

GENERAL DENTISTRY: ESP FOR DENTAL STUDENTS AND PROFESSIONALS

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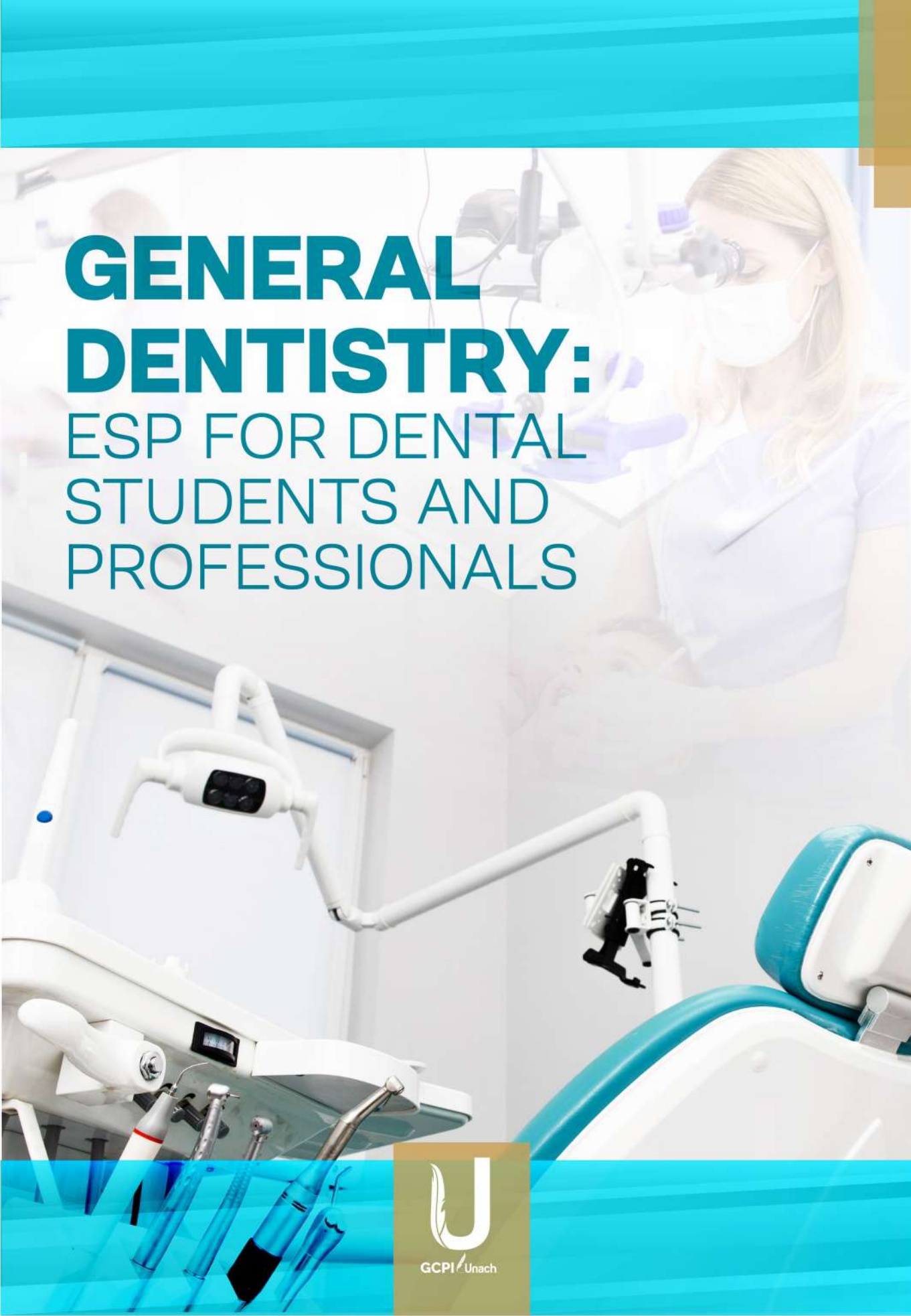
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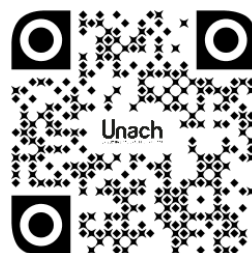
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INTRODUCTION

Nowadays, professionals of different areas must face the current challenges of a globalized world, thus, communicating in the English language has become as important as their major related abilities. English for Specific Purposes (ESP) is an approach to the education of English orientated for specific scientific, medical, technological, economic and academic areas. The ESP aims to satisfy both inside and outside the classroom needs of students who, beyond the learning of the language indeed, require talking about specific topics in certain professional fields. (Hall, 2014)

Most of meaningful academic information about Dentistry issues is published in the English language such as: journals, books, scientific websites, and others. It is really important for general and specialized dentist to handle this information in this foreign language in order to reinforce their knowledge and learn about the new tendencies in the dental area. So, mastering the writing, listening, reading, and speaking skills will let them develop all their abilities to participate in academic events, publish papers and books in the English language.

This book is a new educational didactic resource for dental students and professionals who want to improve their English communication skills in a work environment. It includes career-specific vocabulary and contexts. Each chapter provides opportunities for learners to understand some basic aspects about ESP and also talk about common oral pathologies in the English practicing the four language skills in an interactive form. The central goal is to help students in the complex business of learning English for specific purposes.

The book “General Dentistry: English for Specific Purposes for Dental Students” comes from the research called “Dentistry and the teaching of English for Specific Purposes”, the whole professor staff and students of the dentistry school of the National University of Chimborazo-Ecuador were interviewed in order to determine their weaknesses and know their priorities and needs for developing this didactic resource. This book is divided into four chapters. The first one gives theoretical positions about English for Specific Purposes. The second chapter shows the research process that was carried out in order to establish the perspective about the professional’s English level and importance of ESP. The third chapter contains 17 lessons which include different tasks that considers topics like: Education in Prevention of Oral Health, Common Oral Diseases, Internal Dental Anatomy, Pulpal and Periapical Diagnosis, Anatomy of the Periodontium, Effects of Tobacco Smoking on Chronic Periodontitis, Dental Radiographic Techniques and Normal Anatomy Landmarks, Radiographic Diagnosis of Dental and Maxillofacial Pathologies, Pulpotomy, Pulpotomy, Oral Cancer, Cleft Lip and Palate, Exodontia, Oral Surgery Complications, Dental Prosthesis, Removable Partial Denture Designing: Major and Minor Connectors, Malocclusion. Finally, the fourth chapter contains the answers for the English professor who use the activities in the unit 3.

All the videos and audios are available for free downloading on:
<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

(The links are also available at the end of the audio scripts section of this book)

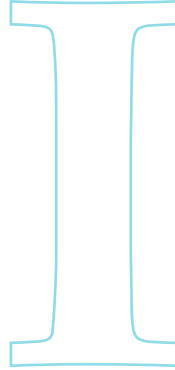
PROLOGUE

This anthology has the scope and limits of having been developed from the love I feel for dentistry and the English language. I do it with all the respect I feel for this career and with the greatest interest in providing all the current knowledge of topics of first importance, in a pleasant and practical way for the dentistry student. I would like us to go through these pages together. This literary anthology is not only directed to students, but also to teachers, or anyone interested in acquiring basic knowledge of dentistry in English.

Dr. Raciél Sánchez S.
University Professor/ Dental Specialist

CHAPTER:

ENGLISH FOR SPECIFIC PURPOSES



English for Specific Purposes (ESP) is the type of English that you need to study as a student and as a professional. Contrary to general English which helps you move on the social sphere; it helps you survive in the whole world of academic and occupational fields. In fact, ESP arose with the aim to help students whose first language was not English to write their assignments in settings where English was the medium of instruction (Salmani-nodoushan, 2020). It also began because the traditional courses did not meet the expectations and needs of employers. The field-specific language managed in both spheres pushed English learners to master relevant communication and professional skills needed in the globalized world where English is known as the lingua franca of business, science, technology, and education.

This type of communication is an indispensable skill in every field. Every professional should be able to transmit the knowledge acquired during the years of study. Knowledge in itself does not do much if it is not put into practice and taught to others. It also has to be mastered in a way that it contributes to personal and professional growth, so that this communication process has to be fluent and accurate enough to do both; encode the message to convey the intended meaning and decode the received utterances; both processes with the intention to meet the audience's needs. This needs satisfaction is what Hutchinson and Waters cited by Backaj (2014) specifies as "an advantage on both sides of the communication where learners know specifically why they are learning a language"

Finding satisfaction on being able to use the language can be called purposefully learning i.e. learners find the reason why they have been learning something, English in this case. For years, professors have tried to answer the student's question "Why to study English" which clearly shows that students have not found the reason for

that subject on their curriculum. According to Cathy Larson in her educational blog, giving a reason is providing students with experiences that connect theory with practice or what David Conley mentions “connecting learning to the real world so that students can take ownership of their learning” (Larson, 2016). ESP creates this bond and boosts passion and purpose in learning English.

This purpose-related orientation is part of the main characteristics of ESP, which in an apprenticeship setting includes simulated activities of tasks that later on will become real. Therefore, it must include specific corpora and expressions that allow participants feed their interlanguage with a wide repertoire of words to describe, tools, processes and procedures, that with time and practice, will be used automatically. Not only does corpora, in its form, play an important role in the specificity of target language use, but also its semantics and pragmatics which have been evidenced to contribute to the sense of property students need to develop during the tasks. Only when form and usage link together, students can pass from passive learners to active users at any time and level of learning and proficiency (Salmani-Nodoushan, 2020).

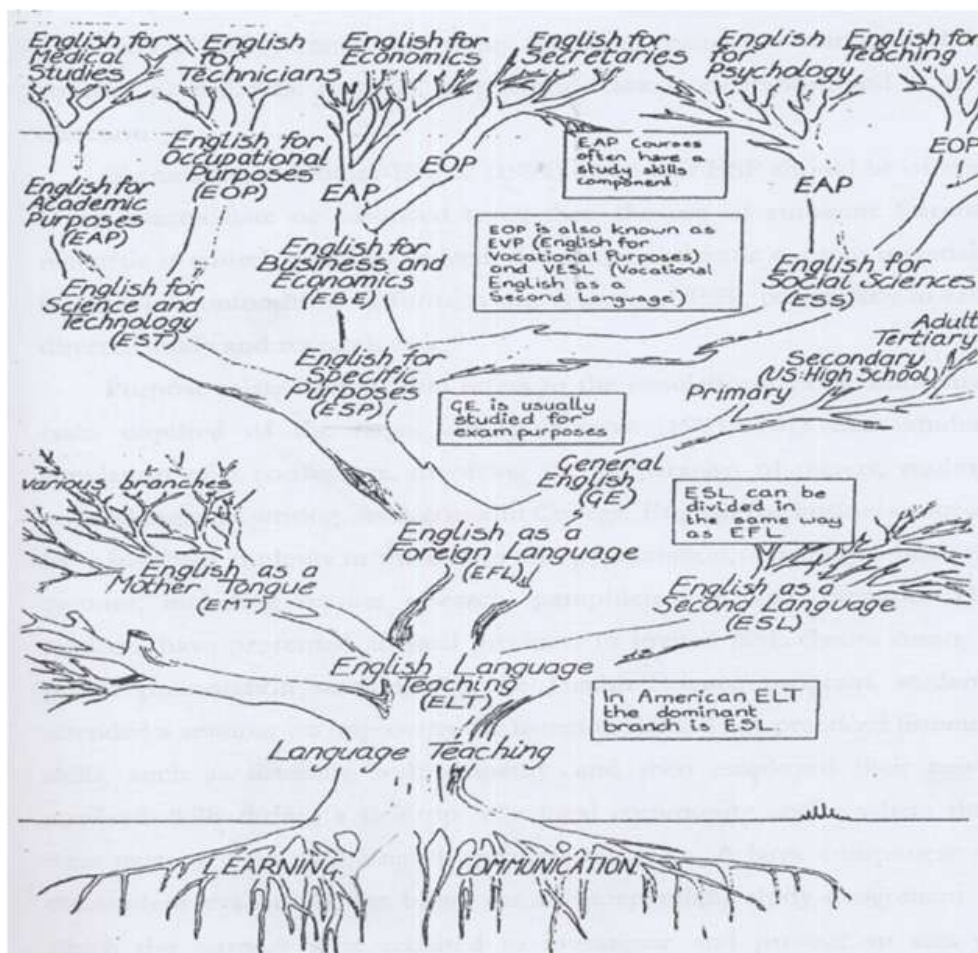
In a way, proficiency in any language and context is achieved when participants demonstrate lexical competence in both aspects Linguistics and Communication. Obviously, in the case of ESP, this lexical component implies knowledge of specialized and field-related words that deals with the first aspect, linguistics. That means that a person should have the competency to use the word at semantical, morphological, phonological and syntactical level. Furthermore, as Marconi mentions there is a duality that is needed to be brought into when speaking about lexical competence, a duality that refers to inferential and referential meaning (connotation and denotation) referring that in ESP one may have an encyclopedic knowledge which can be totally distinct to lexical knowledge. i.e.

different from how we really perceive and conceptualize words which is what allow us to express ourselves confidently.

In other way, the other aspect of linguistic competence is communication where the knowledge either inferential or referential matches the social knowledge about how and when to use utterances appropriately. Then the term sociolinguistic ability arises as the skill to produce socio-linguistically appropriate utterances which involves the discourse ability to produce coherent and cohesive utterances, and strategic ability to solve communication problems as they arise. In ESP, which is, in fact, socially situated this ability is even more challenging, hence, users must learn how to move in that specific and reduced sphere. When both, Communication and Linguistic competences work simultaneously perfectly the lexical proficiency is achieved.

English for specific purposes is an umbrella term that includes two branches; English for academic purposes (EAP) which is taught in higher education and centered in developing competencies of English Language with core subjects' content. This will help participants apply for scholarships, participate in international events and other educational activities. On the other hand, is English for Occupational Purposes (EOP) which is directed to professionals who are already working and developing their careers. This is focused on language skills for job performance, so that they can move confidently in job-related business. This term includes different areas because of the specificity of every career field. A better explanation is showed below.

Graph 1: language skills for job performance



Source: Hutchinson (2010)

1.1. ENGLISH FOR ACADEMIC PURPOSES

English for Academic Purposes (EAP) is a branch of English for Specific Purposes (ESP) and it is referred to the English that is taught at university level. It was born due to the necessity of many overseas students that went to study in an English-speaking country, primarily in Europe, then in the United States and thirdly in countries where English was taught as a medium of instruction (Peacock & Flowerdew, 2001). Jordan (2012) shows a specific

division of EAP; English for Academic Purposes and English for General Academic Purposes. The first one is directed to study the subject matter such as Medicine, Dentistry, Economics and Engineering, but the former one, instead, is directed to teach study skills, such as listening and note-taking, academic writing, formal style and English proficiency.

Teaching or learning a specific subject in English is what it is also called English as a medium of instruction and it is part of EAP. It is not new for many of us that when studying in an English-speaking country or taking a course in English to continue with formal instruction, it is necessary to push oneself to learn and use new corpora that sometimes it is not even known in L1. For example, edema or keratometer in medicine, or, disruption, deep dive and bleeding edge, in business. Then, students are learning not only the content but also English language at the same time; turning this course in an English-embedded Content Course where the academic and social environment backs up language learning. On contrary, when courses of English are taught in a foreign country with a subject matter content, the course becomes a Content-embedded English Course and this is especially challenging for those whose external setting does not contribute to an effective practice of English on daily basis.

Nevertheless, Content-embedded English Courses which belong to **General** Academic Purposes have advantages for language learners, since as mentioned before, it is directed to teach English Language skills such as skimming, scanning and comprehension in reading or word and sentence stress, intonation, rhythm and the use of the individual sounds of a language in speaking. The content with which these courses are tailored include specific lexis applied in real setting simulations which tend to sparkle the interest of participants, enhancing engagement and motivation for learning.

These types of courses are conducted in order to prepare trainees on soft and hard skills which in turn contribute to the skills of the millennium which are expected to be developed by every college student to achieve success in international test performance and other real academic sceneries.

1.2. ENGLISH FOR OCCUPATIONAL PURPOSES

When professionals in any area have noticed that General English is not covering their specific communicational requirements, it is necessary to evaluate those learners' needs, consider their wants and address their lacks in order to provide them with the type of English that is job-related and help them develop their language skills for their occupational purposes. This type of English is the so-called English for Occupational Purposes which is a branch of ESP (English for Specific Purposes) in which learners study English for work-related grounds.

There is a wide range of work-related settings, such as Business English, English for Economics, English for sports, English for Police Force, English for Hospital Staff, English for Law, and many other types and the demand is continuously growing (Sudipa, 2020) When this type of English is taught, it is important to consider the language that is needed in order to interact with colleagues, partners and clients. It is also essential to consider the development of skills such as self-directed learning, team-work, research, communication, reasoning and creativity that support students' knowledge related to their field of expertise and as result they would achieve their career goals.

When designing this type of courses there are some particularities that need to be met; some of them are requirements for students, teachers, and materials. Research has shown that in order to start

with these courses, the participants must account for an A2 to B2 CEFR English proficiency and have a deep knowledge of the field where they are working. On the other hand, instructors must master both; English Language and the specific field of specialization. Regarding the materials, it is necessary to start by conducting a needs analysis research where all stakeholders contribute with their needs and lacks to the course design, that is, syllabus, materials, activities and assessment (Sudipa, 2020). The specificity that ESP deals with is precisely related to the specific area of work that is being taught; so that, the pedagogical tools are centered on teaching language appropriateness in terms of grammar, lexis, register, study skills, discourse and genre (Laurence, n.d.). When all these components work together, new English speakers join with confidence to the growing community of learning and science.

1.2.1. ENGLISH FOR DENTISTRY

With the current development of science and technology, ESP courses on specific fields have increased their demand. Dentistry is not the exception. The access to new procedures and materials which are primarily in English is needed by dentistry students and professionals. Furthermore, with the opening of new training schools in different branches and trends, ESP courses are mandatory due to the desire of many professionals who want to take part of this ever-changing world. Then, ESP on dentistry is not only to teach language or passive theories and principles but to cover “learners’ needs, wants, lacks, materials, teaching strategies and educational policies” (Shaalán, 2020). Therefore, it is indispensable to use strategies to develop learners’ core life skills such as creativity, critical thinking, problem solving that will help participants develop the competencies necessary to face challenges at their workplace with all their complications, particularities, and expectations (UNICEF, 2017).

1.2.1.1. DENTISTRY OR ODONTOLOGY?

For any English Professor or people in general, the definition of both terms may be unknown, somehow confusing or used interchangeable. Students who opt for a dentistry or odontology major may differ them with time and study. On one hand, Dentistry, is practiced by doctors who have studied general dentistry and are trained to provide diagnosis and treatment of your gums, tongue, jaws, mouth, teeth, and their supporting tissues. On the other hand, Odontology is the study of teeth; their development and diseases and analyzes their structure. For this reason, odontology can be related to forensic practices, since it can help recognize special characteristics on individuals (The American Academy of Forensic Sciences, 2021). Both terms are related to the oral cavity however, the tasks are different and can be listed as follows:

Dentists are in charge of:

- Dental extractions
- Cracked teeth restoration
- Install crowns or veneers
- Cavity filling
- Teeth whitening
- Gum disease treatment, gingivitis
- Conduct and interpret dental X-rays
- Promote oral health and oral hygiene
- Fill and bond teeth
- Prescribe treatment, drugs, for oral health conditions
- Oversee the development of children's teeth
- Perform oral surgery

1.2.1.2. IMPORTANT TERMS IN DENTISTRY

- THE PROFESSIONALS AND STAFF

A good and professional work team is significant in every enterprise. Professionals contribute not only with knowledge, talent and innovative ideas but also with hard work, and commitment to service which creates bonds with patients resulting in a sense of responsibility to oral care and improvement of conditions. According to their specialization professionals serve as:

Dental hygienist

In the dental team they will be in charge of preventing dental problems in adults and children by assessing oral health of patients, assisting the dentist, taking and developing dental radiographs. They work in a variety of settings, private and public health settings, long-term care facilities, educational institutions and research. They are trained not only to offer some dental procedures such as preparing preliminary tests, cleaning stains, plaque, and tartar from teeth but also to handle some machines and tools.

Dental nurse

Dental nurses support the dentist in all aspects of patients' dental care and assist the members of the dental team such as technicians/technologists, hygienists and therapists. They can also help at the reception, keep patient's records and do other responsibilities needed in the office.

Dental technician/dental technologist

Dental technicians (or dental technologists) use a variety of materials to construct, fit, and repair custom-made restorative and dental appliances such as the dentures, veneers, inlays, crowns, bridges and dental braces with materials such as gold, porcelain and plastic which are worked on with creativity and focused on

details to meet the patient's need. Dental Technicians are not allowed to examine, diagnose, advise, or treat patients.

Dental therapist

Dental therapists were first trained in England due to the shortage of dental care providers (Hartley Dental, 2017). They had a similar profile to dental hygienist. They usually provide treatment at community level, such as schools and care homes. They provide preventive and restorative care, including filling cavities, placing temporary crowns, and extracting badly diseased or loose teeth.

Dentist

Dentists are the leaders of the dental team because they have the most dental education. Their responsibilities include to prevent, diagnose and treat dental/oral disease, correct dental irregularities and treat dental/facial injuries. Some of their characteristics are manual dexterity since they carry out complex surgical and dental procedures and they also need high knowledge of human anatomy and oral cavity to be able to apply them in every procedure they practice.

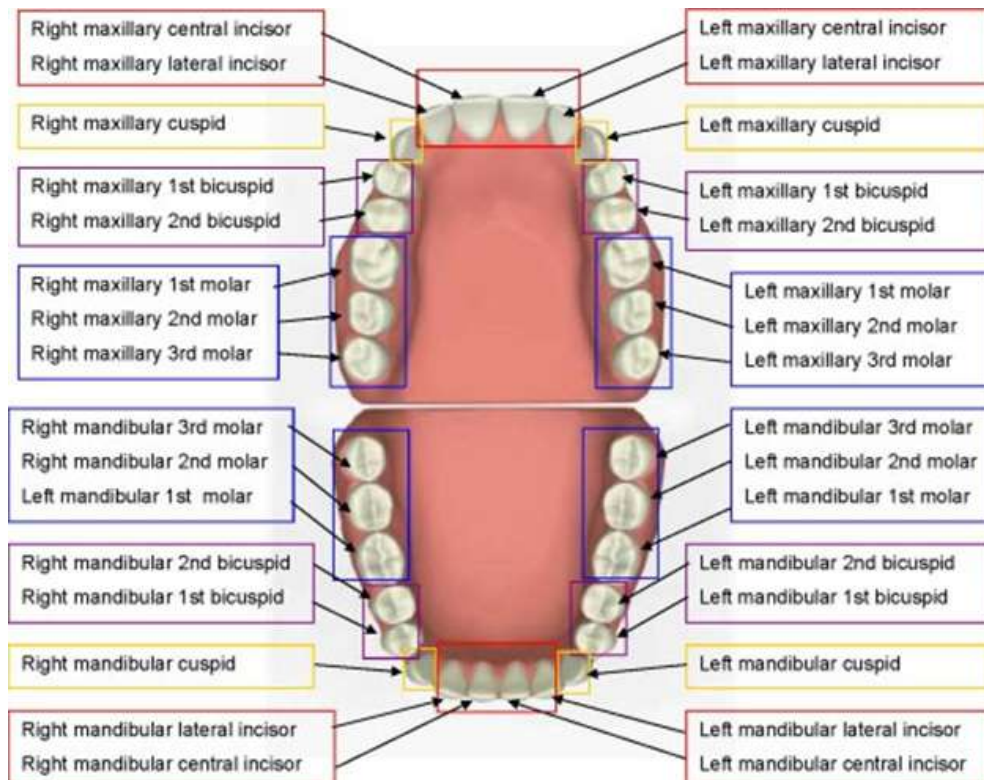
• TEETH

Every human has teeth as part of the mouth; they are the hardest material in the body and helps them eat, speak and smile. It gives shape to the face and contributes greatly to one's speech. Kids have a total of 20 milk teeth by the age of three and they start losing them, generally, at the age of five. When they become adults, they will have a total of 32 teeth. There are four types of teeth but each one is unique and has its own shape and function.

These four types of teeth in a normal adult oral cavity include 8 incisors which are located in the middlemost; 4 in the top and 4 in the bottom jaws and their function is to bite into the food. The second ones are the 4 canines, usually sharp and pointy, which are located 1 outside each incisor on the top and bottom jaw and their function is to tear the food. Next, we have the 8 premolars; first and second ones, also known as bicuspid teeth. They are between the canine and molar teeth and are usually bigger, wider and have a flat biting surface. Their function is to crush and grind the food. Finally, come the 12 molars; 6 upper and 6 lower ones (wisdom teeth included) positioned back in the oral cavity. They are flat, strong and work together with the tongue to mash the food and swallow it (Foster, n.d.).

