

Anchorage Control after Air-Rotor Stripping

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Interproximal enamel reduction is an alternative to extraction of permanent teeth or expansion of the dental arches in cases of mild to moderate crowding, with arch-length discrepancies of 4-8mm.¹⁻³ The technique of air-rotor stripping, as described by Sheridan,^{4,5} was made possible by the introduction of direct bonding, which leaves the proximal surfaces accessible during any phase of treatment.

Before stripping, according to Philippe, a complete set of radiographs should be used to determine the convexity of each tooth surface, the enamel thickness, and the root position.⁶ This information allows the clinician to calculate how much enamel can be removed from each proximal surface. If the total available for removal is insufficient to eliminate the arch-length discrepancy, another treatment option should be chosen.



Fig. 1 22-year-old female patient with crowding and triangular incisors before treatment.

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The present article shows how a simple archwire adjustment can help preserve anchorage during retraction after air-rotor stripping.

Case Report

A 22-year-old female presented with a slightly protrusive lower lip, but a well-balanced face and a Class I molar and canine relationship (Fig. 1). The lower anterior teeth displayed about 7mm of crowding, with the upper teeth less crowded. The upper central incisors and all four lower incisors were triangular in shape.

Air-rotor stripping was chosen because the patient did not want to have her profile changed significantly or have premolars extracted. Since the premolars and canines were well aligned, the initial air-rotor stripping involved the removal of 1mm from each interproximal surface, from the mesial surfaces of the first molars to the distal surfaces of the canines (Fig. 2). A No. 699LC* carbide bur was used for the procedure, followed by a No. 504ED* extra-fine diamond bur. Care

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Fig. 2 Initial air-rotor stripping in lower arch, from mesial surfaces of first molars to distal surfaces of canines.

was taken to prevent the proximal surfaces from tapering gingivally. Final polishing was done with Flex-View Finishing Discs* and medium-fine aluminum oxide polyester sandpaper strips, using acidulated fluoride gel.

The first molars, premolars, and canines were then bonded with .022" × .028" ceramic brackets, and .014" stainless steel archwires were inserted. To preserve anchorage, omega stops were added flush against the first molar tubes and the distal sides of the canine brackets (Fig. 3). Elastic chain was used for retraction, with the upper teeth retracted slightly ahead of the lower teeth to avoid occlusal interferences.

For canine retraction, the archwires were replaced by new ones without stops at the canine brackets. When enough space had been gained



Fig. 3 Omega stops added flush against first molar tubes and distal of canine brackets to preserve anchorage.

for proper alignment of the incisors (Fig. 4), elastic chains were used to correct the incisor rotations. Once the proximal surfaces of the incisors were accessible, they were stripped with a No. 55000 diamond bur,* followed by finishing and polishing as with the posterior teeth. The narrow upper lateral incisors were not stripped, but the other, triangular incisors were reshaped during this procedure. The incisors were bonded, and the archwires were changed to light .012" nickel titanium.

After 18 months of treatment, the patient showed excellent intercuspation, good archform without expansion, and normal overjet and overbite (Fig. 5). The lower lip was slightly less protrusive.

Discussion

Crain and Sheridan, in a radiographic study of the proximal surfaces of molars and bicuspid two to five years after stripping, showed no statistical difference between the stripped group and the control group in the incidence of caries and periodontal disease.⁷ According to Tal⁸ and Heins and colleagues,⁹ narrow interradicular spaces are not associated with periodontal problems. For added security, however, and to save time in finishing, Sheridan and Ledoux recommended the application of sealant to stripped enamel surfaces.¹⁰

Compared to other methods of interproximal reduction, air-rotor stripping has the following advantages:

- Reduced chairtime
- Less patient discomfort and heat generation
- No risk to soft tissues
- More precise
- Less need for prior separation
- Easier access and visibility

Because air-rotor stripping is more exact than extractions, there is no excess space to be closed. The archwire stops described in this article help preserve anchorage during retraction, further reducing treatment time.

*Raintree Essix, Inc., 4001 Division St., New Orleans, LA 70002.



Fig. 4 After canine retraction, before correction of incisor rotations and stripping of interproximal incisor surfaces.

