ORTHODONTIC DIAGNOSIS

▶ The primary task for the clinician is to identify the problem and find its etiology .

▶ Once this is done , and only then can a treatment plane be formulated.

Diagnosis involve the development of a comprehensive and concise data base of information ,sufficient to understand the patient problem as well as answer question arising in the treating clinician mind.

Orthodontic diagnosis :-

▶ deals with recognition of the various characteristics of the malocclusion and dentofacial deformity.

▶ should be based on scientific knowledge combined at times with clinical experience and common sense.

▶ design a treatment strategy based on the specific needs and desires of the individual;

▶ present the treatment strategy to the patient in such a way that the patient fully understands his/her decision.

The data base is derived from diagnostic aids

They are of two types –
a. **Essential diagnostic aids** -
   i. Case history
   ii. Clinical examination
   iii. Study models
   iv. Certain radiographs –
      Panoramic radiograph
   v. Facial photographs
b. **Supplemental diagnostic aids** –
   i. Specialized radiographs
   ii. Electro myographic examination of muscle activity
   iii. Hand – wrist radiograph
   iv. Endocrine tests

⭕ **CASE HISTORY:-**

▪ **Personal details** –

NAME –

Communication

Identification

Psychological benefits

It makes the patients more comfortable when he is addressed by his first name and arouses a feeling of familiarity, which has a positive psychological effect on the patient

Age and Date of Birth –

The chronologic age of the patient helps in:-

➢ Diagnosis and treatment planning

➢ Growth modification procedures

➢ Surgical resective procedures

The age of the patient also dictates the use of certain treatment protocols-for example, surgical correction might be advocated following cessation of growth whereas the same malocclusion might be treated using functional appliances if the patient has a potential to grow.

▪ **. SEX** – Treatment planning

e. g. the timing of growth events such as growth spurts are different in males and females, Females precede males in onset of growth spurts, puberty and termination of growth

- **. Address and occupation –**

Evaluation of socio – economic status

In selection of an appropriate appliance

- **Race :** negroid race usually obtain an anterior diversion of the face with bimaxillary alveolodental protrusion

- **Referred by :** can give us a good impression about the patient co-operation
    - **CHIEF COMPLAINT The patient's chief complaint should be recorded in his/her own words.**
  ▶ **This helps the clinician in identifying the priorities and desires of the patient.**

  ▶ **There are three major reasons for patient concern about the alignment and occlusion of the teeth:**

  - impaired dento-facial esthetics that can lead to psychosocial problems,

  - &a desire to enhance dento-facial esthetics and thereby the quality of life.

  - impaired function,

- **MEDICAL HISTORY :-**

In obtaining the medical history, the orthodontist or assistant must always ask a few important questions, as

the last time a physician was seen, any hospitalizations,

any medications currently being taken.

information regarding allergies, especially latex or nickel sensitivity;

history of blood transfusions; and heart problems such as mitral valve prolapse or rheumatic fever .

- **DENTAL HISTORY :-**

The dental history of the patient should include ,

age of eruption of the deciduous and permanent teeth,

history of extraction, decay, restorations and

history of trauma to the dentition.

- **PRENATAL HISTORY**-

it include information on the condition of the mother during pregnancy and the type of delivery.

► Forceps delivery predispose to TMJ injuries that can result mandibular growth retardation

► The use of drugs , or even excess use of certain vitamins or affectation with some infection during pregnancy like german measles can results in congenital deformities of child.

POST NATAL HISTORY -it includes information on the type of feeding, presence of habits especially digit sucking and tongue thrust.

FAMILY HISTORY- class II,classIII malocclusions and congenital conditions such as clefts of lip & palate are inherited.

Family history should record details of mal-occlusion existing in other members of the family.

GENERAL EXAMIATION

► Height and weight-they provide clue to the physical growth and maturation of the patient.

► Gait-(way a person walks) abnormalities of gait are usually associated with neuromuscular disorders that may have a dental correlation.

► Posture-(way a person stands)abnormal postures can predispose to malocclusion due to alteration in maxillo-mandibular relationship.

SHELDEON CLASSIFICATION OF BODY BUILD

► A)ECTOMORPHIC- tall and thin physique

► B) MESOMORPHIC- average physique

► C)ENDOMORPHIC- short and obese physique

EXTRA ORAL EXAMINATION

SHAPE OF THE HEAD:

► A)MESOCEPHALIC-average shape of the head. posses normal dental arches

► B)DOLICOCEPHALIC-long and narrow head . They have narrow dental arches

► C)BRACHYCEPHALIC-broad and short head. broad dental arches
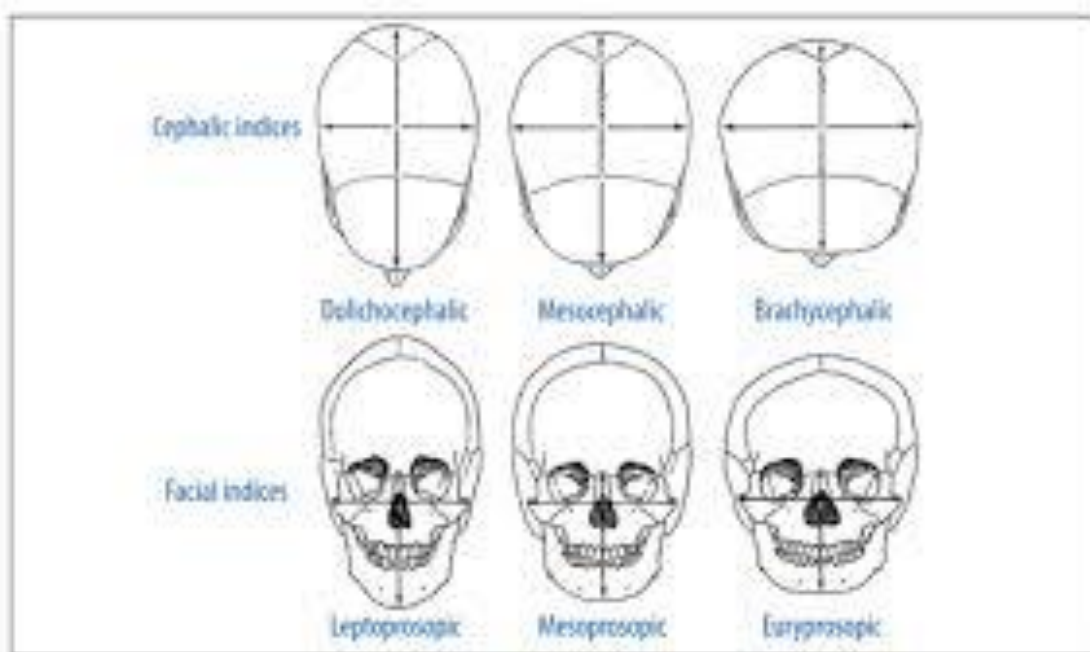
FACIAL FORM

▶ A)MESOPROSOPIC-average or normal face form

▶ B)EURYPROSOPIC-face is broad and short

▶ C)LEPTOPROSOPIC-long and narrow face form

Facial index

▶ The shape of the face is assessed by the morphologic facial index which was given by Martin and Saller (1957) as:

Morphologic facial height (distance between nasion and gnathion)

I =   --

Bizygomatic width (distance between the zygoma points)

The type of facial morphology has a certain relationship to the shape of the dental arch, e.g. :- euryprosopic face types have broad, square arches; border line crowding in such cases should be treated by expansion.

▶ On the other hand, leptoprosopic face types often have narrow apical basel arches. Therefore, extraction is preferred over expansion.

FACIAL SYMMETRY

▶ The patient's facial symmetry is examined to determine disproportions of the face in transverse and vertical planes. Gross facial asymmetry can occur as a result of:

▶ A. congenital defects

▶ B.hemi-facial atrophy/hypertrophy

▶ C.unilateral condylar ankylosis and

▶ D.unilatera hyperplasia

The role of fifth

Facial proportions and symmetry in the frontal plane. An ideally proportional face can be divided into central , medial ,and lateral equal fifths. The separation of the eyes and the width of the eyes, which should be equal ,determine the central and medial fifths. The nose and chin should be cantered within the central fifth, with the width of the nose the same as or slightly wider than the central fifth. The inter – pupillary distance (dotted lines) should equal the width of the mouth

Vertical facial proportions in the frontal and lateral views are best evaluated in the context of the facial thirds, which are equal in height in well-proportioned faces. In modern Caucasians, the lower facial third often is slightly longer than the central third. The lower third has thirds : the mouth should be one-third of the way between the base of the nose and the chin.

FACIAL PROFILE

▶ **The facial profile is examined by viewing the patient from the side. the facial profile helps in diagnosing the gross deviation of maxillo-mandibular relationship. the profile is assessed by joining the <u>following two reference lines</u>:-**

1. **A line joining the forehead and the soft tissue point A(deepest point in curvature of upper lip)**

2. **A line joining point A and the soft tissue pogonion(most anterior part of the chin)**

▶ **STRAIGHT / orthognathic PROFILE -the two lines form nearly straight line.**

▶ **CONVEX PROFILE -the two lines form an angle with concavity facing the tissue. (This kind of profile occurs as a result of prognathic maxilla retrognathic mandible as seen in Class II div 1 patients)**

