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RUSH RUN ON THE CLASSIFICATION SYSTEM OF CLASS II MALOCCLUSION

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ARTICLE INFO	ABSTRACT	ORIGINAL RESEARCH ARTICLE

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Different variants of malocclusion are evident which enables the clinicians or professionalists difficult to communicate with each other and concluding the treatment planning. Classification and labeling the malocclusion make the clinicians/ professionalists easier, faster, accurate to communicate between them. Standardization is needed in every topic of the discussion thus the objective of these studies reveals some of the standard classifications of class 2 malocclusion and describes the different forms of classification system available in this topic of discussion. Class 2 malocclusion is the commonest form of malocclusion after Class 1, thus the proposed skeletal, dental, functional classification gives a detailed accuracy on the determination of treatment planning.

INTRODUCTION :

Malocclusion has different variants of expressions, one of most commonest problem in medical science is defining and labeling the subgroups of the variants[1] . Classification or labeling is necessary for the ease of communication between the professionals and understanding its concept of deviation from normal, and to conclude what is normal. Strang suggested that classification system must include the plan of treatment so he defined classification as a process of analyzing cases of malocclusion for the purpose of segregrating them into a a small number of groups ,which are characterized by certain specific and fundamental variations from normal occlusion of the teeth which variations become influential and deciding factors in providing the fundamental data for the preparation of systematic and correlated plan of treatment[2].

CLASSIFICATION SYSTEM OF CLASS 2 MALOCCLUSION

1. ANGLES SYSTEM OF CLASSIFICATION

Edward H Angle (1899) based his classification on the anterior posterior occlusal relationship of the first permanent molars.

Class II malocclusion → distal Occlusion

The mandibular first molar occluded distal to the normal relationship with the maxillary first molars i.e,

➢ Where the disto-buccal cusp of the upper first permanent molar occludes in the lingual groove of the lower first permanent molar. Angle has classified Cl – II malocclusions into 2 divisions.

➢ Class II Division 1 → Characterized by proclined upper incisors with a resultant increase in overjet.

Figure 1: angles class ii div 1 malocclusion

➢ Class II, division 2 → Characterized by retruded maxillary incisors and a deep anterior overbite.

Figure 2:angles class ii div 2 malocclusion

➢ Class II, subdivision : When the distal occlusion is unilateral, with the opposite side exhibiting the normal relationship[3] .

Figure 3:angles class ii div 1 subdivison-class 2 on right side class 3 on left side

2.MOYERS SYSTEM OF CLASSIFICATION
According to Moyers 1960 Class II can be divided into *6 horizontal types and 5 vertical types*

Horizontal Class II Types:
Normal Skeletal Pattern:
Displays normal relationship of maxilla and mandible to the cranial base and to each other.

Upper and lower dentitions are within their normal positions over their basal bones.

Type A or Dental Class II

A normal skeletal profile and normal A-P position of jaws. Mandibular dentition is places normally on its base but Maxillary dentition are protracted, resulting in Class II molar relationship and increased incisal overjet and overbite than normal.

Horizontal Type B:

Displays mid face prominence with a mandible of normal length. Size of maxillary is increased but mandible is normal Antero-posterior.

Horizontal Type C:

Displays Class II profile through the maxilla and mandible are further back beneath the anterior cranial base than normal the lower incisors are tipped labially, the upper incisors are either upright or tipped off the base labially according to the vertical category.

Horizontal Type D:

Displays a skeletal profile which is retrognathic because there is a smaller than normal mandible. The mid face is normal or slightly diminished. The mandibular incisors are either upright of lingually inclines; where as the maxillary incisors are typically labially positioned.

