into the teeth of lower jaw

C. Sharp pain in the region of the struck cavity

D. Irradiation of pain into the teeth of upper jaw, frontal, temporal region

49. Complications of the furuncle of face:

A. Sepsis

B. Thrombosis of the veins of brain

C. Phlegmon

D. Lymphadenitis

50. Abscess - this:

A. Purulent inflammatory disease of bone tissue

B. Limited center of purulent inflammation with the melting of the section of cloth

C. Sharp purulent spilled inflammation of cellulose tissue

51. The clinical periostitis' feature is:

A. Mobility and the disintegration of teeth

B. Roller-shaped buckling in the region of transitional folds

C. Infiltration in the form of clutch in the region of alveolar branch

D. Necrosis of gingival papillae

52. Osteomyelitis - this:

A. Inflammation of the circular bond of tooth

B. Inflammation of bone tissue and bone marrow

C. Inflammation of periosteum

D. Inflammation of ginigival cloths with the incomplete eruption of teeth

53. It is characteristic for the clinical picture of acute odontogenous osteomyelitis:

A. Sharp pain and the mobility of causal tooth

B. Decrease in arterial pressure

C. Signs of general intoxication

D. Loss of consciousness

54. It perikoronitis - this:

A. Inflammation of periosteum

B. Inflammation of gingival cloths with the incomplete eruption of teeth

C. Inflammation of the circular bond of tooth

D. Inflammation of bone tissue and bone marrow

55. The treatment of perikoronaritis is implied:

A. Carving gingival hood

B. Treatment of the root channels of tooth

C. To periosteotomy

D. Designation of the analgesics

56. In the etiology of acute sialoadenitis they play the role:

A. Drift of the infection through the mouths of excretory ducts

B. Hematogenic way of the penetration of infection

C. Damages of the salivary gland as a result of injury

D. Tumors of salivary gland

57. Factors of the risk of the appearance of odontogenous maxillary sinusitus:

A. Diabetes mellitus

B. Chronic rhinitis

C. Close arrangement of tooth roots to the bottom of maxillary sinus

D. Reduction in the shielding forces of organism

58. Predisposing factors appearances of the furuncle of face:

A. Diabetes mellitus

B. Pollution of the skin

C. Acute respiratory diseases

59. The preventive maintenance of furunculosis includes:

A. Extrusion of blackheads

B. Personal hygiene

C. Warning the micro-injuries of the skin

D. Cauterization of damages on the skin of face

60. Phlegmon - this:

A. Purulent inflammatory disease of bone tissue

B. Limited center of purulent inflammation with the melting of the section of cloth

C. Sharp spilled purulent inflammation of cellulose tissue

61.The anatomical structure of tooth is included:

A. Root

B. Cement

C. Crown

D. Dentine

62.The blood supply of teeth is achieved:

