

The Nance Holding Arch with Bite Rim

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Maxillary bite plates, used in patients with severe deep bites to allow placement of mandibular brackets earlier in treatment, are removable, and their effectiveness depends on patient cooperation. This led me to investigate the feasibility of a fixed bite plate.

The maxillary molars are banded, and .036" sheaths are welded to the occlusolingual aspects of the bands. An .036" wire is adapted to the sheaths and carried over the lingual surfaces of the anterior teeth. A clear plastic bite rim is then extended over the anterior incisal edges (Fig. 1).

Appliance Delivery and Clinical Management

Elimination of much of the palatal acrylic minimizes irritation while still providing an adequate biting surface. The .036" wire is long and flexible enough to allow disengagement of the anterior portion of the appliance for in-office cleaning (Fig. 2). This procedure should not be performed by the patient, who should be instructed to brush in the same way as with full fixed



Fig. 1 Laboratory construction of Nance holding arch with acrylic bite rim.

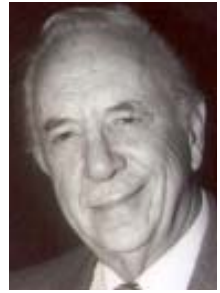
appliances. The only additional hygiene instructions are to take several mouthfuls of water and to forcibly swish and rinse away any debris and plaque between the acrylic and the palatal tissue.

Unfortunately, the flexibility of the .036" wire also makes it possible for the patient to loosen or dislodge the appliance. This can be avoided by crimping each side of the wire with a three-prong plier (Fig. 3). If the edge of the bite rim is then pulled down slightly with a thumbnail, the plate will snap back, indicating a positive force against the anterior dentition. The activation will also produce an extrusive force on the banded maxillary first molars; although this will help open the bite, it will also rotate the mandible downward and backward, which can be a problem in high-angle cases.

Opening the posterior dentition frees the interlocking mechanism of the teeth, so that cuspid retraction seems to occur much more quickly and easily. I can often retract the cuspids to a solid Class I position without placing an initial archwire until the second or third appointment after cementation of the holding arch (Fig. 4). The resulting minor tipping and rotation of the cuspids can be quickly corrected with the initial archwire.



Fig. 2 Disengagement of anterior bite rim for in-office irrigation and cleaning.



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There is such positive anchorage that cuspid retraction can be achieved with little or no advancement of the posterior segments. In most cases, headgear is not required for additional anchorage. In fact, I always ask my patients if they would rather wear a headgear or a bite rim, and their choice tends to make the bite rim more acceptable.

The bite rim allows the mandibular anterior teeth to be bonded early in treatment for derotation and alignment (Fig. 5A-C). A lower archwire with an exaggerated reverse curve of Spee and offsets in the anterior segment can contribute to bite opening by intruding the mandibular anterior teeth and allowing the bicuspids and molars to erupt. The bite rim isolates the posterior teeth from the intrusive forces of space closure.

In my experience, the Nance holding arch with bite rim can open the bite within two to three appointments (Fig. 5D-F). I often leave the appliance in place to hold molar anchorage until the cuspids are in a strong Class I position. If poor hygiene or palatal inflammation is noted, the holding arch must be removed, and a headgear can be used to help preserve anchorage.



Fig. 3 Activation of .036" wire with three-prong plier.

Appliance Removal

The patient usually asks, "How long do I have to wear this thing?" My answer is, "Until your back teeth touch." This response involves the patient in monitoring treatment progress; indeed, I am often told by the patient when it is time to take out the appliance.

Removal is simple: I cut the .036" wire on each side with a heavy-duty cutter, after warning the patient to expect a loud "pop!" Care must be taken to hold the plastic bite rim so it does not slip into the patient's throat. The wire is removed from the lingual sheath by grasping the doubled end inside the sheath with a distal-end cutter, resting the cutter against the edge of the band, and ratcheting the wire out of the sheath.