Horizontal Type F:

Displays mild skeletal tendency due to combination of maxillary protrusion and Mandibular protrusion with upper and lower anteriors. Upright over their basal bones.
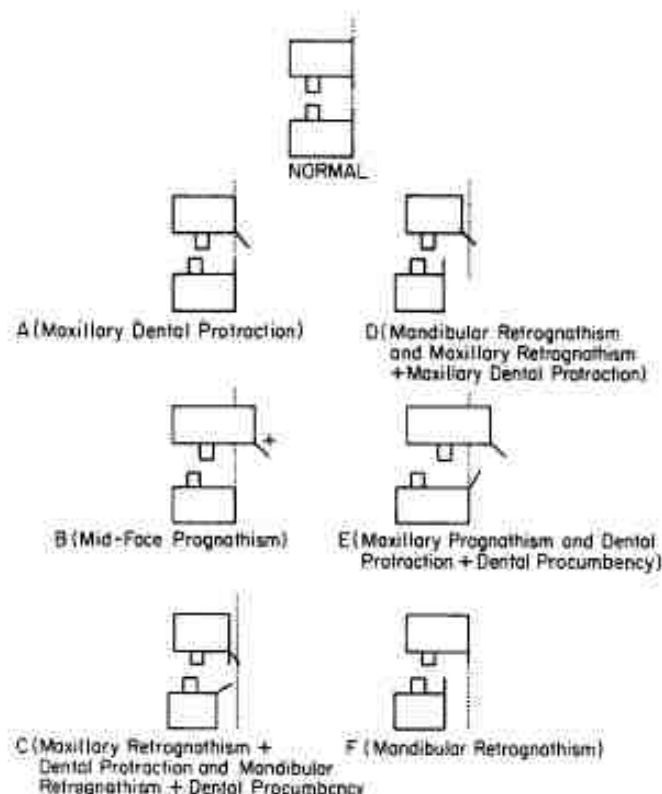

Figure 4: diagrammatic representation of horizontal variants where large rectangle represents maxilla and small rectangle represents mandible, the ideal profile is represented by dotted lines.

Vertical Class II Types:

There are 5 vertical types of Class II, but they are not as clearly differentiable as horizontal types. It is not necessary for a case of horizontal type to be associated with any of the described vertical Class II types.

1. **Vertical type of High angle case:**
Features:
(i) Anterior facial height > Posterior facial height
(ii) Mandibular and functional Occlusal planes are steeper than normal
(iii) Palatal plane may be tipped downwards while the anterior canal base tends to be upward.

2. **Vertical Type 2:**
Features:
(i) Square Face
(ii) Mandibular plane, functional Occlusal plane and palatal planes are more horizontal and often seem parallel
(iii) Gonial angle is smaller than normal
(iv) Anterior cranial base appears horizontal
(v) Skeletal deep bite

3. **Vertical Type 3:**
Features:
(i) Palatal plane tipped upwards resulting in decreased upper anterior facial height and predisposition to open bite.

4. **Vertical type 4:**
Features:
(i) Rare type of vertical pattern
(ii) Mandibular plane, functional Occlusal plane and palatal planes are tipped downwards
(iii) Genial angle is relatively obtuse
(iv) Lip Line is high in the maxillary alveolar process
(v) Upper incisors are tipped labially and lower incisors are tipped lingually.

5. **Vertical Type 5:**
Features:
(i) Mandibular and functional Occlusal planes are placed normally
(ii) Palatal plane is tipped downward
(iii) Gonial angle is smaller than normal
(iv) Skeletal deep bite may be present
(v) Lower incisors are labially tipped and upper incisors are lingually tipped[1].

3. THERAPEUTIC SYSTEM OF CLASSIFICATION
Class II malocclusion therapeutically as:
1. **Skeletal Class II**
2. **Dentoalveolar Class II**
3. **Functional Class II**
Skeletal Class II
Anterior posterior disproportion of jaws in size and position result in class II
Skeletal class II pattern can result due to:
(i) Increased size of maxillary
(ii) Decreased size of mandible
(iii) Combination of Increase maxilla and decreased mandible

