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THE TOOTH POSITIONER — USE AND FABRICATION*

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The tooth positioner which was first described by Kesling in 1945 has now become an integral part of our practice. Therefore, it became essential that its construction be simple and that it be readily obtainable at a minimum cost. Generally, patients are debanded and the positioner is fitted approximately 4-5 days later. Children who travel long distances for treatment often have a positioner constructed the same day as debanding or it is forwarded by mail several days later. Experience in the use of the tooth positioner has shown that results are good; however, one of the underlying factors is patient co-operation.

Patient motivation

At the time of case presentation the tooth positioner is briefly discussed and it is accepted that all patients will finish with this appliance. It is regarded as part of the active treatment stage, which gradually merges into the retentive stage.

The tooth positioner is again mentioned to the patient approximately one year into treatment and a suggestion is made that it may be possible to remove appliances a little earlier if good co-operation in using their finishing appliance can be anticipated.

When the bands are removed an appointment is scheduled for one or both parents to be present in order to view a film sequence* on the use of the positioner. This film is usually shown while models are being cast and mounted on an articulator.

When the positioner is inserted the chairside assistant carefully explains how to position, how to exercise, some of the early difficulties and how to care for it. The details discussed are on an instruction sheet (Fig. 1) which is given to the patient. The assistant also explains the time record sheet and supplies a special positioner box with a time dial.* In order to emphasize the importance of the level of co-operation required to obtain the best results, the orthodontist again explains to both the parent and the child that the positioner is still part of the active phase of treatment and that exercising and wearing are necessary. Generally, a follow-up visit is scheduled 2-3 weeks after the positioner is fitted in order to encourage the patient and check on any difficulties.

Exercising and wearing

The patient is told to exercise for a total of 4 hours a day and to wear it while sleeping. The exercising hours need not be continuous. Exercising means to clamp the jaws together into the positioner for approximately 10 seconds and then to relax. The patient is shown where to feel for the contraction of the masseter muscles. The number of exercise hours is usually reduced to zero over approximately a 6 month period. When that stage is reached the positioner is worn only during sleeping hours

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*Supplied by T.P. Laboratories Inc., La Porte, Indiana, U.S.A.

YOUR POSITIONER

POSITIONER IS A FINISHER AND RETAINER.	This rubber positioner is to finish off your orthodontic treatment. If it is worn as requested it will move your teeth into their final position. As well it will hold them until the surrounding bone becomes calcified.
HOW TO POSITION THE APPLIANCE.	The appliance is correctly positioned by pushing it completely over the upper teeth and biting into it with the lower teeth. You can exercise with your positioner in place by alternating biting and relaxing.
SOME EARLY DIFFICULTIES.	When your positioner is first placed, the fit is poor. However, by the end of the first week it becomes snug as the teeth begin to move towards their final position. Also there will be some difficulty with breathing, increased flow of saliva and sore teeth. These difficulties are all normal and will soon disappear — SO PERSEVERE.
WEAR CORRECT HOURS.	The positioner must be worn every night during sleep. Best results will be achieved if it is worn 3—4 hours during the waking hours (doing homework or watching TV).
TAKE CARE OF IT.	In the morning brush your positioner with tooth-paste and store it in clean cold water. HOT WATER will warp it.
REPORT DIFFICULTIES.	REPORT DIFFICULTIES, AS NON-WEARING WILL UPSET TREATMENT.

Fig. 1. Instructions on the use and care of the positioner.

for as long as the patient will wear it, but certainly for a further 12 months. If some temporary upper respiratory problem is present then the positioner can be left our during sleep; however, lost hours can be made up by at least one hour of exercise wear.

Usually positioners are fitted near the week-end and we ask our patients to wear them during the first two days for as many hours as possible. As a result of this request the teeth will move very rapidly and the fit of the positioner will be much better. The patients then follow the normal exercise and wear routine.

Fabrication

Clinical preliminaries

Check nasal airway: If nasal breathing is a major problem, then the positioner is contraindicated. For minor breathing problems air holes are placed anteriorly in the positioner to facilitate mouth breathing. This procedure is not common.

Impressions: Following debanding, the teeth are carefully scaled and polished before taking good upper and lower impressions.

