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Overview For Selection Dental Articulators

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Abstract
Articulators are a big topic of discussion these days among clinicians and laboratory technicians because their usefulness and necessity in the treatment of functional, esthetic, and occlusal problems has become more significant. It gives the provision for adjusting the maxillary and the mandibular cast in three planes of space relative to the hinge axis of the patient and the instrument. It can be undoubtedly said that no other instrument has influenced the Science of Prosthodontics as much as the articulator. In the past patients were forced towards an ideal bite set on the articulator. However, there has been constant increasing refinement of the instrument.The articulators that dental surgeons use today are based on the principles that have evolved over the device's 200-year history. This article illustrates the evolution and selection of the articulators through the years and recent advances of the same.

Key Words
Dental Articulators, mandibular, maxillary, occulusal

Introduction

The success of fixed or removable restoration directly depends on the articulator selected as well as the skill and care with which it is used. Articulator is defined as a mechanical instrument that represents the temporomandibular joints and jaws, to which maxillary and mandibular casts may be attached to simulate some or all mandibular movements1. Mandibular movements occur around the temporomandibular joint which is capable of making complex movements.

Any restoration provided should not interfere with mandibular function in mastication, speech, and swallowing nor should they transmit excessive force to the attachment apparatus or the temporomandibular joint either in the intercuspal or eccentric jaw positions as well as during movement.

Although it is often said that the patient's mouth is the best articulator, it is not practical and convenient to work exclusively in the patient's mouth at all times, thus, articulators have been designed to enable the dental surgeon and technician to study the patient's dentition and construct the prosthesis without the continued presence of the patient. Hence the advent of the articulators is a boon and the Science of Prosthodontics and the total oral rehabilitation is incomplete without it.

Discussion

Numerous articulators are available for the restoration of occlusion. The challenge for the dentist is to choose an articulator that is suitable for the purpose at hand, neither more nor less complicated than necessary. Generally single crowns and simple fixed partial dentures are fabricated on simple articulators consisting of nothing more than a simple hinge.

These nonadjustable articulators do little more than simulate the hinge motion of the mandible and hold the casts in centric relation.

Occlusal inaccuracies produced by this type of instrument may be corrected intraorally using valuable chair time but the final restoration is a result that is less than optimal. Many inaccuracies, however, remain unrecognized and these remain in mouth as occlusal interferences which frequently may produce pathologic conditions ranging from destruction of teeth and supporting structures and/or TMJ disturbances.

Semiadjustable articulator allows adjustment to replicate average mandibular movements. These instruments allow for orientation of the cast relative to the joints and may be arcon or non arcon instruments. These articulators are most often indicated for balanced complete dentures, for Class I and Class II partial dentures and for crowns and three unit fixed partial dentures.

Fully adjustable articulators duplicate the mandibular movements with a higher degree of precision. These instruments allow for orientation of the cast to the temporomandibular joints and replication of all mandibular movements. Inaccuracies in the restoration can be highly limited by the use of these articulators; however, treatment using these instruments is time-consuming, demand great skill by the dentist and the technician, hence, economically not feasible for smaller routine treatment plans.

Current popular articulators

1. Mean Value Articulator

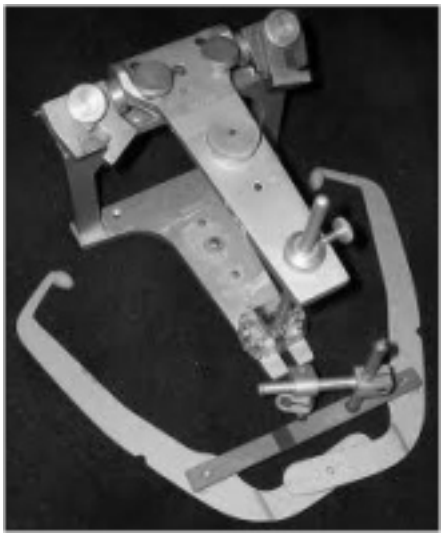
Also called as "Three Point Articulator or Free Plane Articulator", these instruments are routinely used in dental colleges to teach undergraduate students. These instruments are nonadjustable, non arcon type, designed using fixed dimensions. A spring is mounted within the condylar track to stabilize the condylar elements and hold them in their posterior most position.

2. Hanau H2 Articulator

These instruments are condylar or non arcon type. Its prototype, the model H, designed by Rudolph Hanau, was originally designed for complete denture construction, both models have received widespread acceptance throughout dental profession. The Hanau H 2 articulator has a fixed Intercondylar distance of
110 mm and does accept a face-bow transfer.

3. Whip – MixArticulator

The basic Whip-Mix is an arcon articulator. It was designed by Charles Stuart in 1955 so that restorative dentistry could be accomplished with greater precision without the use of very expensive equipment or more time consuming techniques. The intercondylar distance is adjustable to three positions:
small (S), 96mm; medium (M), 110 mm; and large (L), 124 mm; by means of removable condylar guidance spacers along the instrument's horizontal axis. The horizontal condylar inclinations are set by means of a lateral or protrusive interocclusal record.



Summary and Conclusion

After all the advancement that has occurred in the design of the articulators, a typical articulator consists of a hinge-type frame, mounting plates for casts, two adjustable condyles, an incisal guide pin and a facebow with a bite fork. It must be recognized that the person operating the instrument is more important than the instrument. If dental professionals understand articulators and their deficiencies, they can compensate for their inherent inadequacies. The rapid advancement of modern technology and the continued development has contributed to advanced and accurate articulators at our disposal. As always, these anticipated advancements promise to significantly increase abilities of the dental professionals to successfully serve the needs of their patients.

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