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HISTORY,DIAGNOSIS, AND TREATMENT PLANNING

HISTORY

- **PERSONAL DETAILS** : The patient's name, address, phone number, sex, occupation, work schedule, and marital and financial status are noted.
- **CHIEF COMPLAINT** : Chief complaints usually fall into one of the following four categories :

1. Comfort (pain, sensitivity, swelling)
2. Function (difficulty in mastication or speech)
3. Social (bad taste or odor)
4. Appearance (fractured or unattractive teeth or restorations, discoloration)

- **MEDICAL HISTORY** : An accurate and general medical history should include any medication the patient is taking as well as all relevant medical conditions.
- **DENTAL HISTORY**

1. **Periodontal history** : The patient's oral hygiene is assessed and current plaque-control measures are discussed.
2. **Restorative history** : The patient's restorative history include only simple composite resin or dental amalgam fillings, or it may involve crowns and extensive fixed partial denture.

3. **Endodontic history** : Patients often forget which teeth have been endodontically treated . These can be readily identified with radiographs.
4. **Orthodontic history** : Occlusal analysis should be an integral part of the assessment of a postorthodontic dentition.
5. **Removable prosthodontic history** : The patient's experiences with removable prostheses must be carefully evaluated.
6. **Oral Surgical history** : Information about missing teeth and any complications that may have occurred during tooth removal is obtained.
7. **Radiographic history**
8. **TMJ Dysfunction history** : A history of pain or clicking in the temporomandibular joints or neuromuscular symptoms, such as tenderness to palapation, may be due to TMJ dysfunction, which should normally be treated and resolved before fixed prosthodontic treatment begins.

- **EXAMINATION**
- **General Examination** : The patient's general appearance, gait and weight are assessed. Skin color is noted for signs of anemia or jaundice. Vital signs, such as respiration, pulse, temperature, and blood pressure, are measured and recorded.
- **Extraoral Examination**

1. **Temporomandibular Joints** : The clinician locates the TMJs by palpating bilaterally just anterior to auricular tragi while having the patient open and close. This permits a comparison between the relative timing of left and right condylar movements during opening stroke. Asynchronous movement may indicate an anterior disk displacement that prevents one of the condyles from making a normal translatory movement.
2. **Muscles of Mastication**
3. **Lips** : The patient is observed for tooth visibility during normal and exaggerated smiling. The extent of the smile will depend on the length and mobility of the upper lip and the length of the alveolar process. When a patient laughs, the jaws open slightly and a dark space is often visible between the maxillary and mandibular teeth. This has been called the **negative space**.

- **INTRAORAL EXAMINATION**
- **Periodontal Examination** :

1. **Gingiva** : Color, texture, size, contour, consistency, and position are noted and recorded. The gingiva is then carefully palpated to express any exudate or pus that may be present in the sulcular area.
2. **Periodontium** : The periodontal probe is one of the most reliable and useful diagnostic tools available for examining the periodontium. It provides a measurement (in mm) of the depth of periodontal pockets and healthy gingival sulci on all surfaces of each tooth.

- **CLINICAL ATTACHMENT LEVEL** :
  Documenting the level of attachment helps the clinician determine the amount of periodontal destruction that has occurred and is essential when rendering a diagnosis of periodontitis. The clinical attachment level is determined by measuring the distance between the apical extent of the probing depth and a fixed reference point on the tooth, most commonly either the apical extent of a restoration and/or the cementoenamel junction (CEJ).

- **Dental charting** : Adequate charting, in addition to all periodontal information, must show the presence or absence of teeth, dental caries, restorations, wear faceting and abrasions, fractures, malformations, and erosions.
- **Occlusal Examination** : The objective is to determine to what extent the patient's occlusion differs from the ideal and how well the patient has adapted to this difference.
- **Initial Tooth Contact** : The relationship of teeth in both centric relation and the intercuspal position should be assessed. If all teeth come together simultaneously at the end of terminal hinge closure, the centric relation position (CR) of the patient is said to coincide with the maximum intercuspation (MI).

- **General Alignment** : The teeth are evaluated for crowding, rotation, supra-eruption, spacing, malocclusion and vertical and horizontal overlap.
- **Lateral and Protrusive Contacts** : The degree of vertical and horizontal overlap of the teeth is noted. When asked, most patients are capable of making an unguided protrusive movement. During this movement, the degree of posterior disclusion that results from the overlaps of the anterior teeth is observed. The patient is then guided into lateral excursive movements, and the presence or absence of contacts on the nonworking side and then the working side is noted.
- **Jaw Maneuverability** : The ease with which the patient moves the jaw and the way it can be guided through hinge closure and excursive movements should be assessed, since these factors are a good guide to neuromuscular and masticatory function.

