

Management of Excess Palatal Gingiva after Space Closure of Anterior Teeth

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Orthodontic closure of interdental spaces causes coronal creeping of the interproximal gingival tissues, thus restoring the interdental papillae and contact points.¹ Usually, any gingival hyperplasia that develops during lingual retraction of the incisors diminishes dramatically within 48 hours after appliance removal and continues to decrease over the first four months of retention.² If excess palatal gingiva persists, however, it can cause orthodontic relapse and create periodontal problems due to accumulated bacterial plaque.³ Such cases may require surgical removal of the excess gingival tissue.^{4,5}

The following three cases demonstrate good orthodontic stability and maintenance of proper physiology in the restored tissue after surgical management of excess palatal gingiva.

Case 1

A 26-year-old male presented with anterior

spacing and lip protrusion (Fig. 1A). He had a Class I occlusion with 8.5mm of upper anterior spacing and a deep lower curve of Spee. The treatment plan was to improve the lower curve of Spee and to intrude and retract the upper anterior teeth using a three-piece intrusion arch.⁶

Full-arch .018" appliances were bonded, and leveling and alignment were carried out with .016" nickel titanium archwires. Upper interdental spaces were closed using power chain and an open-coil spring. The lower curve of Spee was leveled with an .016" stainless steel main archwire and an .017" × .025" TMA* auxiliary intrusion wire (Fig. 1B). Six months into treatment, an .017" × .025" stainless steel three-piece base archwire and bilateral .017" × .025" TMA intrusion springs were placed, with an intrusion force of 60g and a retraction force of 50g (Fig. 1C). Orthodontic treatment was

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Fig. 1 A. 26-year-old male patient with upper anterior spacing and deep curve of Spee before treatment. B. Consolidation of upper anterior spaces and leveling of lower curve of Spee. C. Intrusion and retraction of upper anterior teeth. D. Patient after 15 months of treatment.



Fig. 2 Case 1. A. Four months after debonding, excess palatal gingiva removed. B. Patient 11 months after gingivectomies.

completed in 15 months (Fig. 1D).

Four months after debonding, gingivectomies were performed to remove excess palatal gingiva and to reduce probing depths (Fig. 2A). Eleven months later, the restored physiologic form of the gingival tissue was still well maintained (Fig. 2B).

Case 2

A 23-year-old male presented with an ante-

rior diastema and a Class I occlusion with 2.5mm of upper and lower anterior spacing (Fig. 3A). The treatment plan was to close the upper and lower interdental spaces and then retract the upper and lower incisors.

Initially, .018" appliances were bonded passively to the premolars and molars. The anterior spaces were then closed using power chain, and the incisors were retracted on .016" x .022" stainless steel archwires (Fig. 3B). All appliances were removed 12 months after the start of treatment

