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ORIGINAL ARTICLE

A Study on Self Centering of Face Bows

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Abstract Hanau spring bow has been in use since 1986. Hanau spring bow is claimed to maintain self centering property when it is positioned in the patient as well as in the articulator. However there is no documented evidence to prove that feature. Mainly it was due to the absence of a testing device. Exclusively for the present study, the testing device consisting of a platform, stops and distance measuring system was designed by the third author. This study proved that Hanau has the capability of self centering.

Keywords Self-centering · Spring bow · Hanau spring bow · Intercondylar distance · Hanau articulator

Introduction

Hanau spring bow has been in use since 1986. It consists of a flat stainless steel plate of size 12.5 × 1.5 mm bent in the form of a face bow [1, 2]. Ear plugs are attached to the terminals. Fork attachment is through clutches placed on a rod which is removable from the bow and can be placed on the transfer jig. The transfer of relation is achieved through the transfer of rod [3, 4].

When face bow transfer is done, mid-sagital plane and midline of the articulator are made to coincide because the inter-condylar distance of the patient may not match with the distance between the condylar elements of the articulator (Fig. 1). For this reason, the conventional face bows are provided with adjustable ear rods with scales (Fig. 2). Spring bows when introduced, was claimed to self center both in the patient and in the articulator [5]. However, there is no evidence to prove that Hanau spring bow will self center at different inter-condylar distances. It is in this context the present study was designed to verify the capability of the Hanau spring bow to maintain centricity when it is flexed to different inter-condylar distances Viz 100–220 mm.

Subjects and Methods

A platform measuring 45 × 18 cm was made on which nail stops were fixed at a distance varying from 100 to 220 mm. A graph paper was affixed to the wooden platform and a central line was marked. A pointer was attached to the anterior part of the face bow to indicate the centricity (Fig. 3). The distance between the stops on each side corresponded to the inter-condylar distance. The distance between the first stop on either side of the line drawn on the graph paper corresponded to 100 mm, the distance between second stops corresponded to 120 mm, the distance between the third stops corresponded to 140 mm and so on up to 220 mm.

Six spring bows (Hanau™ spring bow) were selected for the study 3 were new and three were in use for one year. Each face bow was positioned at the stops so that the distance varied from 100 to 220 mm. At each attempt the wire indicator attached to the centre of the face bow was verified for its position to find out whether it coincided with the central line drawn on the graph paper (Fig. 4, 5).

C. Veerareddy, presented and judged as the best paper in the National convention of student of Prosthodontic P.G.Students-2007 held at wardha.

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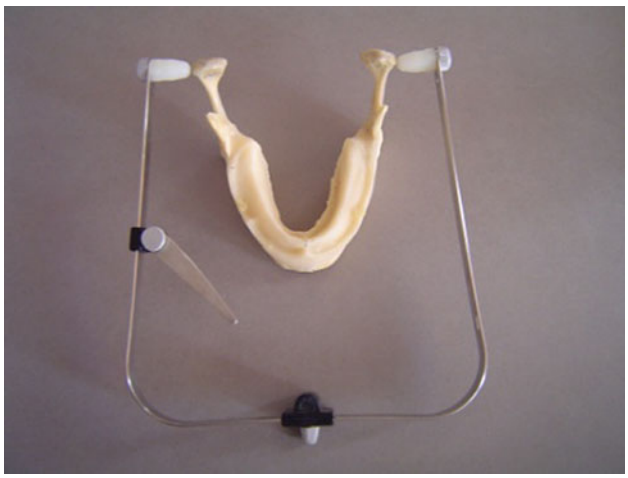