- **RADIOGRAPHIC EXAMINATION** : Radiographs provide essential information to supplement the clinical examination. Detailed knowledge of the extent of bone support and the root morphology of each standing tooth is essential to establishing a comprehensive fixed prosthodontic treatment plan.
- **VITALITY TESTING** : Before any restorative treatment pulpal health must be assessed, usually by measuring the response to percussion and thermal or electrical stimulation. A diagnosis of nonvitality can be confirmed by preparing a test cavity without the administration of local anesthetic. Vitality test, however, assess only the afferent nerve supply.

DIAGNOSIS

- **DIFFERENTIAL DIAGNOSIS** : When the history and examination are completed, a differential diagnosis is made. The practitioner should determine the most likely caused of the observed condition and record them in order of probability. Accurate diagnostic casts transferred to a semiadjustable articulator are essential in planning prosthodontic treatment.

- **IMPRESSION MAKING FOR DIAGNOSTIC CASTS** : Accurate impressions of both dental arches are required. Flaws in the impressions will result in inaccuracies in the casts that easily compound.
- **DIAGNOSTIC IMPRESSION TECHNIQUE**
- **Armamenterium** :

1. Impression trays
2. Modeling compound
3. Mixing bowl
4. Mixing spatula
5. Gauze squares
6. Irreversible hydrocolloid
7. ADA Type IV or V stone
8. Vacuum Mixer
9. Humidor
10. Disinfectant

- **Tray Selection** : For irreversible hydrocolloids, the largest tray that will fit comfortably in the patient's mouth should be selected. In contrast, elastomeric impression materials work well with a relatively tightly fitting custom impression tray in which a relatively uniform thin layer of material is used.
- **Impression Making**
- **Evaluation**
- **Articulator Selection** : For an analysis, the diagnostic casts need to be attached to an articulator, a mechanical device that simulated mandibular movement. Articulators can be of three types :

1. Small non adjustable articulators
2. Semiadjustable articulators
3. Fully adjustable articualtors

- **FACEBOWS**
- **TRANSVERSE HORIZONTAL AXIS** : The mandibular hinging movement around the transverse horizontal axis is repeatable. That makes this imaginary **"hinge axis"** around which the mandible may rotate in the sagittal plane of considerable importance when fabricating fixed prosthesis.
- Facebows are used to record the anteroposterior and mediolateral spatial position of the maxillary occlusal surfaces relative to this transverse opening and closing axis of the patient's mandible. The facebow is then attached to the articulator to transfer the recorded relationship of the maxilla by ensuring that the corresponding cast is attached in the correct position relative to the hinge axis of the instrument.
- Most facebows are caliper like devices that permit some adjustments. Two types of facebows are recognized : **Arbitary and Kinematic**

- **Diagnostic cast modification** : It includes :

1. Changing the arch relationship preparatory to orthognathic procedures when surgical correction of skeletal jaw discrepancy is to be performed.
2. Changing the tooth position before orthodontic procedures.
3. Modifying the occlusal scheme before attempting any selective occlusal adjustment.
4. Trial tooth preparation and waxing before fixed restorative procedures.

TREATMENT PLANNING

- Treatment planning consists of formulating a logical sequence of treatment designed to restore the patient's dentition to good health, with optimal function and appearance.
- **IDENTIFICATION OF PATIENT NEEDS**

1. **Correction of Existing Disease**
2. **Prevention of Future Disease**
3. **Restoration of Function**
4. **Improvement of Appearance**

- **AVAILABLE MATERIALS AND TECHNIQUES**
- **Plastic Materials** : Plastic materials (e.g. silver amalgam or composite resin) are the most commonly used dental restoratives. They allow simple and conservative restoration of damaged teeth. However, their mechanical properties are inferior to cast metal or metal-ceramic restorations.
- **Cast Metal** : Cast metal crowns are fabricated outside the mouth and are cemented with a luting agent. To minimize exposure of the luting agent to oral fluids, a long lasting restoration must have good marginal adaptation.
- **Intracoronal Restorations** : An intracoronal cast metal restoration or inlay relies on the strength of the remaining tooth structure for support and retention, just as a plastic restoration does.
- **Extracoronal Restoration** : An extracoronal cast metal restoration or crown encircles all or part of the remaining tooth structure.