Teeth composition includes some coatings such as enamel, dentin, pulp, and cementum. Enamel is the hard and white covering on the outside of the tooth. Dentin is a softer tissue and is in charge to defend the tooth pulp. When this is damaged it can cause sensitivity due to the heat or cold that penetrates through it. Then, the pulp, which contains blood vessels and nerves. The former ones send alerts to the brain showing possible injuries and infections. Finally, it is the cementum which is a tissue similar to bones and covers the surface of the tooth root. It attaches the root to the gum and the jawbone by the periodontal ligament.

Graph 2: oral cavity with each teeth name and position



(AreTeethBones, 2015)

• THE WORKPLACE

Dentists and their team usually work in a dental office or dental hospital. The environments around this place are similar to typical clinic grounds; they are always clean and sterile. Different patients visit these offices every day but the health personnel remain the same. Some of the facilities seen in this workplace are:

- Dental office
- Laboratories
- Medical office
- Reception.
- Records office

- Rest room of the staff.
- Surgical offices
- Waiting room
- Warehouse

• **FURNITURE AND EQUIPMENT**

Furniture and equipment found in every dental office must be designed in order to provide comfort for the dental team and for the patients who require treatment. Basic necessary furniture for dental clinic includes:

- Cabinets and desks for medical personnel.
- Cabinets and shelves for documents.
- Cajonero cars and surgical carts.
- Chairs and trolleys with wheels.
- Dental chairs.
- Dental unit with a separate or mounted lamp.
- Hydraulic or electric patient dental chair.
- Pharmacy and laboratory cabinets.
- Sofas, tables, stools for the waiting room.
- Standing tables for medical equipment.
- Table for tools.
- Tools and changing tables with drawers for the laboratory.

• **TOOLS**

The most common tools used in a dental office will depend on the procedure that is being performed. Technology is playing a very important role in the development of modern solutions to traditional problems to be treated in a more efficient, effective, and comfortable manner.

- Air-abrasion system

- Alginate spatula
- Alloy power
- Amalgam gun (carrier)
- Bonding agents
- Burnisher
- CAD/CAM
- Caries Detection Solution
- CAT Scans
- Cement spatula
- Computer Imagery
- Condenser
- Cutting aid
- Dental drill
- Dental Floss
- Dental mirror
- Desensitizers
- Diagnodent
- Digital X-rays
- Dycal (calcium hydroxide composition)
- Etch
- Excavator (spoon shaped)
- Matix band
- Mercury dispenser
- Micro brush
- Microscope
- Mortar and pistile
- Mouthwash
- Mylar strips
- NTI Splint
- Packable composite
- Periometer
- Plaque and tartar remover
- Polishers

- Polishing disc
- Saliva Ejectors
- Scalers
- Sickle probe or explorer
- The wand
- Toflemire matrix band retainer
- Tweezer
- Ultrasonic Dental Scaler
- Varnish
- VELscope
- Wax carver
- Wax knife
- Wooden wedge

- **BRANCHES OF DENTISTRY**

The 12 dental specialties recognized by the National Commission on Recognition of Dental Specialties and Certifying Boards are:

- Dental Anesthesiology
- Dental Public Health
- Endodontics
- Oral and Maxillofacial Pathology
- Oral Medicine
- Orofacial Pain
- Oral and Maxillofacial Radiology
- Oral and Maxillofacial Surgery
- Orthodontics and Dentofacial Orthopedics
- Pediatric Dentistry
- Periodontics and Prosthodontics

- **DENTAL PROBLEMS AND DISEASE**

The World Health Organization (WHO) (2020) states that oral diseases have become a major problem for the countries and individuals who suffer from the consequences throughout their

lifetime. Two of the most common problems are dental caries which affects children since early childhood, and gum disease resulting in tooth loss. The problems are aggravated since dental care is not part of the universal health coverage and the prevalence of population's unhealthy habits. However, most oral health conditions are largely preventable and can be treated in their early stages.

- Bad breath
- Cavities (tooth decay)
- Chipped tooth
- Cleft lip palate (congenital anomalies)
- Clenching or Grinding Your Teeth
- Cosmetic needs
- Cracked Tooth
- Gum disease (periodontal)
- Impacted Teeth
- Malocclusion
- Mouth sores
- Oral Cancer
- Periapical abscess
- Plaque
- Stained teeth
- Tartar
- Too Many Teeth: Hypertonia
- Tooth erosion
- Tooth sensitivity
- Toothache
- Wisdom Teeth Problems
- Worn-down or loose teeth
- Xerostomia (dry mouth)

- **PROCEDURES**

- Diagnosis and prevention

- Comprehensive Oral Exams and Check-Up Exams
- Dental Cleanings
- Oral Cancer Screening
- Digital X-Rays
- Intraoral Photos
- Fluoride Varnish
- Sealant

Cosmetic Dentistry

- Anterior Porcelain Crowns
- Bonding / Shaping / Contouring
- Composite Fillings (Tooth Colored, Mercury Free)
- In-Office Whitening, Take Home Whitening Trays, Whitening Strips
- Invisalign
- Scaling and Root Planning (Deep Cleaning)
- Veneers
- Invisalign
- Veneers

Restorative Dentistry

- Antibiotic Therapy – Arrestin
- Bridges
- Dental Crowns
- Dental Implants
- Dentures
- Fillings
- Perio Maintenance
- Replacing Amalgam (Silver)
- Restorations
- Root Canal Treatments
- Zirconia and Emax

Emergency Dentistry

- Abcessed Teeth
- Chipped / Cracked / Broken Teeth
- Emergency Pulpotomies
- Extractions: simple and complex
- Loose Teeth
- Ridge Preservation with Bone Grafts
- Tooth Infections
- Tooth Pain
- Wisdom Teeth Extractions

Other Services

- Full and Partial Dentures
- Invisalign
- Kids Dentistry
- Mouth Guards for Sports Space Maintainers
- Night Guards and NTI Appliances
- Root Canals
- Sedation

1.2.1.3. EFL PROFESSORS' BACKGROUND ON DENTISTRY FIELDS

Back in the years 2000 and 2001, I was invited by “Operation of Hope” to translate to doctors who voluntarily came to Riobamba Public Hospital. They were a group of 20 physicians, dentists, nurses and other staff who provided “free, life-changing surgery & health care for children in desperate need and create a self-sustaining program of hope through education, so that every child has the hope of a normal life” (Operation of Hope, 2021, p. 54). They primarily assisted cleft lip and cleft palate patients who were at least 10 months old and up and in good health. The chief doctor was Dr. Joseph Clawson who, every year, led the group to a successful mission.

I was an English major then, and volunteering as an interpreter of such a prestigious group was an unforgettable experience. During the week of stay at the hospital facilities, I saw many children and families coming full of hope to be accepted for surgery (there were only a few who did not qualify). This situation made me think how difficult must be to have a condition that does not allow you to eat, drink or speak normally. I was really shocked to see the conditions in which children were brought and how parents were desperately looking for a solution. After screening, children were ready for surgery and after some days, it was amazing to see them change their physical conditions; some of them, even, able to give a smile. I am sure that, with time, they changed their life and were able to live productively.

I also saw some other kids and families returning from past years for the second or even third surgery depending on the seriousness of the affection children presented at the beginning. Parents were trained about to take care and support their children in each situation, and they were happy to learn it.

In addition, that was the first year to implement dental service for those whose lip and palate were already reconstructed. They carried out preventive and curative procedures in the oral cavity and they even placed braces in particular patients. Braces were not so popular at that time, therefore implementing this service in a public hospital was innovative and complemented so broadly the treatment given.

Living this experience was really challenging because being an English major teaches you lexis related to everyday situations which were used in this setting to communicate in a friendly way, however specific corpus regarding dentistry was used most of the time and that made communication especially difficult.

Nevertheless, the environment played a very important role in learning such terms and the frequency in which words were used contributed greatly to my learning. This experience taught me about screening a patient, preparing instruments and environments for surgery and also terms and expressions related to oral health care, instruments and procedures. Knowing English and apply it to specific purposes like this, opened me a door that wouldn't have been opened otherwise.

Spending a week in a hospital environment and interpreting the professionals in dentistry, social work, nursing, surgery and other specialist was a challenging but also rewarding experience. Seeing people giving their time, efforts and money to benefit less privileged kids made me realize that speaking English can destroy barriers and create strong bonds, it can add a plus to your profession and it can create sense of purpose, understanding and belonging.

CHAPTER:

II

PROFICIENCY IN ENGLISH FOR SPECIFIC PURPOSES LINKED TO DENTISTRY-RELATED TRAINING

This section provides an overview about the study that support the structure of the next chapters. This study aimed to determine the drawbacks, strengths and needs of dentistry professionals regarding the four skills of English for specific purposes. This research was descriptive and field with a mixt approach. A survey was applied to 26 dentistry specialists of the dentistry college of the National University of Chimborazo, Ecuador. The respondents showed to have deficiency in the four skills of English Language. Only 25% of the participants showed an acceptable level of general English. In the same way, the population media which was higher than 70% showed that managing the four skills is important in order to up-date knowledge and it was accepted using a T-test for one sample ($p=0,00$). After the study, the professionals concluded that English is very important for professional development in the dentistry field. The four skills were reinforced, especially Reading.

2.1. INTRODUCTION

English for Specific Purposes has been implemented in different higher education institutions, especially for medical training (Sequeira, 2016), hence, English learning has been considered essential in the dentistry field. It is necessary that every professional develop the four English Language skills (listening, reading, writing and speaking) as well as to update their knowledge by reading books, magazines, scientific journals and attending or presenting lectures; competencies that professionals have found difficult to develop (Javid, 2011).

According to the EF English Proficiency Index (EPI) world ranking, Ecuador is rated 65 among 88 countries and 13 from 17 countries in Latin America with a low proficiency level. Besides, it was demonstrated that Latin America is the only region that has showed a decrease of English Language proficiency during 2018 (Education First, 2018).

The University of Veracruz, Mexico carried out a study with 75 students to analyze the social and educational situation and the results showed that 52.30% consider themselves little skillful to read academic texts or information online in English; 77.6% considered to be 25% or less able to read in English. When taking a placement test 77% was placed in the level 1 of English out of five and the 80% of the same population failed the reading section. When they were asked if professors ask them to read in English, the 95% answered they do not do it (Herrera & Vallejo, 2013).

In Ecuador, the Universidad Regional Autonoma de los Andes carried out a quantitative study with one hundred medicine students to know the four skills of English Language proficiency and found out that the skill with better score was Speaking with

a highest score of 25 points, then writing with 22 points, however Listening and Reading showed a very poor level with only 16, 34 and 4, 65 points respectively. Additionally, English for Specific Purposes proficiency was evaluated and it was found that 49% obtained between 0 and 20 points, 21% obtained from 21 to 40 points, which demonstrated that most of the participants have a low and very low English proficiency level. (Montes De Oca & Morete, 2017)

Other high-impact study conducted in Vilnia de Lituania University aimed to know 276 students' perceptions about the need to implement a Bio-medical related English course at the end of their college senior year; 42% affirmed to be aware of the need of this course, 37% was doubting and 26% answer negatively. The 68% answered that they need a field-related course. When they were asked about their reading preferences, 46% answered that they read academic texts and 55% other types of literature; this was due to the fact that English was their first language. However, the study determined that 68% of the respondents lacked reading comprehension skills (Rozgienė & Trečiokaitė, 2019).

In Japan, a study determined that medicine and dentistry class sessions are held only in Japanese; nevertheless, due to the globalization of professions, The Ministry of Education, Culture, Science and Technology presented a reform to the Higher Education System integrating English in the curriculum of every major; among which, dentistry college is included. Unfortunately, 7 out of 29 dentistry colleges; 3 private and 4 public ones do not offer this type of courses and the same happens with 10 private and 6 public universities which do not offer this type of courses in their graduate programs (Rodis et al., 2014).

English for specific purposes has been considered as part of the curriculum of Medicine majors in some universities (Isani, 2013; Kayaoğlu & Dağ Akbaş, 2016; Pavel, 2014; Salager-Meyer, 2014; Valdés, González, Diaz, Verdayes, & Diaz, 2010). English is an essential tool in order to update knowledge in the health field since it allows to access to information in Scientific articles with high impact factor which are mostly published in English (Beltrán, 2006). The implementation of ESP as a compulsory subject may be a great contribution for the development of future professionals who will be able to access to hundreds of data bases that have English as the common language.

This research proposal aimed to determine the perception of the dentistry professionals' English proficiency level in their career in order to establish an appropriate course syllabus strengthening the skills that will be useful for their training and career.

2.2. METHODOLOGY

This research was descriptive and field with a mixt approach and cross-sectional data. The population included 26 dentistry specialists in areas such as Oral and Maxillofacial Surgery, Endodontics, Pediatric Dentistry, Orthodontics, Oral and Maxillofacial Pathology, Periodontics, Prosthodontics, Dental Public Health who teach in the dentistry college at the National University of Chimborazo. A 15-question survey measured with the Chronbach's Alpha was applied, it showed a value higher than 0,8 ($\alpha=0,872$) confirming its internal consistency and acceptable reliability.

The instrument that measured the participants' perception was adapted from the one used by Herrera (2013), Sierra (2016) and Weston (2015) in studies related to English for Medical purposes.

On one hand, the items related to the importance of language skills and proficiency development were measured using a Likert scale in the following order: very important, important, moderately important, slightly important and not important. On the other hand, proficiency was measured with the following scale: poor, fair, good, very good and excellent.

Data was processed using the statistical program SPSS version 24 where the T-test was applied to determine the significance value using a population media higher than 70% that showed the importance of skills development to update the professional knowledge.

2.3. RESULTS

It was evidenced that most of the professors (69,24%) considered that reading is the most important, the second most important showed to be speaking which accounted for 19,23%, then listening and finally writing which was not selected by surveyed population.

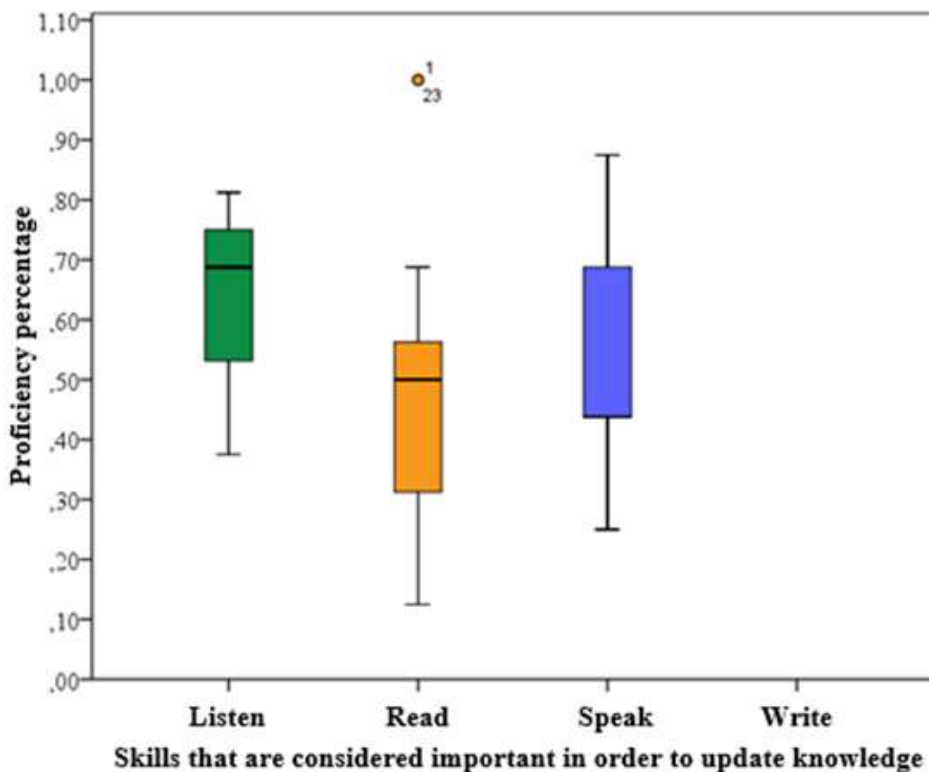
Skill	Frequency	Percentage
Listening	3	11,53
Reading	18	69,24
Speaking	5	19,23
Total	26	100,00

Source: Authors

Regarding the skills that are considered important in order to update knowledge, it was found that professors considered writing skill not important at all. In addition, Listening and Reading skills accounted for 70% and 50% approximately and speaking showed the lowest mean even though it presented the highest range values 25% and 85% of skill proficiency. Listening, on the other hand, was

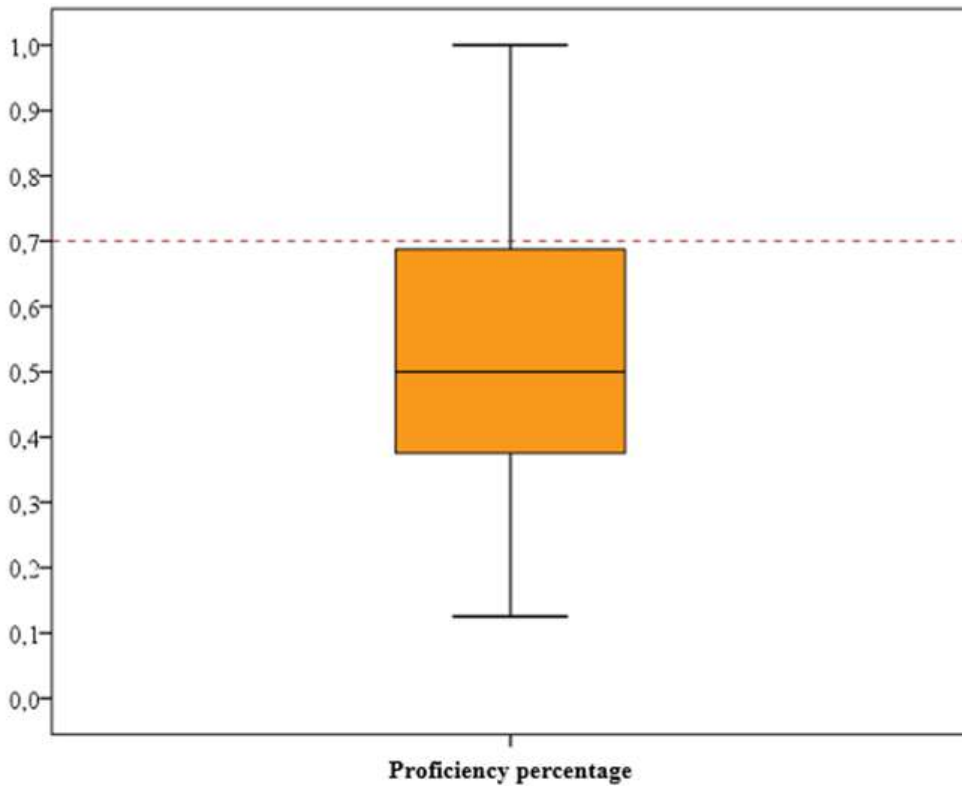
determined to be the most important to be reinforced. It presented a proficiency value close to 70%, where the 50% of the population reached percentages between 53% and 75 % approximately (Graph 3).

Graph 3: Skills to be updated according the level of proficiency



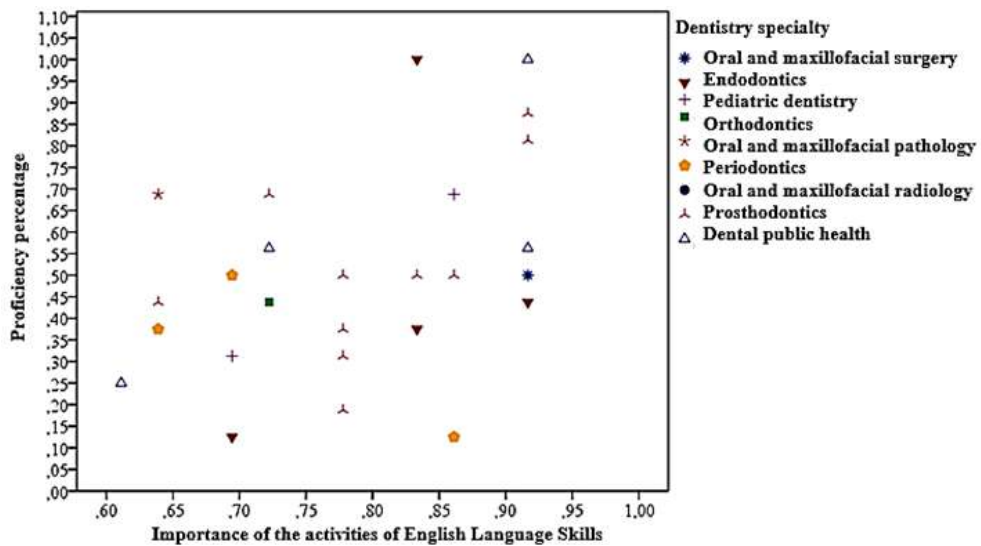
50% of the specialists-professors showed to have a skill proficiency level between 40% and 70% which was determined as an acceptable level; less than 25% of the population was found to be above the acceptable level. The variability of the 50% of the population is between 0,40 lower than 70%; the minimum value per skill corresponds to the value 0,1 and the highest value was 1 (Graph 4).

Graph 4: General proficiency of the four skills of English Language



The scatter plot of points indicates the relationship between the percentage of domains that teachers indicated to have on the four skills versus the importance they give to the different activities for updating knowledge in the English language within their profession. It was observed, across the nine specialties, that there is no correlation between the level of domains and the importance of activities according to skill. In addition, the teachers with the highest skill proficiency correspond to the specialties of public health, prosthodontics, and endodontics, in which cases they also highlight the importance of activities according to their skill (Graph 5).

Graph 5: Importance of the activities of English Language Skills related to the level of proficiency and dentistry specialty.



To determine the significance value that demonstrates the importance of skills proficiency for updating knowledge through the population mean greater than 70% as acceptable, the T test will be carried out for a sample with the following hypothesis:

H1 = the average values of the population regarding the importance of managing skills for updating knowledge are higher.

$H_0 \leq 0.70$ of importance.

Significance value $1-p / 2$ in $\mu \leq 0.70$.

The bilateral significance value was $p = 0.00$, therefore it is calculated with the one-sided test to the right: $1-0 / 2 = 1$; Therefore, H_0 is rejected and it can be affirmed that the average values of the population regarding the importance of managing skills for updating knowledge is higher than 0.70, which is considered acceptable, thus the interest of professionals to improve the mastery of skills and update knowledge of the English language

for dental purposes was demonstrated (Table 2).

Table 2. T test for one sample

Test value = 0.70

95% confidence interval of the difference

	T	gl	Sig. (bilateral)	Mean difference	Inferior	Superior
Percentage of proficiency	4,346	25	0,00	0,12692	0,0668	0,1871

Source: Researchers

2.4. DISCUSSION

The group of specialist professionals that answer the survey applied in this study indicated that the necessary skill in their work environment is reading with 69.24%, then speaking with 19.23%, listening with 11.53%, and do not place greater importance on writing skills. These results disagree with the research authored by Rozgienè (2019), who determined that the study population considered speaking and writing skills of greater importance; 62% pointed out that the first skill is very important for participation in scientific discussions or forums and asking questions at a conference; regarding the second skill, writing, has an importance of 38% and the main activity is to write scientific reports. Other study data reported by Javid (2011) and Gerivani (2016), showed that, for their study population, the most important skill to be mastered is reading, coinciding with the results of this study carried out with dentistry specialists particularly. However, the order of importance given to the other three skills was different compared to both studies mentioned before.

With regard to the English language proficiency, less than 25% of

the dentists indicated being above the acceptable level of language skills proficiency. This percentage is very similar to the data obtained by Gómez et. al (2017) who established that only 22, 15% of medical interns showed a satisfactory level of proficiency in the English language. Another study by Arfán et. al (2018) corroborates the findings of the two previous investigations since in their study it was determined that 26.83% of medical students showed good performance in the subjects related to their areas in English.

The importance of skills management for updating knowledge through the population mean greater than 70% was determined as acceptable using the T-test for a sample ($p = 0.00$) which justifies the design and implementation of a text of work to improve the mastery of skills and update of knowledge of the English language for dental purposes. This result is linked to the theoretical positions proposed by Allouche (2012) who states that medical students (dentistry is also in this field) need to acquire field-related knowledge searching information available in conferences, multimedia resources, and reading a variety of science and technology material. Additionally, the author mentions the importance of orally writing and presenting scientific reports and proposes the creation of a syllable that meets the needs in the medical English field. Niazi (2014) shows agreement with both; the present research and Allouche (2012) paper, since both studies reported that medical professors frequently need English for various purposes during their academic and professional stage, such as: participation in seminars, reading of literature on their specialty, conversations, updating knowledge about new techniques and treatments, understanding manuals for handling equipment, attending conferences, writing laboratory reports, medical prescriptions, and others.

2.5. CONCLUSIONS

It is concluded that English language proficiency was reported as very important by more than half of the specialists. Reading was considered the most important of the four language skills as a means that allows the updating and reinforcement of knowledge about the area of dental specialization.

