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University of Anbar

Dental Faculty

Prosthodontics Unit

Ass. Prof. Dr. Salah Kh. Al-Rawi (BDS, MSc, PhD)

5th Grad / 2th Lec.

2019-2020

Retention, Stability & Support of Complete Denture

RETENTION:- It is the resistance to removal in a direction; Opposite to that of insertion.

FACTORS AFFECTING RETENTION

1-Anatomical Factors.

2-Physiological Factors.

3-Physical Factors.

4-Mechanical Factors.

5-Neuromuscular Factors.

1- Anatomical Factors

A- Size of the denture bearing area:- Retention increases with increase in size of the denture bearing area. The size of the maxillary denture bearing area is about 24 cm² and that of the mandible is about 14 cm². Hence maxillary dentures have more retention than mandibular denture.

B- Quality of the denture bearing area:- the displace ability of the tissues influence the retention of the denture. Tissues displaced during impression making will lead to tissue rebound during denture use leading to loss of retention.

2- Physiological Factors:-

Saliva: The viscosity of saliva determines retention. Thick and ropy saliva gets accumulated between the tissue surface of the denture and the palate leading to loss of retention. Thin and watery saliva can also lead to compromised retention.

3- Physical Factor:-

A- Adhesion: Is defined as (the physical attraction of unlike molecules to another). The role of saliva is very important for adhesion. Saliva wets the tissue surface of the denture and the mucosa. A thin film of saliva is formed between the denture and the tissue surface. This thin film helps to hold the denture to the mucosa. The amount of adhesion present is proportional to the denture base area. The patients with Xerostomia, adhesion does not play a major role.

B- Cohesion: Is defined as "the physical attraction of like molecules for each other". The cohesive forces act within film of saliva. The effectiveness of these forces increase with increase in denture bearing area than thick mucus saliva.

C- Interfacial Surface Tension: Is the resistance to separation possessed by a film of liquid between two well-adapted surfaces.

It is the result of the cohesive forces acting at the surface of the liquid. It is similar to the force that causes a liquid to rise in a capillary tube - the capillary attraction, or capillarity. Once again, close adaptation of the denture base to the mucosa will enhance these forces. If two microscope slides have a thin layer of water between them, it is difficult to separate them by pulling them away from each other precisely because of these forces. But they can be more easily separated by sliding one slide over the other, as the forces of adhesion, cohesion, and surface tension and capillarity will be easily overcome. This has implications for the shape of the underlying basal seat area, especially in the upper. If the shape of the palate is high and vaulted, it will be easier to displace a denture base than if the palate is flatter.

D- Atmospheric Pressure & Peripheral Seal:

Atmospheric pressure can act to resist dislodging forces applied to dentures, if the dentures have an effective seal around their borders.

Retention produced by an atmospheric pressure is directly proportional to the denture base area.

Peripheral seal is the area of contact between the peripheral borders of the denture and the resilient limiting structures. This peripheral seal prevent air entry between the denture surface and the soft tissue.

4-Mechanical Factors:

- A- **Under Cuts:** Unilateral undercuts aid in retention while bilateral undercuts will interfere with denture insertion and require surgical correction.
- B- **Magnetic Forces:** Intra-mucosal magnets aid in increasing retention of highly resorbed ridges.
- C- **Denture Adhesives:** They are available as creams or gels or powders. They should be coated on the tissue surface before wearing the denture.

The action of adhesive are:-

- (1) Increasing the adhesive and cohesive properties and viscosity of the medium lying between the denture and its basal seat
- (2) Eliminating voids between the denture base and its basal seat.

D-Suction Chambers &Suction Discs:- In the past suction chambers in the maxillary dentures were used to aid in retention .The suction chamber creates an area of negative pressure, which increase retention. They are avoided now due to their potency for creating palatal hyperplasia.

5-Muscular Factors:-

The muscles apply supplementary retentive forces on the denture. There is a balance between the forces acting from the buccal musculature and the tongue . The balance is obtained in the neutral zone. Hence, the artificial teeth should be arranged in the neutral zone to achieve the best retention possible. The occlusal plane should be parallel to the residual ridge and divide the inter-arch space equally.

Stability of Complete Denture

Is the ability of the denture to withstand horizontal forces. The various factors affecting stability are:-

1-Vertical Height of the Residual Ridge

The residual ridge should have sufficient vertical height to obtain good stability. Highly resorbed ridges offer the least stability.

2-Quality of Soft Tissue Covering the Ridge

The ridge should provide a firm soft tissue base with adequate sub-mucosa to offer good stability.

3-Quality of the Impression

An impression should be accurate as possible. The impression surface should be smooth and duplicate all the details accurately. It should be devoid of voids and any rough surfaces. It should be dimensional stable and cast should be poured as soon as possible.

4-Occlusal Plane Orientation

Occlusal plane should be oriented parallel to the ridge. If the occlusal plane is inclined, then the sliding forces may act on the denture, reduce its stability.

5- Arrangement of Teeth

The position of the teeth and there occlusion play an important role in the stability of the denture.

Balanced occlusion facilitates the even distribution of forces across the denture. The teeth in the denture should be arranged in the neutral zone. Natural or artificial teeth in this zone are subject to equal and opposite forces from the surrounding musculature.

Contour of the Polished Surfaces

The polished surfaces of the denture should be harmonious with the oral structures. They should not interfere with the action of the oral musculature.

Support Of Complete Denture

Support, is defined as the resistance to vertical forces of mastication ,occlusal forces and other forces applied in a direction towards to denture bearing area.

Support is derived from bone , that all forces are ultimately transmitted via the mucosa.

This depends on the anatomical and histological factors of the ridge and the way of pressure direction on the ridge during impression making procedure, therefore the maximum coverage provides the greater the support, which distributes applied forces over as wide an area as possible. The best support for denture is the compact bone covered with fibrous connective tissue.(Support depends on:

Denture base + Bone + soft tissue).

Stress Bearing Areas (Supporting Area):-

Areas of the oral structures that resist forces, strains or pressures brought on them during function. They are portions of the mouth capable of providing support for a denture, they show minimal ridge resorption even under constant load.

Stress Bearing Areas of Maxilla:

A-Primary stress bearing areas:

- 1-Hard palate.
- 2-Posterior lateral slopes of residual ridge.

B-Secondary stress bearing areas:

- 1-Rugae area.
- 2-Maxillary tuberosity.

Stress Bearing Areas of Mandible:

Primary stress bearing area

- Buccal shelf area.

Secondary stress bearing area

- labial and lingual slopes of lower residual ridge.

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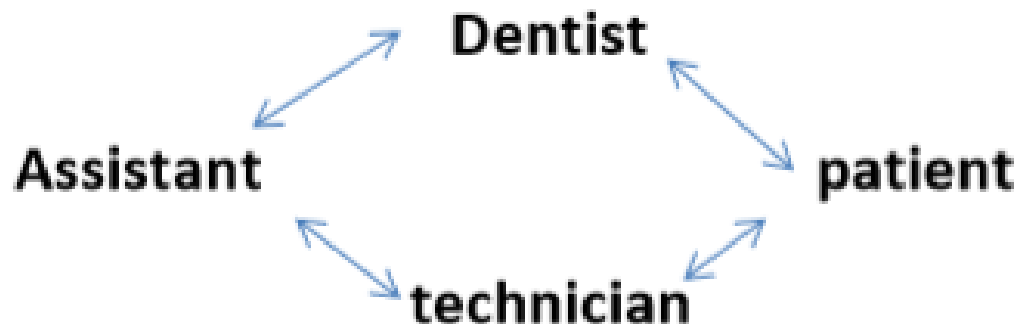
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Infection Control in Prosthodontics

Infection control:-

- Is an essential part of dentistry , dentist have a duty to take appropriate precautions to protect their patients and their staff from the risk of cross – infection.
- Dental work should be done in aseptic field , clean and sterile.
- To minimize the risk of transmission of infection between patients and between patients and health care workers a sensible and practical routine for the prevention of cross –contamination and cross –infection should followed.
- Dentists and auxiliary staff should additionally protect themselves by ensuring up – to date immunization against hepatitis B(HBV) and other infectious diseases such as tuberculosis , poliomyelitis, rubella, tetanus and diphtheria .



PROTECTION OF HEALTH CARE WORKERS:

A- Immunization

- Vaccination against hepatitis B virus (HBV) is strongly recommended for all clinical dental personal including dentists, chair side assistants , dental hygienists and students.
- Protection is also advised against diseases such as tuberculosis, varicella, measles , mumps, diphtheria and tetanus.

B- Hand Protection

- Hand washing is a primary disease prevention measure for Health care workers . Hand must be washed thoroughly with disinfectant liquid soap and dried prior to putting on and after removing gloves.
- Any cuts or abrasions to the hands or wrists should be covered with adhesive waterproof dressing,
- Remove all jewelers, rings that bacteria counts are higher when rings are worn and nails should be kept short.

C- Eye Protection

- Operators and close support dental nurses should protect their eyes against foreign bodies which may arise during dental work.
- Patient ,s eyes should always be protected against possible injury.
- Protective glasses with top and side shields are strongly recommended and should be disinfected between patients.

D- FACE MASKS

A well- fitting surgical facemask should be worn by health care workers. The dome type facemask is preferable to the paper type which rapidly becomes permeable and inefficient.

E- Protective Clothing

F- Ventilation:

Good ventilation should be used to decrease the chance of contamination

METHODS TO ELIMINATE CROSS INFECTION

Total elimination of cross infection in prosthodontics is presently not possible but steps can be taken to reduce it. Education of dental personnel is vitally important in effective implementation of safety measures for cross infection control. Sterilization and disinfection are the most popular and widely used methods for control of infection. Since it is not possible to screen every patient for every infection. Sterilization and disinfection are therefore on the top of this list. Cleaning prior to disinfection and sterilization is mandatory.

1- STERILIZATION OF INSTRUMENTS

- Sterilization is defined as the act of killing or removal of microorganisms including viruses and spores.
- All instruments likely to be contaminated must be sterilized after use.
- Sterilization procedures must be effective against all known pathogens.
- The method of choice for most instruments is by using an autoclave.
- Autoclave is a device to sterilize equipment and supplies by subjecting them to high pressure steam at a certain temperature by using one of the following:-
 - ✓ Time-temperature combination.
 - ✓ Steam at 134C can achieve in 30 minutes the same sterility that hot air at 160C takes two hours to achieve.
 - ✓ The highest temperature compatible with the equipment to be sterilized should be used. Packs should be dry when removed from the autoclave.

2- Decontamination of impression and prosthetic appliances **Disinfection**

All impressions should be rinsed in running water to remove all visible signs of contamination and be disinfected with an appropriate disinfecting agent before being sent to a dental laboratory.

DISINFECTING IMPRESSIONS

Many disinfectants has been used as Iodophors, sodium hypochlorite, chlorine dioxide, phenols and other approved products.

An acceptable disinfectant and widely used is sodium hypochlorite.(Clorox) in a 1:10 dilution.

Methods of disinfecting impression :

1-Rinse under running tap water to remove blood/saliva for 15 seconds.

2-Immerse in disinfectant 10 minutes.

3-Rinse thoroughly with tap water to remove residual disinfectant and casted.

- Most reports indicate dimensional stability is not significantly affected by immersion technique for hydrophobic impression materials.
- Hydrophilic impression materials that cannot immersed in disinfectants alginate and polyether due to potential for absorption and distortion like should be disinfected as follows:

1-Rinse under water 15 seconds.

2-Dipped or sprayed

3-Covered with damp paper towel for 10 minutes.

4-Rinse thoroughly and casted.

Cast disinfection: If disinfection of a cast is indicated, immerse for 10 minutes or spray until wet and leave for 10 minutes. Cast should be fully set (at least 24 hours) before disinfecting.

- Bite registration , wax rims and custom trays should be disinfected by (Rinse-spray –rinse) technique.
- Prostheses which have been worn by the patient and have gross deposits must be cleaned well before disinfection
- Finished acrylic prosthesis should be clean and disinfect before delivery to patient, after disinfection rinse and place in plastic bag with distilled water until insertion.
- Cr-Co prosthesis do not exceed manufacturer recommended contact time on metal components to minimize corrosion . There is little effect on Cr-Co alloy with short-term exposures (10minutes).
- Heat stable items like Face- bow forks, metal impression trays, metal spatulas should be autoclaved while unstable items like articulator. Wooden

handled spatulas , torches, rubber mixing bowls and Shade-guides should be clean and disinfect.

- Disposable plastic impression trays which cannot be autoclaved should not be reused between patients.



Asst. Prof. Dr. Salah Kh. Alrawi

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Geriatric patient

Gerodontology: Branch of dentistry that deals with the oral health problems of the old people. One of the problems of aging is that some of the bodily functions don't maintain their efficiency. Aging is a natural process. Old age should be regarded as a normal, inevitable biological phenomenon. As a result of the advances made in medicine and public health measures in the last half of the 20th century, there is a substantial increase in the life span of man. Elders above 65 years (old age) have health problems as a result of aging process, which calls for special consideration.

The “Elderly” Segment of the Population:-

- 1- People aged 65-74 years are the new or young elderly who tend to be relatively healthy and active.
- 2- People aged 75-84 years are the old or mid-old, who vary from those being healthy and active to those managing an array of chronic diseases.
- 3- People 85 years and older are the oldest-old, who tend to be physically frailer. This last group is the fastest-growing segment of the older adult population.

