DENTAL ARTICULATOR
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It is a mechanical device that represents the TMJ, maxillary and mandibular arches to which maxillary and mandibular casts are attached to simulate some or all mandibular movements.
FUNCTIONS

1- It allows most of the prosthetics work to be done in the absence of the patient.

2- Maintain jaw relation record during setting up of teeth.

3- Denture re mounting after processing for correction of occlusal disharmony.
TYPES OF ARTICULATOR

- Simple hinge articulator (Class I).
- Mean value (Class II).
- Adjustable articulator.
  - semi adjustable (Class III).
  - fully adjustable (Class IV).
- Digital computerized articulator.
Possible movement
1-Single hinge movement only (opening & closing).
2-No lateral movement.
Record required
-Vertical dimension of occlusion.
-Centric relation

Disadvantages
Not represented TMJ
CLASS II

Possible movement

1-Opening and closing
2-Protrusive movement

Record required
-Vertical and centric
-Face bow record
BONWILL TRIANGLE
**DISADVANTAGES**

- Most of these articulator not accepted face bow record
- No lateral movement
- It is successful in patient whose condyle approximate that of articulator
CLASS III
CLASS III

- The horizontal condylar path adjusted by protrusive movement obtained from the patient.

- Lateral condylar path is adjusted according to Hanau’s formula:
  \[ L = \frac{H}{8} + 12 \]

  \( L = \) lateral  \( H = \) horizontal condylar path
The inclination of the condylar path

Types:

A- Sagittal (HORIZONTAL) condylar path angle

B- Lateral condylar path angle
ARCON

MEAN IT HAS CONDYLES ON THE LOWER MEMBER AND THE CONDYLAR GUIDES ON THE UPPER MEMBER

Arcon articulator
Non Arcon articulator
SEMI ADJUSTABLE ARTICULATOR

- **ARCON**: condylar elements are on the lower member of the articulator, mechanical fossae are placed on the upper member of the articulator.

- **NON ARCON**: condylar path simulating the glenoid fossae are attached to the lower member, condylar elements are placed on the upper portion of the articulator.
Possible movement
- Opening and closing
- Protrusive and lateral movement
- Some types have bennett movement

Record required
- Face bow record to mount the upper cast
- Vertical and centric relation record
- Protrusive record to adjust the horizontal condylar path inclination of the articulator

Disadvantages
- The lateral condylar path angle is determined from the formula.
- Most of them have no bennett movement
CLASS IV

It differ from the semi adjustable articulators in that the lateral condylar pat inclination are adjusted according to records taken from the patient.

Possible movements
- The same movements of the semi adjustable articulators in addition they have Bennett movement.
Bennett Movement

It is defined as “the bodily lateral movement/lateral shift of mandible resulting from movements of condyles along lateral inclines of mandibular fossa during lateral jaw movement”

Dr Norman Bennett
Records required:
- Face bow, vertical, centric and protrusive record. In addition:
- Right lateral record to adjust the left lateral condylar path inclination.
- Left lateral record to adjust the right lateral condylar path inclination.
VERSATILE STANDARD ARTICULATOR WITHOUT OPTIONS (D-AAA-01)

Transfer Jig (optional)

Bite Fork (optional)

Bite Plane (optional)

Dual Index (optional item)

Provided with adjustable parts for a total, partial prosthesis, and a crown and bridge work.

Versatile Standard Articulator without options

D-AAA-01
Disadvantages:

-Multi records are required with possibility of errors.

Therefore the **semi adjustable** enough for complete denture construction.
These are able to design prosthesis. They are capable of:

- Simulating human mandibular movements
- Moving digitalized occlusal surfaces against each other according to these movements
- Correcting digitalized occlusal surface to enable free movements
There are two types:

- **Completely adjustable articulators**
  
  It records exact movement paths of mandible using electronic jaw registration system called (JMA).

- **Mathematically simulated articulator**
  
  It is a fully adjustable 3D virtual articulator capable of reproducing the movements of a mechanical articulator.
FACE BOW

Caliper like device that is used to record the relationship of maxilla to the TMJ or the opening axis of the jaw and to orient the cast in the same relationship to the opening axis of articulator.

It consist of :
- U-shaped frame.
- The condyle rods.
- The fork.
The kinetic face-bow

It is used to locate the kinematic transverse hinge which is an imaginary line in which the mandible rotates during opening and closing.
Use of kinematic bow for edentulous patients
The maxillary face-bow

It is used to record the position of the upper jaw in relation to the arbitrary hinge axis which is positioned on a line extending from the outer canthus of the eye to the middle of the tragus of the ear and approximately 13 mm in front of the external auditory meatus.
An arbitrary mounting of the maxillary cast without a face bow transfer can introduce errors in the occlusion of the finished denture.

It allows minor changes in the occlusal vertical dimension.

It is helpful in supporting maxillary cast while it is being mounted on the articulator.
thank you