It is evidenced that professors have shortcomings on the four skills of the English language. In fact, it was determined that only a small number of dentists presented an acceptable skills development. Therefore, that limitation prevents them from attending or participating in scientific academic events developed in this Anglo-Saxon language.

Finally, the importance of the English language for professional development in the field of dentistry is statistically established which suggests the need to build an English for Dental Purposes book as a working tool. It must consider topics related to Maxillofacial Surgery, Endodontics, Pediatric Dentistry, Orthodontics, Oral and Maxillofacial Pathology, Prosthodontics, and Dental Public Health developing the four basic skills of the English language and particularly reinforcing reading.

CHAPTER:

III

ESP ACTIVITIES

LESSON 1

EDUCATION IN PREVENTION OF ORAL HEATH



Fig. 1: Oral Health

Source: (World Dental Federation, 2015)

Task 1. Look at the picture and talk about it.

Task 2. Read a short explanation about the topic.

Oral health is a key indicator of overall health, wellbeing and quality of life. World Health Organization (WHO) defines oral health as “a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual’s capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing” (World Health Organization, 2019).

Task 3. Work in pairs, ask and answer the following questions.

1. When you educate people in oral health, how many diseases might you prevent?
2. Can you recommend five forms of oral health prevention at least?

3. How many groups of risk of poor oral health do you know? / Why?

Task 4. Read the following text about oral health education and prevention. Discuss about it with your classmates and teacher.

Oral health refers to the health of people's teeth, gums, supporting bone and soft tissues of the mouth, tongue and lips. Good oral health is the ability to eat, speak, and socialize without active disease, discomfort or embarrassment. Having poor oral health can exacerbate existing health conditions and impact on people's mental well-being due the experience of pain and limitations in communicating or socializing.

Risk factors for poor oral health, poor oral hygiene from poor tooth brushing, insufficient exposure to fluoride and consumption of a diet that is high in sugar are the main direct risk factors for an individual's poor oral health.

Strategic Priorities and Key Objectives were proposed by South Gloucestershire, Bristol, Bath and North East Somerset and North Somerset as part of a consultation on their joint Oral Health Promotion Strategy.

This strategy aimed to improve oral health and reduce inequalities by endorsing five strategic priorities, each of which is supported by three objectives.

The strategy provides a clear framework to support local delivery plans to direct oral health promotion activity. A template delivery plan accompanies this strategy that sets out the evidence-based interventions required to meet each objective. Each local authority will develop a delivery plan specific to the needs of their own population that will then be embedded across that council.

1. Promote oral health through healthier food and drink choices

Objectives

- a. Promote oral health by making healthier choices easier through multi-stranded approaches to promote healthier food and drink choices and reduce sugar intake.
- b. Commission interventions that encourage and support breastfeeding and healthy complementary feeding (weaning).
- c. Promote healthier food and drink choices that are lower in sugar in settings that the local authority reaches e.g., leisure, education, social and residential care and local food outlets.

2. Promote oral health by improving levels of oral hygiene

Objectives

- a. Commission supervised tooth brushing programs for pre-school and primary school children at high risk of poor oral health.
- b. Train front line staff to provide demonstrations on how to clean teeth among those at high risk of poor oral health.
- c. Commission programs that provide free toothbrushes and toothpaste to all preschool and primary school children, prioritizing targeted interventions among those at high risk of poor oral health.

3. Improve population exposure to fluoride

Objectives

- a. Promote the use of fluoride toothpaste among those at high risk of poor oral health.
- b. Commission programs that provide free toothbrushes and toothpaste to pre-school and primary school children, prioritizing targeted interventions for those at high risk or poor oral health.
- c. Commission fluoride varnishing programs for young children in areas with high rates of tooth decay.

4. Improve early detection, and treatment, of oral disease

Objectives

- a. Maximize all opportunities for signposting to local NHS (National Health Service) dental services.
- b. Promote the benefits of visiting a dentist throughout the life course
- c. Raise awareness of eligibility for free check-ups, prioritizing those at high risk or poor oral health.

5. Reduce inequalities in oral health

Objectives

- a. Look for opportunities to embed oral health promotion within all health and wellbeing policies, strategies, and commissioning.
- b. Promote oral health among vulnerable groups; young children, people with diabetes, people who smoke, consume high quantities of alcohol, or use drugs, people with learning disability, the elderly and other locally identified vulnerable groups.
- c. Equip the wider health and social care workforce with the knowledge and skills to recognize the link with neglect and complex social circumstances and ensure provision of care for those at high risk of poor oral health. (World Health Organization, 2019)

Task 5. Write five promoting oral health objectives related to the reading above.

Task 6. Listen and watch the video 1 and fill in the gaps in the following statements about oral health and the social determinants of health.

- a) Our disease remains a 1_____ problem, particularly among disadvantaged preparation, 2_____, industrials and developing countries.
- b) All our 3_____ are also associated with 4_____ including conditions such as 5_____ and cardiovascular disease.
- c) There is a ring between oral health and general health through common 6_____ including 7_____, _____ use and alcohol consumption.
- d) Inequalities in oral health remain 8_____ both between and within countries and often mirror in majorities in general health.
- e) These inequalities 9_____ in magnitude and extent and they are becoming marked in low middle income countries even in 10_____ countries which advanced our 11_____, _____, inequalities in oral health 12_____.
- f) Our disease are 13_____ and social inequality in our health it's 14_____, intervention strategies which ignores the 15_____ context and related risk factors, offer most potential for 16_____ of oral health.

Video 1

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (Fisher, 2016)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹ wellbeing ²outcome ³buried ⁴ neglect ⁵sore ⁶ feeding ⁷ check-up

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Task 8. Reinforcement. Do the activity following the instructions.

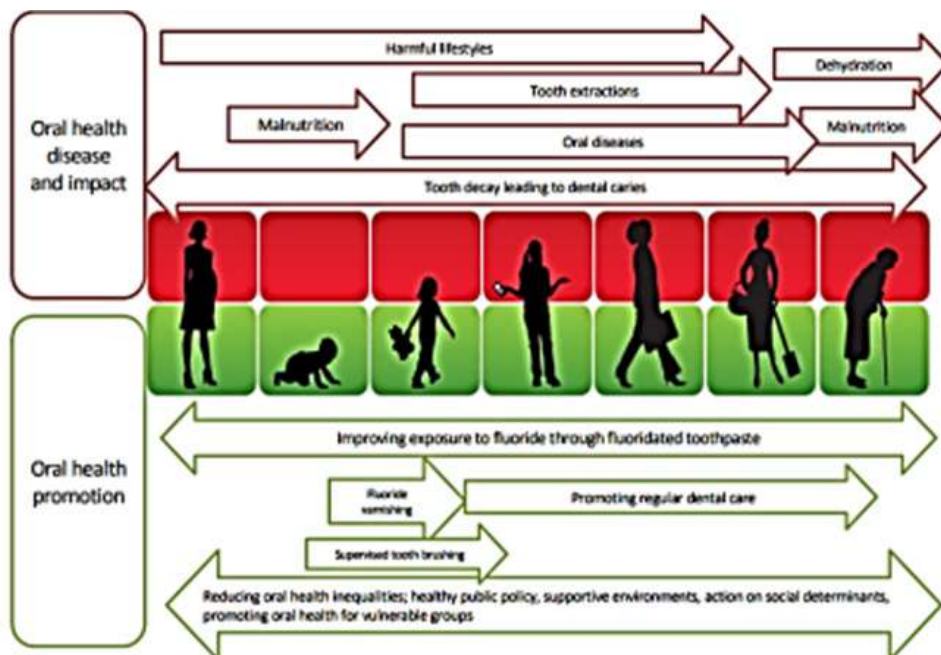


Fig. 2: DRAFT for public consultation May 2016
 Source: (World Health Organization, 2019)

Instructions

- Join in two groups
- Connect the ideas in the picture above in order to create six sentences about promoting oral health
- Write down your ideas, then compare all sentences, which have more different ideas is the winner.

LESSON 2

COMMON ORAL DISEASES



Fig. 4: Oral diseases Task 1. Look at the picture and talk about it.

Source: (World Dental Federation, 2015)

Task 2.- Read a short explanation about the topic.

Oral diseases may directly affect a limited area of the human body, but their consequences and impacts affect the body as a whole (World Dental Federation, 2015).

Task 3. Work in pairs, ask and answer the following questions.

1. What is the most known oral disease?
2. What are the five most common oral diseases?
3. What are the main systemic consequences of tooth loss?

Task 4. Read the following text about five dental and maxillary more common pathologies. Discuss about it with your classmates and teacher.

The World Health Organization (WHO) defines oral health as ‘a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual’s capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing.’

Tooth decay

Tooth decay (dental caries) is the most widespread chronic disease worldwide and constitutes a major global public health challenge. It is the most common childhood disease, but it affects people of all ages throughout their lifetime. Current data show that untreated decay of permanent teeth has a global prevalence of over 40 percent for all ages combined and is the most prevalent condition out of 291 diseases included in the Global Burden of Disease Study.

Tooth decay is principally caused by sugar consumption and can largely be prevented by reducing sugar intake, appropriate fluoride use, and promoting good oral hygiene.

Periodontal disease

Periodontal (gum) disease begins as gingivitis (chronic inflammation of the gums), which is very widespread and for the majority of patients completely reversible. It may progress to periodontitis, a more serious condition that destroys tooth-supporting tissues and bone. In about 15 percent of the population, the disease can progress further to severe periodontitis that leads rapidly to tooth loss. The disease process is still poorly understood, but it tends to progress through phases of rapid, irreversible tissue destruction. About 30 percent of people by the age of 65-74 years have lost all their teeth, with periodontal disease being the main cause.

Periodontal disease is one of the commonest diseases of humankind, but it is largely preventable through good oral hygiene and preventive policies addressing common risk factors.

Oral cancer

Oral cancer is a disease with high mortality, and it is among the 10 most common cancers, depending on country or world region. It is estimated that 300,000 to 700,000 new cases occur every year, but reliable surveillance data are missing.

Oral cancer is among the 10 most common cancers but reducing tobacco and alcohol consumption can largely prevent it. Survival rates can be improved with early detection.

Congenital anomalies

Congenital anomalies of the face and mouth are frequent, with cleft lip and/or palate (orofacial clefts – OFC) accounting for two-thirds of the total. Clefts occur either alone (70 percent) or as part of a syndrome, affecting more than 12 in 10,000 newborns worldwide.

Cleft lip and/or palate are the most frequent birth defects of the face and mouth, creating a heavy burden in terms of mortality, disability, quality of life and financial cost.

Oral trauma

Oral injuries account for 5 percent of all injuries, and craniofacial trauma is responsible for about half of the estimated total 8.5 million trauma deaths worldwide. They include fractures of the jaws and other facial bones, as well as fractures, dislocations and loss of teeth.

Oral trauma is common and can be prevented by improving public health policies and raising awareness of risks related to violence, sports and road safety (World Dental Federation, 2015).

Task 5. Write a summary of five dental and maxillary more common pathologies in task 3, include each pathology.

Task 6. Listen to the video 2 and fill in the gaps in the following statements.

- a) 1_____ is a gum infection and is caused by 2_____ which we know as 3_____, it forms on the teeth and around the 4_____, it can also form on 5_____.
- b) Plaque is a 6_____ that accumulates around the 7_____
- c) The 8_____ forms a 9_____ that causes gum disease and 10_____ in your mouth.
- d) The signs of 11_____ and 12_____ are obvious if you watch for them look for red, 13_____ or 14_____ gums, bad breath, 15_____ teeth and partials or dentures that do not 16_____ properly.
- e) Periodontal disease creates 17_____ and 18_____ around the teeth, there's usually no 19_____ with periodontal disease, it is a 20_____ disease.

- f) Dental caries or ²¹_____ if there is no sugar there would be no cavities or ²²_____, the ²³_____ and bacteria plus ²⁴_____ creates an acidic environment.
- g) Your mouth goes from a ²⁵_____ or a neutral environment to an ²⁶_____ each time you consume food that contains ²⁷_____ or ²⁸_____.
- h) The ²⁹_____ of the food is also important, soft candy and ³⁰_____ foods can ³¹_____ to the surfaces of the teeth and stay there for long periods of time, ³²_____ on candy allows the sugar to reach all areas of the mouth causing ³³_____
- i) ³⁴_____ helps to ³⁵_____ tooth decay.

Fig. 5: Video 2

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (Healthy, 2012)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹sore ²widespread ³surveillance ⁴cleft lip ⁵sticky ⁶bad breath ⁷starchy ⁸suck ⁹tooth decay

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Task 8. Reinforcement. Pictionary



Fig. 4: Pictionary

Source:(WikiHow, 2021)

Pictionary can help students practice their vocabulary and see if they are remembering the words

Instructions:

- Divide the class into teams of 2 and draw a line in the center of the board.
- Give each team member a pen and ask them to choose a word from the bag.
- Tell students to draw the word as an image on the board and encourage their team to guess the word.
- The first team to shout the correct answer gets a point.
- The student who has completed the drawing must nominate another person to draw for their team.

Repeat this until all the words have disappeared. Make sure you have enough words so that each student can draw at least once!

LESSON 3

INTERNAL DENTAL ANATOMY



Fig. 5: The tooth worm

Source: (Suddick & Harris, 1990)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

As far back as 1500 B. C., the Greeks, Romans and Chinese have been focused on remedies to relieve and treat tooth pain. The Chinese first described dental caries through the tooth worm theory. This theory of an outside parasite inflicting damage to the tooth prevailed as the largely accepted theory for decay and the eventual pain associated with it. Not until the age of the microscope was this celebrated theory dismissed. Pierre Fouchard, in his book “Surgical Dentist” refutes the worm theory in 1728, as he describes a method of access and removal of the offending pulpal tissue with the consequent placement of lead fillings (Shane, 2009).

Task 3. Work in pairs, ask and answer the following questions.

1. Have you heard about the “tooth worm” and “ghost inside of teeth”? Could you explain that?

2. What is the real cause of dental cavities and dental diseases?
Explain
3. What are the consequences of dental cavity progression?

Task 4. Read the following text about tooth anatomy. Discuss about it with your classmates and teacher.

The tooth is made up of four tissues: enamel, dentin, cementum, and pulp. The first three of these (enamel, dentin, and cementum) are relatively hard since they contain considerable mineral content, especially calcium (so these tissues can also be described as calcified). Only two of these tissues are normally visible in an intact extracted tooth: enamel and cementum. The other two tissues (dentin and pulp) are usually not visible on an intact tooth.

Enamel is the white, protective external surface layer of the anatomic crown. It is highly calcified or mineralized and is the hardest substance in the body. Its mineral content is 95% calcium hydroxy-apatite (which is calcified). The remaining substances include 5% water and enamel matrix.

Cementum is the dull yellow external layer of the tooth root. The cementum is very thin, especially next to the cervical line, (only 50–100 mm thick where one mm is one millionth of a meter). It is composed of 65% calcium hydroxyapatite (mineralized and calcified), 35% organic matter (collagen fibers), and 12% water. Cementum is about as hard as bone but considerably softer than enamel.

The cemento-enamel junction (also called the CEJ) separates the enamel of the crown from the cementum of the anatomic root. This junction is also known as the cervical line, denoting that it

surrounds the neck or cervix of the tooth.

Dentin is the hard-yellowish tissue underlying the enamel and cementum and makes up the major bulk of the inner portion of each tooth crown and root. It extends from the pulp cavity in the center of the tooth outward to the inner surface of the enamel (on the crown) or cementum (on the root). Mature dentin is composed of about 70% calcium hydroxyapatite, 18% organic matter (collagen fibers), and 12% water, making it harder than cementum but softer and less brittle than enamel.

The dentin enamel junction is the inner surface of the enamel cap where enamel joins dentin. The cement dentinal junction is the inner surface of cementum where cementum joins dentin. Cementum is so thin that it is difficult to identify this junction on a radiograph.

Pulp is the soft (not calcified or mineralized) tissue in the cavity or space in the center of the crown and root called the pulp cavity. The pulp cavity has a coronal portion (pulp chamber) and a root portion (pulp canal or root canal). The pulp cavity is surrounded by dentin, except at a hole (or holes) near the root tip (apex) called an apical foramen. Nerves and blood vessels enter the pulp through apical foramina. Functions of the dental pulp are Formative, Sensory, Nutritive, and defensive or protective (Scheid & Weiss, 2012).

In 1984, Vertucci introduced a classic study classifying commonly seen variations of root canal anatomy. Vertucci examined 2,400 permanent extracted teeth using a dye injection technique that highlighted the canal anatomy. His result determined eight canal types that were classified as follows:

1. Type I is a single canal from the chamber to the apex.
2. Type II has two separate canals from the chamber but joins near the apex and exits as one.

3. Type III has one canal that separates into two canals in the mid-root and rejoins and exits as one canal.
4. Type IV has two separate canals in the chamber that exit as two separate canals.
5. Type V has a single canal that divides into two separate canals.
6. Type VI has two canals in the chamber that join and then exit as two separate canals.
7. Type VII has a single canal in the chamber that divides and rejoins and then exits as two canals.
8. Type VIII has three separate canals from chamber to apex.

Walton illustrates the Weine classification for canal configurations and highlights four common canal configurations:

1. Type I is a single canal from the chamber to the apex.
2. Type II has two separate canals from the chamber, but they join near the apex and exit as one.
3. Type III has two canals from chamber to apex.
4. Type IV has one canal from the chamber, but which exits as two separate canals (Shane, 2009).

Task 5. Write a summary about the four tissues that make up a tooth.

Task 6. Listen and watch the video 3 and fill in the gaps in the following statements about tooth anatomy.

- a) The top of the tooth, an area called the 1_____ because this part of the tooth 2_____ food, it's covered with the 3_____ in the body.
- b) The 4_____ of tooth 5_____ is the reason our teeth are 6_____, _____ and _____.
- c) 7_____ the enamel and down into the roots the tooth is made up of 8_____ although it's 9_____ than enamel, it's still harder than 10_____.
- d) The 11_____ of every tooth is 12_____ to make room for 13_____ needed to keep the tooth 14_____, this collection of soft tissue is called the 15_____ and also contains the 16_____ that warn us when something is wrong with the tooth.
- e) The nerves and blood vessels enter the tooth through a 17_____ at the 18_____ of the root and travel up through the 19_____ to fill up the space in the crown called the 20_____.
- f) Every tooth sits in a 21_____ in the 22_____ and is held in place by a 23_____ called the 24_____ this stretchy connection means each tooth can move a little when you 25_____.
- g) Above the jaw bone that tooth is 26_____ in a firm 27_____ of 28_____ or 29_____.

Video 3

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (*The Gentle Dentist*, 2010)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹make up ²worm ³dull ⁴surround ⁵yellowish ⁶bulk ⁷inner surface
⁸pulp chamber ⁹hole ¹⁰blood vessels ¹¹dye ¹²grind up ¹³cuff

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____

Task 8. Reinforcement. Use the words in the box to fill in the gaps with the correct name of each anatomic structure of tooth.

Apical foramen Dentin Cementoenamel junction
 Cementum Root canal Pulp chamber
 Dentinoenamel junction Anatomic crown Enamel Anatomic root
 Cementodentinal junction Lingual surface of crown

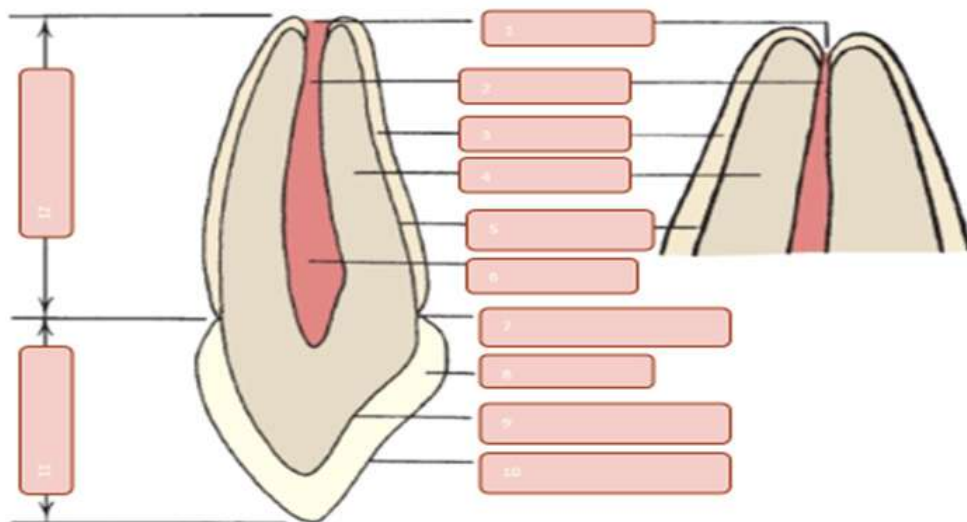


Fig. 6: Tooth anatomy

Source: (Scheid & Weiss, 2012)

LESSON 4

DIAGNOSIS OF PULP AND PERIAPICAL PATHOLOGIES

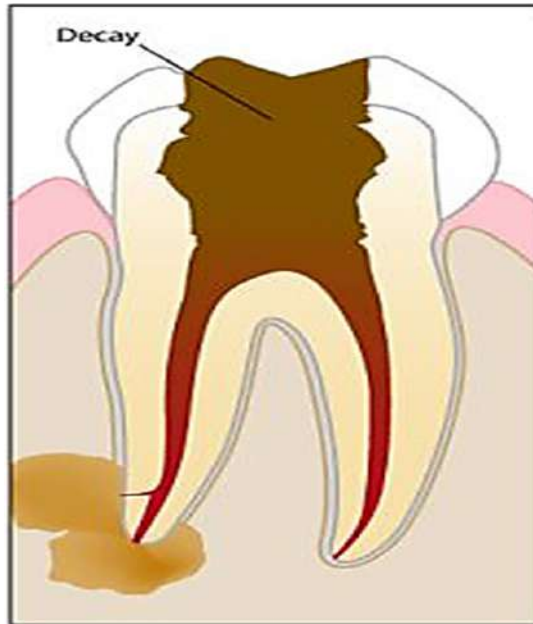


Fig. 7: Decayed tooth

Source: (Langley Endodontic, 2013)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

An Ancient Science

Endodontics may have been practiced as early as the second or third century B.C. A skull found in the Negev Desert in Israel had a bronze wire in one of its teeth. Researchers believe the wire may have been used to treat an infected pulp. (Langley Endodontic, 2013)

Task 3. Work in pairs, ask and answer the following questions.

- How many ways of treating an infected pulp have you heard about? Explain one of them.
- Do you know the newest way of treating an infected pulp? Explain the newest way that you know.

Task 4. Read the following text about pulpal diagnosis. Discuss about it with your classmates and teacher.

Normal Pulp is a clinical diagnostic category in which the pulp is symptom-free and normally responsive to pulp testing. A “clinically” normal pulp results in a mild or transient response to thermal cold testing, lasting no more than one to two seconds after the stimulus is removed.

Reversible Pulpitis is based upon subjective and objective findings indicating that the inflammation should resolve and the pulp return to normal following appropriate management of the etiology. Discomfort is experienced when a stimulus such as cold or sweet is applied and goes away within a couple of seconds following the removal of the stimulus. Typical etiologies may include exposed dentin (dentinal sensitivity), caries or deep restorations. There are no significant radiographic changes in the periapical region of the suspect tooth and the pain experienced is not spontaneous.

Symptomatic Irreversible Pulpitis is based on subjective and objective findings that the vital inflamed pulp is incapable of healing and that root canal treatment is indicated. Characteristics may include sharp pain upon thermal stimulus, lingering pain (often 30 seconds or longer after stimulus removal), spontaneity (unprovoked pain) and referred pain. Sometimes the pain may be accentuated by postural changes such as lying down or bending over, and over-the-counter analgesics are typically ineffective.

Asymptomatic Irreversible Pulpitis is a clinical diagnosis based on subjective and objective findings indicating that the vital inflamed pulp is incapable of healing and that root canal treatment is indicated. These cases have no clinical symptoms and usually respond normally to thermal testing but may have had trauma or deep caries that would likely result in exposure following removal.

Pulp Necrosis is a clinical diagnostic category indicating death of the dental pulp, necessitating root canal treatment. The pulp is non-responsive to pulp testing and is asymptomatic. Pulp necrosis by itself does not cause apical periodontitis (pain to percussion or radiographic evidence of osseous breakdown) unless the canal is infected. Some teeth may be nonresponsive to pulp testing because of calcification, recent history of trauma, or simply the tooth is just not responding.

Previously Treated is a clinical diagnostic category indicating that the tooth has been endodontically treated and the canals are obturated with various filling materials other than intracanal medicaments. The tooth typically does not respond to thermal or electric pulp testing. Previously Initiated Therapy is a clinical diagnostic category indicating that the tooth has been previously treated by partial endodontic therapy such as pulpotomy or pulpectomy. Depending on the level of therapy, the tooth may or may not respond to pulp testing modalities.