The Aging Patient Usually Fits into One of the 3 Groups:

- 1- Those who are well preserved physically and emotionally.
- 2- Those who are really aged and chronically ill.
- 3- Those who are fall between two extremes.

The Changes In Geriatric Patients Can Be Classified As:

1- Physiologic

- loss or graying of hair.
- loss of teeth.
- diminished of senses of light, hearing and taste.
- skin become thin, wrinkled and dried.
- Naso-labial groove deepens which produce a sagging look to the middle third of the face.

2- Psychological

Can be classified into 3 groups:

- A- Realists : Philosophic and exacting type.
- B- Resenters: Indifferent and hysterical.
- C- Resigned : Vary in their emotional and systemic status.

3- Pathologic:

Pathologic disorders or changes most frequently encountered are:-

Metabolic, Skeletal, Muscular, Circulatory and Neoplastic.

The principle cause of disability in persons of 65 years and above are :

- Heart disease.
- Hypertensive vascular disease.
- Tuberculosis.
- Disease of the bones and joints, accidents , nephritis , diabetes, cancer and eye diseases.

Oral Health Status in Aged

1- Nutrition in Old Age and Its Implications for Oral Care:

- Adequate nutrition is a vital factor in promoting the health and well-being of the aged.
- Inadequate nutrition may contribute to an accelerated physical and mental degeneration.
- Poor oral health can be a detrimental factor to nutritional status and health.
- Disorders of the oral cavity have contributed to poor eating habits in the elderly.
- Loose painful teeth or ill-fitting dentures may result in a reduced desire or ability to eat.
- A compromised nutritional status, in turn can further undermine the integrity of the oral cavity are closely interrelated, diet and nutrition should be considered as an integral part of the oral health assessment and management of the elderly.
- Although chewing efficiency and nutritional status improve when inadequate dentition or edentulousness is corrected with partial or complete dentures, with these replacements, mastication is less efficient than with intact natural dentition.

- Denture status may contribute to dietary changes to soft; easily masticate certain foods, which are often high in fermentable carbohydrates that may predispose to the development of root caries lesions.
- The dentists are hence in an ideal position to contribute to the well-being of the elderly population.
- Dentists should be alert to nutritional risk factors in the elderly population and by careful screening can intervene in the early stages of nutritional problems when such interventions can be most valuable and effective.

2- Changes in Salivary Glands and Salivary Secretion With Aging:

- With advancing age, there is an atrophy of tissue, a proliferation of ductal elements and some degenerative changes in the major salivary glands. These alterations tend to occur linearly with increasing age.
- Minor salivary glands also undergo similar degenerative changes with advancing age. Thus, there is a normal, uniform decrease of salivary gland tissue accompanying the aging process. As the serous gland decrease in activity the saliva become more mucous and soapy.
- The main oral health problems of old age that is mouth dryness and dental caries have been attributed to the reduced salivary flow.

3- Age Changes in Oral Mucous Membrane:

- The oral mucosa performs essential protective functions that profoundly affect the general health and well-being of the host.
- A decline in protective barrier function of the oral mucosa could expose the aging host to myriads of pathogens and chemicals that enter the oral cavity during daily activities.
- The thinning of mucous membrane of the geriatric patient allows **Fordyce spots** (White –yellow bumps enlarge oil glands) to become more apparent.

4- Changes in the Teeth With Aging

- The gradual changes taking place in the dental tissues after the teeth are fully formed are referred to as age changes.
- Most of the tissues have a physiological turnover of their components but however, some tissues do not exhibit any turnover such as the enamel.

A two age dependent change takes place in dentin

- 1- Continued growth, referred to as physiological secondary dentin formation.
- 2- Gradual obturation of the dentinal tubules referred to as dentin sclerosis.

The dental pulp in teeth from old individuals differs from that in younger teeth by having more fibers and fewer cells, and hence reduces in volume.

Cementum apparently continues to be laid throughout life, but the rate of formation diminishes with age. Under some circumstances, excess amounts of cementum may be formed (hypercementosis) associated with accelerated elongation of an unopposed tooth or to an inflammatory stimulus.

5- **Tongue:**

- Macroglosia usually result from relaxation of the tongue musculature. This occurs in disturbance of the endocrine glands as hyperpituitarism, however ,the extraction of mandibular posterior tooth allows the musculature to relax and preferably the most prevalent etiologic factor.

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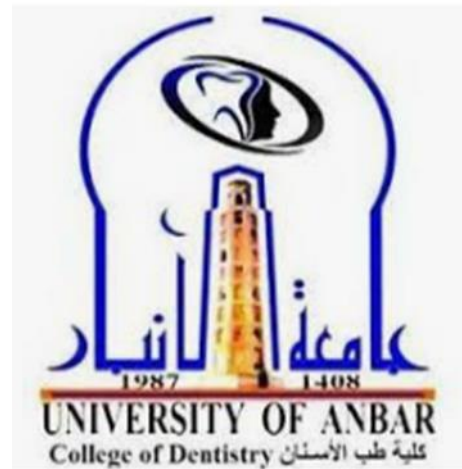
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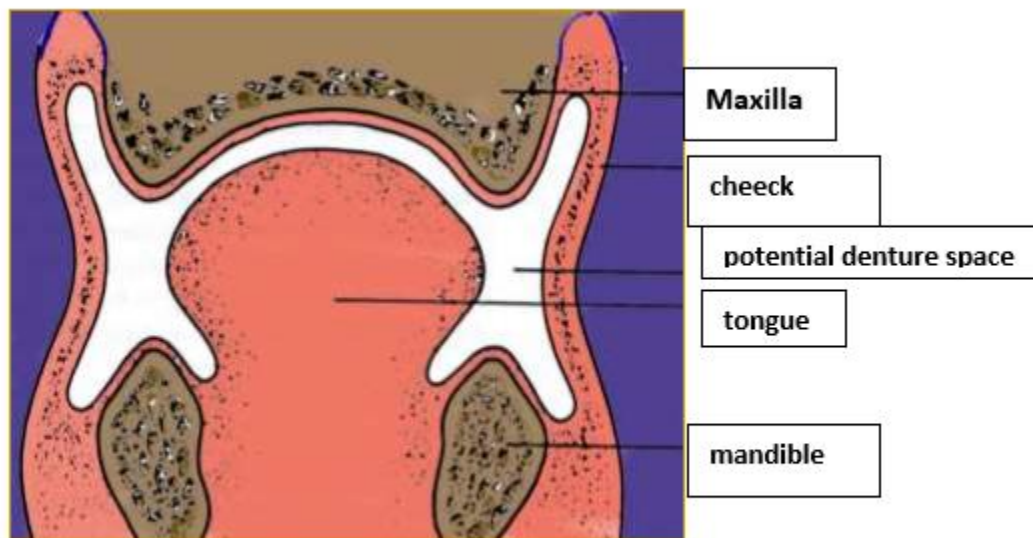
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NEUTRAL ZONE

The lower denture commonly presents the most difficulties with pain and looseness being the most common complain. This is because the mandible atrophies at greater rate than the maxilla and has less residual ridge for retention and support. The Neutral Zone technique is most effective for patients who have had numerous unstable and unretentive lower complete dentures. These patients usually have highly atrophic mandible and there has been difficulty in positioning the teeth to produce a stable denture.

Neutral Zone (N.Z.) Is That :- Area in the potential denture space where the forces of tongue pressing outward are neutralized by the forces of the cheeks and lips pressing inward.

Since these forces are developed through muscular contraction during the various functions of chewing, speaking and swallowing . They vary in magnitude and direction in different individuals.



Cross section/ The potential denture space

INDICATIONS:-

N.Z. is indicated when stability and patients acceptance of lower C.D. are in question.

1. Severely atrophic mandibular ridge
- 2- Patients with prominent and highly attached mentalis muscle, lateral spreading of tongue as a result of poor transition from dentate to edentulous state and sever resorption.
- 3- Patients with diminished neuromuscular control such as those with a history of stroke , Parkinson,s disease or patients with impaired motor innervations to oral and facial muscles as a result of brain surgery.
- 4- Patients with a typical shape or consistency of oral and perioral structure for example. patient who have scleroderma, marginal or segmental mandibulectomy and partial glossectomy.
- 5- N.Z. technique can be used to locate optimal position for implants in cases of implant supported or retained the overall outcome of treatment.

Muscles Involved in the N.Z.

The musculature of the denture space can be divided into two groups:-

- 1- Those muscles which primarily dislocate the denture during activity (Dislocating muscles).
- 2- Muscles that fix the denture by muscular pressure on the polished surfaces (Fixing muscles). These can then be further divided according to their location on the Vestibular (labial and buccal) side or lingual side of the dentures.

Dislocating Muscles

Vestibular:

- Masseter.
- Mentaalis.
- Incisive labii Infer.

Lingual:

- Medial Pterygoid.
- Palatoglossus.
- Styloglossus.
- Mylohyoid.

Fixing Muscles

Vestibular:

- Buccinator.
- Orbicularis oris.

Lingual:

- Gnioglossus.
- Lingual vertical.
- Lingual transverse.

Materials Used for N.Z. Impression:-

- 1- Impression plaster.
- 2- Impression waxes.
- 3- Tissue conditioner.
- 4- Impression compound.
- 5- Regular bodies silicon.
- 6- Hard relining.
- 7- Polyether.

Neutral Zone Impression Technique

The loose and unstable lower complete denture is one of the most common problems faced by denture patients. One of the methods used to solve this problem is the neutral zone technique. The neutral zone is the area where the displacing forces of the lips cheeks and tongue are in balance. It is in this zone that the natural dentition lies and this is where the artificial teeth should be positioned. This area of minimal conflict may be located by using the neutral zone technique. The artificial teeth can then be set up in the correct positions. This technique is described below.

- Primary and final impressions of the upper jaw and primary impression for the lower jaw are taken and models were prepared. On the upper model wax rim is made and a lower special tray is constructed. The special tray is a plate of acrylic adapted to the lower ridge, without a handle, with spurs or fins projecting upwards towards the upper arch. These help with retention of the impression material.



1) A lower edentulous arch



2) A lower acrylic special tray with metal spurs to aid retention of the impression material

- The upper wax rim is adjusted as in normal registration for a complete denture. The lower special tray is placed in the mouth. Two occlusal pillars are then built up in self-cured acrylic on opposite sides of the lower arch. These pillars are molded and adjusted to the correct height so as to give the usual 3mm freeway space.

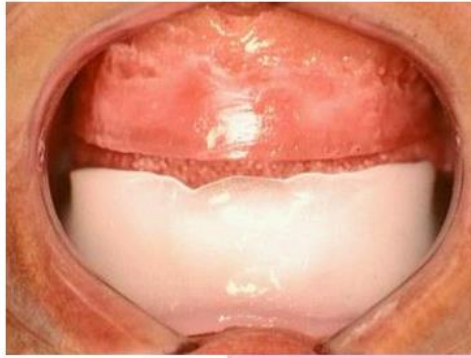


3) Occlusal pillars have been built up in green stick to the correct occlusal height



4) Establishing the correct occlusal height

- A thick mix of heavy body silicone impression material is then placed around the rest of the lower special tray, distally and mesially to the occlusal pillars. Then impression material is applied to the base plate and retained by the wire loops and or acrylic pillars. The patient is then asked to talk, swallow, drink some water etc. After 5-10 minutes the set impression is removed from the mouth and examined. The impression material will have been molded by the patient's musculature into a position of balance. Then a light body silicone material is put on the tissue surface and on the heavy body to make a final impression for the facial and lingual surfaces. It is useful if the chosen material has relatively long working time to allow the required movements to be carried out before the material becomes rigid. Also denture is fitted in the patient mouth as it may help to control recording material and prevent it from being displaced in a labio-occlusal direction.

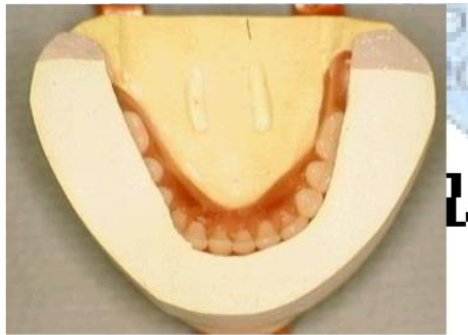


5) The impression material being molded within the mouth



6) A completed silicone impression

- After applying petroleum gel separating medium, plaster index are then constructed in the lab, by surrounding the impression with plaster and a stonecast.



7) A plaster index used to locate the teeth to the neutral zone.