▶ **COCAVE PROFILE -the two reference lines form an angle with convexity towards tissue. (This type of profile is associated with a prognathic mandible or retrognathic maxilla as in Class Ill patients)**
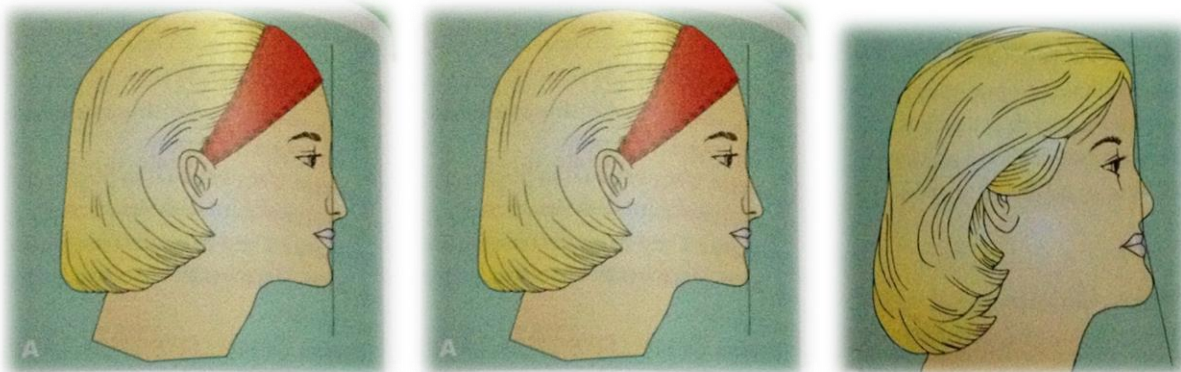
FACIAL DIVERGENCE

Facial divergence is defined as anterior or posterior inclination of the lower face relative to the forehead.

▶ ANTERIOR DIVERGENT-a line drawn between the forehead and the chin is inclined anteriorly towards the chin..

POSTERIOR DIVERGENT

▶ A line drawn between the forehead and chin slants posteriorly towards chin.

STRAIGHT/ORTHOGNATHIC

▶ The line between the forehead and the chin is straight or perpendicular to the floor.

▶ The facial divergence is to a large extend influenced by patient's ethnic and racial background.

ASSESSMENT OF ANTERO-POSTERIOR JAW RELATIONSHIP

▶ It can be assessed clinically.

▶ Ideally maxillary skeletal base is 2-3 mm ahead of the mandibular skeletal base when the teeth are in occlusion.

▶ Estimation is done by placement of index and middle fingers at the soft tissue point A and point B respectively.

▶ In skeletal CLASS II PATIENTS, the index finger is anterior to middle finger or the hand points upwards.

▶ In a skeletal CLASS III patient, the middle finger is ahead of the forefinger or the hand points downwards.

▶ In a patient with CLASS I skeletal pattern the hand is at an even level.

ASSESSMENT OF VERTICAL SKELETAL RELATIONSHIP

▶ The vertical skeletal relationship assessed by studying the angle formed between the lower border of the mandible and the Frankfort horizontal plane   (a line between the most superior point of external auditory meatus and inferior border of orbit)

▶ Normally the two planes intersects near the occipital region.

▶ In case the two planes meets beyond the occipital region, it indicates a low angle case or a horizontal growing face.

▶ If two planes meet anterior to occipital region it indicates a high angle case or a vertical growing face.

▶ A normal vertical relationship is one where the distance between the glabella and subnasale is equal to the distance from the subnasale to the under side of the chin.

▶ Reduced lower facial height is associated with deep bites while increased lower facial height is seen in anterior open bites.

Examination of the Soft Tissues

▶ **Extraoral**

1. Forehead   For a face to be harmonious, the height of the forehead (distance from hairline to glabella) should be as long as the mid-third (glabella-to-subnasale) and the lower third (subnasale-to-menton), i.e. each of these is one-third the total face height

2. Nose Size, shape and position of the nose determines the esthetic appearance of the face

EXAMINATION OF LIPS

▶ **The upper lip covers the entire labial surface of upper anteriors except the incisal 2-3 mm**

▶ **The lower lip covers the entire labial surface of lower anteriors and 2-3 mm of incisal edge of upper anteriors.**

CLASSIFICATION OF LIPS

▶ **COMPETENT LIP-THE LIPS ARE IN SLIGHT CONTACT WHEN MUSCULATURE IS RELAXED.**

▶ **INCOMPETENT LIPS-they are morphologically short lips which do not form a lip seal in a relaxed state.**

▶ **The lip seal can only be achieved by active contraction of perioral and mentalis muscle.**

▶ **POTENTIALLY INCOMPETENT LIP-they are normal lips that fails to form a lip seal due to proclained upper incisor.**

EVERTED LIP-they are hypertrophied lips with weak muscular tonicity.

EXAMINATION OF CHIN

▶ **MENTOLABIAL SULCUS**-concavity seen below the lower lip. Deep mentolabial sulcus is seen in CLASS11,DIVISON 1 malocclusion.

▶ **CHIN POSITION AND PROMINENCE**-prominent chin is usually associated with class 111 malocclusion.

○ **NASOLABIAL ANGLE :-**

This is the angle formed between a tangent to the lower

border of the nose and a line joining the subnasale with

the tip of the upper lip (labrale superius)

• **This angle is normally 100°-110° .**

• **It reduces in patients having proclined upper anteriors or prognathic maxilla.**

• **It increases in patients with retrognathic maxilla or retroclined maxillary anteriors.**