Apical Diagnoses

Normal Apical Tissues are not sensitive to percussion or palpation testing and radiographically, the lamina dura surrounding the root is intact and the periodontal ligament space is uniform.

Symptomatic Apical Periodontitis represents inflammation, usually of the apical periodontium, producing clinical symptoms involving a painful response to biting and/or percussion or palpation. This may or may not be accompanied by radiographic changes. Severe pain to percussion and/or palpation is highly indicative of a degenerating pulp and root canal treatment is needed.

Asymptomatic Apical Periodontitis is inflammation and destruction of the apical periodontium that is of pulpal origin. It appears as an apical radiolucency and does not present clinical symptoms (no pain on percussion or palpation).

Chronic Apical Abscess is an inflammatory reaction to pulpal infection and necrosis characterized by gradual onset, little or no discomfort and an intermittent discharge of pus through an associated sinus tract. Radiographically, there are typically signs of osseous destruction such as a radiolucency.

Acute Apical Abscess is an inflammatory reaction to pulpal infection and necrosis characterized by rapid onset, spontaneous pain, extreme tenderness of the tooth to pressure, pus formation and swelling of associated tissues. There may be no radiographic signs of destruction and the patient often experiences malaise, fever and lymphadenopathy.

Condensing Osteitis is a diffuse radiopaque lesion representing a localized bony reaction to a low-grade inflammatory stimulus usually seen at the apex of the tooth (Glickman & Schweitzer, 2013).

Task 5. Write a summary about one of the apical diagnoses.

Task 6. Listen and watch the video 4 and fill in the gaps in the following statements about endodontic diagnosis.

- a) Our profession is excellent at 1 _____, but I'm talking about 2 _____ involved 3 _____, the patient has 4 _____.
- b) We need to do the 5 _____ so we should identify is the 6 _____, is it 7 _____ can that tooth take another dental procedure, so our patients oftentimes give us their 8 _____.
- c) The three phases of the exam are the 9 _____ where you can 10 _____, look in the 11 _____, look for 12 _____ oftentimes secondary to 13 _____.
- d) We can 14 _____ the 15 _____ of the vestibule and look in there and see 16 _____ from an 17 _____.
- e) There's a 18 _____ point tracing that 19 _____ and it'll trace into a lesion of in 20 _____.
- f) Our clinical exam can find 21 _____, we can look at 22 _____, we can look at existing restorations, 23 _____ and all this comprises part of our endodontic clinical examination.
- g) The 24 _____ and the duration of the response and if we begin to do this on 25 _____, contralateral teeth and adjacent teeth we can get pretty good at locking that patient in.
- h) The third phase in the in 26 _____ is the radiographic exam and the thing to emphasize here is the importance of getting two to three well angulated different 27 _____ by doing this.

Video 4

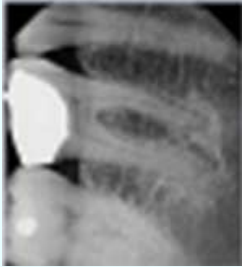
<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (Dentsply Sirona Endodontics US, 2013)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹Mild ²wire ³skull ⁴heal ⁵ lingering pain ⁶ lying down ⁷ osseous
breakdown ⁸painful ⁹filling material ¹⁰ bite ¹¹pull back
¹² perilous

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

	X-ray	DESCRIPTION	DIAGNOSIS
I	 <i>Fig. 8: Diagnosis</i> <i>Source: (Glickman & Schweitzer, 2013)</i>	1. A full gold crown on the maxillary right second molar, the patient complained of sensitivity to both hot and cold liquids; now the discomfort is spontaneous. Upon application of Endo-Ice® on this tooth, the patient experienced pain and upon removal of the stimulus, the discomfort lingered for 12 seconds. Responses to both percussion and palpation were normal; radiographically, there was no evidence of osseous changes. Note that the maxillary second premolar has severe distal caries.	a. Diagnosis: pulp necrosis; a s y m p t o m a t i c apical periodontitis
II	 <i>Fig. 9: Diagnosis</i> <i>Source: (Glickman & Schweitzer, 2013)</i>	2. Mandibular right lateral incisor has an apical radiolucency that was discovered during a routine examination. There was a history of trauma more than 10 years ago and the tooth was slightly discolored. The tooth did not respond to Endo-Ice®. There was no tenderness to percussion or palpation in the region. Treatment is non-surgical endodontic treatment followed by bleaching and permanent restoration.	b. Diagnosis: previously treated; symptomatic apical periodontitis

III	 <i>Fig. 10: Diagnosis</i> <i>Source: (Glickman & Schweitzer, 2013)</i>	3. Maxillary left lateral incisor exhibits an apical radiolucency. There is no history of pain and the tooth is asymptomatic. There is no response to Endo-Ice®. There is no tenderness to percussion or palpation. Treatment is nonsurgical endodontic treatment and placement of a permanent restoration.	c. Diagnosis: reversible pulpitis; normal apical tissues.
IV	 <i>Fig. 11: Diagnosis</i> <i>Source: (Glickman & Schweitzer, 2013)</i>	4. Mandibular right first molar had been hypersensitive to cold and sweets over the past few months but the symptoms have subsided. Now there is no response to thermal testing and there is tenderness to biting and pain to percussion. Radiographically, there are diffuse radiopacities around the root apices. Non-surgical endodontic treatment is indicated followed by a build-up and crown. Over time the condensing osteitis should regress partially or totally.	d. Diagnosis: pulp necrosis; symptomatic apical periodontitis with condensing osteitis.

V	 <i>Fig. 12: Diagnosis</i> <i>Source: (Glickman & Schweitzer, 2013)</i>	5. Maxillary left first molar was endodontically treated more than 10 years ago. The patient is complaining of pain to biting over the past three months. There appear to be apical radiolucencies around all three roots. The tooth was tender to both percussion and to the Tooth Slooth®. Treatment is nonsurgical endodontic retreatment followed by permanent restoration of the access cavity.	f. Diagnosis: pulp necrosis; a s y m p t o m a t i c apical periodontitis.
VI	 <i>Fig. 13: Diagnosis</i> <i>Source: (Glickman & Schweitzer, 2013)</i>	6. Maxillary left first molar has occlusal-mesial caries and the patient has been complaining of sensitivity to sweets and to cold liquids. There is no discomfort to biting or percussion. The tooth is hyper-responsive to Endo-Ice® with no lingering pain. Treatment would be excavation of the caries followed by placement of a permanent restoration. If the pulp is exposed, treatment would be non-surgical endodontic treatment followed by a permanent restoration such as a crown.	g. Diagnosis: pulp necrosis; chronic apical abscess.

X-ray	DESCRIPTION	DIAGNOSIS
I		
II		
III		
IV		
V		
VI		
VII		

LESSON 5

ANATOMY OF THE PERIODONTIUM

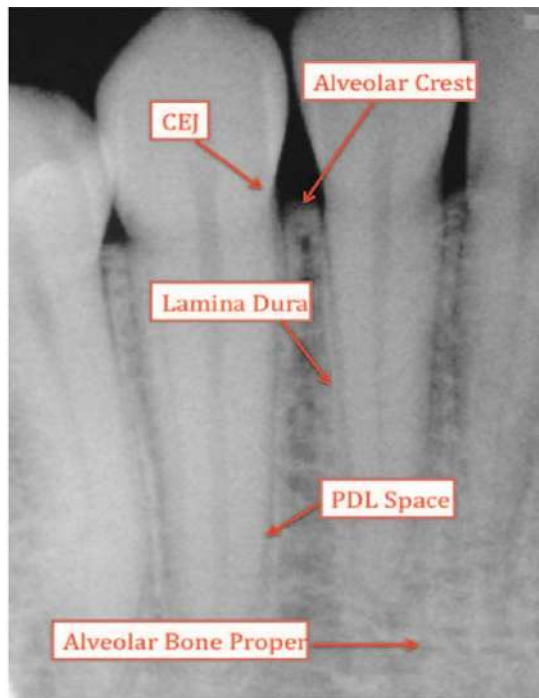


Fig. 14: Appearance and location of periodontal components on a periapical radiograph

Source: (Palumbo, 2011)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

The periodontium serves as the supporting apparatus for the teeth in function and in occlusal relationships (Palumbo, 2011).

Task 3. Work in pairs, ask and answer the following questions.

1. What are the macroscopic anatomical structures of periodontium?
2. What is the main function of periodontium?
3. How do you evaluate periodontium structures?

Task 4. Read the following text about appearance of the periodontium. Discuss about it with your classmates and teacher.
Macroscopic appearance of the periodontium

The periodontium is composed of the gingiva, alveolar mucosa, cementum, periodontal ligament, and alveolar bone. The oral mucosa can be divided into three types: the masticatory, lining, and specialized mucosa. The gingiva is firmly bound to the underlying bone and is continuous with the alveolar mucosa that is situated apically and is unbound. The border of these two tissue types is clearly demarcated and is called the mucogingival junction. The gingiva consists of a free gingival margin and attached gingiva. The tissue that resides in the interproximal embrasure is called the interproximal papilla. The col is also presented in the wider papillary. This is a valley-like structure situated apical to the contact area. The gingival sulcus is the invagination around a tooth bounded by the free gingival margin.

Microscopic appearance of the periodontium

Greater detail of the periodontium is obtained histologically. The gingiva consists of a surface epithelium and underlying connective tissue termed the lamina propria. There are three types of epithelium present, the oral, sulcular, and the junctional epithelium.

The border of the connective tissue and epithelium is undulating. These epithelial extensions are known as epithelial ridges or rete pegs. The connective tissue layer is also termed the lamina propria or the dental papillae. The gingiva consists of keratinized, stratified, squamous epithelium. There are four distinct layers; the stratum basale, stratum spinosum, stratum granulosum, and the stratum corneum. In health, the depth of the sulcular epithelium is less than 3mm and ends at the coronal surface of the junctional epithelium.

The periodontal ligament is the connective tissue that connects the tooth to the alveolar bone. The periodontal ligament serves to allow forces to be distributed to the alveolar bone during mastication and occlusal function. The ligament is about 0.15mm to 0.25mm in width. With root development principle fibers, which are collagenous bundles, insert their terminal ends into the root cementum and alveolar bone and are termed Sharpey's fibers or periodontal ligament fibers. The six groups are the transseptal, horizontal, alveolar, oblique, apical, and radicular groups.

The cementum is a mineralized tissue covering the anatomic root of the tooth. Cementum is avascular and has no direct innervation. It is made of collagen fibers within a mineralized matrix. Fibers present in the cementum may be classified as extrinsic or intrinsic. Cementum is characterized into acellular and cellular types. Acellular afibrillar cementum is located near the coronal aspect of the root and has no cells and no extrinsic or intrinsic collagen fibers within it. Acellular extrinsic fibrillar cementum is found in the middle and coronal parts of the root and lacks cells. This type of cementum has Sharpey's fibers.

The alveolar process is the osseous tissue of the maxillary and mandibular jaws which houses and supports the sockets of the teeth. The plate, the inner socket wall known as the alveolar bone proper and is compact bone, and a cancellous trabecular bone in between the two boney layers. The bone is typically thicker in the palatal and lingual areas when compared to the buccal areas (Palumbo, 2011).

Task 5. Write a summary of anatomy of periodontium in task 3, include the name of all structures.

Task 6. Listen and watch the video 5 and fill in the gaps in the following statements about gingival fiber bundles

- a) Alveolar 1_____ extend from the 2_____ of the alveolar 3_____ into the gingival connective tissue, these fibers 4_____ attach the gingiva to the 5_____.
- b) The 6_____ is a dense 7_____ composed of 8_____ connective tissue that closely 9_____ the outer surface of the alveolar bone.
- c) 10_____ fibers encircle the tooth in a 11_____ like manner coronal to the alveolar crest and are not attached to the 12_____ of the tooth, these fiber bundles 13_____ adjacent teeth to one another.
- d) Dental gingival fibers are 14_____ in the cementum near the 15_____ and 16_____ into the gingival connective tissues.
- e) 17_____ gingival fibers extend laterally from the 18_____ of the alveolar bone, these fibers attach the gingiva to the bone.

- f) ¹⁹_____ fibers encircle several teeth these fiber groups link adjacent teeth into a dental arch unit.
- g) ²⁰_____ fibers are located in the ²¹_____ coronal to the ²²_____ fiber bundles, these fiber groups connect the oral and vestibular ²³_____ of posterior teeth.
- h) ²⁴_____ fibers extend from the cementum near the CEJ and run ²⁵_____ between adjacent teeth these fiber bundles link adjacent teeth into a dental arch unit.
- i) ²⁶_____ fibers pass from the ²⁷_____ of one tooth over the crest of ²⁸_____ to the cementum of the adjacent tooth, these fiber bundles connect adjacent teeth to one another and secure ²⁹_____ of teeth in the arch.

Video 5.

<https://1drv.ms/u/s!Avu0NeaWfGfZlE8WA4dCzvEfNXUn?e=bMGltj>

(Edilia Marshall, 2016)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹ bind ²underlying ³ surface ⁴ embrasure ⁵ fiber bundles ⁶ lining
⁷ embedded ⁸ fan out ⁹ junction ¹⁰ sulcus

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

LESSON 6

EFFECTS OF TOBACCO SMOKING ON CHRONIC PERIODONTITIS



Fig. 16: Chronic periodontitis patient

Source: (Attia, y otros, 2017)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

Nicotine is considered the most pharmacologically active compound in tobacco smoke. Most is absorbed through the lung alveoli, but nicotine can also be absorbed, though more slowly, through the oral mucosa in sufficient quantities to have a pharmacological effect. During smoking it increases the heart rate, cardiac output, and blood pressure by autonomic stimulation, which also effects peripheral vasoconstriction (Pejčić, Obradović, Kesić, & Kojović, 2007).

Task 3. Work in pairs, ask and answer the following questions.

4. What features can you add to describe a chronic periodontitis disease?

5. Can you name two microorganisms which lead a chronic periodontitis disease?

Task 4. Read the following text about chronic periodontitis in smokers. Discuss about it with your classmates and teacher.

According to Grover, Bhardwaj, & Singh (2013), periodontitis is "an inflammatory disease of supportive tissue of teeth caused by specific microorganisms which lead to progressive destruction of periodontal membrane and alveolar bone, with formation of periodontal pockets and gingival recession" (p. 25).

Periodontal diseases are a group of conditions affecting the supporting structures of the dentition. Progression and severity of the disease depends on the complex interactions between several risk factors such as microbial, immunological, environmental and genetic factors, as well as age, sex and race. Tobacco smoking is a significant risk factor for periodontal disease.

Nowadays, WHO estimates that there are about 1100 million regular smokers in the world. About 300 million (200 million males and 100 million females) are in the developed countries.

Smoking as Risk Factor for Periodontal Disease

Cigarette smoking is a well-established risk factor for periodontitis and second to bacterial plaque, is the strongest of the modifiable risk factors. Smoking is associated with an increased risk for periodontal attachment and or bone loss, depending on the definition of disease severity and smoking dose.

Etiopathogenesis of Periodontal Disease Progression in Smokers

Microbiology

- 1) Effect of smoking on plaque development and accumulation: smokers showed a higher prevalence of dental plaque than non-smokers.
- 2) Effect of smoking on the subgingival microflora in periodontitis: there is a higher prevalence of *T. forsythensis* and *P. gingivalis* in the current or former smokers.

Immunology

a) Effect of Smoking on Neutrophils

- 1) Smokers have reduced phagocytic capacity compared to PMNs from non- smokers.
- 2) Tobacco smoking has been shown in human skin to decrease the rate of synthesis of specific collagen types, by increasing the production of collagen-degrading enzymes.
- 3) Neutrophil respiratory burst: a compromised respiratory burst may reduce the capacity of neutrophils to destroy plaque bacteria. Cigarette smoke constituents inhibit the respiratory burst of neutrophils.

b) Effect of smoking on Lymphocyte Function

- 1) Acute or chronic exposure to hydrocarbons may stimulate or inhibit the immune response (Grover, Bhardwaj, & Singh, 2013).

Task 5. Write a summary about smoking like a periodontitis etiology.

Task 6. Listen and watch the video 6 and fill in the gaps in the following statements about Smoking and Periodontal Disease.

- a) Most people 1_____ that 2_____ are three to six times more likely to have 3_____ and two times more likely to 4_____.
- b) Periodontal disease is an 5_____ of the teeth 6_____ and the 7_____ that surrounds the teeth.
- c) Plaque is the 8_____ of food and bacteria that forms constantly on your teeth.
- d) 9_____ helps to cause periodontal disease in two ways, it reduces the production of 10_____ and damages the 11_____ to 12_____ the infection.
- e) Saliva helps to 13_____ from the teeth, so less saliva means more 14_____ and 15_____.
- f) Saliva also contains 16_____ that help to fight destructive bacterias in the mouth

- g) Smoking damages your ¹⁷_____ by causing blood vessels to ¹⁸_____ throughout your entire body, which reduces the flow of infection-fighting ¹⁹_____ oxygen and ²⁰_____ to the ²¹_____.

Video 6

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (Fobnull, 2009)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹lung alveoli ²heart rate ³cardiac output ⁴periodontal pocket
⁵fight off ⁶tartar ⁷dose

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Task 8. Reinforcement. HANGMAN

Instructions:

1. Take a paper in which will be some words about periodontitis
(The participant will not see the content of the paper)
2. The participant will have to guess the name of the drug.

4. From here the basic rules of the Hangman Game are followed.
(Say letters of the alphabet until the word is complete)
5. You have a maximum of 5 errors
6. If you think you know what the word is you can risk it and say it at any time of the game but if you fail you lose automatically, and you should



LESSON 7

DENTAL RADIOGRAPHIC TECHNIQUES AND NORMAL ANATOMY LANDMARKS



Fig. 17: Panoramic radiograph

Source: (Altug & Ozkan, 2011)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

In 1895, Wilhelm Conrad Röntgen had discovered X-rays. Nowadays, these ones are used in medicine and dentistry to diagnose some diseases that clinically can't be observed. This procedure consists of an electromagnetic radiation spectrum with a high energy that is targeted to a specific tissue. This process takes place in an evacuated glass envelope called X-ray tube (The Nobel Prize, 2019).

Task 3. Work in pairs, ask and answer the following questions.

1. How important is X-rays to the dental practice? / Why?
2. How often do you use this diagnostic mean in your daily practice?
3. What dental procedures need a previous radiograph?

Task 4. Read the following text about dental radiology. Discuss about it with your classmates and teacher.

Dental radiographs play an indispensable role during the diagnosis of oral and maxillofacial diseases clinically not visible; this will help you making a successful diagnosis, however, it's necessary to know profoundly about normal anatomy of maxillofacial structures. Radiolucent and radiopaque images are obtained from this process which comes from invisible rays with a high energy that bombard anatomic structures being radiographed.

Periapical radiography

It's an interoral kind of radiography which depict 3-4 teeth and anatomic structures around them in a periapical film, there are two techniques to obtain a periapical radiography:

The paralleling technique: the periapical film must be stood parallel to the long axis of the teeth and the X-ray tube is aimed at the same angles of the teeth being radiographed and periapical film. There exist some paralleling instruments with a ring to aim the X-ray cone according to film and teeth position, in a parallel relationship.

The bisecting-angle technique: the periapical film must be stood as close as possible to the palatal/lingual surface of the teeth being radiographed and the X-ray tube is aimed at its apex, forming an angle.

You are able to take a periapical radiography if you need to evaluate periapical and periodontal tissue after trauma or just for health, in a surgical and endodontic treatments, to evaluate the presence of apical pathologies within the alveolar bone, to see the presence or absence of unerupted teeth.

Panoramic radiography

It allows you to obtain a two-dimensional view of jaws and their surrounding structures, there exist an amazing device called orthopantomograph, where head's patient is positioned between X-ray generator, it's useful to diagnose presence or absence of unerupted teeth, evaluation of maxillofacial development and growth, evaluation of relationship of lower and upper teeth with canalis alveolaris inferior and maxillary sinus respectively, when you suspect of temporomandibular joint disturbances, odontogenic/nonodontogenic cysts, tumors, bone examination for a dental implants treatment, examination of maxillary and mandibular traumas and surgical interventions (Altug & Ozkan, 2011).

Task 5. Read the following situation and answer the questions:

A patient comes to the dental clinic expressing a constant pain in the lower right teeth lateral incisor (4.2) without evident clinical symptoms.

- a) According to the text in task 3, What kind of radiograph is necessary in this case? / Why?
- b) Write about biosafety and position of the patient and position of the film.

Task 6. Listen and watch the video 7 about X-ray and fill with the correct information.

- a) 1_____ or x-rays are important tools the dentist uses to help care for your teeth.
- b) Many 2_____ cannot be seen with a 3_____ but an x-ray can 4_____ small 5_____ between the teeth are hidden by 6_____, _____ in the bone, periodontal disease, 7_____ or 8_____ and even 9_____.
- c) 10_____ is key to save time, money and 11_____.
- d) Dental x-rays expose a small part of the body to a 12_____ of radiation, a leaded apron with a 13_____ is recommended for children and women who are 14_____ or of 15_____ to help minimize that exposure even more.
- e) Your 16_____ determines the number of 17_____ that need to be taken, talk to your dentist if you have any questions.

Video 7

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (The Nobel Prize, 2019)

Task 7. Vocabulary. Use the following words to make a sentence according to the topic of the lesson.

1. Abnormal growths:_____
2. Ailment:_____
3. Barrier:_____

4. Beam:_____
5. Joint disturbances:_____
6. Pinpoint:_____
7. Scatter radiation:_____
8. Surrounding area:_____
9. Suspect/ suspicion:_____
- _____
10. Swelling:_____

Task 8. Reinforcement. Choose the correct number of the following anatomic structures in the picture below and match it with the name of that anatomic structure.

_ Anterior nasal spine	_ Zygoma	_ Epipharynx
_ Maxillary tuberosity	_ Inferior nasal concha	_ Nasopalatine canal
_ Orbital rim	_ Inferior border of mandible	_ Cervical vertebra
_ Coronoid process	_ Dorsum of tongue	_ Pterygoid process of sphenoid bone
_ Infraorbital canal	_ Mandibular angle	_ Pterygopalatine fossa
_ Ear lobe	_ Mandibular canal	_ Zygomatic arch
_ Nasal cavity	_ Hard palate	_ Soft palate
_ External auditory canal	_ Maxillary sinus	_ External oblique ridge
_ Styloid process	_ Articular tubercle	_ Submandibular fossa
_ Mandibular condyle	_ Mental foramen	_ Incisive foramen
_ Hyoid bone	_ Nasal septum	_ Sigmoid notch

LESSON 8

RADIOGRAPHIC DIAGNOSIS OF DENTAL AND MAXILLOFACIAL PATHOLOGIES



Fig. 17: Panoramic radiograph

Source: (Altug & Ozkan, 2011)



Fig. 18: Anatomic structures

Source: (Altug & Ozkan, 2011)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

During the diagnosis of oral and maxillofacial diseases, clinical and radiological data play a major role. A successful diagnosis and evaluation of clinical examination are generally up to a profound knowledge of the normal anatomy of the region (Altug & Ozkan, 2011).

Task 3. Work in pairs, ask and answer the following questions.

- a) Talking about oral and maxillofacial pathology, Do you think is more important a clinical or a radiological diagnosis? Why?
- b) How do you know that there is a radiographic lesion in the jaws? Explain.
- c) What kind of images do you normally see in a radiography?

Task 4. Read the following text about radiographic description of oral and maxillofacial pathology. Discuss about it with your classmates and teacher.

Radiolucent/radiopaque lesions of the jaws

Odontogenic cysts and tumors present problems of diagnosis, radiology and histopathology. In general, their differential diagnosis requires radiographic clinical data, since many of them possess similar histological characteristics. Radiologic appearance of jaw cysts and odontogenic tumors varies considerably. The common lack of physical findings and the development of most of these lesions within the confines of the bone make radiologic investigation and interpretation uniquely important. Radiographs are also important in treatment planning for surgical removal. They can evaluate encroachment on vital structures, extent into soft tissue, size of the lesion, and requirements for reconstruction. Radiography allows for creation of a radiologic differential diagnosis (Escobar, Godoy, & Peñafiel, 2007).

Radiolucent lesions of the jaws

- Dental granuloma
- Radicular cyst: Radiographically, radicular cyst appears well defined radiolucent area. Infection of a cyst causes resorption of the surrounding tissue.