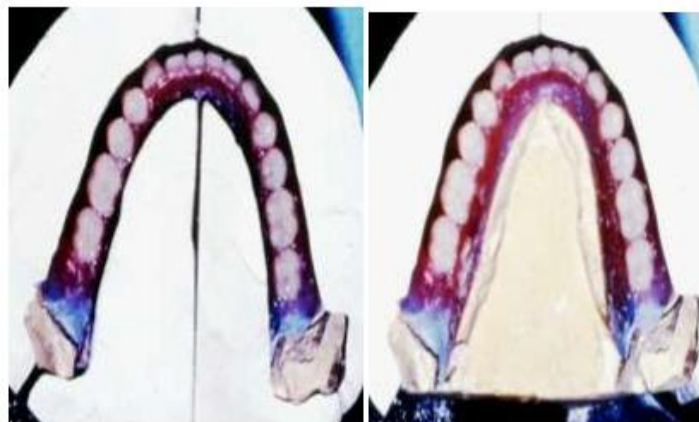


fig:- plaster index

- When the silicone and the tray is removed, a temporary denture base constructed and a gutter corresponding to the neutral zone is left behind that filled with wax to form bite rim in the neutral zone.
- Tooth arrangement and initial wax up for the soft tissue contours. The teeth may then be placed into the neutral zone.
- Then lingual index are being removed and buccal index after that.
- Intra oral try in

The resulting denture should feel more comfortable and be more stable and retentive because the denture should not interfere with or be displaced by the functions of the lips, cheeks and tongues.



8) The teeth positioned in the neutral zone leaving plenty of tongue space

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JAW RELATION FOR COMPLETELY EDENTULOUS PATIENT

JAW RELATION:- It is defined as “Any relation of the mandible to the maxilla”

• Types:

- 1- Orientation jaw relation.
- 2- Vertical jaw relation.
- 3- Horizontal jaw relation

1- ORIENTATION JAW RELATION

Are those that orient the mandible to the cranium in such a way, that, when mandible is kept in its most posterior position, the mandible can rotate in sagittal plane around an imaginary transverse axis passing through or near the condyles.

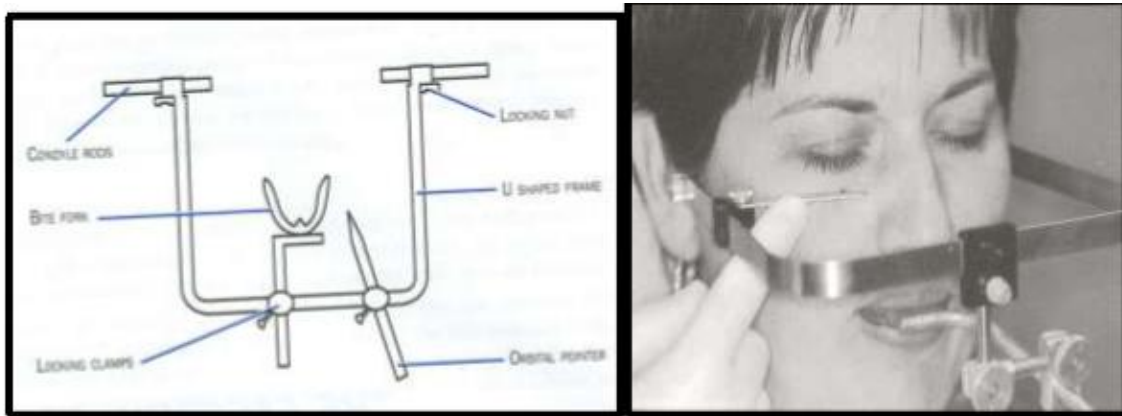
It include:

- 1- Orientation of maxilla or mandible to skull by using (face bow).
- 2- Orientation of occlusal plane by using (fox plane).



Face Bow

- U shaped Caliper like instrument used to record the relationship of the maxillary arch to some anatomic reference point or points and then transfer this relationship to an articulator.
- Face bow is used mainly when the vertical dimension of occlusion is expected to be altered.
- Use of face-bow minimizes occlusal errors in the restoration as the casts will be oriented as close to as they are in the patient.
- It orients the dental cast in same relationship to the opening axis of articulator. Customarily the anatomic references are the mandibular condyles transverse horizontal axis and one other selected anterior point.
- Also called Hinge bow, Ear bow, Kinematic face bow.



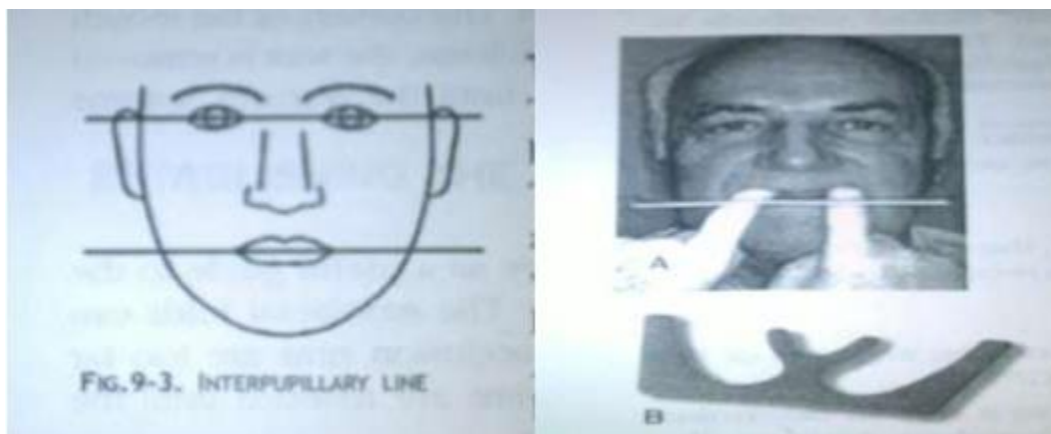
During Orientation Jaw Relation Clinically We Should Do the Following:

- Properly contoured maxillary occlusal rim is inserted in the patient's mouth and following are assessed:-
 - Lip support: Upper lip - just supported enough.
 - Visibility of the rim: at rest 1.5-2 mm of the rim should be visible.
 - Lips relaxed.
 - Nasolabial angle should be at 90 degree.
 - Philltrum should be depressed slightly, There should be no obliteration or stretching of philltrum.

FOX PLANE (Fox Bite)

- Anteriorly the maxillary occlusal plane is adjusted to be parallel to interpupillary line.
- Posteriorly the occlusal plane is adjusted to be parallel to alaetragus line (camper's plane),

Camper's plane: Imaginary line joining the alae of the nose to the tip of the tragus.



2- VERTICAL JAW RELATION

VERTICAL DIMENSION: is the distance between two selected points -: one on the fixed part and the other on the movable (maxilla and mandible) at the mid line.

REST VERTICAL DIMENSION (RVD):- The distance measured when the mandible is in the rest position .

OCCLUSAL VERTICAL DIMENSION (OVD) :- The distance measured when the occluding members are in contact.

INTEROCCLUSAL DISTANCE (FREE WAY SPACE):- It is the distance measured when the occluding surface of the maxillary and mandibular teeth when the mandible in its physiologic rest position and it is equal to 2-4mm.

IMPORTANCE OF VERTICAL DIMENSION:

- 1- Functional role which include mastication, respiration, deglutition and phonetics.
- 2- Esthetic role.
- 3- Preservation role maintenance of healthy tissues such as mucosa, bone, muscles and TMJ.

The Vertical Jaw Relations can be recorded in tow positions:-

- 1- The vertical dimension at rest position.
- 2- The vertical dimension at occlusion.

Effects Of Excessively Increasing the Vertical Dimension:-

- 1- Discomfort – teeth come into contact sooner than expected.
- 2- Trauma – caused by constant pressure on the mucous membrane.
- 3- Loss of freeway space.
- 4- Clicking of teeth – teeth are raised & the opposing cusps frequently meet each other during speech & mastication.
- 5- Appearance – over opening may cause elongation of the face & at rest the lips are parted.

Effect Of Excessively Decreasing the Vertical Dimension:-

- 1- Inefficiency – the force exerted with the teeth in contact decreases considerably with over closure.
- 2- Cheek biting – the flabby cheek tend to become trapped between the teeth & bitten during mastication.
- 3- Appearance – Closer approximation of nose to chin, soft tissue sag & fall in, & the lines on the face are deepened.
- 4- Soreness at the corner of the mouth (Angular cheilitis) – falling in of the corner of the mouth beyond the vermilion border & the deep fold thus formed become bathed in saliva. This area becomes infected & sore.
- 5- Pain in TMJ – caused due to strain of the joint & associated ligaments.

1- METHODS OF RECORDING REST VERTICAL DIMENSION(RVD):-

A- Swallowing Method :

- It is based upon **the hypothesis** that after each act of swallowing the subject passes through rest V.D. After insertion of the occlusion rims inside the patients mouth where the head in the upright position the patient swallows and then let the jaw relax several times when the relaxation is obvious several measurements between the 2 selected points and do average for them to obtain the rest vertical dimension . it is important to mention that there must be a separation between the occluding members of 2-4mm before taking the measurement.
- However it has been found in experimental research that a rapid adaptation takes place after changes of the vertical dimension leading to another rest position such findings indicate that the rest position is not a reliable basis for the determination of vertical dimension .

B- Tactile Sense Method :

- This method depends upon the patient's muscular perception in registering comfortable and relaxed position . We instruct the patient to open widely until strain is felt in the muscles and when this opening become uncomfortable ask him to close slowly until the jaws reach a comfortable relaxed position and then measure the distance.
-

C- Phonetic Method:-

- The bilabial sounds like M , P or (emm) are considered the most popular sound used as the patient repeat these sounds when the lips come together in contact we measure the distance.

D- Facial Expression:-

- The experienced dentist learn the advantage of recognizing the related facial expression when the patients jaw are at rest where the lips will be even antero-posteriorly and in slight contact the skin around the eyes and over the chin will be relaxed.

E- Anatomical Landmarks:-

- The distance between the outer canthus of the eye to the corner of the mouth and the distance between the anterior nasal spine and the lower

border of the mandible. When these measurements becomes equal the jaws are considered at rest position.

2- RECORDING OCCLUSAL VERTICAL DIMENSION (OVD):-

A- Mechanical Methods:

1- Pre-extraction records:-

- Profile photographs
- Radiography (cephalo metric profile and the condyles in the fossae)
- Articulated cast
- Facial measurements.

2- Former dentures.

3- Ridge relation.

B- Physiological Methods:

1- Swallowing Threshold:

- The position of the mandible at the beginning of the swallowing act as a guide to the vertical dimension of occlusion .

2- Tactile Sense Method:

- A central bearing screw and central bearing plate apparatus is used and attached to accurately adapt record bases permits the patient to experience through neuromuscular perception the different vertical relations. The central bearing screw is adjusted downward and upward until the height of contact feels right to the patient and this represents the occlusal vertical dimension .



3- Phonetics (Silver Man,s Closest Speaking Space) :-

- It is the minimal amount of inter occlusal space between the upper & lower teeth. When sounds like Ch, S, and J are pronounced , there is 1-2mm clearance between teeth when observed from the profile and frontal view. If the distance is too large it mean that too small a vertical dimension of occlusion may have been established. If the anterior teeth touch when these sounds are made , the vertical dimension is probably too great.

Asst. Prof. Dr. Salah Kh. Alrawi

(PhD) Maxillofacial Prostheses

(MSc) Fixed and Removable Prosthodontics

(BDS) Oral Dental Surgery

2019 - 2020

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Prosthodontics Unit

Asst. Prof. Dr. Salah Kh. Al-Rawi (BDS, MSc, PhD)

5th Grad / 8th Lec.

2019-2020

HORIZONTAL JAW RELATION FOR COMPLETE DENTURE CONSTRUCTION

The horizontal jaw relation are the relationship of the mandible to the maxilla in antero-posterior and side to side direction, which include :-

- 1- Centric jaw relation.
- 2- Eccentric jaw relation which include:-
 - A- Protruded or forward relation.
 - B- Left or right lateral relation.

CENTRIC JAW RELATION

- Is the most retruded physiologic relation of the mandible to the maxilla to and from the individual can make a lateral movements. This movement can exist at various degrees of jaw separation , it occurs around the terminal hinge axis.
- Also it can define as the most retruded relation of the mandible to the maxilla when condyles are in the most posterior unstrained position in the glenoid fossa from which lateral movements can be made at given degree of jaw separation ,(bone –to- bone relation).

CENTRIC OCCLUSION : The occlusion of opposing teeth when the mandible is in centric relation .This may or may not coincide with the maximum inter-cuspation , tooth –to-tooth relation.

Eccentric occlusion: Any occlusion other than centric occlusion. In many people centric occlusion of the natural teeth does not coincide with centric relation of the jaws ,but in construction of complete denture the centric occlusion must be coincide with centric relation

The significance of centric jaw relation

- 1- It is a learnable, repeatable, and recordable position which remains constant throughout life.
- 2- It is a reference position from which the mandible can move to any eccentric position and return back involuntary.

- 3- It is the start point for developing occlusion.
- 4- Functional movement like chewing and swallowing are performed in this position , because it is the most unstrained position.

Factors that affect centric relation records

- 1- The resiliency of the supporting tissues.
- 2- The stability of the record bases.
- 3- The TMJ and associated neuromuscular mechanisms.
- 4- The character of the pressure applied in making the recording
- 5- The skill of the dentist.
- 6- The health and cooperation of the patient.

METHODS (Techniques) of RECORDING CENTRIC RELATION

- A- Functional Methods.
- B- Graphic Methods.
- C- Tactile-interocclusal method (physiologic).

