A New Attachment for Mock Surgery in Hanau Wide-Vue Arcon Articulator

Kanhu Charan Sahoo, Roopa Sidde Gowda, N Raghunath, BM Shivlinga

ABSTRACT
Over few decades, orthognathic surgery has become a routine procedure for the correction of facial deformities. People have become more aware and concerned about maxillofacial deformations. Articulators are of interest to both orthodontic and maxillofacial team as they facilitate the planning of combined orthodontic treatment and orthognathic surgery. A new attachment was designed in order to the limitations of the manual method.

Keywords: New attachment, Mock surgery, Hanau articulator, Surgical splint.


INTRODUCTION
Facebows were developed in conjunction with articulators to relate the maxillary arch to the axis of the condylar hinge in three planes of space. A facebow is a mechanical device which uses tripod localization by two posterior references approximating each of the temporomandibular joints, and an anterior reference point to relate the maxillary cast vertically to the selected horizontal reference plane. This is the step-wise procedure for a model surgery:
1. Making an impression
2. Making of models
3. Facebow transfer

4. Articulators
5. Fabrication of splints

Rudolf L Hanau designed an articulator in 1923 originally for complete denture construction. There are many more models with modifications. But, the routinely used Hanau articulator for the surgical splint preparation is Hanau Wide-Vue (Models 183).

The newest type of Hanau Wide-Vue articulator are Hanau Wide-Vue I and Hanau Wide-Vue II. They are Arcon with fixed intercondylar distance of 110 mm. The difference being, that the Hanau Wide-Vue I has a closed condylar track and the Hanau Wide-Vue II has an open condylar track which allows upper member to be removed. Wide-Vue II has condylar retainers to avoid accidental separation of upper member. A micrometer protrusive-retrusive condylar adjustment is available which is accurate to 0.05. Horizontal condylar angle is adjustable from –20° to 60° and side shift angle adjustment is from 0 to 30°. The straight incisal guide pin or with adjustable foot is available. The straight pin has dual ends—chisel and spherical—which extend above the upper member to act as a third point stability when inverting the articulator for mandibular cast mounting. Three incisal guide tables are available: mechanical, flat and pant-acrylic table. After articulation of model to the articulator, mock surgical procedure is carried out manually which is not at all a precise method to get proper result. So, a attachment was made for the Hanau articulator to do mock surgery easily and precisely in order to good result in the orthognathic procedure.

APPLIANCE FABRICATION
Components needed for the new attachment as shown in (Fig. 1):
1. Bitt of 4 mm diameter
2. Screw driver
3. Screws of 5 mm diameter
4. A connector
5. Bow attachment

Procedures for the attachment of the model to the appliance are as follows:
1. Mark the point of attachment on the cast.
2. Drill the model with the bitt to make the hole in the model.
3. Assemble all the components of the appliance.
4. Later, attach the screws from the bow to model.
5. The bow is attached to the vertical rod of articulator maintaining the occlusion in the articulator for further mock surgical procedures to be carried out with the help of this appliance (Figs 2 to 6).
6. Then with this appliance, the position of the model can be changed in all the three planes of Proffit (i.e. pitch, roll and yaw) to get the desired jaw relation for the proper orthognathic surgical splint.
7. Anterioposterior vertical movement can be done by the graded marking in the horizontal and vertical rods.
8. Rotations of model in mock surgery can be done precisely by this appliance.
   This attachment can be used in different stages of splint-fabrication process without the use of dental plaster.

Advantages over Manual Technique

1. Precision of jaw movement can be done for proper treatment result.
2. No need of plaster for attachment of model.
3. Measurement can be made in linear direction and in angular pattern of mock surgeries.
4. Rotation of jaw bases is possible in an axis with this attachment rather than by hand.
5. Planning of movement of jaw bases is possible by this attachment.
6. Three-dimensional movements, i.e. vertical, horizontal and transverse jaw movements, are possible with this attachment thus maintaining the jaw relation.

REFERENCES