- Dentigerous cyst: It surrounds the crown of an impacted tooth, caused by fluid accumulation between the reduced enamel epithelium and the enamel surface.
- Keratocystic odontogenic tumor: It grows in anterior-posterior direction within medullary cavity of the bone without causing obvious bone expansion. Radiographically, it is well defined radiolucent area with smooth corticated margin.
- Lateral periodontal cyst: Radiographically, it appears as a well circumscribed radiolucent area located laterally to the roots of vital tooth.
- Ameloblastoma: Radiographically, it is typically form rounded, cyst-like, radiolucent area appears multilocular.
- Incisive canal cyst
- Simple bone cyst
- Central giant cell granuloma: The lesion is more common in the anterior part of mandible with a tendency to cross the midline. In the early stage, the lesion manifests as a small unilocular lucent lesion. However, with development, it appears multilocular with fine trabeculae.
- Odontogenic myxoma: the odontogenic myxoma may produce several types: unicystic, multilocular, pericoronal and radiolucent-radiopaque and it is close resemblance to soap bubble-like picture of ameloblastoma.
- Solitary eosinophilic granuloma: Radiographically, the lesion has rounded radiolucency and an appearance of teeth floating air.

Radiopaque lesions of the jaws

- Odontoma: Radiographically, it is seen as a radiopaque mass surrounded by thin radiolucent space.
- Torus
- Osteoma
- Osteochondroma

- Cementoblastoma: Radiographically, here is typically a radiopaque mass with a thin radiolucent margin with the root of the tooth. The mass may be rounded or irregular in shape.
- Fibrous dysplasia (late stage)

Mixed radiolucent/radiopaque lesions of the jaws

- Fibrous dysplasia (early stage)
- Ossifying fibroma: Radiographically, early lesion is radiolucent with varying degrees of calcification and has well circumscribed margins.
- Cemento-osseous dysplasia
- Chronic osteomyelitis
- Osteosarcoma
- Metastasis
- Focal osteos dysplasia: e lesion is well defined by radiolucent borders and an unilocular dense radiopaque appearance
- Dentigerous cysts (Altug & Ozkan, 2011).

Task 5. Write a summary including the most common lesions of the jaws according to your point of view.

Task 6. Listen and watch the video 8 and complete the next statements about radiographic tips for diagnosis

a) You need to understand that when you take an 1_____ the

- 2_____ is 3_____ facial to lingual, but the 4_____ is read 5_____ to 6_____ because all 7_____ except the 8_____ and 9_____ are two to three times as wide facial lingually.
- b) Most of the variations in 10_____ occur in that plane and are not 11_____ on the 12_____.
- c) If the need arises, a 13_____ can show you anatomy you can't see on a 14_____.
- d) The 15_____ of this 16_____ are not on the film, if you are going into the 17_____, you need to have an image of the 18_____.
- e) Here you see a 19_____ on the 20_____ of this tooth and around the 21_____ and actually this case has a 22_____ which we 23_____ in this film.
- f) Here is a 24_____ which shows clearly the 25_____ in this 26_____ which is going to expose the pulp.
- g) You see that the 27_____ of this tooth are 28_____ and not formed there for conventional 29_____ on this tooth would be impossible to obtain fortunately, for this patient we were able to do 30_____ of pulp.
- h) Here you see the tooth two years after the treatment and the 31_____

Video 8

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (Dentsply Sirona Endodontics US, 2014)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹ cysts ² lack of ³bone ⁴ encroachment ⁵smooth ⁶ resemblance

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Task 8. Reinforcement. How good are you at describing radiographic images?

Instructions:

- Each person will pass a ball or anything and whoever falls should make a diagnosis of an image.
- Make a diagnosis of the image that is presented with a maximum time of 30 seconds.
- The people who don't respond must fulfill a penance and others will be awarded with sweets.

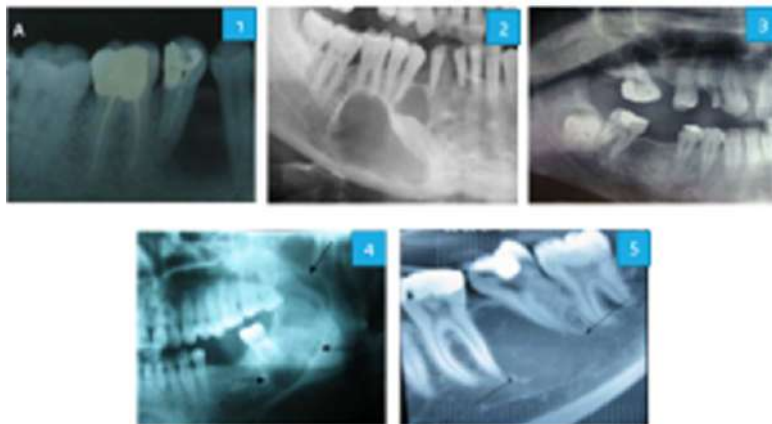


Fig. 20: Diagnosis

Source: (Altug & Ozkan, 2011)

LESSON 9

PULPECTOMY



Fig. 21: Baby tooth loss

Source: (Law, 2013)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

Premature loss of primary molars can cause a number of undesirable consequences including loss of arch length, insufficient space for erupting premolars and mesial tipping of the permanent molars (Hany, 2014).

Task 3. Work in pairs, ask and answer the following questions.

1. What do you think about the consequences of premature baby tooth loss?
2. What situation do you agree with premature baby tooth extractions in?
3. What considerations do you take into account to do a pulpectomy procedure?

Task 4. Read the following text about pulpectomy. Discuss about it with your classmates and teacher.

Pulpectomy, refers to the procedure of removing the whole contents of the chamber pulp and its root canal. In pulpectomy, the root canals are then filled with specific substances that to protect against recurrent infection. Pulpectomy can be total, where the whole pulp is removed until the apical foramen, or partial, where a pulp with an open apex or an incompletely formed root is formed. The main objectives of pulpectomy are to clean the root canals, obturate them, protect them from potential infection, and subsequently promoting healthy development of physiological roots.

Prior to a pulpectomy procedure, dentists should be aware of the primary anatomy of the root canals of the teeth to be operated, and to meticulously evaluate the proximity of the succedaneum's dentitions. Getting started, a local anesthetic agent to be injected and a rubber dam is to be applied to prevent transmission of bacteria from the rest of the oral cavity. The caries is to be then removed until the exposure area can be identified. Thereafter, a fissure bar is utilized to remove the pulp chamber roof. An excavator is then used to remove both the coronal and radicular portions of the dental pulp, respectively. Having the roof, radicular portion, and cranial portion all removed, the root canal is cleansed using an H-files. Saline is then irrigated into the root canal to ensure cleansing, and formocresol is subsequently placed.

After that, zinc oxide is applied to prevent infection. Obturation of the canal roots is the supposed next step and can be performed via various techniques such as lentulo spiral technique, incremental fill technique, and endodontic pressure syringe technique. A ZOE cement is then filled into the root canal and a stainless-steel crown is inserted to restore the operated tooth (Baik et al., 2018).

Technique	Pulpectomy
	Removing the whole contents of the chamber pulp and its root canal.
Indications	- Non vital teeth - Furcation - Coronal and radicular involvement - Dental abscess - Irreversible pulpitis - Primary teeth with necrotic pulp - Pulpless primary teeth with need to arch maintenance - Absence of underlying cysts
Complications	- Anesthesia adverse effects - Tooth discoloration - Local infection - Pain - Local bleeding - Tooth fracture - Tooth loss

(Baik et al., 2018)

Task 5. Write a summary of pulpectomy procedure in task 3, include indications about pulpectomy.

Task 6. Listen and watch the video 9 and fill in the gaps in the following statements about Pulpectomy.

- a) Endodontics is a specialized area of Dentistry focused on treating 1_____ or 2_____ to the 3_____.
- b) Here is a 4_____, inside the tooth under the 5_____ is a hard tissue called 6_____ inside the dentin is a soft tissue called pulp.
- c) the pulp contains the 7_____ and 8_____, it extends from the crown of the tooth into the roots of your 9_____.
- d) If the pulp becomes 10_____ or 11_____ an opening is made 12_____ the crown of the tooth and into the 13_____, fluid is put in the 14_____ to 15_____ any bacteria and help 16_____.
- e) The pulp is 17_____ using small instruments, the endodontist carefully cleans and 18_____ the canals, after the space is cleaned and shaped.
- f) The endodontist 19_____ and 20_____ the root canals in most cases a 21_____ is placed to close the opening until you see your dentist.
- g) You must return to your dentist to have your tooth 22_____ with a filling or 23_____ that protects the tooth and is important to ensure the success of your 24_____.

Video 9

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (*Implantologia*, 2015)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹debris ²undesirable ³archlength ⁴tipping ⁵obturate ⁶succedaneum's
dentitions ⁷ rubber dam ⁸ thereafter ⁹ fissure bar ¹⁰ pulp chamber
roof ¹¹excavator ¹² saline ¹³ stainless-steel crown

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Task 8. Reinforcement. Draw a line to match the picture with the correct description of contraindications about pulpectomy.

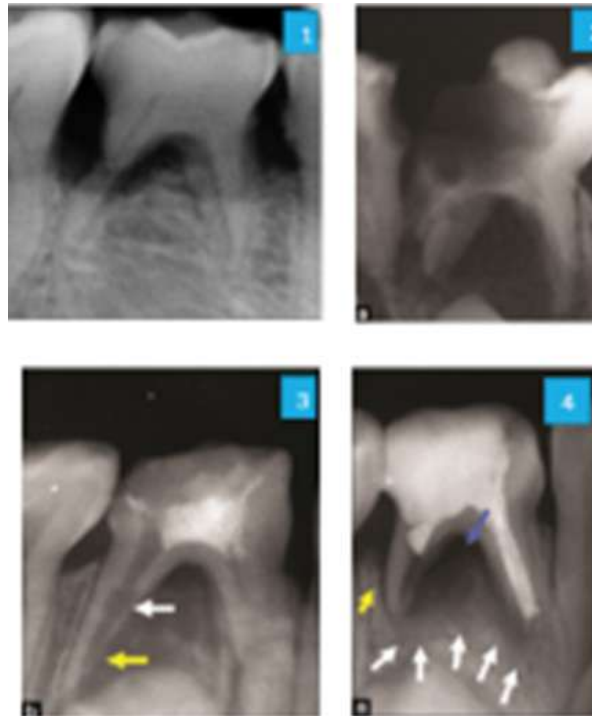


Fig. 22: Contraindications about pulpectomy

Source: (Hany, 2014)

- | | | | |
|--------------------------------|--|--|--|
| a) Badly decayed primary molar | b) Extensive root resorption (white arrow: Internal resorption, yellow arrow: External resorption) | c) External resorption of the distal root is the fate of chronic periodontitis | d) Total pulpectomy of the mesial root and partial pulpectomy of the distal root of primary 1st mandibular molar having radiolucencies in the periapical zone. |
|--------------------------------|--|--|--|

LESSON 10

PULPOTOMY



Fig. 23: A clinical case of child at: (a.) Preoperative Rö.gr - deep carious lesion on tooth 54; (b.) Postoperative Rö.gr on tooth 54 after 6 months.
Source: (Kabaktchieva & Gateva, 2009)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

Teeth pulps are necessary for healthy physiological apexogenesis particularly in early-formed permanent teeth with immature roots (Kashyap et al., 2021)

Task 3. Work in pairs, ask and answer the following questions.

1. Do you think a long-term maintenance of the pulp is necessary to preserve an adequate crown-root ratio, and subsequently an adequate function? Why?
2. If you have a coronal inflamed pulp, from your point of view, what is the better conservative treatment?

Task 4. Read the following text about Pulpotomy. Discuss about it with your classmates and teacher.

Pulpotomy is the procedure of removal of the coronal part of the dental pulp followed by application of a medicament. To

perform pulpotomy, a local anesthetic is initially injected at the site of procedure and a dental rubber dam is applied to isolate the surgical field, the first step of the procedure is to remove the visible dental caries until the pulp chamber is accessed. A cotton piece is then inserted to stop any potential bleeding. Once the dentist feels a dip, he begins side to side movement to extent the dental roof. Getting the pulp clearly accessible, the dentist removes its coronal pulp using an excavator or a round bar. After that, the dental medicament is inserted. The most common used dental medicaments for this procedure are ferric sulphate or formocresol. At this moment, the cotton is removed, and the dentist ensures there is no bleeding points. Because pulpotomy implies manipulation of the deep part of the dental pulp, acute or chronic pulpitis is a potential consequence and, therefore, zinc oxide eugenol (ZOE) should be applied to the dental chamber to provide a temporary sedating effect. Finally, a stainless-steel crown is inserted, and coronal restoration is placed (Igna, 2021).

Technique	Pulpotomy
	Removal of coronal part of dental pulp followed by application of a medicament
Indications	- Vital teeth - Healthy periodontium - Only coronal involvement - Contraindicated extraction - Absence of infection/abscess - Absence of fistula - Absence of spontaneous pain - Absence of involvement of pulp floor - Absence of interradicular bone loss

Complications	- Anesthesia complications - Tooth fracture - Tooth discoloration - Persistent pain
---------------	--

(Baik, y otros, 2018)

Task 5. Write a summary of pulpotomy procedure in task 3, include complications about pulpotomy.

Task 6. Listen and watch the video 10 and complete the next statements about pulpotomy.

- In primary teeth when _____ are in the nerve or close to the nerve, it's sometimes necessary to _____ a _____.
- A pulpotomy is the _____ of the irritated part of the pulp while _____ the healthy root canals _____.
- A pulpotomy usually involves four common steps, first we _____ an _____ into the tooth and _____ the part of the nerve in the _____ of the tooth.
- Next, we place medication to promote _____ and then we _____ the tooth to _____ it and protect it.

- e) The first thing we do is make sure they're _____ we place a _____ around the tooth to _____ it from the rest of the mouth.
- f) It protects like a safety _____ nothing can fall to the back of the _____.
- g) The _____ we make an opening through the top of the tooth down into the pulp _____.
- h) We carefully _____ the nerve tissue and then place a _____ sometimes the medicated packing is removed and sometimes it's left in place.

Video 10

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (Smoothdentist, 2009)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹crown ² thoroughly ³numb ⁴throat ⁵clean out ⁶ surgical field ⁷ bleeding ⁸ isolate ⁹ dip ¹⁰ round bar ¹¹healing

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____

Task 8. Reinforcement

Hanged (game)

Instructions:

A player thinks about two words, phrases or sentences and the other tries to guess it, according to pulpotomy's indications. Switch the roles.

The game ends when:

- The player completes the word, or guess the complete word correctly
- The other player completes the diagram:



1. _____
2. _____

LESSON 11

ORAL CANCER



Fig. 24: Squamous cell carcinoma which is surrounded by leukoplakia
Source: (The Oral Cancer Foundation, 2019)

Task 1. Look at the picture and talk about it.

Task 2. Read a short explanation about the topic.

Oral cancer is a malignant neoplasia, known like squamous carcinoma cell due to its origin, is one of ten most common cancers, his diagnosis is later and the treatment is expensive, it has a bad prognostic, more incident in male sex than female sex, it is developed in lips, tongue, gums, floor of the mouth, parotid and salivary glands. It has a high predilection of doing metastasis in lymphatic nodules (Rivera, 2015).

Task 3. Work in pairs, ask and answer the following questions.

1. Have you ever seen the presence of squamous carcinoma cell?
2. From your point of view, what are the most common causes of oral cancer?

Task 4. Read the following text about oral cancer. Discuss about it with your classmates and teacher.

Oral cancer is a malignant neoplasia which arises on the lip or oral cavity. Is traditionally defined as a squamous cell carcinoma (OSCC), because in the dental area, 90% of cancers are histologically originated in the squamous cells. It has different levels of differentiation and a propensity for lymph node metastasis.

Epidemiology

Oral cancer is two to three times more prevalent in men than women in most ethnic. According to the latest reports of the International Agency for Research on Cancer (IARC) for oral cancer (ICD-10 code C00-08: Lip, Oral Cavity) which includes lips, tongue, gingiva, mouth floor, parotid and salival glands, annual incidence is higher around the world, which is over 300.000 diagnosed cases, and the annual mortality is about 145,000 death.

Risk factors

Oral cancer is a preventable disease, where smoking and alcohol-considered major risk factors are present in 90% of cases, having them both a synergic effect.

Tobacco

In 2007, the IARC concluded that “there is quite evidence to establish that snuff smoke is carcinogenic, and for example, it causes cancer of the oral cavity and pancreas”. The risk for

developing oral cancer is 3 times higher in smokers compared with nonsmokers. Cigarette smoke weakens immunity in the oral cavity by promoting gingivitis, periodontitis and oral cancer. This smoke contains several elements that promote cancer and they basically can be grouped into three distinct groups: nitrosamines, benzopyrenes and aromatic amines.

Alcohol

Alcohol (ethanol) can act as a both locally and systemically risk factor: increased permeability of oral mucosa, dissolving lipids components of the epithelium, causing epithelial atrophy and interference in DNA synthesis and repair; it also has genotoxicity and mutagenic effects, causing decreased salivary flow, affects the liver's ability to deal with toxic or potentially carcinogenic compounds, and their chronic use is associated with an impairment of innate and acquired immunity, resulting in increased susceptibility to infections and neoplasms.

Other factors

Among other risk factors, there is the human papillomavirus (mainly associated with carcinoma of the oropharynx and ultraviolet radiation (UV). The IARC classifies human papillomavirus 16 (HPV16) as a cause for cancers of the oral cavity and pharyngeal tonsils, and HPV18 as possible causes of oral cancer. The most-common sites of HPV-related head and neck squamous cell carcinoma (HNSCC) are the tonsils and base of tongue within the oropharynx. Ultraviolet radiation, mainly the UVB is also involved in lip cancer (Rivera, 2015).

Task 5. Write a summary about risk factors of oral cancer.

Task 6. Listen and watch the video 11. Are the following sentences true (T) or false (F)? Correct wrong sentences.

- a) At the end of the oral evaluation you should ask your patient if any new dental issue has emerged since his/her last visit. ()
- b) It's important to pay attention to risk factors such as be female sex, elderly age, alcoholic and sugar consumption. ()
- c) The oral evaluation is performed by the means of a visual and tactile intraoral and extra oral exam. ()
- d) Changes in color, consistency, function, irregular contours, asymmetry, diameter more than 6 mm, and the evolution over the time are indispensable to recognize an oral cancer. ()
- e) Lips indurations and ulcerations are important for oral evaluation. ()
- f) It's important to look and palpate lateral and ventral tongue, nearby salivary glands because a half of all malignant lesions are usually found in this area. ()
- g) You don't have to palpate and inspect the floor of the mouth. ()

Video 11

<https://1drv.ms/u/s!Avu0NeaWfGfZlE8WA4dCzvEfNXUn?e=bMGITj>

Source: (American Dental Association, How to Check Patients for Oral Cancer, 2017)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹misdiagnosis ²carcinoma in situ ³tongue
⁴white plate ⁵triggering factors

1. _____
2. _____
3. _____
4. _____
5. _____

Task 8. Reinforcement. Find the following words in the crossword regarding some oral premalignant neoplasm.

- Lichen planus
- Erythroplakia
- Leukoplakia
- Submucous fibrosis
- Squamous Papilloma
- Actinic Cheilitis

Q	L	S	D	A	E	T	R	Y	G	M	A	S	S	R	I	A
Z	X	E	S	D	Q	S	H	G	J	Y	E	R	U	T	L	F
H	E	A	U	R	R	A	G	I	C	H	R	N	B	U	E	A
Y	I	C	B	B	A	S	E	N	M	L	Y	N	M	R	U	A
P	L	T	M	K	O	E	S	U	Z	A	T	T	U	W	K	E
O	R	I	U	T	S	P	C	R	T	A	H	O	C	A	O	R
T	S	N	C	C	H	Y	L	U	N	G	R	N	O	A	P	Q
E	W	I	P	H	U	S	A	A	F	K	O	K	U	X	L	S
N	E	C	U	S	E	A	D	H	K	I	P	H	S	A	A	A
S	X	C	T	K	A	N	S	G	H	I	L	K	F	W	K	E
I	C	H	F	A	M	A	P	O	N	U	A	H	I	D	I	R
O	D	E	I	Y	S	P	N	L	E	A	K	J	B	U	A	S
N	S	I	L	S	S	O	G	A	A	A	I	A	R	A	S	G
D	A	L	R	L	W	Z	X	G	H	N	A	N	O	S	U	H
V	S	I	I	S	O	R	B	I	J	S	U	L	S	B	M	J
F	S	T	S	R	R	A	F	I	B	R	A	S	I	S	O	G
S	R	I	O	M	P	U	S	P	A	U	S	K	S	P	E	S
I	T	S	U	I	R	M	O	E	L	R	I	Y	T	R	I	R
S	Q	U	A	M	O	U	S	P	A	P	I	L	L	O	M	A

LESSON 12

CLEFT LIP AND PALATE



Fig. 25: Cleft lip and palate

Source: (Shaye, Liu, & Tollefson, 2015)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

Cleft lip and palate (CLP) is the most common orofacial malformation affecting one in every 700–1000 newborns worldwide. The anomaly is characterized by the lack continuity of tissues forming the lip, alveolus, and soft and hard palate (Vyas et al., 2020).

Task 3. Work in pairs, ask and answer the following questions.

3. Have you ever seen the presence of cleft lip and palate in the same patient? Explain.
4. From your point of view, what are the most important consequences of cleft lip and palate?

5. Do you think that people affected by this pathology have psychological repercussions?

Task 4. Read the following text about cleft lip and palate. Discuss about it with your classmates and teacher.

Cleft lip and palate (CLP) are the most common congenital deformity of the orofacial. Clefts are thought to be of multifactorial etiology due to genetic and environmental factors. Different dental abnormalities are usually seen in cleft patients, including midface deficiency, collapsed dental arches, malformation of teeth, hypodontia, and supernumerary teeth. Moreover, feeding and speech are major functional dilemmas for those patients. The goal of treatment is to restore esthetics and functional impairments associated with clefts.

Classification of cleft lip and palate

Veau (1931) classified oral clefts based on the anatomy of the oral cavity into four groups:

1. Cleft of soft palate.
2. Cleft of soft and hard palate from incisive foramen up to the secondary palate.
3. Complete unilateral cleft from the uvula to incisive foramen, going on one side through the alveolus at the side of the future lateral incisor tooth.
4. Complete bilateral cleft from the incisive foramen to the alveolus, the premaxilla remains suspended from the nasal septum (Zreagat, Hassan, & Hanoun, 2017).

Cleft lip

The extent of the cleft lip is variable and can include the cleft alveolus, which can be complete or notched. Independent of the cleft lip type, the cleft palate is described as unilateral (one palatal shelf is attached to the nasal septum) or bilateral. The extent of the cleft is classified as complete, incomplete, or microform. In the complete cleft, there is disruption of the lip's mucosal up to the nasal floor with the associated nasal deformity.

An incomplete bilateral cleft lip can be quite asymmetric. The severity of the cleft lip width can make the repair more difficult because of wound tension. In the complete unilateral cleft lip, there is an external and upward rotation of the medial segment of the premaxilla and an internal and posterior rotation of the lateral segment. The nasal septum is dislocated from the vomerian groove with a shortening of the columella. The alar cartilage of the cleft side is deformed such that the medial crus is displaced posteriorly, and the lateral crus is flattened over the cleft.

In the complete bilateral cleft lip deformity, the premaxilla and prolabium are entirely separate from the lateral lip and maxillary segments, the prolabium does not contain orbicularis oris muscle (Shaye, Liu, & Tollefson, 2015).

Cleft palate

A cleft deformity can occur in both the primary and secondary palates. Clefts of the primary palate range from an alveolar notch to those that extend through the hard and soft palates. Clefts of the secondary palate range from a bifid uvula to clefts that extend to the incisive foramen. The soft palate consists of 5 muscles that are responsible for velopharyngeal closure, including the musculus uvulae, the palatoglossus, the palatopharyngeus, the tensor veli palatini, and the levator veli palatini. The levator veli palatini is

the primary muscle involved in velopharyngeal closure. Normally, it originates from the Eustachian tube and inserts anteromedially onto the tensor aponeurosis, along with the tensor veli palatine. In the cleft palate, the levator muscles insert aberrantly onto the posterior edge of the hard palate. Contractions of the palatal muscles therefore become ineffective at closing the velopharynx (Shaye, Liu, & Tollefson, 2015).

Task 5. Rewrite the paragraph about cleft palate.

Task 6. Listen and watch the video 12 and fill in the gaps in the following statements about cleft lip and palate treatment, DynaCleft.

- a) Souths medics Dyna 1_____ and 2_____ are clinically proven pre surgical 3_____ for cleft lip, cleft 4_____ and nasal 5_____.
- b) Dyna cleft 6_____ across the cleft 7_____ provides a controlled 8_____, repositioning the 9_____ pre maxilla and 10_____ segments for the best possible 11_____.
- c) The nasal elevator gently 12_____ the nose 13_____ and straightening the 14_____, leading to improved 15_____ and reducing the extent of or even the need for

- 16 _____, as an effective treatment that is also easy to adjust and 17 _____ patient 18 _____.
- d) 19 _____ and 20 _____ elevator are increasingly becoming the preferred 21 _____ by both clinicians and families.

Video 12

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (*Dynamic Tissue Systems*, 2016)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹ cleft lip ² cleft palate ³ lengthening ⁴ notched ⁵ disruption ⁶ force ⁷ width ⁸ groove

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Task 8. Reinforcement. Use the correct diagnosis from the box. Identify the pictures and match the picture about cleft lip and palate with the correct number.