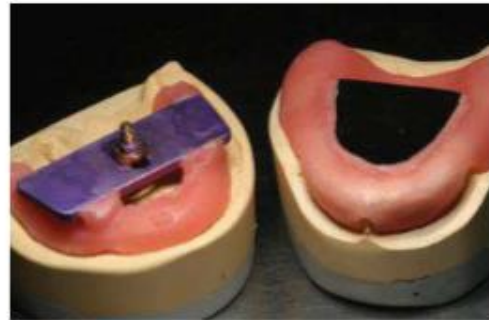
A-Functional Technique

Or called chew –in, examples on this are House Needle and Patterson techniques. The patient produces of mandibular movements by moving the mandible to protrusion, retrusion and right and left lateral movement.

- 1- Uses compound occlusion rims with: House Needles technique - A four metal styli placed in the maxillary rim. When the mandible moves with the styli contacting the mandibular rim, the styli cut four diamond shaped tracings. The tracings incorporate the movements in three planes, and the records are placed on a suitable articulator.'
- 2- - Patterson Method uses wax occlusion rims. A trench is made along the length of mandibular rim. A 1:1 mixture of dental plaster is loaded into the trench. When the patient moves his mandible, compensating curves on the mixture will produced, and the height of the mixture is also reduced. The patient is asked to continue these movements till a predetermined vertical dimension is obtained. Finally, the patient is asked to retruded his jaw and the occlusal rims are fixed in this position with metal staples.

B- Graphic Method

These methods are called because they use graphs or tracing to record the centric relation. The general concept of this technique is that a pen-like pointer is attached to one occlusal rim and a recording plate is placed on the other rim, the plate coated with carbon or wax on which the needle point can make the tracing, when the mandible moves in horizontal plane, the pointer draws characteristic patterns on the recording plate.



C- Interocclusal Methods For Centric Relation Record

- The tactile or inter occlusal check record method is referred to as a physiologic method. The normal functioning of the patients and the tactile sense is essential in the making of an accurate record.
- The records are made using a recording medium (impression plaster, zinc oxide eugenol, impression compound and wax) between the occlusion rims or the trial denture bases. The patient closes into the recording medium with the lower jaw in its most retruded position and stops the closure at a predetermined vertical relation.

Procedure

- 1- This procedure is done after establishing the V.D. of the jaws ,and mounting of the face bow transfer.
- 2- Seat the patient comfortably with head upright.

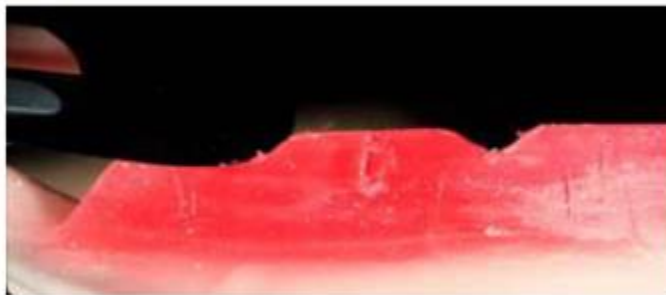
- 3-** Place 3 widely separated lines between the rims in the centric position (mid line & canine eminences).



- 4-** Check that record base heels (rims do not touch).



- 5-** Make two sharp "V" shaped notches in the molar /premolar area of each sided wax depth 3-4mm in the upper bite rim wax.



- 6- Reduce the mandibular occlusal rim from the premolar area to the end to allow for excess inter-occlusal distance
- 7- Making role of soft wax or can use silicone impression material, place wax into a 1-2mm slot in mandibular rim, ensure wax is soft.
- 8- Stabilize mandibular record base using index fingers on the flange and thumbs under the symphysis.
- 9- Making a tentative centric record by having the patient retrude and close the jaw until he feels the closure to be at a tentative vertical dimension of jaw separation .
 - Patient slowly closes.
 - patient closes until rims are almost touching (1mm separation).
 - Ask patient to stop as soon as this position has been reached.
 - Hold position until set 1-2min.
 - Remove both rim together.



- 10--Mount on a suitable articulator.

NOTE: IF the retention of the record bases is not adequate, apply a fine dusting of denture adhesive to the wet tissue surface.

TRIAL INSERTION FOR COMPLETE DENTURE

The fourth clinical appointment for construction of complete denture, is consider the last opportunity to correct errors before the denture is processed.

The following steps should be checked at the trial insertion:-

- 1- Midline: should be centered to the philtrum of the upper lip when patient is smiling.
- 2- Centric relation: The posterior teeth must all contact simultaneously when the patient closes lightly to their perceived "1st contact" in centric relation.
- 3- Occlusal vertical dimension; the patient should look normal during sibilant sound production, one or two millimeters of space should exist between the maxillary and mandibular first premolars. Patient should feel comfortable with the degree of jaw separation their trial denture provide. Teeth should not contact during speech sounds, especially the sibilant sounds . A larger change of vertical dimension will require a new centric relation record made at the new vertical dimension of occlusion.
- 4- Lip support and normal contour: observe the lip support when the complete denture in place. The patient should have proper support and a natural appearance.
- 5- Tooth position: mandibular posterior teeth are set over the crest of the lower ridge. Maxillary anterior teeth are set to provide natural lip support and position that is agreeable to the patient.
- 6- Buccal corridor: Is the space between the buccal surfaces of the posterior teeth and the cheeks. This space should be neither excessive nor diminished.
- 7- Occlusal plane: should parallel with the pupils of the eyes when viewed in front of the patient, the occlusal plane should not drop as it progresses posteriorly.

- 8- PHONETICS: Ask the patient to count from sixty to seventy .Observe how close the teeth approach each other . They should not contact during speech . If they touch, the occlusal vertical dimension is too great and will need to be reduced. Also listen for. distortions sibilant such as a whistle or central lisp.

During the conversation certain sounds should be observed carefully:-

A- "F" and "V" sounds are produced when the highest part of the lower lip is barely in contact with the incisal edges of the upper teeth.

- Difficulty in producing the "F" and "V" sounds is due to placing the maxillary anterior teeth too far lingually or placing the occlusal plane too high.

B- "S" sounds are produced by air as it escapes behind the maxillary incisor near the center of the mouth between the tongue and the palate. Lipping can be caused by excessive thickness lingual to the maxillary central incisors . A deep channel located lingual to the maxillary central incisors causes whistling .

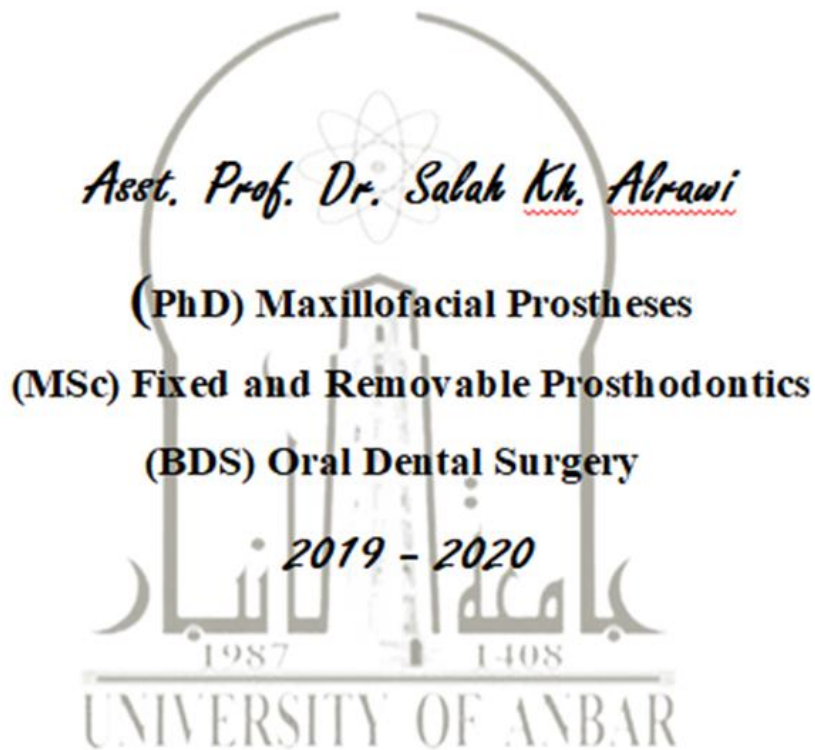
- An "S " sound that sounds like the "Sh" may be caused by too broad a channel lingual to the maxillary central incisors preventing contact between the tongue and the denture base in the premolar and molar region.

C- "Th" sounds are produced by slightly protruding the jaw and bringing the tip of the tongue in contact with the incisal edges of the upper and lower incisors.

- Difficulty in producing this sound is due to too much horizontal overlap or a deep and /or board channel between the tongue and the area of the denture base lingual to the upper incisors. The "S", "Sh" and "Th" sounds are closely related to one another.

- 9- Overall Appearance (Size, Position , Form , and Arrangement: Stand back away from the patient , ask him to smile and speak , the denture should appear natural looking . :

- 10-** Maxillary Posterior Extension -Using an indelible transfer applicator, mark each pterygo-maxillary notch and the vibrating line . Evaluate the extension of the trial denture to verify that it ends on the line and in the pterygo-maxillary notches.
- 11-** Selection of Denture Base Shade if a custom gingival denture base shade is to be tested, it must be selected at this time.



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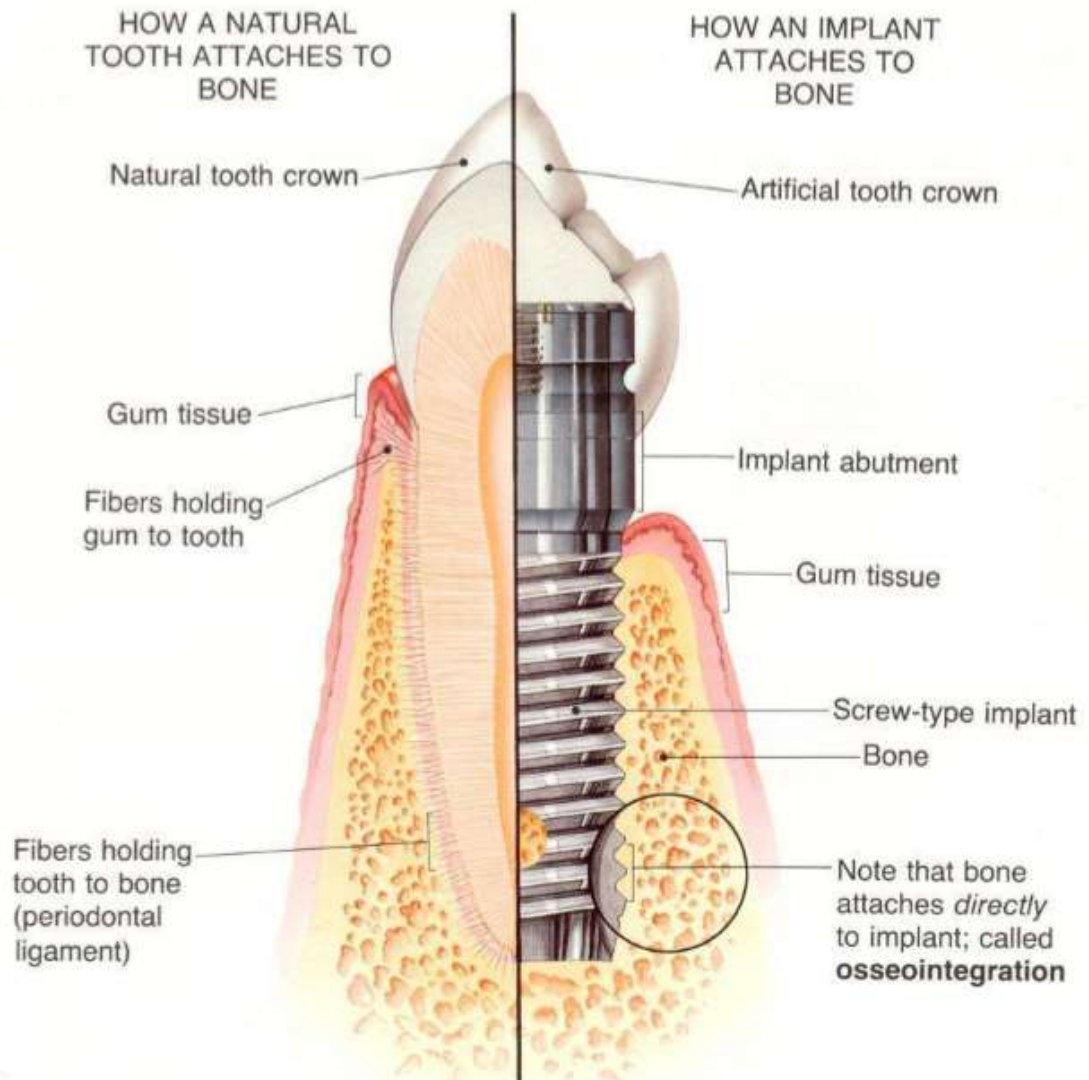
Asst. Prof. Dr. Salah Kh. Al-Rawi (BDS, MSc, PhD)

5th Grad / 7th Lec.