CEPHALOMETRIC FINDINGS INDICATING CLASS II DUE TO:
Mandibular Deficiency:
Variant 1:
1. Downward and backward rotation of mandible caused by small size of ramus and body of mandible
2. Decreased posterior facial height
3. Steep mandibular plane angle
4. Increased ANB angle
5. Increased angle of convexity
6. Increased overjet
7. Greater positive value of wits appraisal
8. Posterior position of point B in relation to Na perpendicular
9. Normal position of Point A in relation to Na perpendicular
10. Dental compensation of protruded mandibular incisors

Variant 2:
Due to decreased size:
Features:
1. Convex profile
2. Normal or an increased ramus length
3. Flat mandibular plane angle
4. Normal of increased posterior facial height
5. Excessive bony chin masking the mandibular deficiency but still have lack of support for lower lip
6. Short anterior facial height
7. Hyperactive mentalis muscle
8. Deep anterior overbite
9. Maxillary incisors are lingually inclined masking the anteroposterior dental discrepancy
10. Accentuated curve of spee

Variant 3:

Due to retruded position

Features:

1. Normal or decreased size of mandible
2. Cranial base angle is more obtuse
3. Glenoid fossa is more posteriorly positioned

FORCED BITE MALOCCLUSION
FUNCTIONAL CLASS II

Based on different types of movement of mandible from the rest position to occlusion class II malocclusion can be divided into 3 functional types:

1. Functional True Class II Malocclusion
2. Functional Class II with posterior sliding movement
3. Functional Class II with anterior sliding movement

4. VANDER LINDEN'S SYSTEM OF CLASSIFICATION OF CLASS II DIV-2

Type A: Maxillary four permanent incisors can tip palataly without occurrence of crowding

- High Lip line position and certain excess of external soft tissue material present in the anterior region
- The lips attain a more dorsal position and a "dished in" appearance
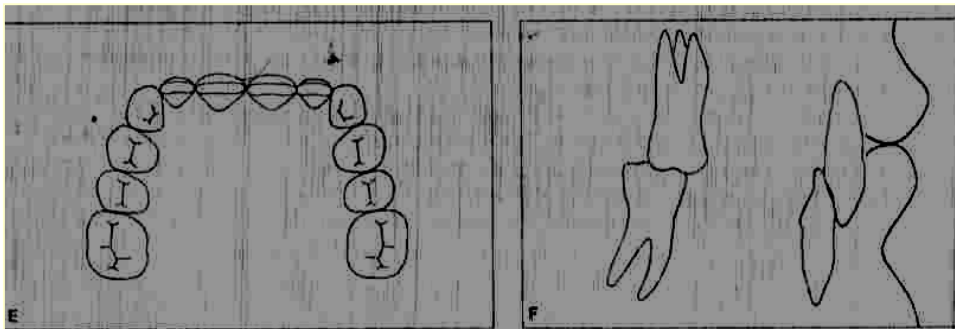- Space present for the correction of dentition'

Figure 5: Type A of class II div 2

Type B: The Maxillary permanent central incisor will move palataly gradually

- The available space in maxillary dental arch is limited. Thus lateral incisor are placed labially

- The lower lip will become positioned inferiorly to maxillary lateral incisor and will contribute to the increase if their labial inclination.

