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DIAGNOSIS AND PROGNOSIS IN COMPLETE DENTURE PATIENT – A SYSTEMATIC REVIEW

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Declaration

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Abstract

Complete edentulism can be defined as "the physical state of the jaw following removal of all erupted teeth and the condition of the supporting structures available for reconstructive or replacement therapies. The edentulous patient presents both anatomical and psychosocial factors which affect the treatment and outcome. By identifying these factors, patient expectations can be modified, thus avoiding disappointment. Rehabilitative and therapeutic treatment and a long-range plan for maintenance should be identified before initiating care. The During the initial appointment, clinical data, psychosocial and dental/ medical history, and the patient's expectations should be recorded. A thorough examination and consultation ensures that the patient understands his or her problem and responsibility for a successful outcome. This article review and described the oral and diagnosis aspect of edentulous patient.

Introduction

Diagnosis and treatment planning are the two most important parameters in the successful management of a patient. Inadequate diagnosis and treatment planning are the major reasons behind the failure of a complete denture. Patients with some teeth remaining who request complete dentures should be carefully diagnosed to ensure that treatment alternatives to complete dentures are thoroughly considered. The decision to retain or remove even one tooth is serious and all alternatives must be explored before the final decision is made.

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Question Sequence : [1, 2, 3] Sequential recording of case history starts with patient information such as name, age, sex, occupation that helps in gathering certain information required before formulating a particular treatment plan for the patient.

Examination : [4] The primary step in gathering of data is by examining the patient through visual perception. Through visual perception, typical tasks to be identified are detection, discrimination, recognition, identification and judgment.

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

Mental Attitude of Patients : De Van stated, "meet the mind of the patient before meeting the mouth of the patient". Hence, we understand that the patient's attitudes and opinions can influence the outcome of the treatment.

A doctor should evaluate the patient's hair colour, height, weight, gait, behavior, socioeconomic status, etc right from the moment he/she enters the clinic. A brief conversation will reveal his/her mental attitude. Actually patient evaluation is done along with history taking but since it is usually begun prior to history taking, we have discussed it in detail here.

Based on their mental attitude, patients can be grouped under two classifications. Dr.M.M. House proposed the first one in 1950, which is widely followed.

House's Classification[5]

Dr.M.M.House in 1950 classified patient's psychology into four types :

Class I: Philosophical

a. Those who have presented themselves prior to the extraction of their teeth, have had no experience in wearing dentures, and do not anticipate any special difficulties in that regard.
b. Those wearing dentures unsatisfactory in appearance and usefulness, and who doubt the ability of the dentist to render a satisfactory treatment, and those who insist on a written guarantee or expect the dentist to make repeated attempts to please them.

These patients are precise, above average in intelligence, concerned in their dress and appearance, usually dissatisfied by their previous treatment, do not have confidence in the dentist. It is very difficult to satisfy them. But once satisfied they become the dentist's greatest supporter.

Class III: Hysterical

a. Those in bad health with long neglected pathological mouth conditions and who are positive in their minds that they can never wear dentures. They are emotionally unstable and tend to complain without justification.
b. Those who have attempted to wear dentures but failed. They are thoroughly discouraged. They are of a hysterical, nervous, very exacting temperament and will demand efficiency and appearance from the dentures equal to that of the most perfect natural teeth. Unless their mental attitude is changed it is difficult to give a successful treatment.

These patients do not want to have any treatment done. They come out of compulsion from their relatives and friends. They have a highly negative attitude to the dentist and the treatment. They have unrealistic expectations and want the dentures to be better than their natural teeth. They are the most difficult patients to manage. They show poor prognosis.

Class IV: Indifferent

Those who are unconcerned about their appearance and feel very little or no necessity for teeth for mastication. They are, therefore uncooperative and will hardly try to become accustomed to dentures. They will not maintain the dentures properly and do not appreciate the efforts and skills of the dentist.

Health History : The health history or clinical interview is an integral part of the diagnosis and is best obtained in the consultation room.

Past Medical History[6]*:* The medical history provides important insights regarding the patient's dental prognosis. A patient in good general health is generally able to accept and adjust to a complete

denture better than one who is in poor health. Systemic factors that may affect complete denture treatment include; anemia, arthritis, Bell's palsy, carcinomas, diabetes, nicotinic stomatitis, Paget's disease, Parkinson's disease, and therapies that cause xerostomia and infectious diseases.