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DENTAL IMPLANTS

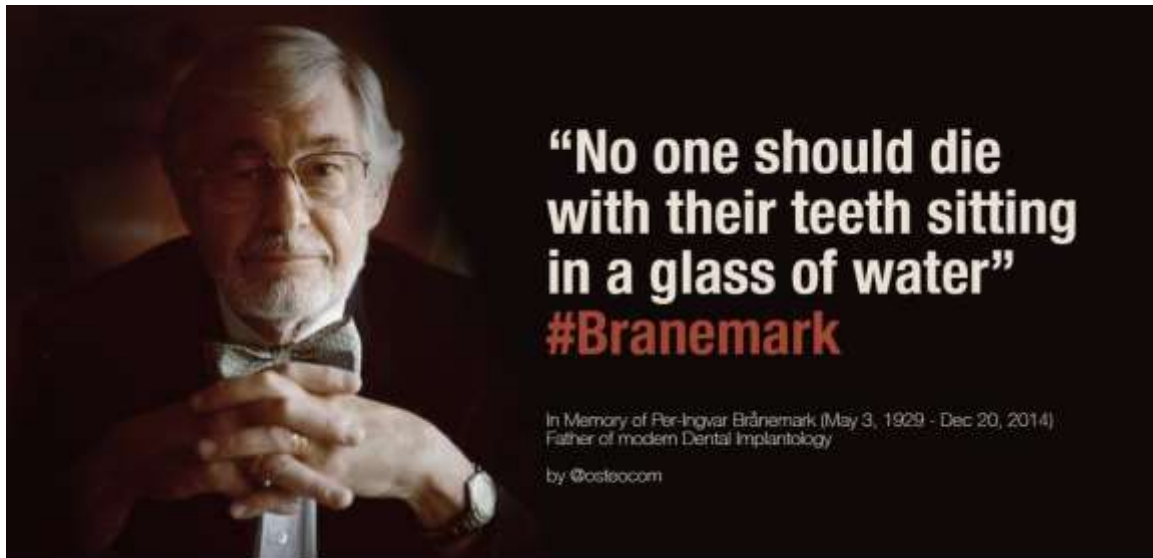
IMPLANT DENTISTRY is a boon for restoration of missing teeth or a dental implant is an artificial root that replaces the natural tooth root. It overcomes many disadvantages of other conventional methods of restorations i.e., with removable prosthesis with fixed prosthesis .



WHAT IS IMPLANTATION?

IMPLANTATION – is defined as insertion of any object or a material , which is all nature either partially or completely into the body for therapeutic, experimental, diagnostic or prosthetic purpose .

❖ FATHER OF IMPLANT DENTISTRY Per Ingvar Branemark



ADVANTAGES OF IMPLANT

- To overcome the drawbacks of removable prostheses.
- Bone maintenance of height and width.
- Ideally esthetic tooth positioning.
- Improved psychological health.
- Increased stability in chewing.
- Increased retention.

DISADVANTAGES OF IMPLANT

- Most expensive
- Time consuming procedure
- Not good for patients who don't recover quickly
- Adaptation of the bone tissue

Diagnosis and treatment planning in Implant Dentistry

- Patient screening and medical evaluation.
- General examination – Extra/Intraoral.
- Classification of arches.
- Bone evaluation.
- Evaluation of natural teeth adjacent to implants.
- Esthetic risk factors.
- Diagnostic imaging.
- Diagnostic casts.

Evaluation of patient's medical history

- Smokers.
- Diabetes.
- Long-term steroid use.
- Osteoporosis.
- Other diseases.
- Radiotherapy

Bone evaluation

- 1988 Misch classification on bone density:-
- He classified it in to 4 groups independent of region of the jaw, based on microscopic structure of bone.

D1	Dense cortical bone	Anterior mandible Posterior mandible
D2	Dense to porous cortical bone surrounding dense trabecular bone	Anterior mandible Posterior mandible Anterior maxilla
D3	Thin porous cortical bone surrounding fine trabecular bone	Anterior maxilla Posterior maxilla
D4	Fine trabecular bone	Posterior maxilla
D5	Immature, nonmineralized bone	

D1
D 2
D3
D4

Diagnostic tools

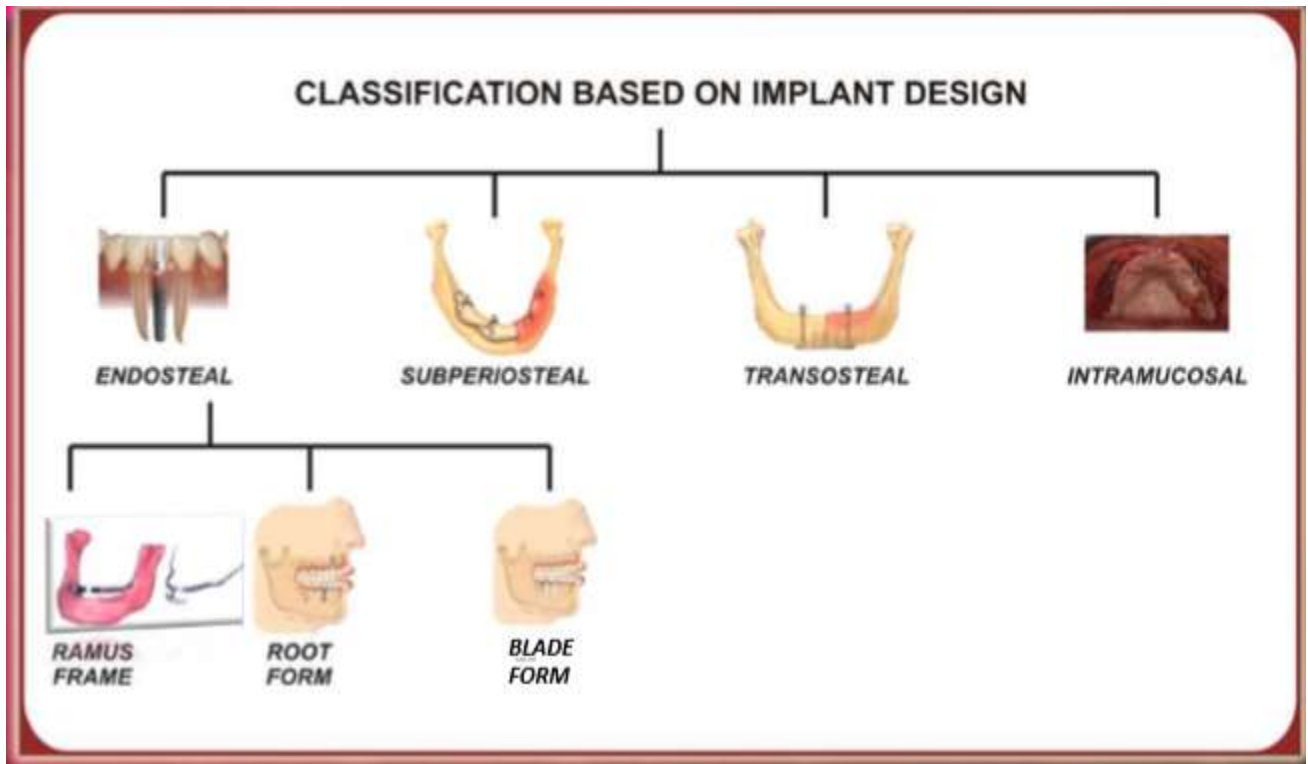
- Periapical radiograph
 - Occlusal radiograph
 - Orthopantomograph
 - CBCT
 - Cephalometric radiograph
 - Computed Tomography (3D)
 - Magnetic resonance imaging (3D)
 - Interactive computed tomography (3D)
 - Photographs/Study models
- **Main goals of presurgical imaging**
 - Identify disease
 - Determine bone quality
 - Determine bone quantity
 - Determine implant position
 - Determine implant orientation

CLASSIFICATION OF DENTAL IMPLANTS

There are Five Types of classification

- 1- Based on implant design.
- 2- Based on attachment mechanism.
- 3- Based on macroscopic body design.
- 4- Based on the surface of the implant.
- 5- Based on the type of the material.

CLASSIFICATION BASED ON IMPLANT DESIGN



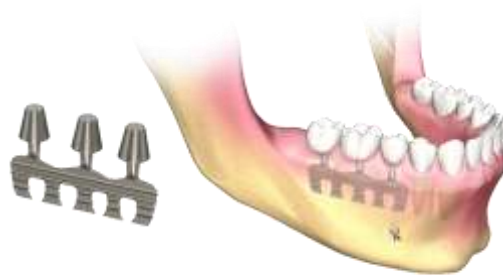
1. ENDOSTEAL IMPLANT

- A device which is placed into the alveolar bone and/or basal bone of the mandible or maxilla.
- Transect only one cortical plate.



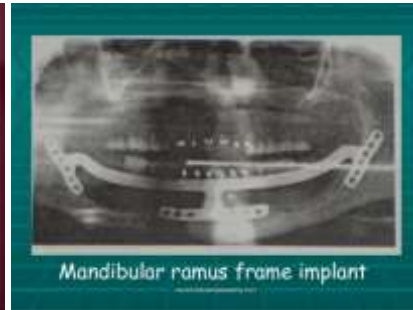
A) BLADE IMPLANT

- It consists of thin plates in the form of blade embedded into the bone



B) RAMUS FRAME IMPLANT

- Horse shoe shaped stainless steel device.
- Inserted into the mandible from one retromolar pad to the other.
- It passes through the anterior symphysis area.



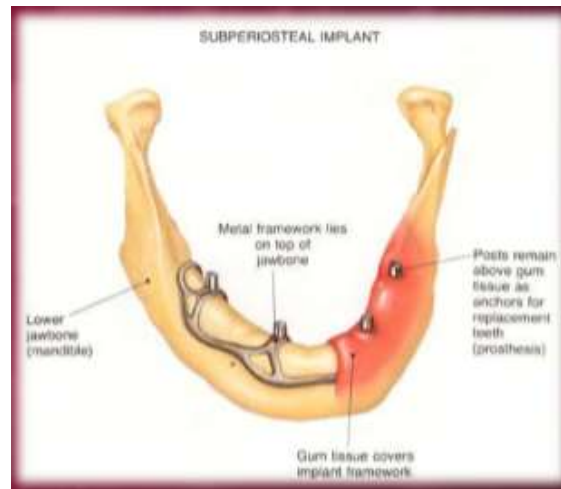
C) ROOT FORM IMPLANT

- Designed to mimic the shape of the tooth.
- For directional load distribution



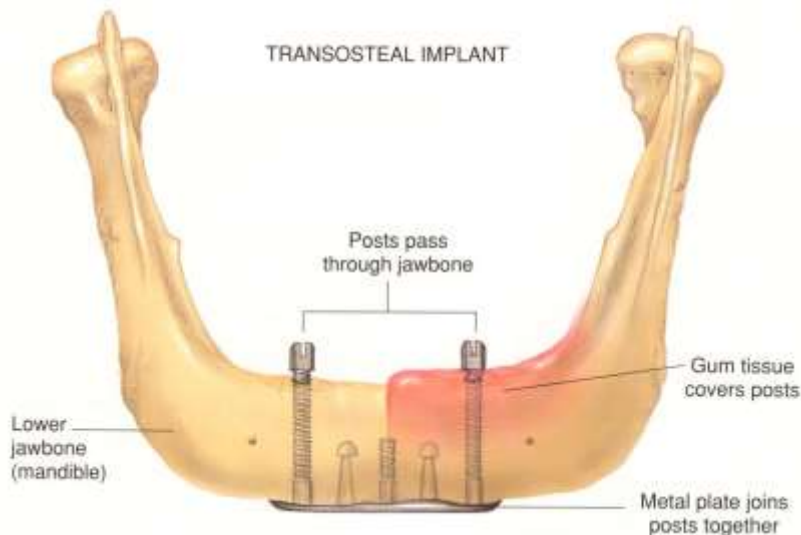
2- SUBPERIOSTEAL IMPLANT

- Placed directly beneath the periosteum overlying the bony cortex



3- TRANSOSTEAL IMPLANT

- Other names-staple bone implant mandibularstaple implant transmandibular implant.
- Combines the subperiosteal and endosteal components.
- Penetrates both cortical plates

