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Abstract
A semi adjustable articulator is no better than a simple hinge articulator if it is not programmed. The semiadjustable articulator gets upgraded to the status of a simulator through the programming. The relationship between the inter condylar axis and the maxillary cast, opening and closing arc, vertical dimension and the path on which jaw moves, are all simulated through the programming. This article describes the systematic process of programming the Hanau Wide Vue articulator.

MeSH words: Semiadjustable articulator, programming, split cast, gothic arch tracing.

Maxillary cast is mounted to the upper member of the semi adjustable articulator using a face bow. A split cast is issued (Fig 1). Tentative jaw relation is registered. Mandibular cast is mounted to the lower member of the articulator using tentative centric record (Fig 2). This is further verified using a graphic tracer. Extra oral tracer consists of central bearing point and plate. Tracer unit consists of stylus and table. The central bearing plate and central bearing point are attached to the occlusal rims in such a way that the height - the established vertical dimension is maintained and at the same time a uniform gap is provided (Fig 3,4). The central bearing plate is submerged into the maxillary occlusal rim but the shape of which is kept unaltered (Fig 5). Height of the mandibular occlusal rim is reduced by 4mm and is maintained parallel to the maxillary occlusal rim. The plate carrying the central bearing point is kept flush with the modified mandibular occlusal rim (Fig 6). The height of the central bearing point is adjusted to make a point contact with the central bearing plate attached to the maxillary occlusal rim. Central bearing point is positioned at the centre of the mandibular arch. The central bearing point is in the form of a sphere because, the central bearing point should maintain contact when the mandible protrudes; the condyles translate and the anterior portion of the occlusal rims get approximated. If the central bearing point is not a sphere this movement will not be accommodated. Next, testing is done in two phases. First testing is done in the articulator. The central bearing plate and points are attached and upper member is moved to simulate protrusive and lateral movements. Care should be taken that 3mm gap is maintained between heels of the bases. Now the bases are transferred to the patient's mouth and movements are simulated. A minimum 3 mm of gap should be maintained in the posterior region. The next step is to attach the tracing unit. The tracing table is attached to the buccal surfaces of the mandibular occlusal rim such that it is parallel to the maxillary occlusal plane and will not interfere with the incisal guide table (Fig 7, 8). Stylus unit is attached to the maxillary rim (Fig 9). The stylus is provided with spring loading so that it can move in a vertical direction to accommodate...
the approximation of occlusal rims in the protrusive position. After the tracing unit is attached, the stylus movement is checked whether it is contained within the table. Assembly is now transferred to the patient's mouth and patient is asked to make protrusive and retrusive movements only. Once consistency at centric relation point is obtained, the patient is asked to make excursive movements, one after the other. First the patient is asked to make right lateral and come back to centric then left lateral and back to centric. Patient if trained few times will be capable of making a tracing in a singular line. Then a thin layer of contrast medium using okelson spray, marker pen, wax or mixture of zinc oxide and spirit is applied on the tracing table and the patient is asked to perform the jaw movements.

By training, each edentulous individual will be able to make a gothic arch tracing. It has an arrow point that represents the centric relation (Fig 10 a, b). The excursive movements – protrusive, right lateral and left lateral movements of the mandible will be represented by straight lines. However the tracing obtained from the protrusive movement need not always be a straight line because it is controlled by both the joints. With a caliper an arc is drawn on the tracing which will cut at 6 mm distance on all the lines from the centric point. The number of records to be obtained is based on the type of the articulator used. If Hanau wide vue articulator is used, two records are to be made, one at the centric and the second at the protrusive point which was marked before. Articulators like Dentatus require records made on the lateral tracings also. While making the record, the stylus has to be held at the desired points and for that a plastic template is used. A transparent plastic sheet is selected and trimmed according to the dimensions of the tracing table and it is fixed over the tracings made. The points at which the records are to be made are marked on the plastic plate and a fine hole is drilled. This hole will hold the stylus at the desired point, for example at centric and at 6 mm protrusion (Fig 11). Now the occlusion rims are to be modified by closing the gaps between the central bearing plates and the rim. On the wax rim, triangular locating notches extending to the buccal surfaces are prepared both on the maxilla and mandible. Petroleum jelly is smeared on the wax and metal surface to act as a separating medium between wax and plaster. Patient is asked to hold the stylus first at the centric position and an accelerated mix of plaster is injected between the upper and lower occlusal rims. Alternatively plaster mix can be spread first on the mandibular plate and then it can be inserted in to the mouth and the patient's mandible is guided to the required position. Excess material flowing out should
be wiped. Once the plaster is set, the assembly can be removed and the record is carefully separated out. Record can be considered as accurate if the central bearing point makes clear perforation in the plaster record (Fig 12, 13). Similarly all records are obtained which will serve in programming the articulator.

**Programming**

First the centric record has to be placed and it has to be found out whether it matches with tentative centric relation. For this purpose the bases with the tracing assembly is brought back to the casts mounted in the articulator. After keeping the interocclusal record, the upper cast and the lower cast are to be secured and for that retentive pins have to be incorporated on both sides. Fine holes can be drilled on the casts and on each side 2 pins on the upper and 2 pins on the lower can be fixed. While fixing on the maxillary pins, care should be taken to drill the holes well below the split (Fig 14). Before securing the pins the split has to separated. With a thread the lower cast, the lower base, the plaster record, the upper base and the upper cast should be secured in to a singular block. The incisal guide pin and the stylus have to be raised at this point and they need not make contact with the respective tables (Fig 15).

The upper member of the articulator with the upper split of the cast should now be approximated. At this point it is desirable to release the centric lock. When it is approximated, both the parts of the split cast must approximate closely. While it is closed, if the condylar spheres are making contact with the respective stops it can be considered that the tentative centric is matching with graphic tracing. If it is not matching it is desirable to go back to the check bite and re-register the tentative centric and repeat the entire process. If the centric matches the articulator can be programmed. Upto this stage the articulator simulated the patient in the opening and closing movement. The articulator has the capability to make translatory movements for which the horizontal condylar path has to be adjusted similar to the condylar path inclination present in the patient. For this purpose the protrusive record is used. In the place of the centric record, protrusive record is positioned and the casts are secured. The centric lock, as well as the thumbscrew present behind the condylar housing will be released so that both the condylar elements and the condylar paths can be moved. The upper member with the upper split cast is approximated. If there is a gap, the brass disc containing the condylar path can be moved so that the split completely gets obliterated. When it is obliterated, hold the upper member and the lower member of the articulator tight and note down the condylar path set by itself. The path is fixed at this point. The lateral condylar path in Hanau articulator is adjusted using the formula which will approximately be 15 degrees. From now onwards the articulator will function as a simulator of the patient’s jaw with movement capability both in opening and in translation.