A. By lower alveolar artery

B. By branches of internal carotid artery

C. By upper maxillary artery

D. By facial artery

63. They carry to the basic methods of inspection in stomatology:

A. Roentgenography

B. Inspection

C. Percussion

D. Thermo-diagnostics

64. They determine with the aid of the percussion:

A. State of the tissues of periodontist

B. Mobility of teeth

C. Depth of carious cavity

D. Presence of fluctuation

65. General factors, which lead to the development of the caries:

A. Damage of the composition of saliva

B. Nature of nourishment

C. Content of fluorine in the water

D. Carbohydrate food remainders

66. Special features of clinical picture with the caries:

A. Complaints of the presence of cavity

B. Short-term fast-passing pain from the cold food

C. Spontaneous paroxysmal pain

D. Percussion is sensitive

67. The reasons for the appearance of pulpitis include:

A. Acute respiratory diseases

B. Inflammatory diseases of salivary glands

C. Penetration into the pulp of bacteria from the deep carious cavity

D. Irrational regime of cooling tool during treatment

68. Chronic pulpitis are divide by:

A. Partial

B. Hypertrophic

C. General

D. Gangrenous

69. The conservative method of treating pulpitis is implied:

A. Sealing root channel

B. Partial removal of pulp

C. Liquidation of the center of inflammation by drug action

D. Extirpation of the pulp

70. Special features of the clinical picture of acute periodontites:

A. Prolonged painful assault from the action of temperature stimuli

B. Intensive constant pulsatory pain

C. Low-sensitivity percussion

D. Percussion is sharply unhealthy

71. Surgical methods of treating periodontitis:

A. Resection of the top of root

B. Removal of tooth

C. Extirpation of pulp

D. Trepanation of the cavity of tooth

72. The treatment of gingivitis is included:

A. Removal of dental deposits

B. Flap operation

C. Curettage of periodontitis pockets

D. Elimination of the chronic injury of the periodontium

73. Defeats of solid cloths, which appear after the eruption of the tooth:

A. Imperfect dentinogenesis

B. Wedge-shaped defect

C. Pathologic erasure

D. Hypoplasia of the enamel

74. Histologically tooth consists of:

A. Periodontist

B. Dentine

C. Enamels

D. Pulps

75. The innervation of teeth is accomplished:

A. N. vagus

B. N. maxillaris

C. N. facialis

D. N. mandibularis

76. They carry to the auxiliary methods of inspection in stomatology:

A. Percussion

B. Cytological studies

C. Biopsy

D. Interrogation

77. On the localization of stricken area caries they divide into:

A. Caries on the occlusion surface

B. Caries of cement

C. Caries in the region of neck

D. Caries in the stage of spot

78. Local factors, which lead to the development of the caries:

A. Damage of the composition of saliva

B. Microflora of the cavity of mouth

C. Action on the organism of the ionizing emission

D. Diseases of gastrointestinal tract

79. The local (etiotropic) treatment of caries is included:

A. Increase in the resistance of the solid cloths of tooth

B. Removal of the nonviable cloths of tooth

C. Restoration of anatomical form, color and function of tooth

D. Change in the composition of the oral liquid

80. Acute pulpitis are divide by:

A. General

B. Gangrenous

C. Purulent

D. Simple

81. Basic clinical signs of acute pulpitis:

A. Short-term pain with the intake of cold food

B. Strengthening pain in the night time of twenty-four hours

C. Spontaneous paroxysmal pain

D. Percussion is sharply unhealthy

82. Periodontitis distinguished by the etiology:

A. Hematogenic

B. Traumatic

C. Infectious

D. Odontogenous

83. First aid with acute periodontitis:

A. Dissection of the cavity of tooth with the aid of the sterile sharp tool

B. Designation of the detoxification therapy

C. Frequent garglings by warm soda- salt solution

D. Warming compress to the region of the causal tooth

84. It gingivitis - this:

A. Local infectious process of the solid cloths of tooth

B. The Inflammatory- dystrophic disease of the tissues of periodontium

C. Inflammation of gums without the disturbance of tooth -[desnevogo] fastening

D. Progressive loss of bone tissue

85. Local reasons for the development of periodontitis:

A. Hyper-tone of masticatory musculature

B. Microbial agent - dental platelet

C. Immunodeficiencies

D. Diabetes mellitus

Standards of answers

1. – A
2. – D
3. – B
4. – A
5. – A
6. – D
7. – C
8. – A
9. – C
10. – C
11. – D
12. – D
13. – A
14. – B
15. – C
16. – A
17. – C
18. – D
19. – D
20. – B
21. – A
22. – A
23. – A
24. – C
25. – D
26. – D
27. – C
28. – B
29. – D
30. – D
31. – A
33. – D
35. – C
36. – C
37. – B
38. – A
39. – A
40. – A
41. – C
42. – D
43. – B
44. – B
45. – A
46. – C
47. – C
48. – B
49. – C
50. – C
51. – A
52. – A
53. – C
54. – B
55. – D
56. – D
57. – A
58. – C
59. – C
60. – C
61. – D
62. – B
63. – C
64. – C
65. – A
66. – B
67. – B
68. – C
69. – A
70. – B
71. – B
72. – A
73. – D
74. – A
75. – B
76. – B
77. – D
78. – A
79. – B
80. – B
81. – D
82. – B
83. – C
84. – C
85. – A

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