Cleft lip + palate bilateral Median cleft Cleft lip unilateral Lateral cleft Cleft lip bilateral Cleft lip + palate unilateral



Fig. 26: Cleft lip and palate diagnosis
Source: (Shaye, Liu, & Tollefson, 2015)

LESSON 13



Fig. 27: Extractions of teeth with bone preservation

Source: (Gargiulo, Manos, Kolozenski, Tzanos, & Levi, 2011)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

Exodontia is a procedure that all dentists are taught to perform in dental school and used by most general clinicians in their practice. With the growth of implant dentistry because of its high success rate and predictability, more questionable teeth that in the past may have been salvaged through extreme endodontic or periodontic procedures are now extracted for implant placement (Dym & Weiss, 2012).

Task 3. Work in pairs, ask and answer the following questions.

1. Have you ever recommended to preserve teeth through dental procedures or to extract them? Why?
2. Do you agree to extract teeth for implant placement or do you prefer to preserve them if it's possible? Give two reasons at least.

Task 4. Read the following text about simple extraction. Discuss about it with your classmates and teacher.

In the process of a simple extraction, surgeons must exercise a great deal of finesse and a certain degree of controlled force to be able to deliver a simple tooth extraction.

Definition

Basic exodontia: simple luxation techniques, bone expansion, and forceps delivery

Complex exodontia: techniques used to remove teeth other than by simple luxation and forceps delivery

Indications

Surgical extraction usually involves 3 or more of the following steps:

1. Elevation of a mucoperiosteal flap
2. Ostectomy
3. Sectioning of the tooth
4. Luxation and removal of the roots
5. Removal of radicular pathologic condition when present
6. Debridement of the surgical field and the removal of sharp bony edges
7. Wound closure.

A simple extraction process involves minor alveolar bone expansion, separation of the periodontal ligament (PDL), and simple coronal forceps delivery of the tooth. Successful extractions also depend on the surgeon's thorough and detailed understanding of the anatomy of the teeth involved, the root form, angulation, attachment of the teeth to the periodontal apparatus, and the bony structure underneath. As the tooth is being removed, the surgeon will be able to appreciate the lateral forces applied on the tooth's roots and their effect on the alveolar bone. This recognition leads to avoidance of any excessive forces that would produce root and alveolar bone fractures. The patient needs to be positioned in the dental chair to allow for the surgeon's optimal control and visibility. When extractions are being performed in the lower arch, it is preferable that the patient's mandible is positioned in a parallel line with the floor. Then the patient's height should be adjusted up and down to allow for the mandible to be positioned at the same level at the surgeon's elbow so that when the surgeon is performing the extraction, the forearm is parallel with the floor as well.

When extracting a maxillary tooth, the patient's maxillary occlusal plane should fall at almost 60° angle with the floor. The surgeon's position, relative to the patient's position, varies as well, depending on which tooth is being extracted, and is also dependent on the surgeon's dominant hand.

Typically, the surgeon starts by separating the superior portion of the PDL and then sub-luxating with an elevator. Choosing the right forceps is important to be able to grasp the cervical portion of the tooth and position it as apically as possible to try to shift the center of rotation toward the root. This positioning allows the most effective central bone expansion movement and prevention of the fracture of roots or crown at the same time. Sharp elevators and

forceps are always more desirable to use because they engage the tooth in a more firm and predictable manner and prevent slippage and/or lack of efficient delivery of force. Pursuant to the separation of the PDL, one must find an appropriate purchase point for the elevator. The clinician must try to position the elevator between the bony socket wall and the tooth itself and direct the elevator in an apical direction trying to sublunate the root and push it coronally. Most of the time, an effective elevation prevents injuries (Dym & Weiss, 2012; Colgate, 2022).

Task 5. Write a paragraph about what post extraction instructions you have given to your own patients.

Task 6. Listen and watch the video 13 about Oral Surgery Simple Extraction to fill in the blanks.

- a. After anesthetic technic, the explore is used to ensure that 1_____ are sufficiently 2_____, it means that the tooth is ready for 3_____.
- b. The periosteal elevator will help to 4_____ around the 5_____.
- c. The curette is useful to 6_____ within the socket; there could be an abscess or 7_____.
- d. It's necessary to irrigate the site with 8_____.

- e. Finally, we need to put a gauze moisten it with ⁹_____ folding it into a ¹⁰_____, rolling it up.
- f. The gauze needs to be placed around the ¹¹_____.

Video 13

Source: (Young Dentist, 2015)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹numb ⁴log ⁷bone ¹⁰bleeding
²debris ⁵socket ⁸dental bur ¹¹scalpel handle
³moisten ⁶needle ⁹scalpel blades ¹²bone file

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Task 8. Reinforcement. Match the words in the box with the number of the correspondent picture and write down it.

Bayonett root forceps maxillary forceps mandibular forceps scalpel handle periosteal elevator Minnesota retractor scalpel blades

Farabeuf retractor Metzenbaum scissors dissecting forceps straight elevator triangular elevator straight forceps bayonet forceps bone file Luer Rongeur forceps Allis tissue clamp Adson forceps surgical spoon curette apexo elevator Mayo-Hegar needle holder anesthetic syringe 3-0 silk with 3/8 circle needle surgical drill

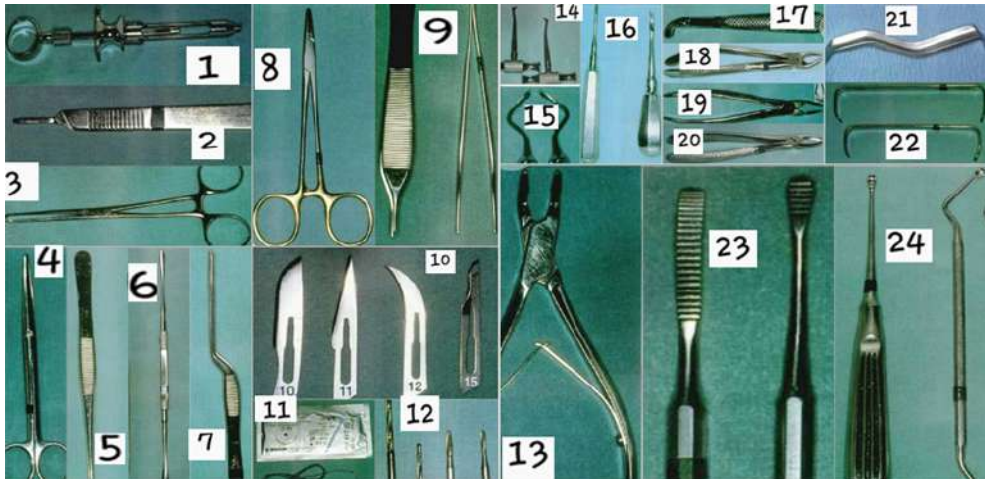


Fig. 28: Instruments for exodontia

Source: (Gay Escoda, Sánchez Garcés, & Berini Aytés, 2015)

- | | |
|----------|----------|
| 1 _____ | 2 _____ |
| 3 _____ | 4 _____ |
| 5 _____ | 6 _____ |
| 7 _____ | 8 _____ |
| 9 _____ | 10 _____ |
| 11 _____ | 12 _____ |
| 13 _____ | 14 _____ |
| 15 _____ | 16 _____ |
| 17 _____ | 18 _____ |
| 19 _____ | 20 _____ |
| 21 _____ | 22 _____ |
| 23 _____ | 24 _____ |

LESSON 14

ORAL SURGERY COMPLICATIONS



Fig. 29: Bleeding

Source: (Roberts, Scully, & Shotts, 2001)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

The most common surgical procedure done in the dental clinics is the extraction of teeth, there are a number of factors that determine difficulties related to extractions, including root morphology and proximity to anatomical structures, bleeding, post-operative swelling and infection, also prolonged operation duration, low serum albumin, and increased blood loss volume were associated with postoperative complications (Bach & Woo, 2007; Shigeishi, Ohta, & Takechi, 2015).

Task 3. Work in pairs, ask and answer the following questions.

1. From your point of view, what is the most common complication after performing an extraction? Explain.
2. What complementary medical studies do you recommend before performing an extraction?
3. What considerations do you take into account to prevent a surgical complication?

Task 4. Read the following text about: Surgical local complications after performing an extraction. Discuss about it with your classmates and teacher.

Difficulties of extractions are multi-factorial. Depth and angle of impaction are obvious factors that should be assessed. Factors that are also important in the decision-making process are the age of the patient, general medical health, ethnicity, anatomy (trismus, tongue size, tooth structures), mental status (anxiety), and ability to cooperate. Extraction difficulty increases when the following conditions exist dense supporting bone, difficult root morphology, teeth with large restorations or decay, adjacent teeth with large restorations, and brittle teeth associated with endodontic treatment.

Bleeding

One of the most common complications of all surgeries is post-operative bleeding. Post-operative bleeding from dental extraction is commonly due to venous bleed from nutrient blood vessels in the supporting bone but can also be due to an arterial source. Other causes of post-operative bleeding may include the failure to debride all granulation tissues from the socket, torn soft-tissue, and rebound vasodilatation following the use of epinephrine-containing anesthetics. Patient factors can also contribute to excessive and prolonged post-operative bleeding. Patients who

are on medications such as Coumadin, Aspirin, Plavix, and chemotherapeutic agents may have prolonged bleeding. Patients who have uncontrolled hypertension, liver diseases, platelet deficiency, hemophilia, von Willebrand factor deficiency, or vitamin K-deficiency (from prolonged antibiotic intake or GI surgeries) may also pose a significant risk for post-operative bleeding.

Surgical Swelling & Infection

Post-operative soft-tissue swelling can be a normal part of the healing process. The wound heals by the inflammatory process, which has four cardinal signs: swelling, redness, pain, and heat. The initial clot serves as a wound protector as well as scaffolding for the formation of granulation tissues. Granulation tissues are highly vascularized tissue beds that help bring nutrients and fibroblasts to the wound for repair. Due to the increased blood flow, increased hydrostatic pressure, and increased transudate that contains all the immune cell types and chemotactic factors, swelling is ensured.

Dry Socket



Fig. 30: Dry socket

Source: (Bach & Woo, 2007)

Dry socket is also known as alveolar osteitis. It is delayed wound healing of the alveolar bone after dental extractions. It can be confused with normal post-operative pain. Dry socket is usually diagnosed on Post-Operative Day 3 to 5 when the pain suddenly intensifies instead of gradually decreasing. There is also a distinctive foul odor from the wound that the patient may complain about.

Sinus Perforation

The maxillary sinus is a potential source of complication during the extractions of upper molars. The floor of the sinus is usually the closest to the palatal root of the upper first molars. The floor of the sinus may be so close to the roots that part of it can be removed with the tooth during routine extractions. Other times, the sinus can be easily perforated during traumatic retrieval of broken root tips. One easy way to test for sinus perforation is to squeeze close the patient's nostrils, then ask the patient to breathe out through their nose with their mouth wide open. If the sinus is perforated, air will leak from the nasal passage through the sinus into the oral cavity. Using indirect vision with the help of a mouth mirror, one would see bloody air bubbles.

Root Tip in Maxillary Sinus

As mentioned above, the floor of the sinus is closely associated with the maxillary molar roots. If a root tip is pushed into the sinus during extractions, place the patient in an upright position to allow gravity to draw the root tip closer to the perforation.

Nerve Injury

The inferior alveolar nerve and artery are both contained within the inferior alveolar canal. The course of this canal is such that it usually runs buccal and slightly apical to the roots of the mandibular molars. During extraction of the mandibular molars, due to the proximity of the roots, the nerve can be traumatized.

Some radiological findings that predict this close proximity include darkening or notching of the roots, deflected roots at the canal, narrowing of the roots, narrowing of the canal, disruption of the canal outline, and diversion of the canal from its normal course (Bach & Woo, 2007).

Task 5. Number the Surgical local complications after performing an extraction in task 3 and why they occur.

Task 6. Listen and watch the video 14 and fill in the gaps in the following statements about the most common oral surgery complication.

- a) Probably, the most common 1_____ in removing 2_____ other than 3_____, is a 4_____.
- b) Anyone that's had a dry socket has certainly 5_____ the word through all of their friends.
- c) When we 6_____ a tooth 7_____, we would like a nice 8_____ to fill in that 9_____, that's why you put a 10_____ in there to 11_____ the gum 12_____.
- d) We put 13_____ on top for direct 14_____.
- e) In some cases that 15_____ can be 16_____ or maybe it doesn't form and just leaves a 17_____.

- f) That ¹⁸_____ results in a ¹⁸_____, it develops about three to five days after the ¹⁹_____.
- g) Once the ²⁰_____ goes down if the ²¹_____ gets worse you may have a ²²_____.
- h) In which case you go back to the ²³_____ and they can evaluate it, they can ²⁴_____ out the extraction site and put a nice ²⁵_____ in there to ²⁶_____ of the pain.
- i) If we did nothing it would ²⁷_____ fine it would just ²⁸_____ for about two to three weeks as it was ²⁹_____.

Video 14

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (*Media News Sequence*, 2012)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹ dull throb ² swelling ³ platelet ⁴ intake ⁵ brittle teeth ⁶ redness ⁷ clot ⁸ foul odor ⁹ retrieval ¹⁰ nostrils ¹¹ root tip ¹² leak ¹³ get rid ¹⁴ wisdom teeth

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Task 8. Reinforcement. Tic tac toe

Indications

- Tic-tac-toe is a paper-and-pencil game for two players, x and o, who take turns to fill the gaps in a 3×3 grid.
- A statement about the oral surgery complications will be given and the person who raises the hand first will respond if it is false or true.
- If the person responds correctly, he will play his game, otherwise nobody will play the game and we will jump to another statement.
- The player who succeeds in placing three of their marks in a horizontal, vertical, or diagonal row wins the game.

Materials:

- Blackboard
- Markers

Statements

1. Swelling can hopefully be controlled by just placing ice on the face T F
2. When you make an incision in the gum or anyone in the body you can have bleeding T F
3. Sometimes the roots develop further down around inferior alveolar nerve and that nerve can be injured. T F
4. In the upper jaw in particular you have a sinus and it's in front of your posterior teeth and sometimes the roots will actually be within the sinus floor T F
5. The lingual nerve innervates the anterior 2/3 of the tongue and sometimes when you're getting an injection for a filling you can get an electric shock T F
6. Probably the most common complication in removing wisdom teeth is a dry socket T F

LESSON 15

DENTAL PROSTHESIS



Fig. 31: Vertical dimension

Source: (Preti, 2018)

Task 1. Look at the picture and talk about it.

Task 2.- Read a short explanation about the topic.

Portraits of the first president of United States by Charles Willson Peale, having defeated the British and won the first election to the presidency, he was inaugurated in 1789 with one tooth in his mouth, a lower left bicuspid. He had a large collection of false teeth, made of everything from elephant ivory, walrus tusk, and hippopotamus tusk to the teeth of a fellow human (Darnton, 2003).

Task 3. Work in pairs, ask and answer the following questions.

1. Do you know the causes for tooth loss?
2. Why is it important to ask about smoking before starting a prosthodontic treatment?
3. How indispensable is taking X-rays of the adjacent tissues and remaining teeth? Why?

Task 4. Read the following text about Prosthodontics. Discuss about it with your classmates and teacher.

Prosthetic dentistry is one of the fundamental pillars of dentistry. Even though it is highly specialized in replacement of missing teeth and adjacent soft and hard oral tissues, the cooperation with other branches of dentistry is very important. It usually provides final stages of rehabilitation of the whole maxillofacial system. The loss of several teeth can initiate serious problems related to the whole orofacial region, psychics and the wellbeing of the patient. From this point of view prosthetic dentistry is a valuable tool with high therapeutical and preventive character.

Modern prosthetics offers classical solutions with simple fixed and removable dentures, and advanced solutions with dental implants support for rehabilitation of dental defects. Final quality and prognosis of prosthetic treatment depends both on materials and technologies used and on the patients' motivation and dental care. Superior esthetical demands and biocompatibility issues drive dental manufacturers to introduce new materials with defined properties. Nowadays the most sophisticated systems are based on ceramics, dental implants and CAD/CAM technologies.

The objective of prosthetic dentistry is the complex rehabilitation of the orofacial system – i.e. the rehabilitation of the masticatory

function, phonetics and aesthetics. This complex rehabilitation is very important for a patient's self-image. Prosthodontics deals with the replacement of lost teeth and the adjacent alveolar ridges and missing soft and hard maxillofacial tissues. The causes of these losses may be different. The loss of teeth caused by extractions or injuries is the main reason for such situations. Further reasons are: physiological processes during the aging, insufficient care on the part of the patient for oral health and hygiene.

Classification of defects and types of prosthetic appliances

The large variety of dental defects (over 4 billion) required simplification. Today's dentistry uses several classification systems, which help in treatment planning.

Kennedy classification distinguishes four basic classes:

1. Bilateral edentulous area
2. Unilateral edentulous area
3. Unilateral edentulous area with natural teeth remaining both anterior and posterior to it.
4. Single edentulous area located anterior to the remaining natural teeth.

Modern prosthetic dentistry offers two ways of solution: with classical dental appliances and with dental implants.

Classical fixed and removable appliances can solve all dental defects. Dental implants, which replace natural roots, with added special prosthetic appliances, can replace under strict conditions, single missing teeth or whole groups of teeth, even the entire dentition. Implant-born prosthetic appliances may be fixed or removable and they always represent a high comfort for the patient.

Fixed bridges

Fixed bridges are dental appliances firmly luted on the natural teeth. They are indicated for gaps in the dental arch. Their characteristic feature is dental support, i.e. all masticatory forces during mastication act on the whole surface of the bridge construction and are transferred to the maxillofacial skeleton only by the periodontal tissues of dental abutments. Contraindications include extreme atrophic changes of periodontal tissues, chronic inflammations of the marginal gingiva, too low and too advanced age of the patient, progressive stages of a periodontal disease. Removable bridges are indicated for these patients.

Fixed bridges consist of construction elements, pontics and connectors. These constructions must have sufficient mechanical properties, responsible for retention in the oral cavity, and they must respect aesthetical demands.

Removable dentures

There are two types of removable dentures – partial dentures and complete dentures.

Removable partial dentures (RPD) RPDs with special indications are: removable bridges, saddle dentures, plate (acrylic) dentures and overdentures. Removable partial dentures with a metal cast framework are suitable for gaps and shortening of the dental arch. These RPDs provide mixed support (dento-mucosal).

Plate (acrylic) dentures are removable prosthetic appliances with simple wire clasps (retention), providing mucosal support.

Complete dentures

Total edentulousness means a considerable handicap for each patient from functional (mastication) as well as from the phonetic,

esthetical, psychological and social point of view. There are two possible ways of rehabilitation of the total edentulousness in today's dentistry: complete-dentures fabrication, and dental implant application with special prosthetic appliances (overdentures and hybrid dentures).

Complete dentures replace missing natural teeth and adjacent alveolar ridges. We deal with individual problems concerning denture support, retention and stability, inter-jaw relations and the arrangement of the artificial teeth (Hubáľková & Linetskiy, 2006; Brennan, 2021)

Task 5. Rewrite the paragraph about complete dentures in task 3.

Task 6. Listen and watch the video 15 and fill in the gaps in the following statements about three Tooth Replacement Options.

- a) A 1_____ may cause the surrounding teeth to 2_____ or become 3_____ and can change your 4_____, this can lead to cavities, 5_____ and bite problems, a missing tooth in the 6_____ may even cause a tooth in the upper jaw to move 7_____ into the 8_____ space.
- b) It may also cause your face to look 9_____ or you may find it difficult to talk or 10_____ food.

- c) You have a few options to replace missing teeth depending on your specific needs your dentist may recommend ¹¹_____, _____ or ¹²_____.
- d) An implant is a replacement tooth that ¹³_____ to your ¹⁴_____ with a ¹⁵_____ that acts like a tooth ¹⁶_____.
- e) Implants can also help prevent ¹⁷_____ of the jawbone that occurs from missing teeth.
- f) Fixed are made from ¹⁸_____, _____ or a combination of the two, an artificial tooth called a ¹⁹_____ takes the place of the lost natural tooth, ²⁰_____ on either side of the ²¹_____ are bonded or ²²_____ to the adjacent teeth.
- g) Removable partial denture typically have the ²³_____ attached to a gum colored plastic base connected by a metal ²⁴_____, they attach to your natural teeth with either metal ²⁵_____ or devices called ²⁶_____.

Video 15

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (ADA, 2013)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹walrus tusk ²clasp arm ³autoglaze ⁴fixed bridge ⁵saddle dentures
⁶acrylic plate ⁷framework ⁸cast ⁹chew ¹⁰shrinkage

1. _____
2. _____
3. _____
4. _____

5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Task 8. Reinforcement. Match the words 1-10 with the definitions a-j.

1) abutment	4) reciprocal arm	7) anatomic teeth
2) bonded bridge	5) anatomic crown	8) ackers clasp
3) alveolar crest	6) clasp arm	9) autoglaze
		10) attachment screw

- a) It could be a tooth, or a portion of a dental implant that receives pressure and it is used to support and/ or retain a dental prosthesis. ()
- b) The bony portion of the maxillae or mandible where a tooth lost have occurred, as well known as residual crest. ()
- c) The portion of a natural tooth, visible clinically. ()
- d) No natural teeth, it's designed to replace natural teeth, designed with cusps to articulate with the opposing teeth, in order to help in masticating process. ()
- e) A circumferential device, it clasps the abutment, it's made of alloy for removable partial denture. ()
- f) A metal device used in fixed dental prosthesis to attach, retain and stabilize a fixed denture framework. ()
- g) The process in which the temperature is increased to produce a shiny ceramic surface in a fixed dental prosthesis. ()

- h) The well-known Maryland bridge is an adhesive fixed dental prosthesis. ()
- i) It's opposite to retentive arm action allowing the removal of the removal partial denture. ()
- j) It's designed to retain a removable partial denture, also it's the flexible part or a removable partial denture. ()

LESSON 16

REMOVABLE PARTIAL DENTURE DESIGN: MAJOR AND MINOR CONNECTORS



Fig. 32: 'Waterloo teeth'

Source: (World Dental Federation, 2015)

Task 1. Look at the picture and talk about it.

Task 2. Read a short explanation about the topic.

In 1815 UK: Teeth from the 50,000 soldiers killed in the battle of Waterloo were taken out and used to fabricate dentures, known as 'Waterloo teeth'. Even though the use of porcelain teeth and new materials became more widespread, extracted human teeth were used until the 1860s to make dentures (World Dental Federation, 2015).

Task 3. Work in pairs, ask and answer the following questions.

1. Would you like to make dentures with human teeth? Yes/No, Why?
2. What do you think is more esthetic human teeth or porcelain teeth? / Why?
3. Do you think people would accept human teeth in their artificial dentures? Yes/No, Why?

Task 4. Read the following text about removable partial denture designing major connector. Discuss about it with your classmates and teacher.

Removable partial denture (RPD) is one of the various treatment options available for the replacement of teeth for partially edentulous patients. The major connector of an RDP is the component that connects the different parts of the RPD as well as can achieve numerous functions and influence the success of RPD. The variety of anatomic considerations related to the shape of the palate and gingival conditions may affect selection of maxillary major connector.

RPD success mainly depends on proper design and components selection. Maxillary major connector (MMC) is RPD component that fulfill various functions and important for RPD effectiveness. The MC is the most important component of the partial denture framework to which all other components are attached.

Requirements: the choice of MMC type is based upon requirements include: rigidity, function, and hygiene

Types of Major Connector

It can be classified according to form, thickness, and position into bar, A-PP bar, strap, A-PP strap, U-shaped, and plate. The MCs used in maxillary RPD are mainly the A-PP strap, full palatal plate, palatal strap and u-shaped while bar type least used.

Bar: bar is MC with least anteroposterior width varies from 4-8mm. Due to the decreased width; palatal bar to have the necessary rigidity for cross-arch distribution of stress and provide support in addition to should be symmetrically and have concentrated bulk.

A-P bar: A-P bar formed of anterior and posterior bars joined by flat longitudinal elements on each side of the palate. This configuration gives the effect of a circle and is considerably more rigid than any of the individual elements.

Strap: strap is a transverse palatal cover, normally 8-12 mm in width, and may extend up to 20 mm with proper thickness.

A-PP strap: A-PP strap comprise two transverse palatal straps (8 to 10 mm width) and two longitudinal parallel straps (6 mm width). This circle configuration ("L-beam" effect) could be improved the connector rigidity because the straps are in 2 different planes therefore it favorite used for most maxillary partially edentulous situation.

U-shape: all major connector designs should have the potential to reduce torquing forces delivered to the abutments by loading a removable partial denture distal extension.

Plate: Palatal Plates usually extended and offer more palatal coverage than straps. A typical example of palatal plate indication is a Kennedy class I and wide maxillary edentulous areas when retention and maximum support were needed (Gad, 2017).

