



The face bow is irrelevant for making prostheses and planning orthognathic surgery

Keith Yohn, DDS, MS

Investigators have studied extensively the spatial relationship of the condyles to the maxilla and the occlusal plane, and they have proposed many landmarks on the surface of the skin for recording and transferring this relationship from the patient to the articulator. For example, in 1908, Bennett¹ suggested that the angular rotation of the mandible occurs in the temporomandibular joint behind and below the head of the condyles. In 1942, Beyron² stated that the axial rotation of the mandible occurred in the head of the condyles and that there was a skin surface landmark for locating the condylar heads. In 1959, Moss³ hypothesized that “the center of rotation of the mandible is coincident with the mandibular foramen. Thereby, reducing stretch of the inferior alveolar neurovascular bundle during functional activity.” Many other researchers agreed and added that it prevented airway impingement during mastication and swallowing.⁴⁻⁶

In 1962, Silverman⁷ wrote:

Schwartz (1956) showed a patient with a bilateral condylectomy who closed repeatedly into centric occlusion. This also indicates that the closing muscles are responsible for terminal occlusion and not the temporomandibular joint or any hinge-axis position. . . . The terminal position of occlusion, as dictated by the action of all closing muscles, is centric occlusion. . . . It is an obligation of clinicians and teachers of prosthodontics to eliminate all excessive techniques to find the quickest methods of productivity with the most accurate end results. This keeps the cost of dental care as low as possible and the health of the remaining oral tissues as high as possible. Therefore, the procedures involved in the use of complicated anatomic or fully adjustable articulators and hinge-axis face bows seems to be a luxury.

Keeping these theories and truisms in mind, I conducted a study to collect evidence about the face bow. The purposes of the face bow are to transfer the arbitrary

ABSTRACT

Background. The author addresses whether the face bow is irrelevant for all types of prosthetic work and for planning orthognathic surgery.

Methods. The author searched electronic databases to find studies whose investigators used the strongest clinical evidence (that is, randomized clinical trials) and studies whose investigators incorporated the use of cinefluorography. The author found 13 studies and 1 Internet video that provided strong evidence to support the irrelevancy of the face bow transfer.

Results. Evidence indicates that the face bow has nothing to do with speech, the fit and comfort of the prostheses, ridge morphology, facial contours, the color of the teeth and denture bases, the arrangement of the artificial teeth, chewing efficiency stability, and the psychological aspects of prosthodontic treatment. The cinefluorographic example showed that there was no condylar axis of rotation during functional activity, a sawing action of the mandibular incisors during the incising of toast and the mandible moving in a back and forth, rocking chair–like movement during functional activity.

Conclusions. Eliminating the face bow transfer reduces the patient’s chair time and the dentist’s overhead expenses. The author found evidence in the results of randomized controlled trials and an online video that justify eliminating the use and teaching of the 133-year-old technique known as the face bow transfer.

Practical Implications. Patients expect their physicians and dentists to perform only treatment procedures that are essential. The findings of this study show that the face bow transfer treatment procedure is not absolutely necessary to mount dental models on an articulator. Students’, professors’, schools’, patients’, and taxpayers’ time and money can be saved by no longer teaching this 133-year-old treatment procedure.

Key Words. Face bow; irrelevant; cinefluorography; randomized clinical trials; evidence.

JADA 2016;147(6):421-426

<http://dx.doi.org/10.1016/j.adaj.2015.12.011>

rotational axis of the condyles (often called the terminal hinge axis or hinge axis) to the opening and closing axis of the articulator and to attach the maxillary occlusal plane cant to the upper member of the articulator. My primary questions were as follows: Does the face bow transfer accurately replicate the human masticatory system? Is transferring an artificial rotational axis of the condyles in the mandibular fossae (produced by the dentist) needed for the construction of a prosthetic appliance that patients can wear comfortably and be satisfied with their appearance, that allows patients to speak clearly and chew efficiently, and that causes no pathology to the supporting teeth in partially edentulous patients and in the bony ridges and soft tissues in edentulous patients?