Diabetes: The following diagnostic features are in evidence in diabetes: a dry feeling in the mouth; a coated tongue, with swollen edges and tooth impressions along the borders; fissures on the tongue; small abscesses throughout the mouth, poor tissue tone; and a burning and metallic taste in the mouth.

Arthritis: The oral aspects of arthritis are usually seen in the temporomandibular joint. These are limited movement and opening, generalized pain throughout the side of the face, abnormal chewing procedures, and changing occlusal relations.

Bell's palsy: Bell's palsy is a toxic, infective, thermal, or mechanical over stimulation of the facial nerve, which results in facial asymmetry, lack of muscular control on the affected side, failure of the eyelid to close normally on the affected side, excessive tearing on the paralyzed side, droping of the corner of the mouth, and emission of saliva.

Parkinson's disease (Paralysis Agitans): Parkinson's disease is characterized by rhythmical muscular tremors which include the tongue and muscles of mastication, muscle rigidity, which is usually evident, very slow movements by the patient, excessive salivation, and a fixed masklike expression. mastication, muscle rigidity, which is usually evident, very slow movements by the patient, excessive salivation, and a fixed masklike expression.

Anemia: Various type of anemia present the following generalized symptoms: changes in the mucous membrane; pallor of the tongue and lips; burning, smooth, glossy tongue; and usually pain in the tongue and supporting areas.

Pemphigus: Pemhigus is the most often fatal of the dermatologic diseases. Orally it presents vesicles and bullae on the mucous membrane as well as on the skin. When the vesicles rupture, they leave eroded areas and ulcerations, and the resulting condition causes discomfort and pain.

Clinical Examination of the Patient[7]

Facial form : House and Loop, Frush ad Fisher, and Williams classified facial form based on the outline of the face as square, tapering, square tapering and ovoid. Examining the facial form helps in teeth selection.

Facial profile: Examination of the facial profile is very important because it determines the jaw relation and occlusion. Angle classified facial profile as:

Class I : Normal or straight Profile, Class II: Retrognathic profile, Class III: Prognathic profile

Lip: The contour and appearance of the vermillion border is usually altered by tooth loss. Restoration of lip support and vermilion border width must be considered during placement of anterior teeth. Classify the lip contour as "adequately supported" or "unsupported." Also, comment on the amount of vermillion border visible Lip mobility should be noted Lip length can be classified as – class I: normal, Class II: long., Class III: short. Classify lip mobility as normal (class 1), reduced mobility (class 2), or paralysis (class 3).

Neuromuscular Examination : It includes the examination of speech and neuromuscular coordination.

Speech : Speech is classified based on the ability of the patient to articulate and coordinate it.

Type 1: Normal. Patients who are capable of producing an articulated speech with their existing dentures can easily accommodate to the new dentures.

Type 2 : Affected. Patients who have impaired articulation or coordination of speech with their existing dentures require special attention during anterior teeth setting.

Patients whose speech was altered due to a poorly-designed denture require more time to adapt to a proper articulated speech in the new denture. They also fall under affected speech.

Neuromuscular Coordination : The patient is to be observed from the time he/she enters the clinic. The patient's gait, coordination of movements, the ease with which he moves and his steadiness are important points to be considered. Facial movements have to be noted as much as bodily movements. Abnormal facial movements like lip smacking, tongue tremors, uncontrollable chewing movements can influence complete denture performance and may also lead to prosthetic failure.

Intraoral Examination

Arch Size: Arch size is classified as follows:

The size of the maxilla and mandible ultimately will determine the amount of basal seat available for the denture foundation.
Class 1: Large (Best for retention and stability),Class 2: Medium (good retention and stability but not ideal) ,Class 3: Small (difficult to achieve good retention and stability)

Arch Form: Classified according to House

Class I. – Square: The square arch is the best form to prevent rotational movement. Class II. – Tapering: The tapering form offers some resistance to movement but to a lesser degree than a square arch., Class III. – Ovoid: The ovoid form, because of its rounded shape, gives little or no resistance to rotational movements.

Ridge Form : Ridge contour can vary widely. The ideal is a high ridge with a flat crest and parallel or nearly parallel slopes. This type of ridge will give maximum support and stability and resistance to horizontal movement.

Bony Undercuts

*Class I ;*A residual ridge with bone undercuts is most unfavorable to a stable denture, and surgical reduction may be necessary. ,Class II-There are small undercuts over which the denture can be placed by changing the path of insertion or by relieving the completed denture after pressure indicating paste has been applied to reveal pressure areas.,Class III Prominent bilateral undercuts are corrected by surgery. Sometimes surgery can be limited to undercuts on one side only.