- **Metal-Ceramic** : Metal ceramic restorations consist of a tooth-colored layer of porcelain bonded to a cast metal substructure. They are used when a complete crown is neede to restore appearance as well as function.
- **Resin-Veneered** : Resin-veneered restorations were popular before the metal-ceramic technique was fully developed, but problems with wear and discoloration of the polymethyl methacrylate veneer limited their use to long term provisional restorations.
- **Fiber-Reinfored Resin** : Advances in composite resin technology, especially the introduction of glass and polyethylene fibers, have prompted the use of indirect composite resin restorations for inlays, crowns, and FPDs.
- **Complete Ceramic** : Crowns, inlays and laminate veneers made entirely of dental porcelain can be the most esthetically pleasing of all fixed restorations.

- **Fixed Partial Dentures** : An FPD is often indicated where more teeth require removal or are missing. Such teeth are replaced by pontics that are designed to fulfill the function and often the esthetic requirements of the missing teeth.
- **Implant Supported Prosthesis** : Single or multiple missing teeth can be replaced with an implant-supported prosthesis.
- **Removable Partial Dentures** : A removable partial denture (RPD) designed to replace missing teeth and their supporting structures. Forces applied to a well designed prosthesis are distributed to the remaining teeth and the residual alveolar ridges.
- **Complete Dentures**

SELECTION OF ABUTMENT TEETH

- **REPLACEMENT OF A SINGLE MISSING TOOTH** : Unless bone support has been weakened by advanced periodontal disease, a single missing tooth can almost always be replaced by a three-unit FPD having one mesial and one distal abutment tooth.
- **Cantilever Fixed Partial Dentures** : FPDs in which only one side of the pontic is attached to a retainer are referred to as **cantilevered**.

- **Assessment of Abutment Teeth** : Radiographs are made and pulpal health is assessed by evaluating the response to thermal and electrical stimulation. Existing restorations, cavity liners, and residual caries are removed and a careful check is made for possible pulpal exposure. Teeth in which pulpal health is doubtful should be endodontically treated before the initiation of fixed prosthodontics.
- **Endodontically Treated Abutments** : If a tooth is properly treated endodontically, it can serve well as an abutment with a post and core foundation for retention and strength.

- **Unrestored Abutments** : An unrestored, caries-free tooth is an ideal abutment. It can be prepared conservatively for a strong retentive restoration with optimum esthetics.
- **Mesially Tilted Second Molar** : Loss of a permanent mandibular first molar to caries early in life is still relatively common. If the space is ignored, the second molar will tilt mesially, especially with eruption of the third molar. It then becomes difficult or impossible to make a satisfactory FPD, because the positional relationship no longer allows for parallel paths of insertion without interference from the adjacent teeth. In such cases, an FPD is made with modified preparation designs or with a non-rigid connector : uprighting the tilted abutment orthodontically with a simple fixed appliance.

- **REPLACEMENT OF SEVERAL MISSING TEETH**
- **Overloading of Abutment Teeth** : The ability of the abutment teeth to accept applied forces without drifting or becoming mobile must be estimated and has a direct influence on the prosthodontic treatment plan. These forces can be particularly severe during parafunctional grinding and clenching and the need to eliminate them becomes obvious during the restoration of such a damaged dentition.
- **Direction of Forces** : Whereas the magnitude of any applied force is difficult to regulate, a well-fabricated fixed partial denture can distribute these forces in the most favorable way, directing them in the long axis of the abutment tooth.

- **Root Surface Area** : Ante suggested in 1926 that it was unwise to provide a FPD when the root surface area of the abutment was less than the root surface area of the teeth being replaced; this has been adopted and reinforced by other authors as **Ante's law**.
- **Root shape and angulation** : A molar with divergent roots will provide better support than a molar with conical roots and little or no interradicular bone. A single-rooted tooth with an elliptic cross-section will offer better support than a tooth with similar root surface area but a circular cross-section.

- **Periodontal Disease** : After horizontal bone loss from periodontal disease, the PDL supported root surface area can be dramatically reduced.
- **Span Length** : Excessive flexing under occlusal loads may cause failure of a long-span FPD.
- **Replacing Multiple Anterior Teeth** : Special considerations in this situation include problems with appearance and the need to resist laterally directed tipping forces.

SEQUENCE OF TREATMENT

- TREATMENT OF SYMPTOMS
- Urgent treatment of Non acute Problems
- STABILIZATION OF DETERIORATING CONDITIONS
- Dental caries
- Periodontal Disease
- DEFINITIVE THERAPY
- Oral surgery
- Periodontics
- Endodontics
- Orthodontics
- Fixed Prosthodontics
- Occlusal Adjustment
- Anterior Restorations
- Posterior Restorations
- Complex Prosthodontics
- FOLLOW-UP

THANK YOU