Diagnosis in Orthodontics

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Diagnosis in Orthodontics, as in other disciplines of Medicine, requires the collection of an adequate database of information about the patient and the distillation from the database of a comprehensive but clearly stated list of the diagnostic process to find out the truth about the patient. Three distinct types of information are gathered from an interview, clinical examination and analysis of diagnostic records to compose the data- base. Then the process of classification is used to systematically delineate the patient's problems. The resulting problem list is the diagnosis.

Malocclusion and dentofacial deformities are caused by deviations from normal growth and development, not by disease. An important aspect of diagnosis is differentiating developmental problems from problems resulting from acute or chronic pathological process. The developmental problems are treated by Orthodontics and Orthognathic surgery, while pathological problems by other means.

To decide what is most important an individual patient should be based on a judicious combination of patient's concerns and the clinician's best judgement. It would be unwise to ignore the patient's chief complaint in deciding what is most important, but patients often do not completely understand their problems and may require some education and guidance from the doctor. It is important to realise that the some problem list prioritized differently can result in different treatment plans, so this is an extremely important step.

But what is happening today in practice is that retraction of upper anteriors without availability of space posteriorly with a labial bow or an anterior bite plate to correct deep-bite in pseudo deepbite case which is going to disturb the whole stomatognathic system. I feel the reason for this is lack of understanding of the problem. This is somewhat synonymous with treating fever with paracetamol and not the disease causing fever.

We strongly believe that every attempt should be the made to harmonize the dental base with skeletal base and neuromuscular reflex. This is only possible if we catch them young. Interception means to stop, to deflect or to interrupt the process of the intended course. If you believe in only one technique (eg. Hawley's or modified Hawley's appliance), your approach towards diagnosis is invariably prejudiced. This is the most common reason for incorrect diagnosis and treatment failures. We strongly beleive that patients present to us with a variety of problems and no single appliance can handle all those problems. Common reason for incorrect diagnosis is to select patient for the appliance rather than selecting appliance for the patient.

In order to have correct diagnosis and

successful treatment planning we must consider the following two things:

a) Identify dysfunctions
b) Growth directions

a) Identify dysfunctions :

To identify dysfunctions, one has to do thorough functional analysis. Contemporary Orthodontics is not restricted to static evaluation of teeth and their supporting structures, but also includes all functional units of the masticatory system. Hence functional analysis constitutes a considerable part of clinical examination. The three most important functional analyses are:

1. Examination of postural rest position and maximum intercuspation
2. Examination of temporo-mandibular joint
3 Examination of Orofacial dysfunction

The movement of mandible from rest to functional occlusion is analyzed in all three planes of space i.e. sagittal, vertical and transverse. The movement of mandible from rest to habitual occlusion position must be differentiated for Orthodantic diagnosis.

Temporo-mandibular joints (TMJ) are compound, ginglimo-arthoidal type of joints engineered by nature in such a way that acts as a mechanical shock absorber. Neither the TMJ nor its associated musculature should hurt or make noise during function. They should work smoothly, quietly and painlessly with their normal range of motion.

Orofacial dysfunctions are divided into;
i) primary (causual)
ii) secondary (adaptive).

Primary dysfunctions cause malocclusions and the treatment must concentrate on eliminating the orafacial muscle dysfunctions. Secondary dysfunctions can be considered as an adaptive phenomenon on the existing skeletal or dentoalveolar deviation. These secondary dysfunctions correct spontaneonsly while the morphologic discrepancies are being treated.

Tongue thrust has an important effect on etiopathogenesis of malocclusion. The tongue thrust may take place in anterior or in lateral regions or can be complex. Antrerior tongue thrust can lead to anterior open bite and lateral tongue thrust to lateral open-bite. The other form of orofacial dysfunction is the lip and cheek dysfunction. The lip and check dysfunction can be observed when the patient is talking and swallowing. The lower lip and tip of the tongue are often in contact. In such cases, the lower lip is sucked in and pressed against the tip of the tongue. Any lip and cheek activity during swallowing, apart from closing the lip is unphysiologic and is a symptom of orofacial dysfunction. Visual evidence of mentalis activity is also abnormal, Hyperactivity of mentalis muscle impedes the forward development of the anterior alveolar process in the mandible. The abnormal mentalis muscle function often occurs with lip sucking. Impaired nasal breathing leads to dysfunction of the orofacial musculature. The compensatory tongue posture and breathing pattern may lead to altered dentofacial growth pattern characterized by vertical growth pattern, maxillary constriction, high vault palate and open-bite dental pattern.

b) Growth Directions:

Probably the most complicated anatormical complex in all creations is the human head. The more our knowledge increases about the growth of complex, the more our ignorance unfolds. As we know, at the time of birth the human face constitutes an insigificant portion of the human head, and it is in the post-natal life then face literally unfolds from beneath the base of skull. All the bones that constitute face descend down and at the sametime move forwards,

meaning that, there is vertical growth and horizontal growth. When this vertical & horizontal growth components are in harmony, there is a smooth downward and forward movement of the whole facial skeleton. It is well recognized that the mandible rotates both clock-wise and anti-clockwise as growth process unfolds. Clockwise rotation is the result of excessive vertical growth as it relates to horizontal growth counter clockwise rotation is a result of a deficiency in vertical direction as related to horizontal growth. So it is important to recognise the growth directions before planning treatment for such cases.

So, diagnosis is an art of recognizing the problems through a series of act. The correct diagnosis only can decide about success or failure of treatment. Before I conclude, I must say an operator is for building, not destroying; for shaping, not crippling; for helping, not hindering his patient.