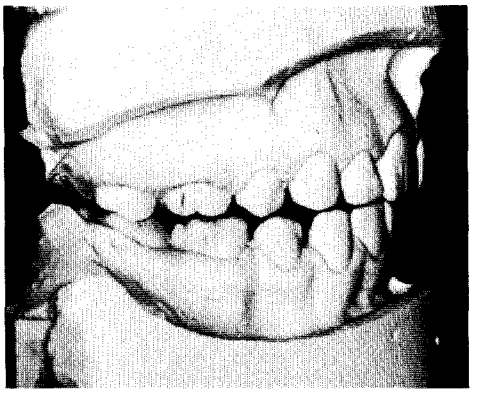
Bite Registration: The patient is seated in a relaxed position and the bite is registered, with the mandible in the most retruded position, before initial contact is reached.

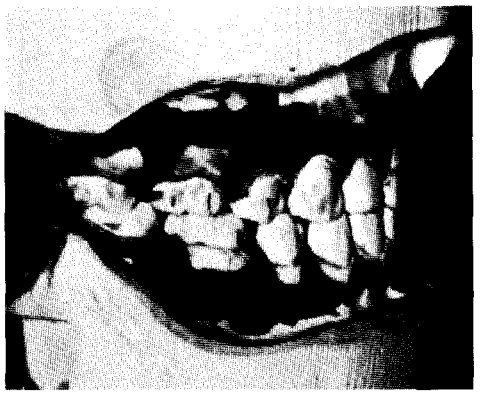
Cast Models: The impressions are poured in a good quality plaster mix; the models are fitted together in the wax wafer and mounted on a plain line articulator and checked before the patient leaves the office. The articulator is then locked at a suitable interocclusal position..

Laboratory procedures

The set-up [*Fig. 2*]

The set-up is made by resetting all the teeth or only the teeth marked on the prescription form. The set-up is usually constructed on the original models, although occasionally models may be duplicated prior to making the set-up. The set-up can include alterations in labio and bucco-lingual tooth positions, limited space colsure, axial inclinations and overjet and overbite adjustments. When the teeth are set into their optimum position the adjacent gingival area is correctly contoured. The set-up is now duplicated and repositioned on the articulator ready for the fabrication of the positioner.





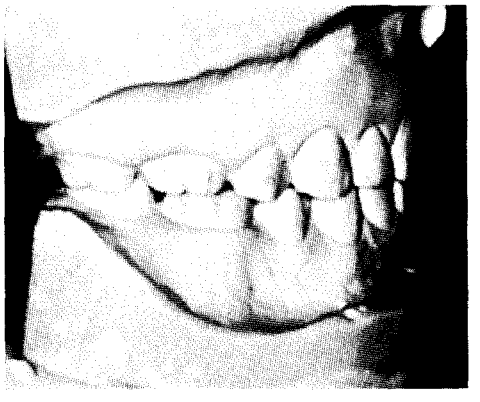


Fig. 2. A. Casts mounted on articulator. B. Wax set-up. C. Duplicated set-up.

The Positioner [*Fig. 3*]

The positioner is made from Vangard blanks** which are adapted to both upper and lower casts. The occlusal surface of both upper and lower blanks is heated until the surfaces are soft enough to enable the articulator to be closed at the desired interocclusal distance. Care must be taken not to overheat the material. Once fusion of upper and lower blanks has occured the buccal and lingual aspects of the join are re-heated to ensure complete fusion. The positioner is now ready to be trimmed and polished. The margins need only extend approximately 2 mm onto the gingival margin; as a consequence there is no impingement on muscle and frena attachments during function.