Tori

Classification :

Class 1: Tori are absent or minimal in size. Existing tori do not interfere with denture construction.
Class 2: Clinical examination reveals tori of moderate size. Such tori offer mild difficulties in denture construction and use. Surgery is not required.
Class 3: Large tori are present. These tori compromise the fabrication and function of dentures. Such tori usually require surgical recontouring or removal.

Interarch Space

Classification:

Class I: the patient has enough interarch distance to accommodate the denture., Class II: There is excessive space. The dentures are usually less stable because the distance between the teeth and the supporting bone is so great..Class III: Inter-ach space is limited. Placement of the artificial teeth can be a defiant procedure.

Ridge relationship

Classified according to Angle

Class I (normal): The maxillary alveolar ridge crest is directly under the mandibular ridge. This is usually the most favorable ridge relation for complete dentures .Class II (retroganathous, Angle's

class II): The mandibular ridge is narrower and shorter than the maxillary ridge. In some instances it may be as wide as the maxillae in the posterior. Such patients often have a large protrusive excursion that makes balanced occlusion difficult, Class III (Prognathous, Angle's Class III). The mandible is longer and usually wider than the maxillae. Such patients rarely show excessive jaw excursions.

Lateral throat form

classified according to Neil :[8]

It is classified as class I, II, III according to the depth and width of the retro-mylohoid sulcus. Palatal throat form Classified according to House.

Class I - Large & normal form with a relatively immovable band of resilient tissue 5-12mm distal to a line drawn across the distal edge of the tuberosities , Class II - Medium size & normal form, with a relatively immovable resilient band of tissue 3-5mm distal to a line drawn across the distal edge of the tuberosities ,Class III - Usually accompanies a small maxilla. The curtain of soft tissues turns down abruptly 3-5mm anterior to a line drawn across the palate at the distal edge of the tuberosities.

Shape of the Hard Palate

Vertical support and retention for the maxillary denture is partially determined by the shape of the hard palate. The palate may be classified as flat, U, or V- shaped Class I - The broad flat palate offers excellent resistance to vertical stresses. A large median palatal raphe, if present, may cause an adverse prognosis, Class II - The U-shaped palate offers good retention and/or resistance to both vertical and horizontal forces, Class III - The v- shaped palate has a poor prognosis. Vertical forces tend to break the seal.

Slope of the soft palate

The degree of flexure of the soft palate to the hard palate determines the posterior extent of the maxillary13 denture.

Class I - The soft palate slopes gradually down from the hard palate this type generally allows several millimeters of soft, relatively immovable tissue for the formation of a gross

seal. The precise location of the posterior extent of the denture is also not as critical.

Class II - The soft palate slopes more sharply than the class I type, thus limiting the seal area and the posterior denture length.

Class III - The soft palate drops sharply down from the hard palate. The precise location of the posterior extent is critical and the area for the seal is restricted. Generally this form shows a great deal of soft palate movement when the patient speaks and swallows.

Mucosa condition : Classified according to House,Class 1: Healthy,Class 2: Irritated,Class 3: Pathologic

Tongue size

Classification according to House

Class 1: Normal in size, development, and function. Sufficient teeth are present to maintain normal form and function.,Class 2: Teeth have been absent long enough to permit a change in the form and function of the tongue.,Class 3: Excessively large tongue, all teeth have been absent for an extended period of time, allowing for abnormal development of the size of the tongue. class 3 tongue.

Tongue position: Classification according to Wright Normal: The tongue fills the floor of the mouth and is confined by the mandibular teeth. The lateral borders restn on the occlusal surfaces of the posterior teeth and the apex rests on the incisal edges of the anterior teeth. ,Class 1: Retracted: The tongue is retracted. The floor of the mouth is pulled downward and is exposed back to the molar area. The lateral borders are raised above the

Saliva

Class I: The saliva is normal in amount and consistency ,Class II There is an excessive amount of thin, watery saliva or thick, ropy saliva. Excessive saliva may cause gagging and will usually complicate impression making.,Class III Insufficient saliva reduces the retentive qualities of the denture and may cause an excessive dryness of the mucosa.