I believe there is strong evidence showing that pure rotation of the condyles during functional activity is a myth; that the maxillary occlusal plane cant transferred by the face bow is inaccurate; that for 133 years, there has been no reported evidence showing that using a face bow transfer produces beneficial results in complete dentures, occlusal bite splints, and planning orthognathic surgery; and that there are easier and simpler ways to record jaw relations and mount dental models on an articulator to make efficient use of the patient's and the dentist's time and provide quality dental care at an affordable cost.

METHODS

Source selection. By searching electronic databases, I found information sources that cited cinefluorography studies and strong clinical evidence (that is, randomized clinical trials [RCTs]). I did not specify any language for the search, and I conducted the search using PubMed, MEDLINE, Firefox, and Google. In addition, I obtained references from citations within the articles. I ran the last search on November 26, 2015.

Inclusion and exclusion criteria. I used the following minimum inclusion requirements:

- RCTs that included human participants of any age, sex, or national origin;
- cinefluorography studies;
- comparisons of complete dentures, removable partial dentures, fixed partial dentures, and occlusal bite splints constructed with and without the face bow transfer;
- face bow transfer for planning orthognathic surgery;
- a study size of at least 20 patients;
- a record and assessment of the dentist's time; the patient's speech, chewing efficiency, esthetics, and comfort level; and the number of occlusal contacts.

I excluded case reports, studies with small sample sizes, and personal communications.

Review methods. I printed and analyzed all the original journal articles and was not biased by the number of authors; the names, degrees and positions

of the authors; the city or country where the studies were conducted; the names of the reporting journals; the date of publication; and whether the studies were conducted with or without financial support.

RESULTS

Through the database search, I found 13 pertinent articles (Table⁸⁻²⁰) and 1 Internet video. I grouped the results into 4 evidentiary areas: prosthetic appliances, occlusal bite splints, orthognathic surgery, and cinefluorography.

Prosthetic appliances. In 1969, the investigators¹⁶ of a landmark 20-year study divided a population of 64 edentulous patients into 2 groups. One group had a set of complete dentures that had been constructed with the face bow transfer method. The second group had a set of complete dentures that had been constructed with a method other than the face bow transfer. The investigators mounted mandibular dental models with a centric-relation record. They arranged and adjusted denture teeth to bilateral occlusal contacts (balance occlusion). Five experienced prosthodontists constructed the complete dentures.¹⁶ The investigators examined denture quality,²¹ residual ridge resorption,^{22,23} and the microscopic status of the oral mucosa.²⁴ They evaluated denture quality at the placement appointment and every 5 years thereafter. At the 20-year mark, the investigators reported "no difference for coincidence of centric relation and centric occlusion, denture stability, denture retention or change in ridge morphology and mucosal status."¹⁴

In 2010, Kumar and D'Souza¹³ conducted a study with 20 edentulous patients with normal ridges and a class I skeletal relationship. At the end of the clinic appointments and laboratory steps, each patient had 2 sets of identical complete dentures made with the same artificial tooth mold. One set was made using the Hanau spring face bow transfer and the Hanau H2 semiadjustable articular. The second set was made using the Stratos semiadjustable articulator, without the use of a face bow. The same technician performed all the laboratory procedures, and the investigators recorded the time required for the clinic appointments and the laboratory time to mount models. The investigators designed a questionnaire that asked patients to rate 4 items (that is, comfort during wearing period, stability, bearing during speaking, and bearing during chewing) by choosing 1 of the following responses: "bad," "satisfactory," or "very good."

At the placement appointment, the investigators placed each set of dentures in the patient's mouth. They used finishing stones and burs to adjust the teeth so that there were even occlusal contacts on the right and left sides of the occlusal table (balance occlusion).²⁵ The investigators used articulating paper to identify, count, and

ABBREVIATION KEY. RCT: Randomized clinical trial.

Download English Version:

<https://daneshyari.com/en/article/3136314>

Download Persian Version:

<https://daneshyari.com/article/3136314>

[Daneshyari.com](https://daneshyari.com)