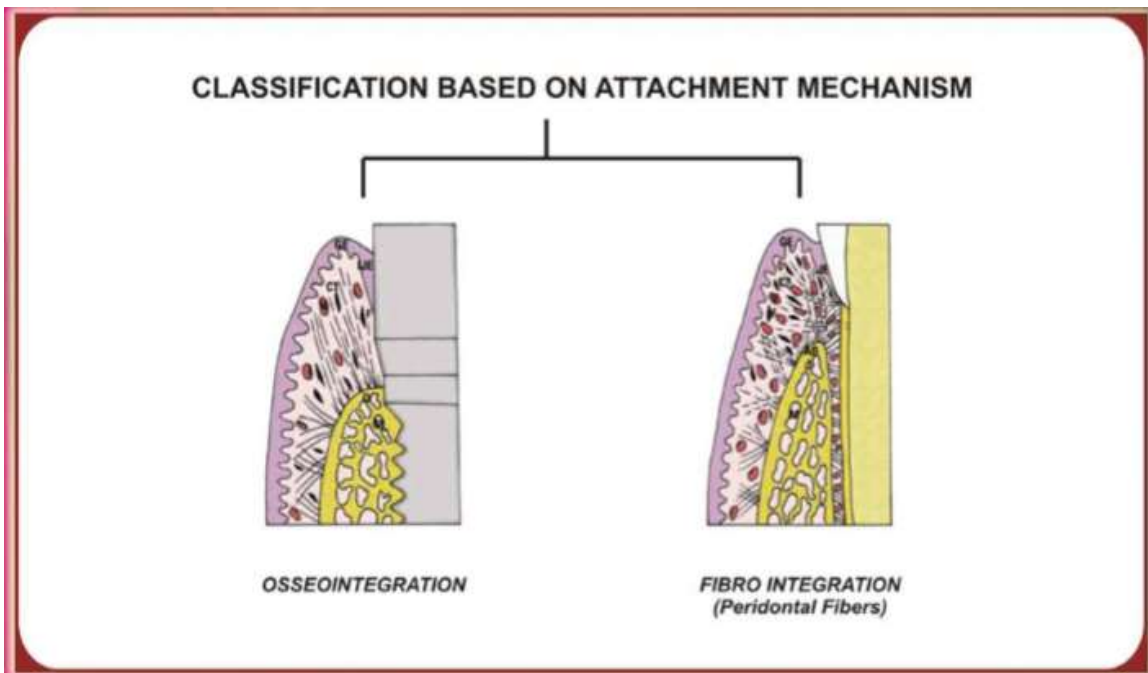


4- INTRAMUCOSAL IMPLANTS

- Inserted into the oral mucosa.
- Mucosa is used as attachment site for the metal inserts



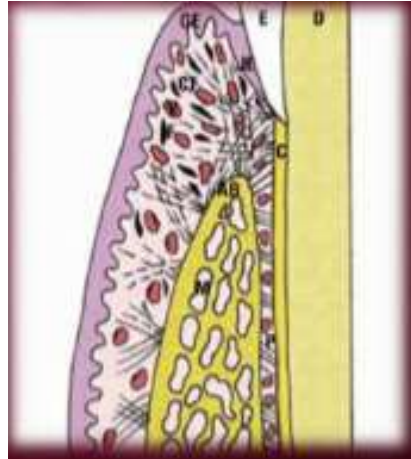
CLASSIFICATION BASED ON ATTACHMENT MECHANISM OF THE IMPLANT



A) FIBROINTEGRATION

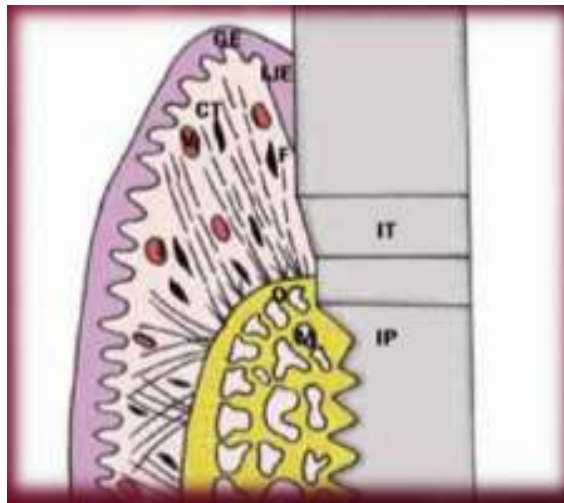
- Proposed by Dr. Charles Wiess.
- Complete encapsulation of the implant with soft tissues.

- Soft tissue interface could resemble the highly vascular periodontal fibers of natural dentition.

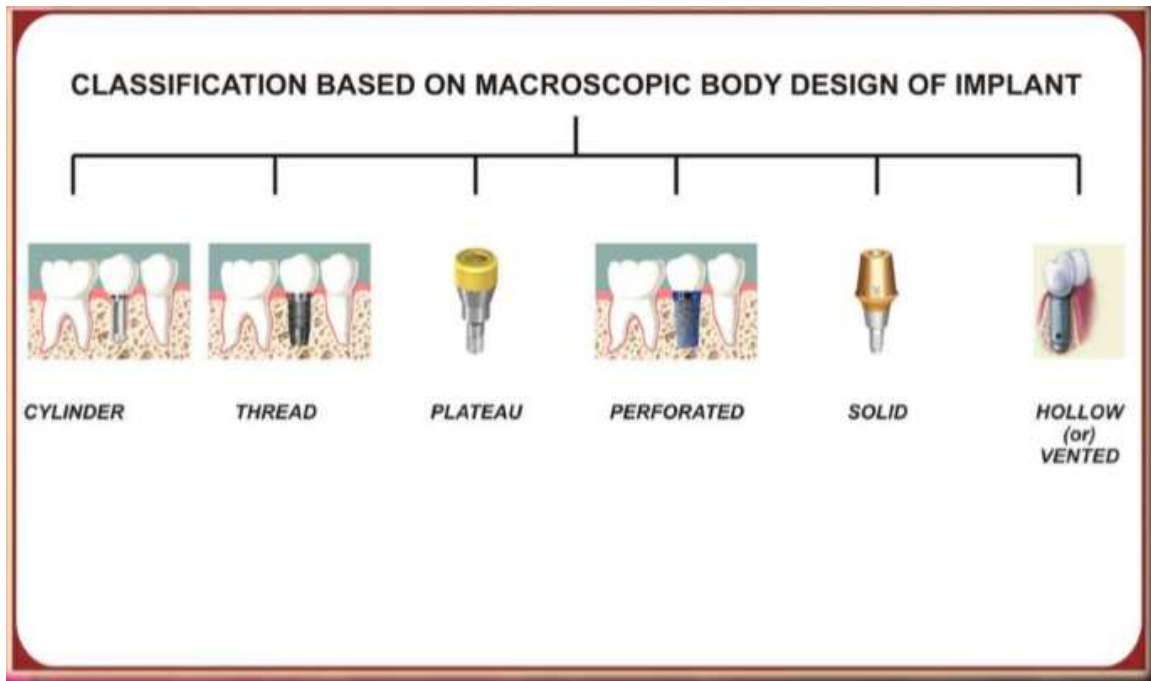


B) OSSEO-INTEGRATION

- Described by BRANEMARK.
- Direct contact between the bone and the surface of the loaded implant.
- Bio active material that stimulate the formation of bone can also be used.



CLASSIFICATION BASED ON MACROSCOPIC BODY DESIGN OF THE IMPLANT



A) CYLINDRICAL DENTAL IMPLANTS

- In the form of cylinder.
- Depends on coating or surface condition to provide microscopic retention and bonding to the bone.
- Pushed or tapped into a prepared bone site.
- Straight, tapered or conical.



B) THREADED DENTAL IMPLANTS

- The surface of the implant is threaded, to increase the surface area of the implant.
- This results in distribution of forces over a greater peri-implant bone volume.



C) PLATEAU-DENTAL IMPLANTS

- Plateau shaped implant with sloping shoulder



D) PERFORATED DENTAL IMPLANTS

- The implants of inert micro porous membrane material (mixture of cellulose acetate) in intimate contact with and supported by the layer of perforated metallic sheet material (pure titanium).



E) SOLID DENTAL IMPLANTS

- They are of circular cross section without vent or hollow in the body.



F) VENTED DENTAL IMPLANTS

- It is hydroxyapatite coated cylinder implant patented vertical groove connecting to the apical vents were designed to facilitate seating and allow bone ingrowth to prevent rotation.



G) HOLLOW DENTAL IMPLANTS

- Hollow design in the apical portion.
- Systematically arranged perforations on the sides of the implant.
- Increased anchoring surface.



CLASSIFICATION BASED ON THE SURFACE OF THE IMPLANT



A) SMOOTH SURFACE IMPLANT

- It has a very smooth surface.
- To prevent microbial plaque retention, smooth surface is essential



B) MACHINED SURFACE IMPLANTS

- For the purpose of better anchorage of implant to the bone, the surface of the implant is machined.



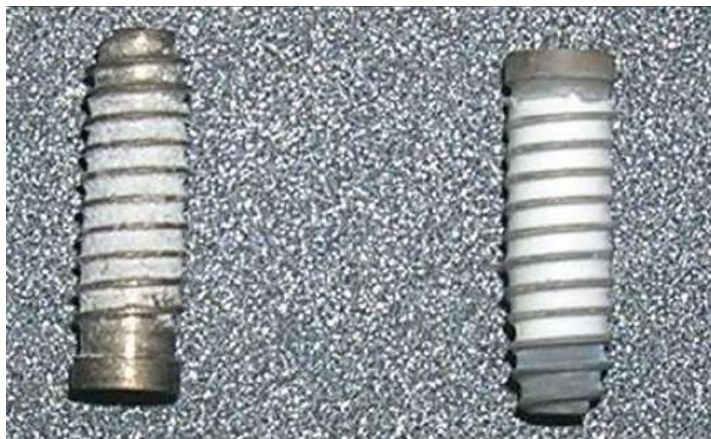
C) TEXTURED SURFACE IMPLANT

- The implants of increasing surface roughness of the area to which bone can bond

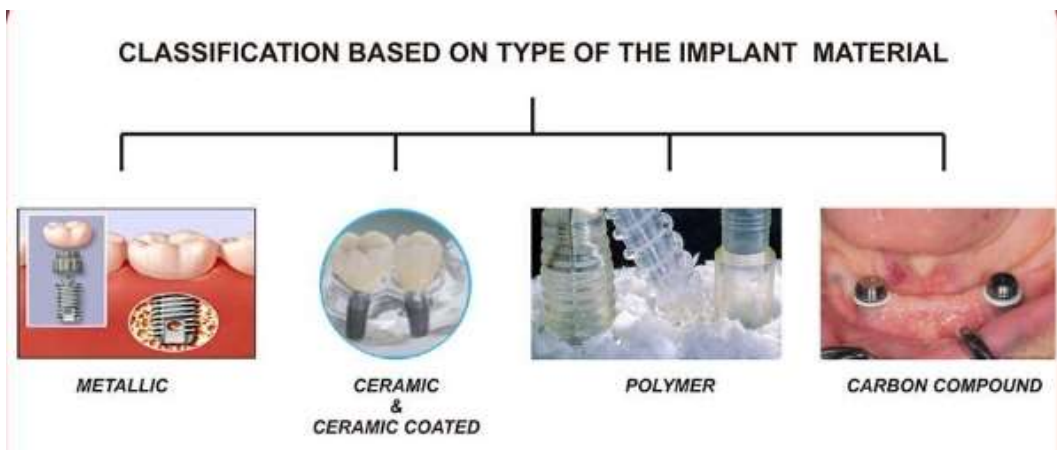


D) COATED SURFACE IMPLANT

- The implant surface is covered with a porous coating.
- The materials used for coating are titanium hydroxyapatite



CLASSIFICATION BASED ON THE IMPLANT MATERIAL



A) METALLIC IMPLANT

- Most popular material in use today is TITANIUM.
- Other metallic implants are stainless steel cobalt chromium molybdenum alloy vitallium



B) CERAMIC & CERAMIC COATED IMPLANTS

- These materials are also used to coat metallic implants.
- These ceramics can either be plasma sprayed or coated to produce bio active surface.
- Non-reactive ceramic materials are also present.



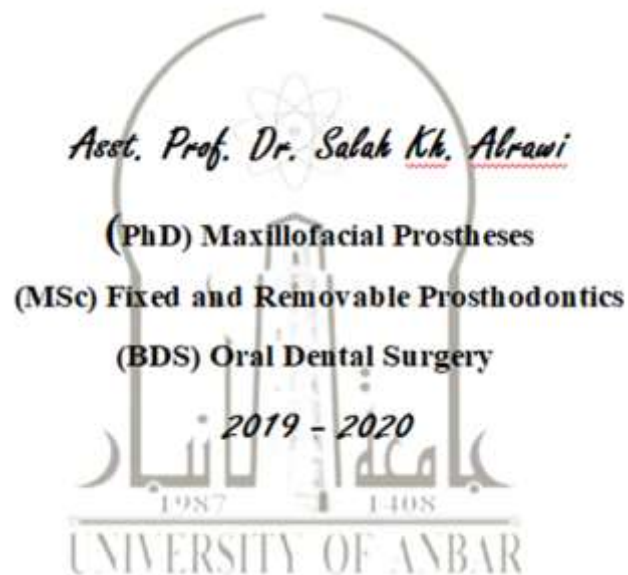
C) POLYMERIC IMPLANT

- In the form of polymethylmethacrylate & polytetrafluoroethylene.
- Have only been used as adjuncts stress distribution along with implants rather than used as implants by themselves



D) CARBON IMPLANTS

- Made up of carbon with stainless steel.
- Modulus of elasticity equivalent to bone and dentine.
- Brittleness leads to fracture.