Radiographs

Radiographs are essential for evaluating the conditions existing in every patient needing prosthodontic service. The dentist must know the condition under the mucous membrane. Abnormalities such as foreign bodies, retained tooth roots, unerupted teeth, varied pathosis of developmental, inflammatory or neoplastic origin may exist. Radiographs show the relative thickness of submucosa covering the bone in the edentulous region, the location of mandibular canal, and mental foramen in relation to the basal seat of the dentures. Sharp spicules of bone on ridges crest are also apparent on properly exposed dental radiographs. Preoperative photos, radiographs, face profile 11 cutouts, moulds, and mounted casts help in the treatment planning. lip.

Existing Dentures as Diagnostic Aids[9]

The recognition of deficiencies in the existing dentures enables the dentist to correct those deficiencies in the new ones and also know that this is one of the treatment limitations for that particular patient The examination and evaluation of the present prostheses are valuable aids in gaining insights into the patient's previous experience, prosthetic tolerance, and esthetic values Existing dentures should be evaluated to determine physical, esthetic, and anatomic characteristics. Shape shade, mold and material should be recorded for both anterior and posterior teeth. Esthetics, phonetics, retention, stability, extensions, and contours: Existing esthetics, phonetics, retention, stability, extensions, and contours should be evaluated. These attributes should be rated as (1) good, (2) fair and (3) poor.

Centric Relation and Vertical Dimension of Occlusion[10]

Centric relation and vertical dimension of occlusion should be assessed and rated "acceptable" or "unacceptable." If unacceptable, it should be noted whether the existing VDO is inadequate" or excessive."

Palate: The palate of the existing maxillary denture should be examined. The denture base material and thickness should be noted. Anatomic features should be assessed. The practitioner should note the presence or absence of rugae on the cameo surface of the denture base. Denture wearers may have become accustomed to a particular palatal form, and may resist change. The practitioner should listen to speech patterns, and determine whether appropriate "valving" is taking place. Placement of rugae or a change in thickness may affect pronunciation.

Post dam :[11] The posterior border of the maxillary denture should be examined. Like-wise, soft tissues in the vicinity of the "vibrating line" should be observed. The seal of the existing maxillary denture should be evaluated clinically. Often, deficiencies in retention of the maxillary denture may be traced to improper post damming. The post dam should be rated "acceptable" or "unacceptable."

Comfort: The patient should be questioned regarding then comfort of maxillary and mandibular dentures. Comfort for the respective arches should be classified as "acceptable" or unacceptable." Patients who experience discomfort should be questioned to determine the nature and source of the discomfort.

Hygiene: The patient's ability and motivation to clean the dentures should be assessed during the clinical evaluation. The patient should also be questioned about his or her denture cleansing regimen. These factors may affect denture-base contouring (e.g., closed interdental contours versus open interdental contours) and tooth arrangement (e.g., presence or absence of diastema). Hygiene should be classified as (1) good, (2) fair, or (3) poor.

Prognosis

A forecast as to the probable result of a disease or a course of therapy. Prognosis can be categorized into good, fair, poor and bad. Anatomic and physiologic factors: The first step is a careful analysis of the diagnostic findings, paying particular attention to specific components. With knowledge of these needs, the second step involves developing a list of possible means of addressing them. The treatment should be stated in a logical sequence and will include adjunctive care. Its detail and clarity will permit estimates of operatory time and laboratory time, as well as associated fees. Failure to have such a plan makes informed consent by the patient impossible. Proceeding without informed consent exposes the dentist to problems ranging from loss of patients confidence to difficulty with fee collection or even to litigation. Inadequate plans also make it difficult or impossible for staff to deliver smooth patient care.

Following are some of the most common diseases encountered in the practice of prosthodontic treatment: In diabetes, the success of dentures goes hand in hand with medical control. The operator should use a non pressure impression for maximum physiologic compatibility of the denture base with the supporting tissues. Careful occlusal corrections should be accomplished to remove all interferences. The food table should be small, and the patient should be given detailed instructions on eating habits and oral hygiene. Periodical adjustment of dentures is necessary. In arthritis, the problems for the prosthodontist are as follows: the limited opening of the mandible during impressions may necessitate special trays and procedures. It may be difficult to record proper jaw relation registrations, and the technique may have to be changed. Probably the tactile method is the most satisfactory. Occlusal correction must be made often because of arthritic changes in the temporomandibular joint.

Treatment planning

Treatment planning thus means developing a course of action that encompasses the ramifications and sequelae of treatment to serve the patient's needs.

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