Task 5. Write a summary about Removable Partial Denture Designing in task 3; don't forget to include types of major connectors.

Task 6. Listen and watch the video 16 and fill in the gaps in the following statements about minor connectors.

- a) 1_____ are those components that serve as the connecting 2_____ between the 3_____ and other components of the partial denture.
- b) This 4_____ is a 5_____ that connects the major connector to a rest.
- c) The 6_____ is a minor connector that connects the base and the 7_____ to the major connector, and lastly the 8_____ shown here connects the major connector to this 9_____, these are all minor connectors.
- d) There are 10_____ types of minor connectors, there are: those that join 11_____ to the major connector: those that join 12_____ to the major connector, those that join 13_____ or 14_____ to the major connector and those that serve as approach 15_____ for the 16_____.

- e) The function of the minor connector is to ¹⁷_____ to the ¹⁸_____, it also is to transfer the effect of the ¹⁹_____ and stabilizing components to the rest of the ²⁰_____.

Video 16

<https://1drv.ms/u/s!Avu0NeaWfGfZIE8WA4dCzvEfNXUn?e=bMGITj>

Source: (Windchy, 2014)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹strut ²clasps assemblies ³base attachment ⁴bar type clasp
⁵abutment teeth ⁶strut strength ⁷link ⁸fulfill
⁹thickness

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Task 8. Reinforcement Broad Race

Instructions:

1. Split the class into two teams and give each team a colored marker.
2. If you have a very large class, it may be better to split the students into 2 teams.

3. Draw a line down the middle of the board and write a topic at the top.
4. The students must then write as many words as you require related to the topic in the form of a relay race.
5. Each team wins one point for each correct word. Any words that are unreadable or misspelled are not counted.

Removable Partial Denture Design

Team 1

Team2

LESSON 17

MALOCCLUSION

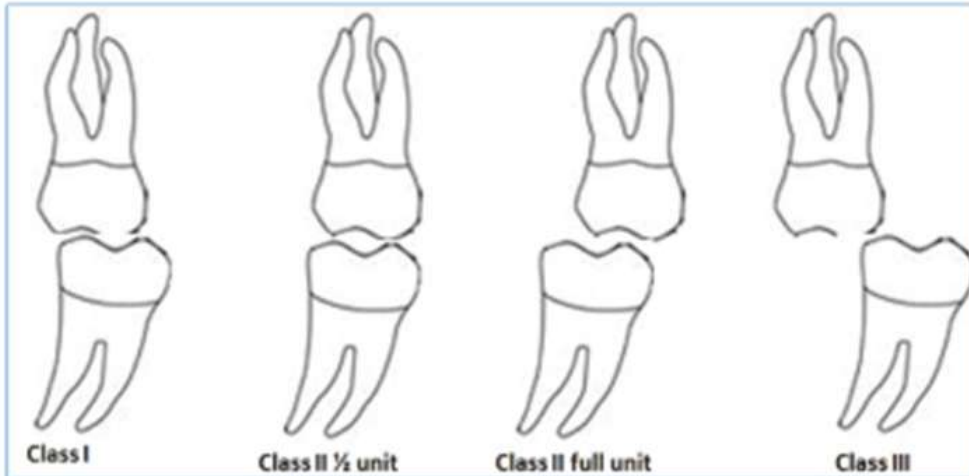


Fig. 33: Molar's Classification

Source: (Mageet, 2016)

Task 1. Look at the picture and talk about it.

Task 2. Read a short explanation about the topic.

Edward Hingley Angle (1899) classified Orthodontic malocclusion in the mesio-distal relationship of teeth. His classification system is still used to describe how crooked teeth are (World Dental Federation, 2015).

Task 3. Work in pairs, ask and answer the following questions.

1. Name 6 malocclusions treated in Orthodontics.
2. Could you describe your type of occlusion?
3. Describe the Class I occlusion defined by Angle.

Task 4. Read the following text about malocclusions. Discuss about it with your classmates and teacher.

Occlusion is defined a manner in which the upper and lower teeth intercusate between each other in all mandibular positions and movements. It is a result of neuromuscular control of the components of the mastication systems namely: teeth, periodontal structures, maxilla and mandibular, temporomandibular joints and their associated muscles and ligaments. An individual's occlusal status is generally described by two major characteristics: intra-arch relationship, the relationship of the teeth within each arch to a smoothly curving line of occlusion and inter-arch relationship, the pattern of occlusal contacts between the upper and lower teeth.

The Angle method for the classification of malocclusion has been the gold standard in orthodontics for over 100 years. Arguably, Angle's classification is the most widely used and accepted occlusal classification system.

As described by Angle, in Class I molar relation, the mesiobuccal cusp of upper first permanent molar occludes with mesiobuccal groove of the lower first permanent molar. The distobuccal cusp upper first permanent molar occludes with mesiobuccal groove of the lower first permanent molar in the Class II and, in a Class III molar relation, the lower first permanent molar lies mesial to upper first permanent molar by a premolar width or a cusp width. The original classification had Class II as a full premolar width distoclusion and Class III as a full premolar-width mesiocclusion. Assuming an average premolar width of 7.5 mm, then Class I ranged from 7 mm mesiocclusion to 7 mm distoclusion, for a total range of Class I of 14 mm. This range was far too wide, and so in 1907, Angle revised his definition, making Class II more than half a cusp distoclusion and Class III more than half a cusp mesiocclusion (Yadav et al., 2014).

[illegible]

a) 1_____ the upper teeth are 2_____ enough to fit on the outside of the lower teeth, this makes it difficult to bring the 3_____ together the lower 4_____.

b) In 5_____ excessive 6_____ the upper teeth are 7_____ in front of the lower teeth, if the 8_____ of the overjet is severe the 9_____ may be subject to 10_____ and 11_____ may be affected.

c) An 12_____ is when the 13_____ teeth are 14_____ or not in front of the lower teeth, which makes it difficult to 15_____ food and causes premature 16_____ of the back teeth.

d) 17_____ sometimes referred to as an 18_____, a deep bite is when the 19_____ cover the lower teeth and the lower teeth 20_____ into the 21_____ of the mouth, this type of bite causes difficulty in the 22_____ of the lower 23_____ and make us premature 24_____ of the 25_____.

- e) An ²⁶_____ is when the front teeth do not ²⁷_____, this makes cutting or ²⁸_____ food difficult or impossible, the ²⁹_____ are always touching and subject to premature ³⁰_____, this type of bite also causes speech problems and ³¹_____ problems during ³²_____.

Video 17

Source: (Movahhedian & Vaziri, 2015)

Task 7. Vocabulary. Write a sentence using each word in the box according to the topic of the lesson.

¹roof ²aware ³jaw ⁴swallowing ⁵thrusting
⁶width ⁷crooked ⁸joints ⁹groove

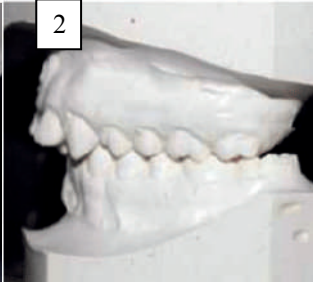
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Task 8. Reinforcement. Write the correct name of Angles's molar classification according to the pictures.

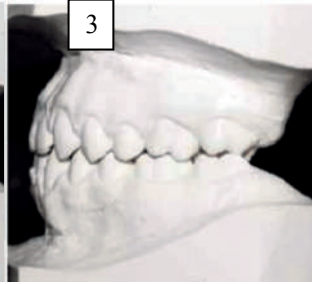
1



2



3



4



5



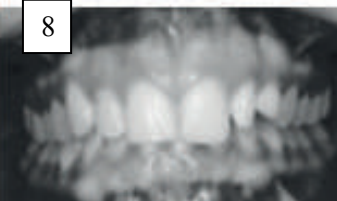
6



7



8



9



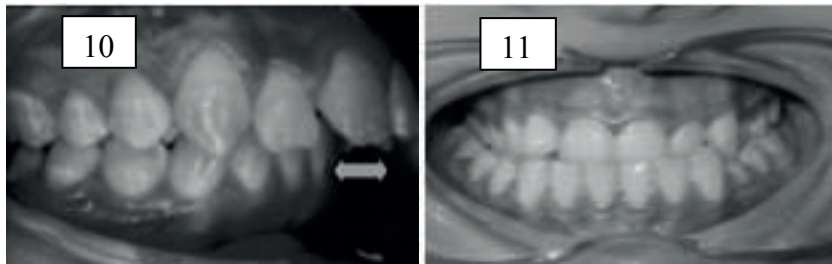


Fig. 34: Malocclusions

Source: (Yadav et al., 2014)

CHAPTER:

IV

TEACHER GUIDELINES ANSWERS KEY SECTION

LESSON 1

Task 6. Listening

1. global	7. poor/ diet	13. persist
2. emboss	8. tobacco	14. preventable
3. duties	9. widespread	15. avoidable
4. systemic diseases	10. buried	16. socio-economic
5. diabetics	11. high-income	17. promotion
6. risk/ factors	12. health care systems	

Task 7. Vocabulary

1. bienestar	3. enterrado	6. alimentación
2. resultado	4. negligencia	7. chequeos
	5. dolencia	

LESSON 2

Task 6. Listening

1. Gingivitis	13. swollen	25. basic
2. bacteria	14. bleeding/ gums	26. acidic/ environment
3. plaque	15. loose	27. sugar
4. gums	16. fit	28. starch
5. dentures	17. bone/ loss	29. consistency
6. colorless/ sticky/ film	18. recession	30. starchy
7. gums	19. pain	31. stick
8. bacteria	20. silent	32. sucking
9. toxin	21. cavities	33. decay
10. bad/ breath	22. dental/ decay	34. brushing
11. gingivitis	23. plaque	35. reduce
12. periodontal/ disease	24. food	

Task 7. Vocabulary

1sore 2 widespread 3 surveillance 4 cleft lip 5 sticky 6 bad breath 7 starchy 8 suck 9 tooth decay

Task 8. Reinforcement

Suggested words: Gingivitis, plaque, cleft lip, bad breath, Oral trauma, periodontal disease, bleeding gums, bone loss, recession, dental decay.

LESSON 3

Task 6. Listening

1. crown	11. middle	21. socket
2. grinds/ up	12. hollow	22. jawbone
3. hardest/ material	13. blood/ vessels	23. tiny/ elastic/ strand
4. thin/ layer	14. alive	24. periodontal ligament
5. enamel	15. pulp	25. chew
6. hard/ white/ shiny	16. nerves	26. wrapped
7. Underneath	17. hole	27. cuff
8. pale/ yellow/ dentine	18. very/ end	28. gum tissue
9. slightly/ softer	19. pulp/ canal	29. gingiva
10. bone	20. pulp/ chamber	

Task 7. Vocabulary

1. conformado por	5. amarillento	9. hueco
2. gusano	6. espesor/grosor	10. vasos sanguíneos
3. opaco/sin brillo	7. superficie interna	11. tinte/ pintura
4. rodear	8. cámara pulpa	12. pulverizar
		13. puño

Task 8. Reinforcement

1. Apical foramen	5. Cementodentinal junction	9. Dentinoenamel junction
2. Root canal	6. Pulp chamber	10. Lingual surface of crown
3. Cementum	7. Cementoenamel junction	11. Anatomic root
4. Dentin	8. Enamel	12. Anatomic crown

LESSON 4

Task 6. Listening

1. Finding/ tooth/ aches	11. vestibule	21. swellings
2. irreversibly	12. discolored/ teeth	22. pocketing
3. pulps	13. trauma	23. missing/ teeth
4. asymptomatic	14. lift up	24. intensity
5. pulp/ testing	15. fornix	25. opposing/ teeth
6. pulp/ sound	16. tattoos	26. denying/ examination
7. healthy	17. old/ silver/ point	27. horizontal views
8. chief/ complaint	18. gutta-percha	
9. clinical/ examination	19. sinus tract	
10. pull/ back/ lips	20. denying origin	

Task 7. Vocabulary

1. leve	5. dolor persistente	9. material de relleno
2. alambre	6. recostado	10. mordida
3. cráneo	7. colapso óseo	11. voltear
4. curar/cicatrizar	8. doloroso	12. peligroso

Task 8. Reinforcement

I - 6 - b	IV - 3 - a	VII - 5 - g
II - 4 - d	V - 7 - c	
III - 2 - f	VI - 1 - e	

LESSON 5

Task 6. Listening

1. gingival fibers	11. ring	21. papilla
2. periosteum	12. cementum	22. transseptal
3. crest	13. connect	23. interdental papillae
4. bundles	14. embedded	24. Transgingival
5. bone	15. cementoenamel junction	25. Horizontally
6. periosteum	16. fan out	26. Transseptal
7. membrane	17. Periosteal	27. cementum
8. fibrous	18. periosteum	28. alveolar bone
9. wraps	19. Intercircular	29. alignment
10. Circular	20. Interpapillary	

Task 7. Vocabulary

1. Atar/unir	4. tronera	7. incrustado
2. Por debajo/ subyacente	5. Haz de fibras/paquete de fibras	8. Disceminarse
3. Superficie	6. Revestimiento	9. unión
		10. surco

Task 8. Reinforcement

1. Enamel	7. Alveolar mucosa	13. Periodontal ligament
2. Gingival margin	8. Sulcus	14. Alveolar bone
3. Free gingiva	9. Oral sulcular epithelium	
4. Free gingival groove	10. Oral junctional epithelium	
5. Attached gingiva	11. CEJ (cementoenamel junction)	

6. Mucogingival junction	12. Cementum	
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LESSON 6

Task 6. Listening

1. aren't/ aware	9. Smoking	17. immune/ system
2. smokers	10. saliva	18. constrict
3. periodontal/disease	11. body's/ ability	19. white/ blood/ cells
4. lose/ teeth.	12. fight/ off	20. nutrients
5. infection	13. wash/ bacteria	21. gums
6. gums	14. plaque	
7. bone	15. tartar	
8. sticky/ film	16. disease/ fighting/ antibodies	

Task 7. Vocabulary

1. alveólo pulmonar	4. bolsa periodontal	7. dosis
2. ritmo cardíaco	5. defenderse de	
3. gasto cardíaco	6. tártaro/sarro	

LESSON 7

Task 6. Listening

1. Radiographs	8. tumors	15. oral health
2. oral diseases	9. Early detection	16. x-ra
3. visual examination	10. unnecessary discomfort	
4. reveal	11. low dose	
5. cavities	12. thyroid collar	
6. fillings, infections	13. pregnant	
7. abscesses or cysts	14. childbearing age	

Task 7. Vocabulary

1. crecimiento anormal	5. desajuste articular	9. sospechar/ sospecha
2. enfermedad/dolencia	6. detallar/ localizar	10. hinchazón
3. barrera	7. radiación dispersa	
4. haz/rayo	8. área circundante	

Task 8. Reinforcement

1. Anterior nasal spine	13. Inferior nasal concha	25. Orbital rim
2. Articular tubercle of the temporal bone	14. Inferior border of mandible	26. Pterygoid process of sphenoid bone
3. Cervical vertebra	15. Infraorbital canal	27. Pterygopalatine fossa
4. Coronoid process	16. Mandibular angle	28. Sigmoid notch
5. Dorsum of tongue (Shadow)	17. Mandibular canal	29. Soft palate
6. Ear lobe	18. Mandibular condyle	30. Styloid process
7. Epipharynx	19. Maxillary sinus	31. Submandibular fossa
8. External auditory canal	20. Maxillary tuberosity	32. Zygoma
9. External oblique ridge	21. Mental foramen	33. Zygomatic arch
10. Hard palate	22. Nasal septum	
11. Hyoid bone	23. Nasal cavity	
12. Incisive foramen	24. Nasopalatine canal	

LESSON 8

Task 6. Listening

1. x-ray	11. clearly/ visible	21. apex/ of/ the/ tooth
2. beam	12. film	22. neoplasia
3. shot	13. cone/ beam	23. picked/ up
4. film	14. conventional/ film	24. bitewing/ x-ray
5. mesial	15. apices	25. cavity

6. distal	16. tooth	26. lower/ molar
7. human/ permanent/ teeth	17. pulp	27. apices
8. maxillary/ central	18. entire/ tooth	28. wide/ open
9. lateral/ incisor	19. massive/ lesion	29. endodontics
10. anatomy	20. distal	30. vital/ therapy
		31. closure/ of/ the/ root

Task 7. Vocabulary

1. quiste	3. hueso	5. liso/delicado/regular
2. falta de	4. intrusion	6. parecido/similar

Task 8. Reinforcement

1. lateral periodontal cyst	3. Radicular cyst	5. Central giant cell granuloma
2. Dentigerous cyst	4. Keratocystic odontogenic tumor	

LESSON 9

Track 6. Listening

1. Disease	10. inflamed	19. fills
2. Injury	11. infected	20. seals
3. dental/ pulp	12. through	21. temporary/ filling
4. healthy/ tooth	13. pulp/ chamber	22. properly/ restored
5. white/ enamel	14. canals	23. crown
6. dentin	15. kill	24. root/ canal/ treatment
7. tooth's/ nerves	16. rinse/ out/ debris	
8. blood/ vessels	17. removed	
9. teeth	18. shapes	

Task 7. Vocabulary

1. detritos	5. obturar	9. fresa de fisura
2. indeseable	6. dentición sucedánea	10. techo de la cámara pulpar
3. longitud del arco	7. dique de goma	11. cucharilla
4. inclinación	8. a partir de allí	12. solución salina
		13. corona de acero inoxidable

Task 8. Reinforcement

1-c, 2-a, 4-d, 3-b

LESSON 10

Track 6. Listening

1. deep cavities	9. remove	17. isolate
2. perform	10. nerve	18. net
3. pulpotomy	11. top	19. throat
4. removal	12. healing	20. irritated tissue
5. leaving	13. crown	21. chamber
6. intact	14. seal	22. clean out
7. make	15. thoroughly numb	23. medicated packing
8. opening	16. rubber dam	

Track 7. Vocabulary

1. poner una corona	5. limpiar	9. caída (en cámara pulpar)
2. completamente	6. campo quirúrgico	10. fresa redonda
3. anestesiado/anestesiarse	7. hemorragia	11. cicatrización/ curación
4. garganta	8. aislar	

Track 8. Reinforcement

Suggested phrases: Vital teeth, Healthy periodontium, Only coronal involvement, Contraindicated extraction, Absence of infection/ abscess, etc

LESSON 11

Track 6. Listening

1. F/ Begin the exam by asking your patient if any new dental issues have emerged since their last visit	4. V
2. F/ Pay attention to risk factors such as being male	5. V
3. V	6. V
	7. F/ It's important to palpate and inspect the floor of the mouth

Track 7. Vocabulary

1. Diagnóstico erróneo	3. Placa blanca
2. carcinoma in situ	4. Lengua
	5. Factores desencadenantes

Task 8. Reinforcement

Q	L	S	D	A	E	T	R	Y	G	M	A	S	S	R	I	A
Z	X	E	S	D	Q	S	H	G	J	Y	E	R	U	T	L	F
H	E	A	U	R	R	A	G	I	C	H	R	N	B	U	E	A
Y	I	C	B	B	A	S	E	N	M	L	Y	N	M	R	U	A
P	L	T	M	K	O	E	S	U	Z	A	T	T	U	W	K	E
O	R	I	U	T	S	P	C	R	T	A	H	O	C	A	O	R
T	S	N	C	C	H	Y	L	U	N	G	R	N	O	A	P	Q
E	W	I	P	H	U	S	A	A	F	K	O	K	U	X	L	S
N	E	C	U	S	E	A	D	H	K	I	P	H	S	A	A	A
S	X	C	T	K	A	N	S	G	H	I	L	K	F	W	K	E
I	C	H	F	A	M	A	P	O	N	U	A	H	I	D	I	R
O	D	E	I	Y	S	P	N	L	E	A	K	J	B	U	A	S
N	S	I	L	S	S	O	G	A	A	A	I	A	R	A	S	G
D	A	L	R	L	W	Z	X	G	H	N	A	N	O	S	U	H
V	S	I	I	S	O	R	B	I	J	S	U	L	S	B	M	J
F	S	T	S	R	R	A	F	I	B	R	A	S	I	S	O	G
S	R	I	O	M	P	U	S	P	A	U	S	K	S	P	E	S
I	T	S	U	I	R	M	O	E	L	R	I	Y	T	R	I	R
S	Q	U	A	M	O	U	S	P	A	P	I	L	L	O	M	A

LESSON 12

Task 6. Listening

1. cleft	9. pro labium	17. improves
2. nasal elevator	10. alveolar	18. comfort
3. treatments	11. surgical results	19. Dyna cleft
4. palate	12. lifts	20. nasal elevator
5. deformity	13. lengthening	21. pre surgical treatment
6. applied	14. columella	
7. lip	15. nasal symmetry	
8. force	16. primary nasal surgery	

Task 7. Vocabulary

1. labio leporino	4. agujereado	7. ancho
2. paladar hendido	5. interrupción	8. surco/canal
3. alargamiento	6. fuerza	

Task 8. Reinforcement

1. Cleft lip unilateral	3. lateral cleft	5. cleft lip + palate bilateral
2. Cleft lip + palate unilateral	4. cleft lip bilateral	6. median cleft

LESSON 13

Task 6. Listening

1. the tissues	5. tooth	9. sterile water
2. numb	6. remove any debris	10. log
3. removal/ extraction	7. any type of infected tissue.	11. socket area
4. to loosen all of the tissues	8. sterile water.	

Task 7. Vocabulary

1. anestesiar	5. alvéolo	9. hoja de bisturí
2. detritus	6. aguja	10. hemorragia
3. humedecer	7. hueso	11. mango de bisturí
4. tronco	8. fresa dental	12. lima para hueso

Task 8. Reinforcement

1. anesthetic syringe	9. Adson forceps	17. mandibular forceps
2. scalpel handle	10. Scalpel blades	18. bayonet forceps

3. dissecting forceps	11. 3-0 silk with 3/8 circle needle	19. Bayonett root forceps
4. Metzenbaum scissors	12. surgical drill	20. maxillary forceps
5. Allis tissue clamp	13. straight forceps	21. Minnesota retractor
6. Periosteal elevator	14. triangular elevator	22. Farabeuf retractor
7. Luer Rongeur forceps	15. Apexo elevator	23. bone file surgical spoon curette.
8. Mayo-Hegar needle holder	16. straight elevator	

LESSON 14

Task 6. Listening

1. complication	11. hold	21. swelling
2. wisdom teeth	12. together	22. throbbing
3. swelling	13. gauze	23. dry socket
4. dry socket	14. pressure	24. oral surgeon
5. spread	15. blood clot	25. irrigate
6. take	16. lost	26. sedative dressing
7. out	17. bony hole	27. get rid
8. blood clot	18. bony hole	28. heal up
9. hole	19. dull throb	29. throb
10. stitch	20. extraction	30. healing

Task 7. Vocabulary

1. palpitación sorda o leve	6. eritema/enrojecimiento	11. ápice radicular
2. edema/hinchazón	7. coágulo	12. escapar/filtrar
3. plaqueta	8. olor fétido	13. deshacerse de
4. ingesta	9. recuperación	14. tercer molar
5. diente fragil/quebradizo	10. fosas nasales/ orificios nasals	

Task 8. Reinforcement

1. T	3. T	5. T
2. T	4. F	6. T

LESSON 15

Task 6. Listening

1. missing tooth	11. implants, fixed/ bridges	21.pontic
2. shift	12. removable partial dentures	22. cemented
3. crooked	13. attaches	23. replacement teeth
4. bite	14. jawbone	24. framework
5. gum/ disease	15. post	25. clasps
6. lower jaw	16. root	26. precision attach- ments
7. downward	17. shrinkage	27. / than
8. empty	18. metal/ ceramics	28. clasps.
9. older	19. pontic	
10. chew	20. crowns	

Task 7. Vocabulary

1. colmillo de morsa	4. puente fijo	7. armazón
2. brazo retentive	5. silla/ base de la den- tadura	8. molde/ pieza fundi- da
3. glaseado	6. placa de acrílico	9. masticar

Task 8. Reinforcement

a) (1)	d) (7)	g) (9)
b) (3)	e) (8)	h) (2)
c) (5)	f) (10)	i) (4)
		j) (6)

LESSON 16

Task 6. Listening

1. Minor/ connectors	8. guide/ plate	15. arms
2. link	9. rest,	16. bar/ type/ clasp
3. major/ connector	10. four	17. transfer/ functional/ stress
4. minor/ connector	11. clasp/ assemblies	18. abutment/ teeth
5. strut	12. denture/ bases	19. retainers/ rest
6. base/ attachment	13. indirect/ retainers	20. partial/ denture
7. teeth	14. auxillary/ rest	

Task 7. Vocabulary

1. estructura de soporte	4. gancho tipo barra	7. unir
2. grupo de ganchos	5. dientes pilares	8. cumplir
3. el aditamento base	6. solidez estructural	9. grosor/ espesor

Task 8. Reinforcement

Suggested answers: plate, rest, framework, bar type clasp, retainers, indirect retainers, minor connector, etc.