Fig. 1 Spring bow adjusts to intercondylar distance keeping centricity

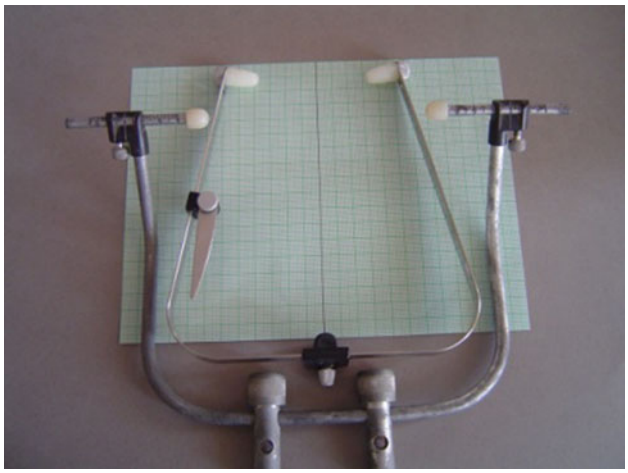

Fig. 2 Conventional face bow in comparison with spring bow

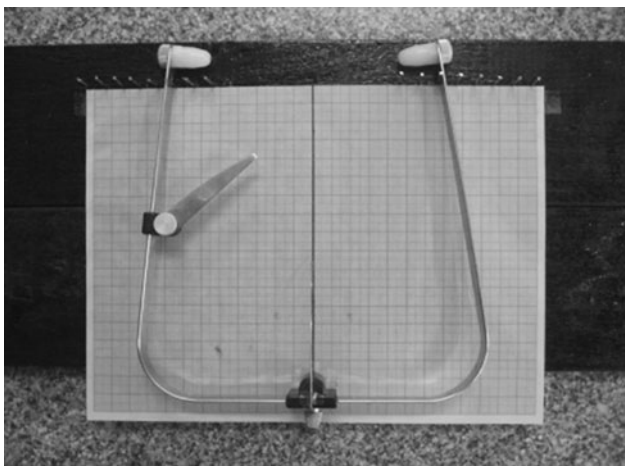

Fig. 3 Platform with nail stops indicating intercondylar distances Viz 100–220 mm

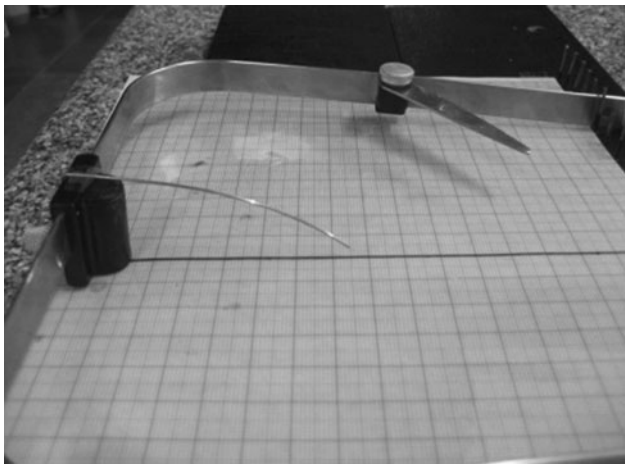

Fig. 4 Coincidence of central line of graph paper with indicator

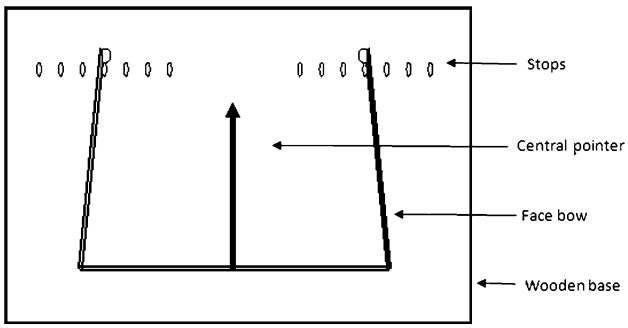

Fig. 5 Schematic diagram of the test device developed exclusively for the verification of centricity maintenance of spring bow

Coincidence indicated the capability of the spring bow in maintaining the centricity. When centricity was maintained, it was recorded as 'Y'; if not 'N'. At each distance, each articulator was tried three times.

Results

Hanau spring bow is claimed to maintain self centering property when it is positioned in the patient as well as in the articulator. However there is no documented evidence to prove that feature. Mainly it was due to the absence of a testing device. Exclusively for the present study, the testing device consisting of a platform, stops and distance measuring system was designed by the third author. Both new and used spring bows were selected for the study. The spring bows were flexed to representative intercondylar distance ranging from 100 to 220 mm. Two hundred and twenty millimetre is the width of wide view Hanau articulator. Spring bows need not be flexed to this distance because transfer jig is provided with this face bow, thereby

Table.1 Maintenance of centricity of spring bow observed at different positions measuring 100 to 220 mm

IFace bow	100	120	140	160	180	200	220
New (1)	Y	Y	Y	Y	Y	Y	Y
New (2)	Y	Y	Y	Y	Y	Y	Y
New (3)	Y	Y	Y	Y	Y	Y	Y
Used(1)	Y	Y	Y	Y	N	N	N
Used(2)	Y	Y	Y	N	N	N	N
Used(2)	Y	Y	Y	Y	Y	N	N

Y yes, centricity was maintained

N no, centricity was not maintained

avoiding the necessity for placing the bow directly on the articulator. New spring bows on testing maintained the self centering property (Table 1) at all distances. The used ones maintained self centricity up to 140 mm. Intercondylar distance of patients fall definitely within 140 mm and hence spring bows are clinically acceptable.

Conclusions

- Hanau spring bows can maintain centricity when they are flexed up to 140 mm.
- Used spring bows may not maintain centricity beyond 140 mm possibly due to fatigue.
- When used in patients, spring bows maintain centricity excellently well.
- When Hanau wide view articulator is used face bow transfer is to be done with transfer jig.

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