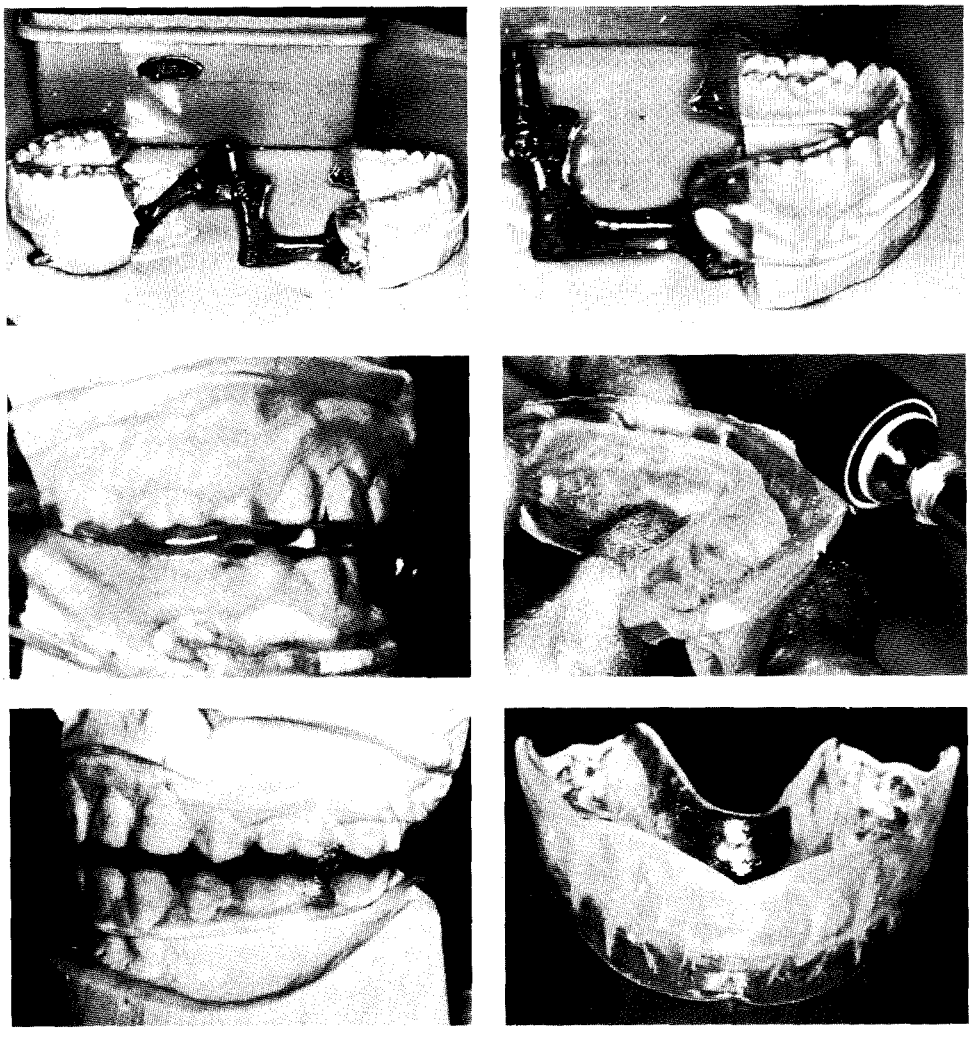


Fig. 3. A. Blanks adapted. B. Heating occlusal surface. C. Complete fusion of the buccal and lingual surfaces. D. Trimming. E. Completed positioner on articulator. F. Positioner.

**D-P Company, Glendale, California, U.S.A.

Advantages of the positioner

Occlusal details can be perfected without the time consuming preliminaries necessary with fixed appliances. The need for occlusal equilibration is greatly reduced.
Intermaxillary retention is provided.
Destructive soft tissue forces are eliminated while the positioner is being worn.
Promotes gingival health.
May be set up as an activator where further favourable mandibular growth is anticipated.
Many be inserted by the patient. This is important for country patients.
Facilitates correction of asymmetries.
May be later used as a protective mouthguard in sport by eliminating the mandibular extensions.
Limitations in using the positioner are few. They include:

Limited ability to tidy extraction spaces.
Limited ability to hold difficult rotations.
Elimination of mouth breathing is not tolerated by some patients.
Its special appeal to dogs is the main cause of premature destruction.

Summary

Over the past 10 years positioners have been fabricated in our laboratory by using Vangard blanks. They have had a very significant positive influence on the quality of treatment in our practice. The skill and industry of our technician and the simplicity of construction allows an average of 7 positioners to be inserted each week.

While the positioner provides an efficient method of detailing and retaining the occlusion following the correction of any malocclusion, its most useful application is as a long term retainer in the changing environment of the maturing face. It has a unique ability to maintain the integrity of the occlusion as the dento-alveolar structures move to their position of equilibrium in the mature face.

Acknowledgement

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Reference

Kesling H D (1945): The philosphy of the tooth positioning appliance. *Amer J Orthodont and Oral Surg* 42: 297-304.