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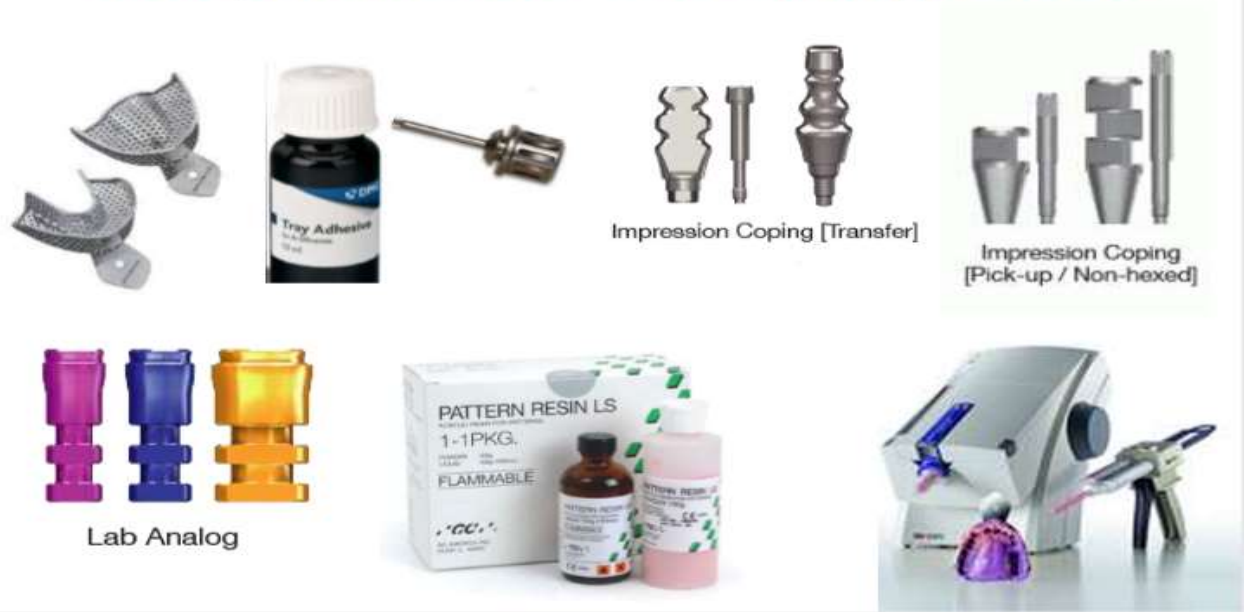
Impressions in Implant Dentistry



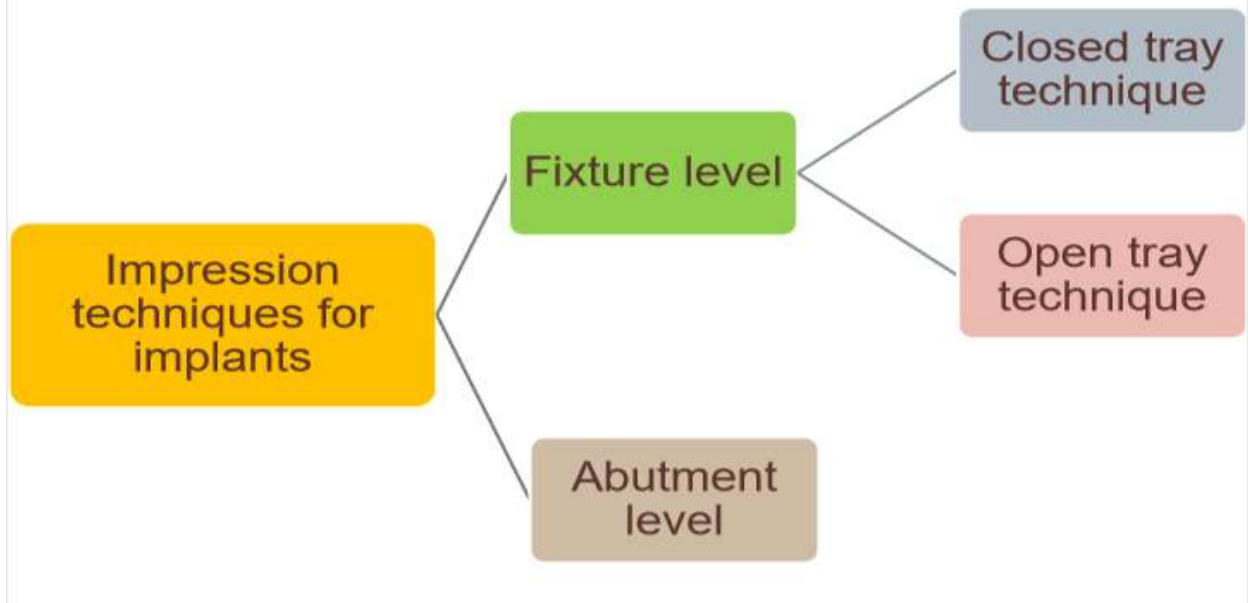
ACCURATE IMPRESSIONS PROVIDE A FOUNDATION FOR SUCCESSFUL IMPLANT PROSTHODONTICS

- Complete plasticity before cure.
- Fluidity to record fine detail.
- Ability to wet oral tissues.
- Dimensional accuracy.
- Dimensional stability.
- Complete elasticity after cure.
- Optimal stiffness.

What you need to take an impression



Classification of implant impression techniques



Abutment level impression

- Prepared abutment

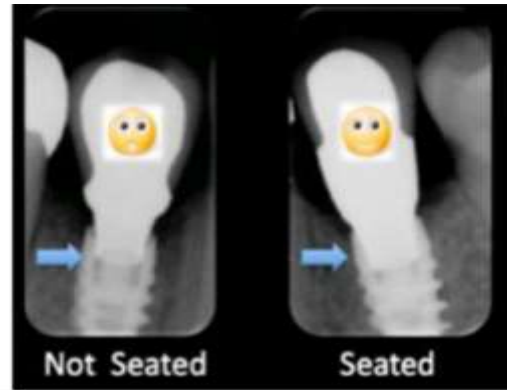


Fixture / Implant level Impression

- Impressions are made of an implant using implant level impression copings.
- To create a restoration for an implant, the laboratory model needs to include an implant replica seated in the model replicating the exact implant position in the patient's mouth.
- Such impressions can be made using an open tray or a closed tray technique.

A- Fixture/Implant level Closed Tray Impression Technique

- During this procedure, the transfer impression coping is screwed onto the implant.
- A radiograph is taken to ensure proper seating of the coping.
- If not seated properly, the position of the implant in the oral cavity cannot be exactly recorded and replicated onto the model to be obtained.



CLOSED TRAY TECHNIQUE



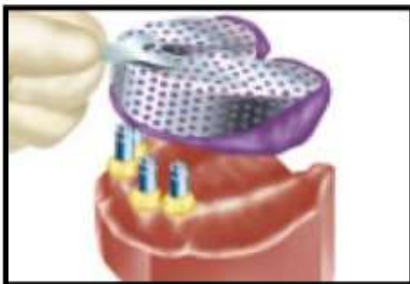
1. Implant fixture



2. Copings attached to the implant body



3. Polyvinylsiloxane impression material is injected around the impression coping



4. Impression is made with a heavy body impression material.



5. Impression coping removed from the fixture



6. Coping placed in the impression

Advantages of Closed Tray Impression Technique

- Easier.
- Impression coping for closed tray are usually shorter, making it easier for posterior areas and for patients with limited mouth opening.
- Less time for impression preparation: cutting holes in the impression tray usually not needed Impression cap type techniques.

Disadvantages of Closed Tray Impression Technique

- Less accurate with multiple units.
- Some implant systems require more clearance than other implant systems, therefore may still necessitate cutting holes in the impression tray as with the open tray technique, and as a result, may be less accurate depending upon several factors.
- Positional timing error, depending upon the impression coping design.

B- Implant/fixture level Open Tray Technique:

- The open tray impression technique is one of the most common impression methods used in the fabrication of implant supported prosthesis.
- It is also called a pick up impression because the impression coping is removed together with the impression body after the impression material hardens.
- In this, the screw connecting the impression coping to the fixture should be long enough to protrude from the impression tray, which should have a hole; hence the name open-tray technique.
- A long-cone radiograph is almost always necessary to confirm that the impression coping is fully seated and to ensure absolute accuracy before any construction of the crown begins.
- A polymeric standard stock tray may be used.
- It is relieved and perforated to allow full seating of the tray and protrusion of the guide pins through it, due to which the technique is termed as an open tray technique.
- If there is a large opening, it may be closed off using a baseplate wax, with the guide pins indenting or perforating the wax.



In the Open Tray Transfer technique, the Direct Pick-up Copings remain in the impression when removed from the mouth. For this pick-up technique a custom tray or modified stock tray with screw access holes in the areas above the implants is required.

Clinical 1 - Remove healing abutment



Clinical 2 - Place impression coping



Clinical 3 - Try-in impression tray



Clinical 4 - Make an impression



Clinical 5 - Remove coping screws



Advantages of Open Tray Impression Technique

- More accurate for multi units

Disadvantages of Open Tray Impression Technique

- More impression preparation and impression time -Test fitting impression copings and cutting holes for the impression copings - Additional time to “unlock” the impression copings.
- Adequate mouth opening required.
- More possibility for gagging.

Restorative Options

Cement-retained Restorations

- Cement-retained implant restorations are very similar to crown & bridge restorations. A prepared implant abutment is screwed onto the implant.
- The crown or restoration is cemented to the prepared abutment, much like a prepared tooth.

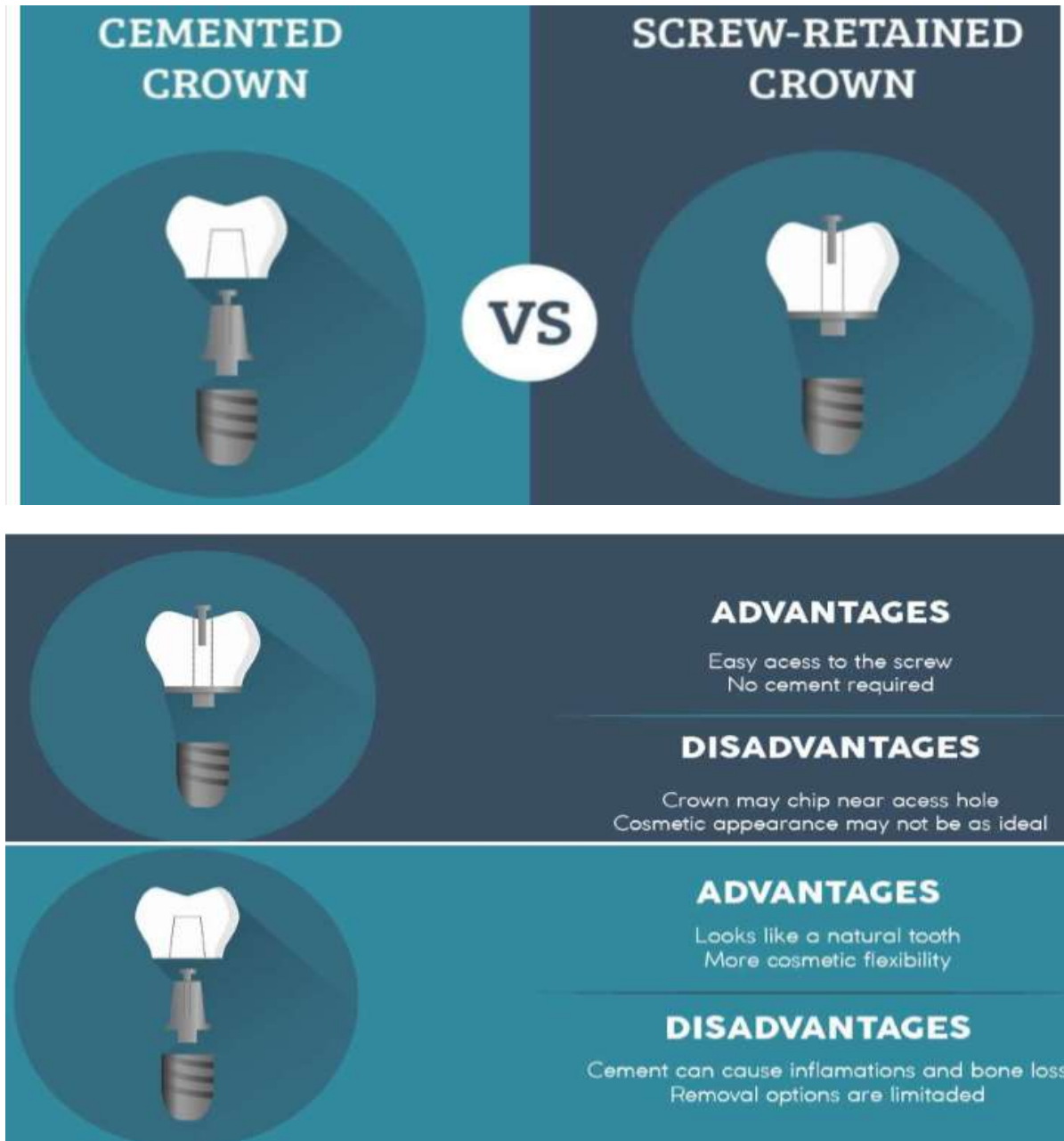
Indications

- Single or multiple-unit implant restorations.

- Totally edentulous or partially edentulous arch.

Advantages

- Conventional crown & bridge procedures.
- Maximum control of occlusion.
- More esthetic than screw-retained Implant-level Cement-retained Restorations.



Implant Over Denture

- For those patients requiring more retention and stability for an upper and lower denture, the all implant-supported overdenture may be the answer.
- A removable implant overdenture is a prosthesis which is removable by the patient and is supported or retained by dental implants.
- The prosthesis has to be removed for the purpose of cleaning around the abutments.