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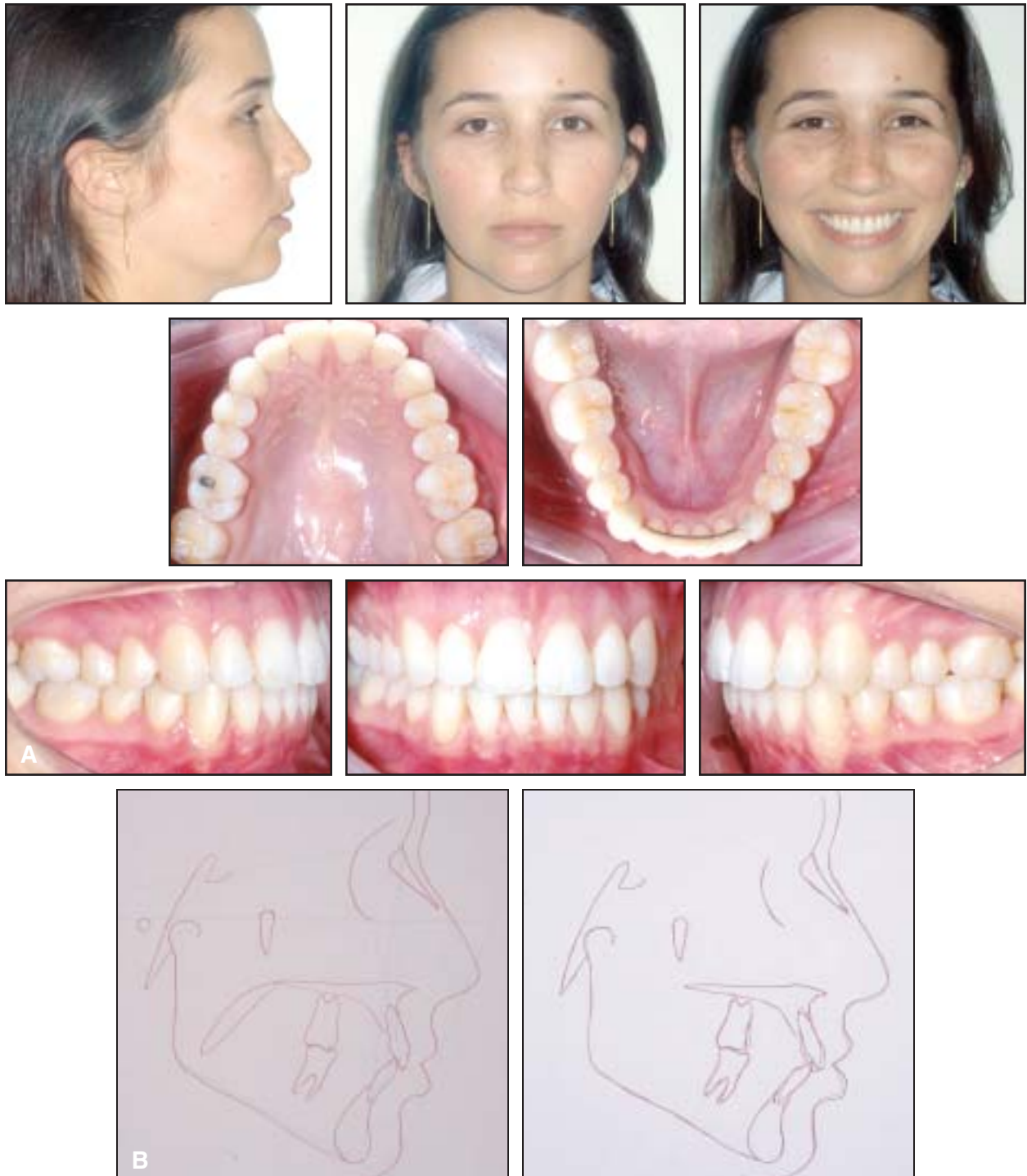


Fig. 5 A. Patient after 18 months of treatment, showing slightly less protrusive lower lip due to incisor retraction. **B.** Superimposition of cephalometric tracings before and after treatment.