Figure 6: Type B of class II div 2

Type C: There is marked shortage of available space in the maxillary dental arch. Central and Laterals are palataly tipped, and Canines, emerges bucally and labially tipped position[4].
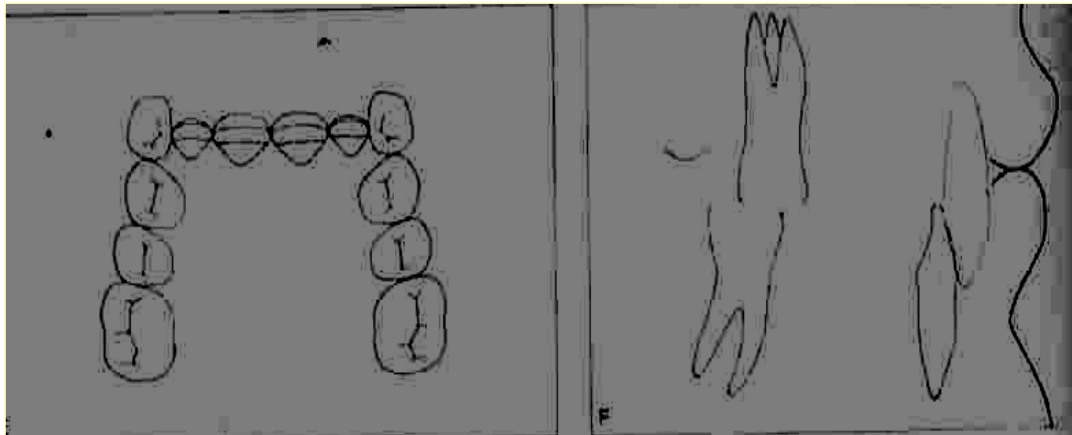
Figure 7: Type C of class II div 2

5.BRITISH INCISOR SYSTEM OF CLASSIFICATION
- Developed by Ballard and Wayman in 1964
- The lower incisor edges lie posterior to the cingulum plateau of the upper central incisors. There are two divisions of class II:

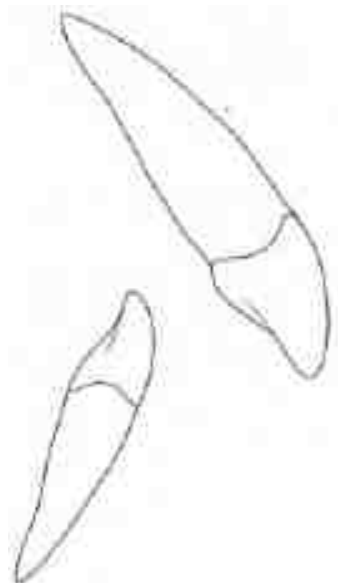i. *Division 1:* The upper central incisors are of average inclination or are proclined. The overjet is thus increased

Figure 8: class II div 1 incisor relationship

ii. *Division 2:* The upper central incisors are retroclined; the overjet is usually within normal limits but the overbite is often increased[5].
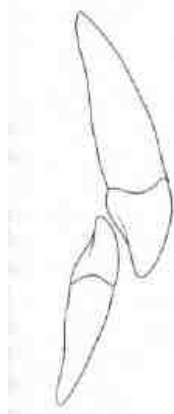
Figure 9: class II div 2 incisor relationship

6. KATZ SYSTEM OF CLASSIFICATION

Morton Katz (1992) classified malocclusion based on the region of premolar
  ➢ The most anterior upper premolar is occluding mesial of the embrasure created by the distal contact of the most anterior lower premolar. The measurement has a (+) sign[6].
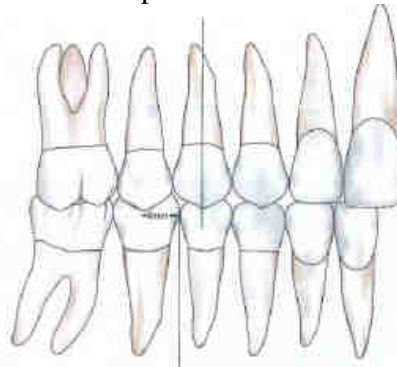

Figure 10: Class II premolar relation

7. CANINE CLASSIFICATION

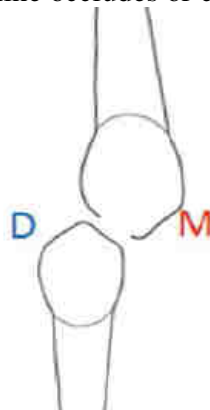Class II: Distal slope of the maxillary canine occludes or contact the mesial slope of the lower canine[7].

Figure 11: Class II canine relation

CONCLUSION

Every classification systems has its own advantages and disadvantages, since the aim of the classification is the fastest and easiest application in clinics and between the professionalist for more accurate communication. A standardization of classification is still welcomed in these topic of discussion.

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