Types of implant overdentures

1. Tissue-implant supported

In the **mandible** a minimum of **2** and in the **maxilla** a minimum of **4** implants are indicated for this type of an overdenture

- The overdenture is **mainly tissue-borne**.
- The attachments give **retention** to the prosthesis.
- In eating, the ridge receives **masticatory forces**.
- The tissue supported implant overdenture is useful in cases where the presenting problem is that of **denture movement**.



2. Fully implant supported

- A minimum of **4** implants in the **mandible** and **4 to 6** in the **maxilla**.
- During mastication, the attachment assembly transfers all the **masticatory forces to the supporting implants**.
- This type of implant overdenture is particularly appropriate for patients who present with considerable **functional difficulty and pain while functioning on their dentures**.



The components available for retaining overdentures are:

1. Bar with clips

2. Studs (ball anchor)



Advantages of Implant overdenture

- Prevents bone loss.
- Improved esthetics.
- Improved stability (reduces or eliminates prosthesis movement).
- Improved occlusion (reproducible centric relation occlusion).
- Decrease in soft tissue abrasions.
- Improved chewing efficiency (20%) and force(300%).
- Increased occlusal efficiency.
- Improved retention.
- Improved support.
- Improved speech.
- Reduced prosthesis size (eliminates palate, flanges).
- Improved maxillofacial prostheses.

Advantages of Implant Overdenture versus Fixed Prosthesis

a- Fewer implants

- Compromised sites can be avoided.
- Less specific placement mesiodistally because prosthesis covers the abutments;

b- Improved esthetics

- Labial flange.
- Denture teeth.
- Soft tissue drape.

c- Speech

- Denture extends onto the soft tissue and prevents escape of air and saliva.

d- Lower cost

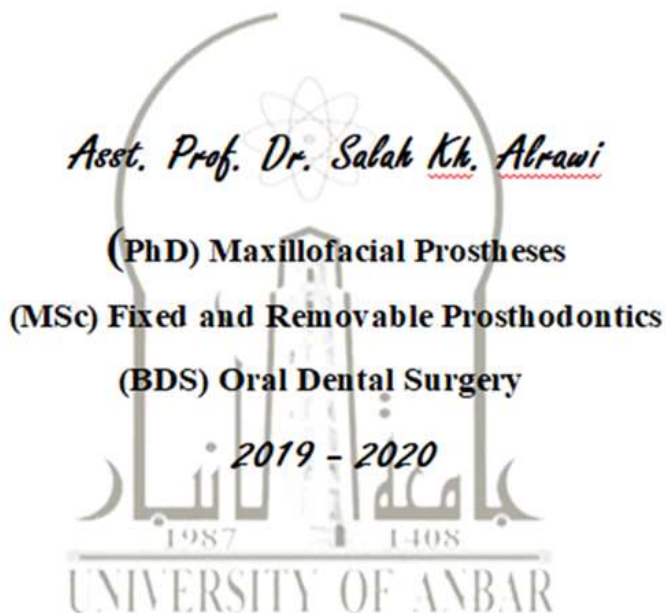
- Fewer implants.
- Sites which require grafting can be avoided.
- Easy repair.
- Decreased laboratory costs.

Disadvantages of Implant overdenture

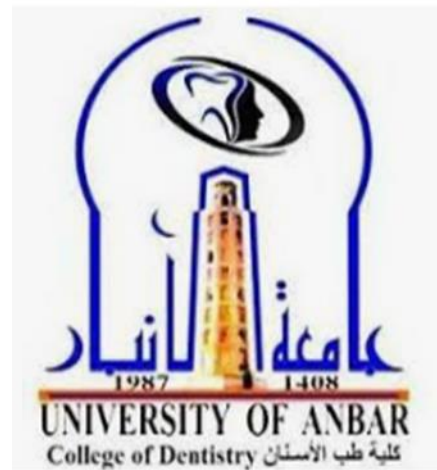
- Psychological (need for non-removable teeth).
- Greater abutment crown height space required.
- Long-term maintenance.
- Attachment (susceptible to wear).
- Relines.
- New prosthesis every 7 years (wear of denture teeth).
- Continued posterior bone loss.
- Food impaction.
- Movement.

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- Rathee M, Bhorla M. Basics of clinical diagnosis in implant dentistry. J Int Clin Dent Res Organ [serial online] 2015 [cited 2018 Jul 23];7, Suppl S1:13-8. Available from: <http://www.jicdro.org/text.asp? 2015/7/3/13/172929>



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University of Anbar

Dental Faculty

Prosthodontics Unit

Asst. Prof. Dr. Salah Kh. Al-Rawi (BDS, MSc, PhD)

5th Grad / 1th Lec.

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DIAGNOSIS AND SYSTEMIC DISEASES RELATED TO PROSTHODONTIC

Diagnosis:-Determination of nature of the disease.

Treatment Planning:-Sequence of procedures planned for the treatment of a patient after diagnosis.

Essential diagnostic data obtained from patient interview, definitive oral examination , consultation with medical and dental specialist, radiographs, mounted & surveyed diagnostic casts should be carefully evaluated during treatment planning.

1-patient Evaluation:-

1. Name:- Obtaining the name of the patient not only helps in maintaining records but also helps in creating a more personal and ambient atmosphere for the patient in the dental clinic. Addressing the patient by his/her name gives a rather personal touch to the dentist patient relationship.

2. Age :- is an indicator of the patient's ability to wear and use a prosthesis. Through the fourth decade of life, tissues heal rapidly and are resilient. Beyond fifth decade healing is not rapid. Woman facing the physiologic and psychological problems often present as exacting or hysterical patients who are very conscious about esthetics. Men are pre-occupied and present as indifferent patients who are concerned more with comfort or function.

3. Sex:- Generally appearance is a higher priority for women than for men. Though 9 younger men are often grow indifferent to their own appearances as they age and are concerned with comfort and function.

4. Occupation :- A patient's job & social training often determine the values he or she places on oral health, as well as the esthetics and other qualities desired in a denture.

Psychological Evaluation of the Patient:-

- 1- **Philosophical:-** Well motivated, cooperative, calm, mentally well adjusted well motivated confidence of the dentist. These patients have excellent prognosis.
- 2- **Exacting(critical):-** likes each step in detail , makes alternative treatment for dentist, makes sever demands. Do not have confidence in the dentist, very difficult to satisfy them. But once satisfied they become the dentist, s greatest supporter.
- 3- **Indifferent:-** Not very interested in treatment, blames the dentist for any problem, not follow instructions, been coerced to come by friend, relative, uncooperative. They will not maintain the dentures properly and do not appreciate the efforts and skill of the dentist.
- 4- **Hysterical:-** Those in bad health with long neglected pathologic mouth conditions and who are positive in their minds that they can never wear dentures, easily excited, highly apprehensive, unrealistic expectation. They show poor prognosis.

Chief Complaint

The questioned regarding his or her chief complaint such as

1. Inability to chew. 2. Impaired speech. 3. Poor appearance. 4. Others

MEDICAL HISTORY

A good medical history questionnaire combined with verbal qualification by the patient is essential to any dental treatment plan. Uncontrolled diabetics , patient with cardiovascular disease and subsequent treatment with blood thinners & immune-compromised patients may be excellent denture patient but might not be considered good surgical risks and therefore, preprosthetic surgery may be contraindicated.

The following medical conditions should be ruled out before beginning the prosthetic treatment:-

1- Debilitating Diseases:-

Complete denture patients, most of whom are geriatric, are bound to be suffering from debilitating diseases like diabetes, blood dyscrasias & tuberculosis. These patients require specific instructions on denture /tissue care. They also require special follow-up appointments to observe the response of the soft tissues to the denture.

2- Diseases of the Joints:

The most common disease of the joint in old age is osteoarthritis. Complete denture patients with this disease , it will affect TMJ . With limited mouth opening and painful movements of the jaw, it becomes necessary to use special impression trays. It may also become necessary to repeat jaw relations and make post insertion occlusal adjustments due to changes in the joint.

3- Cardiovascular Diseases:-

It is always advisable to consult the patients cardiologist before starting the treatment. Cardiac patients will require shorter appointments.

4- Neurological Disorders:-

Diseases such as Bell's palsy and Parkinson's disease can influence denture retention and jaw relation records & USING NON ANATOMIC TEETH. Patients should understand the difficulty in denture fabrication and usage.

5- Oral Malignancies:-

After taking radiation , the tissues having bronze color and loss of tonicity and patient suffering from Xerostomia are not suitable for denture support.

In radiation therapy patient :

- A- Avoid impression material that dry tissue (impression plaster) or heavily flavored materials (ZOE).**
- B- Consider non anatomic teeth.**
- C- Teeth should set in neutral zone.**

Dental History

We should ask the patient about history of tooth loss

- A- Cause: poor ridges can be expected if teeth were lost due to periodontal disease.**
- B- Time:- teeth lost at different time intervals would result in different ridge levels.**

Clinical Examination of The Patient

Extra Oral Examination

- 1-General appearance.**
- 2-Facial symmetry.**
- 3-Skin color.**
- 4-Palpation of the head &neck (lymph nodes &muscles).**
- 5-Muscle tonus.**
- 6-Neuro muscular coordination.**
- 7-TMJ examination.**

Intra Oral Examination

Some complete denture patients refuse to remove or clean their prostheses for prolonged period and as a result might have extremely irritated and traumatized

tissue. These patients are much more susceptible to fungal overgrowth and colonization of the prostheses and subsequent inflammatory papillary hyperplasia- especially in the palate and called (denture stomatitis). Areas of redundant tissue adjacent to denture borders, called (epulis fissuratum) are usually quite painful and are caused by excessive denture flange length, these areas should also be noted and appointed for surgical excision if the condition does not resolve following the removal of the overextended denture border. The saliva should be evaluated both amount and consistency. A normal amount and thickness of saliva is paramount in the ability of most patient to comfortably wear dentures. The saliva acts as a lubricant and also serves as the interface between the denture base and the tissue allowing for denture retention. A patient with Xerostomia or excessive saliva containing much mucous can have difficulty obtaining an adequate seal. Arch size amount of basal seat available for denture formation. The greater size; greater support, larger the contact surface, greater the retention.

Tongue:- Favorable tongue is average sized, move freely covered by healthy mucosa. Normally, it should rest in a relaxed position on lingual flanges, this will retain denture and contributes to denture stability by controlling it during speech, mastication and swallowing.

Tongue Size: 1-Normal 2- large

Frenal Attachment:- Classification

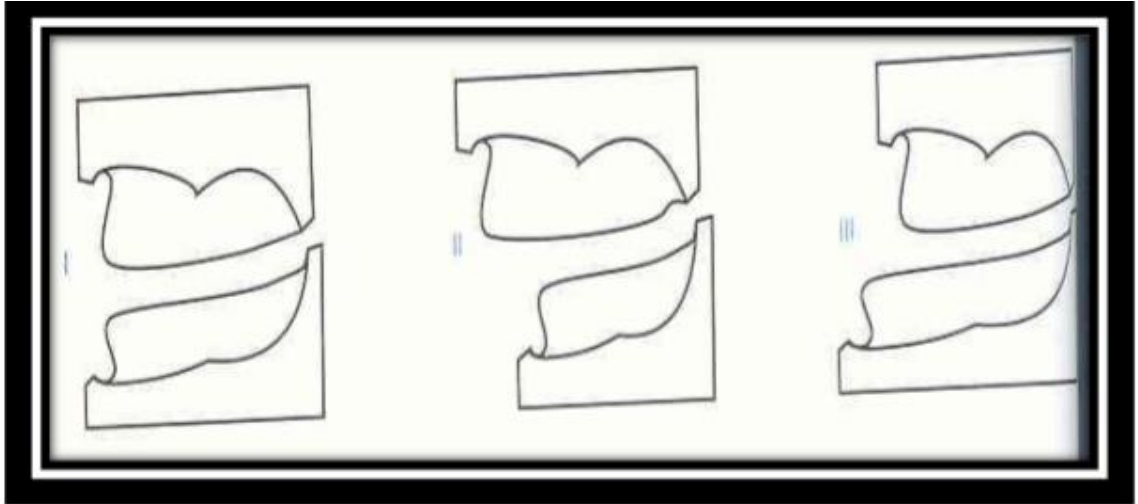
Class I: Sulcal or low attachment.

Class II: Midway between. sulcus & crest of ridge).

Class III: Crestal attachment (Frenectomy).

Ridge Relation:- Described as an antero posterior position of the mandibular ridge relative to the maxillary residual ridge when the jaws are in centric relation.

CL I (NORMAL), CL II (RETROGNATHIC), CL III (PROGNATHIC)



Ridge Contour/Form Residual

1-U SHAPE (good prognosis).

2-V SHAPE (favorable prognosis).

3-FLAT..... Flat residual ridge is the most difficult for restoration by the prosthodontics.



Inter Maxillary Space:

This is the space between the maxillary and the mandibular arches . Normally it should be obtain to 20mm; if the space is less than 20mm it is difficult stability of the denture base.

Maxillary Tuberosity:

If enlarged the posterior occlusal plane may be placed too low, no enough space to set all molar. Surgical removal may need.

Treatment Planning:

- A- The sequence of procedures planned for the treatment of a patient following diagnosis.
- B- Explained to the patient in a simple and straight forward manner including all of the factors that might complicate the treatment .