LESSON 17

Task 6. Listening

1. Crossbite	12. underbite	23. jaw
2. not/ wide	13. upper	24. aware
3. teeth	14. inside	25. front/ teeth
4. jaw	15. cut	26. open/ bite
5. an	16. wear	27. touch
6. overjet	17. deep bite	28. incising
7. too/ far	18. overbite	29. back/ teeth
8. amount	19. upper/ front/ teeth	30. wear
9. front/ teeth	20. bite	31. tongue/ thrusting

10. injury	21. roof	32. swallowing
11. speech	22. movement	

Task 7. Vocabulary

1. techo	4. deglución	7. apiñado/ torcido
2. desgaste	5. empuje lingual	8. articulación
3. mandíbula	6. ancho	9. surco

Task 8. Reinforcement

1. Class III Malocclusion	5. Class III Malocclusion	9. Open Bite
2. Class II Malocclusion	6. Class I Malocclusion	10. Overjet
3. Class I Malocclusion	7. Posterior Crossbite	11. Anterior Crossbite
4. Class II Malocclusion	8. Deep Overbite	

AUDIO SCRIPTS

LESSON 1

VIDEO 1: Oral health and the social determinants of health

Available on:

<https://www.youtube.com/watch?v=pJEkR0x-eO8>

Oral disease remains a global problem, particularly among disadvantaged preparation, emboss, industrials and developing countries. All our duties are also associated with systemic diseases including conditions such as diabetics and cardiovascular disease. There is a ring between oral health and general health through common risk factors including poor diet, tobacco use and alcohol consumption. Inequalities in oral health remain widespread both between and within countries and often mirror in majorities in general health. These inequalities buried in magnitude and extent and they are becoming marked in low middle-income countries even in high-income countries which advanced our health care systems, inequalities in oral health persist. The social determinants of our health universe are affecting a range of our health outcomes and our health-related quality of life the mechanisms and pathways related to our health inequality complex and intolerant economic, psychosocial and behavioral factors or prey law equally social determinants of other systemic diseases and conditions have oral significance. The good news is our disease are preventable and social inequality in our health it's avoidable, intervention strategies which ignores the socio-economic context and related risk factors offer most potential for promotion of oral health throughout the whole population. Prevention of overall disease through public health interventions can be effective tackling inequality in our health it's an integral part of resolution with a sixty point one seven entitled over health action plan for promotion and integrated disease prevention and also supportive of the United Nations sustainable development goals (Fisher, 2016).

LESSON 2

VIDEO 2: Oral Health Basics - Dental Disease

Available on:

https://www.youtube.com/watch?v=_E717XwFEn4

Gingivitis is a gum infection and is caused by bacteria which we know as plaque, it forms on the teeth and around the gums, it can also form on dentures. Plaque is a colorless sticky film that accumulates around the gums, the bacteria forms a toxin that causes gum disease and bad breath in your mouth. The signs of gingivitis and periodontal disease are obvious if you watch for them look for red, swollen or bleeding gums, bad breath, loose teeth and partials or dentures that do not fit properly, there could also be passed or exudate that is present in the mouth. Periodontal disease creates bone loss and recession around the teeth, there's usually no pain with periodontal disease until it gets to the severe stages, it is a silent disease, on the left is a healthy mouth the gums are pink and the mouth looks clean on the right is a mouthful of plaque calculus and red swollen gums it doesn't look clean or healthy. Dental caries or cavities if there is no sugar there would be no cavities or dental decay, the plaque and bacteria plus food creates an acidic environment your mouth goes from a basic or a neutral environment to an acidic environment each time you consume food that contains sugar or starch, bacteria in the mouth break down sugar and starch to produce acid which then softens tooth enamel this acid attack lasts for five to 15 minutes each time you eat, cavities develop when the enamel on your teeth is destroyed with repeated acid attacks when residents suck on candies all day long their mouth stays acidic for long periods of time and this allows for cavities to form on the teeth the consistency of the food is also important soft candy and starchy foods can stick to the surfaces of the teeth and stay there for long periods of time, sucking on

candy allows the sugar to reach all areas of the mouth causing decay to occur between the teeth as well as the front and the back of the teeth, having candies or sweets with a meal is better than having them between meals, brushing helps to reduce tooth decay (Healthy, 2012).

LESSON 3

VIDEO 3: Tooth anatomy

Available on:

<https://www.youtube.com/watch?v=rDxatqUbkVk>

There's much more to a tooth than just the parts you can see in a smile, that's because our gums hide everything except the top of the tooth, an area called the crown, because this part of the tooth grinds up food it's covered with the hardest material in the body. The thin layer of tooth enamel is the reason our teeth are hard, white and shiny. Underneath the enamel and down into the roots the tooth is made up of pale-yellow dentine although it's slightly softer than enamel it's still harder than bone. The middle of every tooth is hollow to make room for blood vessels needed to keep the tooth alive, this collection of soft tissue is called the pulp and also contains the nerves that warn us when something is wrong with the tooth. The nerves and blood vessels enter the tooth through a hole at the very end of the root and travel up through the pulp canal to fill up the space in the crown called the pulp chamber. Every tooth sits in a socket in the jawbone and is held in place by a tiny elastic strand called the periodontal ligament this stretchy connection means each tooth can move a little when you chew. Above the jaw bone that tooth is wrapped in a firm cuff of gum tissue or gingiva as it's sometimes called, the gum attaches to the neck of the tooth where the enamel finishes hiding the complex structure below and that's why there's so much more to a tooth than meets the eye (The Gentle Dentist, 2010).

LESSON 4

VIDEO 4: Endodontic diagnosis

Available on:

<https://www.youtube.com/watch?v=7hBDgwAWq54>

We're gonna speak just briefly about endodontic diagnosis, but my assertion is there's a significant number of disease teeth that need endodontics and they're not being identified, our profession is excellent at finding tooth aches, but I'm talking about irreversibly involved pulps, the patient has asymptomatic, and general dentist is doing his job and he's going to be doing restorations, we need to do the pulp testing so we should identify is the pulp sound is it healthy can that tooth take another dental procedure, so our patients oftentimes give us their chief complaint and then of course the three phases of the exam are the clinical examination where you can pull back lips, look in the vestibule, look for discolored teeth oftentimes secondary to trauma and then also we can lift up the fornix of the vestibule and look in there and see tattoos from an old silver point and that central incisor notice the perilous and there's a gutta-percha point tracing that sinus tract and it'll trace into a lesion of in denying origin, so our clinical exam can find swellings, we can look at pocketing, we can look at existing restorations, missing teeth and all this comprises part of our endodontic clinical examination. Now listen, I got to get you better on your vital pulp testing this is how you decide through hand signals the immediacy, the intensity and the duration of the response and if we begin to do this on opposing teeth, contralateral teeth and adjacent teeth we can get pretty good at locking that patient in, so they know what we're looking for and they don't fool us and we don't fool them the third phase in the in denying examination is the radiographic exam and the thing to emphasize here is the importance of getting two

to three well angulated different horizontal views by doing this you'll see more of the in-and-out dimensions of the tooth buccal lingual or facial lingual (Dentsply Sirona Endodontics US, 2013).

LESSON 5

VIDEO 5: Gingival Fiber Bundles

Available on:

https://www.youtube.com/watch?v=yBADb64_Y40

Alveolar gingival fibers extend from the periosteum of the alveolar crest into the gingival connective tissue, these fiber bundles attach the gingiva to the bone, the periosteum is a dense membrane composed of fibrous connective tissue that closely wraps the outer surface of the alveolar bone. Circular fibers encircle the tooth in a ring like manner coronal to the alveolar crest and are not attached to the cementum of the tooth, these fiber bundles connect adjacent teeth to one another. Dental gingival fibers are embedded in the cementum near the cementoenamel junction and fan out into the gingival connective tissues, these fibers act to attach the gingiva to the teeth. Periosteal gingival fibers extend laterally from the periosteum of the alveolar bone, these fibers attach the gingiva to the bone. Interchangeable fibers extend in a mesial distal direction along the entire dental arch and around the last molars in the arch, these fiber bundles link adjacent teeth into a dental arch unit. Intercircular fibers encircle several teeth these fiber groups link adjacent teeth into a dental arch unit. Interpapillary fibers are located in the papilla coronal to the transseptal fiber bundles, these fiber groups connect the oral and vestibular interdental papillae of posterior teeth. Transgingival fibers extend from the cementum near the CEJ and run horizontally between adjacent teeth these fiber bundles link adjacent teeth into a dental arch unit. Transseptal fibers pass from the cementum of one tooth over the crest of alveolar bone to the cementum of the adjacent tooth, these fiber bundles connect adjacent teeth to one another and secure alignment of teeth in the arch (Edilia Marshall, 2016).

LESSON 6

VIDEO 6: Smoking and Periodontal Disease

Available on:

<https://www.youtube.com/watch?v=HEgkXCIAkjg>

By now almost everyone knows that smoking has been linked with lung disease cancer and heart disease, but most people aren't aware that smokers are three to six times more likely to have periodontal disease and two times more likely to lose teeth. Periodontal disease is an infection of the teeth gums and the bone that surrounds the teeth, the main cause of periodontal disease is plaque. Plaque is the sticky film of food, and bacteria that forms constantly on your teeth, these bacteria produced toxins and these toxins combined with your body's reaction to them destroy bone around your teeth. Smoking helps to cause periodontal disease in two ways, it reduces the production of saliva and damages the body's ability to fight off the infection, saliva helps to wash bacteria from the teeth, so less saliva means more plaque and tartar, saliva also contains disease fighting antibodies that help to fight destructive bacteria in the mouth, smoking damages your immune system by causing blood vessels to constrict throughout your entire body, which reduces the flow of infection-fighting white blood cells oxygen and nutrients to the gums, besides contributing to the onset of periodontal disease continuing to smoke after periodontal treatment makes it much harder for your gums to heal, so if you haven't yet thought about quitting smoking, consider this by becoming a nonsmoker you can strengthen the fight against periodontal disease and keep your teeth (Fobnull, 2009)

LESSON 7

VIDEO 7: Why X-Ray

Available on:

<https://www.youtube.com/watch?v=KLwwzSnlaPc>

Radiographs or x-rays are important tools the dentist uses to help care for your teeth, many oral diseases cannot be seen with a visual examination but an x-ray can reveal small cavities between the teeth are hidden by fillings, infections in the bone, periodontal disease, abscesses or cysts and even tumors. Early detection is key to save time, money and unnecessary discomfort, dental x-rays expose a small part of the body to a low dose of radiation, a leaded apron with a thyroid collar is recommended for children and women who are pregnant or of childbearing age to help minimize that exposure even more. Your oral health determines the number of x-rays that need to be taken, talk to your dentist if you have any questions. For the ADA dental minute, I'm doctor Maria Lopez Howell (American Dental Association, 2013).

LESSON 8

VIDEO 8: Radiographic tips for diagnosis

Available on:

<https://www.youtube.com/watch?v=yBA7cig1U-s>

I'm Jo camp, I've been practicing in the docks in North Carolina for over 40 years and teaching part-time during my entire career. Radiographs are an important part of the diagnostic process, but there are several factors about x-rays which you need to be aware. You need to understand that when you take an x-ray the beam is shot facial de lingual, but the film is read mesial to distal because all human permanent teeth except the maxillary central and lateral incisor are two to three times as wide facial lingually, most of the variations in anatomy occur in that plane and are not clearly visible on the film, if the need arises, a cone beam can show you anatomy you can't see on a conventional film. Let's take a moment to look at what it takes to make radiographs that will help you with your diagnosis, this radiograph illustrates an important point, you notice that the apices of this tooth are not on the film, if you are going into the pulp, you need to have an image of the entire tooth, so we take another image and here you see a massive lesion at the on the distal of this tooth and around the apex of the tooth and actually this case has a neoplasia which we picked up in this film, and this patient actually expired within six months after this film was made, so it's very important to have the entire tooth on the film. Here is a bitewing x-ray which shows clearly the cavity in this lower molar which is going to expose the pulp however, this is not adequate to do endodontic treatment to go in it and expose the pulp on this too you must have a clear image of the roots to see the root development and what's around the end, so here is another film of that same tooth and you see that the apices of this tooth

are wide open and not formed there for conventional endodontics on this tooth would be impossible to obtain fortunately, for this patient we were able to do vital therapy of pulp out of me and here you see the tooth two years after the treatment and the closure of the roots (Dentsply Sirona Endodontics US, 2014).

LESSON 9

VIDEO 9: Pulpectomy English

Available on:

<https://www.youtube.com/watch?v=QCmdzhulPq8>

One way a tooth can be saved is with a procedure called root canal treatment also known as endodontic treatment. Endodontics is a specialized area of Dentistry focused on treating disease or injury to the dental pulp, let's take a step by step look at a modern root canal procedure, here is a healthy tooth, inside the tooth under the white enamel is a hard tissue called dentin inside the dentin is a soft tissue called pulp, the pulp contains the tooth's nerves and blood vessels, it extends from the crown of the tooth into the roots of your teeth, if the pulp becomes inflamed or infected an opening is made through the crown of the tooth and into the pulp chamber, fluid is put in the canals to kill any bacteria and help rinse out debris, then the pulp is removed using small instruments, the endodontist carefully cleans and shapes the canals, after the space is cleaned and shaped, the endodontist fills and seals the root canals, in most cases a temporary filling is placed to close the opening until you see your dentist, after your endodontist is finished, you must return to your dentist to have your tooth properly restored with a filling or crown that protects the tooth and is important to ensure the success of your root canal treatment (Implantologia, 2015).

LESSON 10

VIDEO 10: Pulpotomy

Available on:

<https://www.youtube.com/watch?v=ROZvmfkJE4Y>

In primary teeth when deep cavities are in the nerve or close to the nerve, it's sometimes necessary to perform a pulpotomy. A pulpotomy is the removal of the irritated part of the pulp while leaving the healthy root canals intact. A pulpotomy usually involves four common steps, first we make an opening into the tooth and remove the part of the nerve in the top of the tooth, next we place medication to promote healing and then we crown the tooth to seal it and protect it. We want the entire procedure to be comfortable for your child, so the first thing we do is make sure they're thoroughly numb we place a rubber dam around the tooth to isolate it from the rest of the mouth, it protects like a safety net nothing can fall to the back of the throat, to get to the irritated tissue we make an opening through the top of the tooth down into the pulp chamber, we carefully clean out the nerve tissue and then place a medicated packing sometimes the medicated packing is removed and sometimes it's left in place, the last step in the procedure is a crown it seals and protects the tooth (Smoothdentist, 2009).

LESSON 11

VIDEO 11: How to Check Patients for Oral Cancer

Available on:

<https://www.youtube.com/watch?v=7mv073MJzlg>

This video offers step-by-step instructions for evaluating adult patients for potentially malignant disorders or PMDs and oral cancer during a routine dental exam in your clinic, first begin the exam by asking your patient if any new dental issues have emerged since their last visit or appointment, during the medical history recollection pay attention to risk factors such as being male, older, smoking and alcohol consumption with the patient's response in mind next perform a conventional visual in tactile intraoral and extra oral exam. Throughout the exam use inspection and palpation to look for any changes in colour, contour, consistency and function, begin the extra oral exam by examining the head and face with both the front and back, taking note of any asymmetries and the presence of pigmented lesions, for such lesions use the American Cancer Society's ABCDE rule to assess for melanoma risk look for asymmetry, border irregularity, color changes, diameter greater than six millimeters and evolution of the lesion over time, next observe and palpate the neck on both sides if lymph nodes are identified pay attention to the size, consistency, whether they are painful and whether they freely move or are fixed in place. When evaluating the lips note any change in the Vermilion border mucosa and karma shares as well as the lips color contour consistency and function look for in durations and ulceration, ask your patient to open their mouth and begin the intra oral exam by inspecting the cheeks, retract the tissue with your thumbs and gently pinch the cheek between your fingers looking for a hidden masses, use a mirror to examine the alveolar processes in gingiva

look for changes in color, consistency, or a tooth with bone loss out of proportion with the rest of the , pay special attention to the presence of a lesion with a history of poor healing. Carefully inspect and palpate the hard and soft palate looking for abnormalities, while depressing the tongue with the mirror ask the patient to say: ah, to have better access to the uvula and tonsillar pillars using gauze move the tongue to the left and to the right to examine the entire dorsal tongue pay attention to the lateral and ventral tongue as well complete this assessment palpating the tongue and nearby salivary glands, this aspect of the exam is important as nearly half of all potentially malignant lesions are usually found in this area, ask the patient to touch their top front teeth with the tip of their tongue so that the floor of the mouth can be inspected and palpated. Use two hands, when palpating this area, after the exam clinicians should consider two potential clinical scenarios either the patient exhibits no lesions or has some type of mucosal abnormality. For patients without a lesion no further action is necessary (American Dental Association, 2017).

LESSON 12

VIDEO 12: Cleft Lip and Palate treatment, DynaCleft

Available on:

<https://www.youtube.com/watch?v=s6V2R4Wz8YY>

Souths medics Dyna cleft and nasal elevator are clinically proven pre surgical treatments for cleft lip, cleft palate and nasal deformity. Dyna cleft applied across the cleft lip provides a controlled force, repositioning the pro labium, pre maxilla and alveolar segments for the best possible surgical results, the nasal elevator gently lifts the nose lengthening and straightening the columella, leading to improved nasal symmetry and reducing the extent of or even the need for primary nasal surgery, as an effective treatment that is also easy to adjust and improves patient comfort. Dyna cleft and nasal elevator are increasingly becoming the preferred pre surgical treatment by both clinicians and families (Dynamic Tissue Systems, 2016).

LESSON 13

VIDEO 13: Oral Surgery Simple Extraction

Available on:

<https://www.youtube.com/watch?v=0qPmcICyHY0>

The procedure that we're going to demonstrate for you is oral surgery, the first one we're going to do is a simple extraction, we're going to assume that our dental assistant has applied the topical anesthetic, the tooth we're removing is the 1.1 after the dental assistant has placed the topical anesthetic in the appropriate places to freeze the appropriate nerves, the dentist will take the syringe that has already been prepared with a short needle, while the dentist is giving anesthetic, the dental assistant will be ready to give a courtesy rinse after the dentist has finished, assuming that approximately 10 minutes has passed the dental assistant would then pass the dentist the mirror and explore to ensure that the tissues are sufficiently numb meaning that the tooth is ready for removal, the first thing that we're going to pass our dentist is the periosteal elevator. The periosteal elevator will help to loosen all of the tissues around the tooth, the dental assistant will suction the entire time during this procedure with the surgical suction, the dental assistant will then pass the tooth elevator, the dentist will then attempt to loosen the tooth or elevate the tooth, we would then pass the appropriate forceps notice that the dental assistant continues to suction in the entire time, we would pass the dentist the anterior forceps, the dentist would then take the forceps and remove the tooth. the dental assistant will have ready in her hand gauze and take the entire tooth and forceps in one movement, she would then pass the dentist the curette, the curette is to remove any debris within the socket, if there's an abscess or any type of infected tissue this would be removed at this time we would then

pass through our dentist the mono jet syringe which has sterile water, the dentist would then irrigate the site with sterile water, the dental assistant would take a 2 by 2 gauze moisten it with the sterile water folding it into a little log, we would roll it up and make sure its moist with the sterile water pass it to our dentist. The dentist would then place it around the socket area and have the patient bite together firmly we would return our patient to the upright position, and we would give them the proper postoperative instructions (Young Dentist, 2015).

LESSON 14

VIDEO 14: The most common oral surgery complication

Available on:

<https://www.youtube.com/watch?v=mK4lcw3Ydwk>

Probably, the most common complication in removing wisdom teeth other than swelling, is a dry socket and anyone that's had a dry socket has certainly spread the word through all of their friends and what that dry socket is basically this, when we take a tooth out, we would like a nice blood clot to fill in that hole, that's why you put a stitch in there to hold the gum together we put gauze on top for direct pressure, but in some cases that blood clot can be lost or maybe it doesn't form and just leaves a bony hole, now that bony hole results in a dull throb, it develops about three to five days after the extraction so, once the swelling goes down if the throbbing gets worse you may have a dry socket in which case you go back to the oral surgeon and they can evaluate it, they can irrigate out the extraction site and put a nice sedative dressing in there to get rid of the pain, if we did nothing it would heal up fine it would just throb for about two to three weeks as it was healing. All right doctor thank you. Thanks for having me again (Media News Sequence, 2012).

LESSON 15

VIDEO 15: Three Tooth Replacement Options

Available on:

https://www.youtube.com/watch?v=-jd1J_a21_4

You may already be aware of how important teeth are to your appearance, but you may not know how missing teeth can harm your dental health, even a tooth that does not show when you smile must be replaced because all of your teeth work together to help you to chew, speak and smile, if a tooth is missing these simple actions may become difficult to do. A missing tooth may cause the surrounding teeth to shift or become crooked and can change your bite, this can lead to cavities, gum disease and bite problems, a missing tooth in the lower jaw may even cause a tooth in the upper jaw to move downward into the empty space, you might start chewing only on one side of your mouth causing extra stress on your jaw joints or it can affect your bite and place unusual stress on your teeth, it may also cause your face to look older or you may find it difficult to talk or chew food. However, thanks to tooth replacements you have a few options to replace missing teeth depending on your specific needs your dentist may recommend implants, fixed bridges or removable partial dentures, let's look at each option: an implant is a replacement tooth that attaches to your jawbone with a post that acts like a tooth root, implants are secure and stable and are most similar to your natural teeth and look and feel, they can be used to replace individual teeth or to support complete or partial dentures, unlike some of the other tooth replacement options the implant procedure does not involve your adjacent teeth, implants can also help prevent shrinkage of the jawbone that occurs from missing teeth although implants are a good replacement for natural teeth they're not for

everyone since surgery is necessary patients need to be in good overall health have healthy gums and there must be enough bone to support an implant. Fixed bridges cover the space where one or more teeth have been lost, a fixed bridge is a permanent restoration that can only be removed by your dentist, fixed bridges are similar to natural teeth, they're stable and comfortable, bridges are made from metal, ceramics or a combination of the two, your dentist will work with you to determine what is best for your smile, a fixed bridge is attached to the natural teeth next to the space left by the missing tooth, an artificial tooth called a Pontic takes the place of the lost natural tooth, crowns on either side of the pontic are bonded or cemented to the adjacent teeth, to prepare the adjacent teeth for the bridge the dentist removes some of the tooth structure to make room for the crowns to fit over them, the custom-made bridge is fitted and adjusted and then the bridge is cemented into place; a third option for tooth replacement is a removable bridge also known as a removable partial denture, a removable partial denture is often less expensive than a fixed bridge or implant and can be removed from the mouth for cleaning, removable partial dentures typically have the replacement teeth attached to a gum colored plastic base connected by a metal framework, they attach to your natural teeth with either metal clasps or devices called precision attachments, having crowns on your natural teeth may improve the way a removable partial denture fits your mouth (ADA, 2013).

LESSON 16

VIDEO 16: Major Connectors, Minor Connectors & Rests

Available on:

<https://www.youtube.com/watch?v=w6bGZzo2yeA>

Minor connectors are those components that serve as the connecting link between the major connector and other components of the partial denture this minor connector is a strut that connects the major connector to a rest, the base attachment is a minor connector that connects the base and the teeth to the major connector, and lastly the guide plate shown here connects the major connector to this rest, these are all minor connectors. There are four types of minor connectors, there are: those that join clasp assemblies to the major connector, those that join denture bases to the major connector, those that join indirect retainers or auxiliary rest to the major connector and those that serve as approach arms for the bar type clasp. The function of the minor connector is to transfer functional stress to the abutment teeth, it also is to transfer the effect of the retainers rest and stabilizing components to the rest of the partial denture (Windchy, 2014).

LESSON 17

VIDEO 17: Common Malocclusions in Orthodontics

Available on:

<https://www.youtube.com/watch?v=JFw3ImEYa2g>

Let's take a look at some bytes that would benefit from orthodontic treatment. Crossbite: in a crossbite the upper teeth are not wide enough to fit on the outside of the lower teeth, this makes it difficult to bring the teeth together, the lower jaw or teeth may have to shift to one side to make the teeth fit together; excessive overjet: in an excessive overjet the upper teeth are too far in front of the lower teeth, if the amount of the overjet is severe the front teeth may be subject to injury and speech may be affected; underbite: an underbite is when the upper teeth are inside or not in front of the lower teeth, which makes it difficult to cut food and causes premature wear of the back teeth; deep bite sometimes referred to as an overbite, a deep bite is when the upper front teeth cover the lower teeth and the lower teeth bite into the roof of the mouth, this type of bite causes difficulty in the movement of the lower jaw and make us premature aware of the front teeth; open bite: an open bite is when the front teeth do not touch, this makes cutting or incising food difficult or impossible, the back teeth are always touching and subject to premature wear, this type of bite also causes speech problems and tongue thrusting problems during swallowing (Movahhedian & Vaziri, 2015).

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