Some debris and slight palatal inflammation will usually be seen after the appliance is removed. The area should be carefully cleaned with a wet cotton roll, with the patient advised that "this will tickle for just a moment". The patient should be cautioned to brush gently in this area until the palatal tissue returns to normal, usually within a day or so.



Fig. 4 Retraction of right maxillary cuspid begun simultaneously with delivery of Nance holding arch with bite rim.

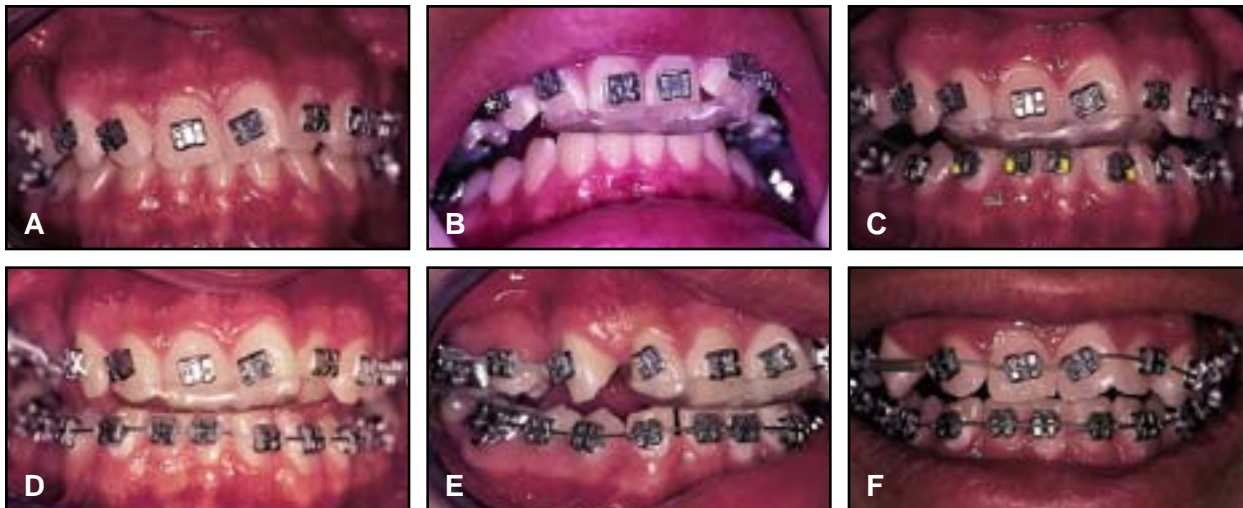


Fig. 5 A. Patient at beginning of treatment: maxillary molars banded, impression taken for Nance holding arch with bite rim, and maxillary arch bonded. B. One week later, after cementation of Nance holding arch with bite rim: note bite opening from mandibular molar to molar. C. Mandibular arch bonded from bicuspid to bicuspid. D. One month after placement of Nance holding arch: mandibular .018" nickel titanium archwire inserted to begin leveling, alignment, and derotation. E. Another month later: bite opened, posterior teeth almost contacting, and right maxillary cuspid partially retracted. F. Another month later: Nance holding arch removed, and initial maxillary .018" nickel titanium archwire inserted to hold bite opening and begin rotation and alignment.

Conclusion

As with any orthodontic appliance, frequent and careful monitoring is mandatory. The Nance holding arch with bite rim may not be suitable for patients with palatal torii or extremely thin palatal tissue. I have used the appliance for more than seven years, however, and only two appliances have had to be removed because of soft-tissue problems. In those cases, the tissue

rebounded quickly after irrigation and home care.

I have seen no instances of lingual decalcification, even in cases where patient hygiene has been abominable. Of course, poor hygiene is often associated with poor headgear wear. The molar anchorage achieved by the Nance holding arch at least eliminates the need for headgear in many cases—no small advantage for both patient and practitioner. □