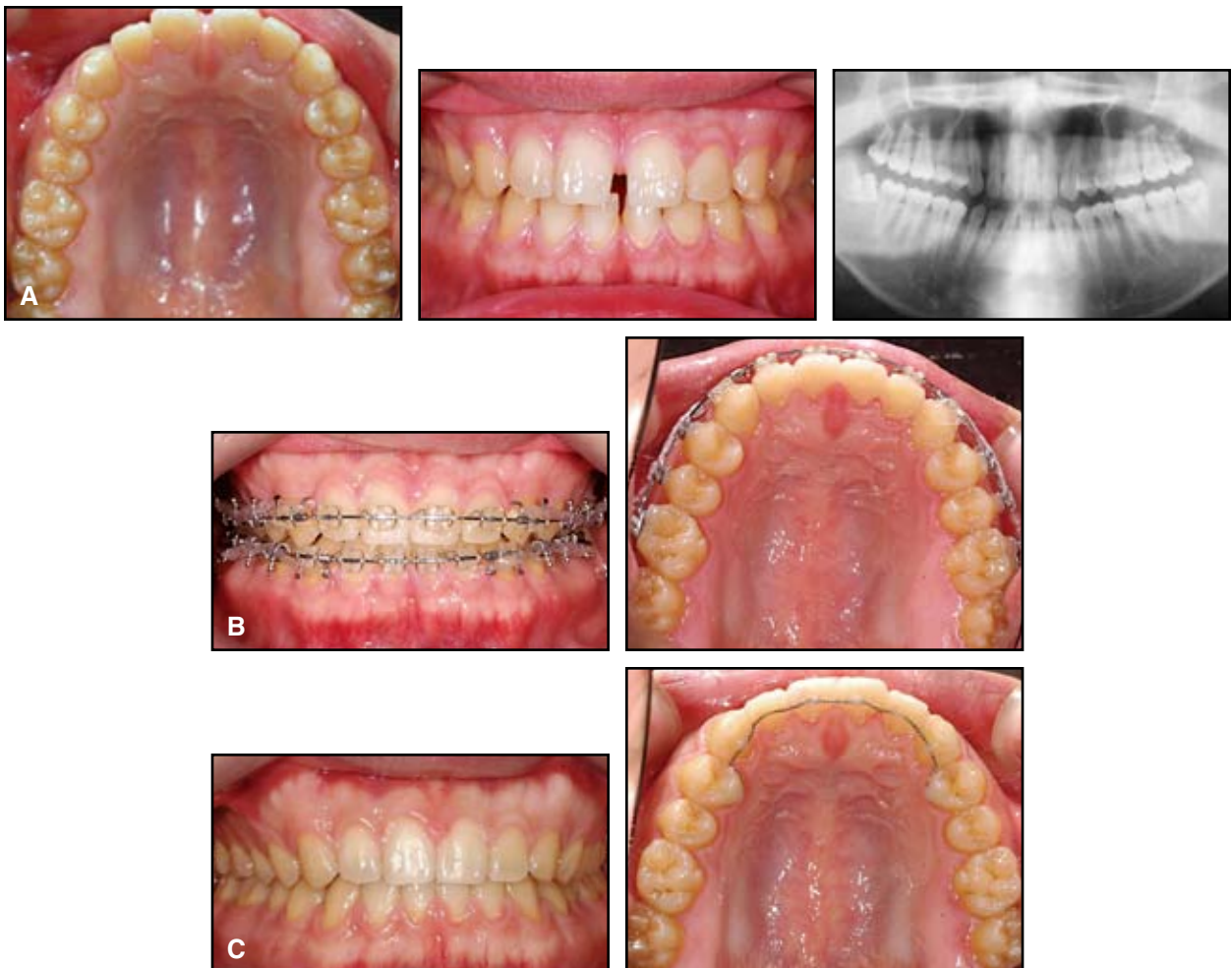


Fig. 3 Case 2. A. 23-year-old male patient with 2.5mm of upper and lower anterior spacing. **B.** Incisor retraction using sliding mechanics on .016" x .022" stainless steel archwires. **C.** After 12 months of orthodontic treatment.



Fig. 4 Case 2. A. Three months after debonding, excess palatal gingiva removed. B. Patient 11 months after gingivectomies.

(Fig. 3C).

Gingivectomies were performed to remove excess palatal gingiva three months after debonding (Fig. 4A). The physiologic tissue form of the restored gingiva was well maintained 11 months later (Fig. 4B).

Case 3

A 19-year-old male presented with a Class I occlusion and an anterior diastema due to mesial-in rotations of the upper anterior teeth (Fig. 5A). The treatment plan was to align the anterior teeth and close the 1.5mm of interdental spacing.

After .018" appliances were bonded in the upper arch, the central incisor rotations were corrected using .014" nickel titanium and .016" stainless steel archwires. The remaining diastema was closed with a power chain on an .016" × .022" stainless steel main archwire (Fig. 5B). Appliances were removed after seven months of treatment (Fig. 5C).

Excess palatal gingiva was noted one month after treatment began, and it remained after removal of the appliance. Gingivectomies were performed eight months after debonding (Fig. 6).

Discussion

The interdental papilla is composed of dense

connective tissue covered by oral epithelium.¹ Its shape is mainly determined by the width of the proximal tooth surfaces and the cemento-enamel junction. Orthodontic closure of a diastema can restore the missing interdental papilla through coronal creeping of interproximal gingival tissue.¹ As the incisors are moved together, however, the gingival tissue is pushed in front of them and becomes hyperplastic. Morphologically, the contained connective tissue appears highly distorted, and inflammatory signs may be observed.⁷ From a histological perspective, an increase in the intercellular glucosaminoglycans in the gingival connective tissue can result in extremely elastic gelatinous tissue⁷ and increased oxytalan fibers.⁸ These phenomena can promote orthodontic relapse after interdental space closure.

Gingival enlargement can also make it difficult to place a fixed retainer and can impair oral hygiene.⁴ Therefore, any excess palatal gingiva remaining after orthodontic space closure should be surgically removed.⁹ Either gingivectomy or flap surgery combined with osseous contouring can be used, depending on the gingival attachment level and pocket depths. In the three patients shown here, surgical elimination of the accumulated hyperplastic gingiva restored the physiologic form of the gingival tissues and provided suitable conditions for good oral hygiene.

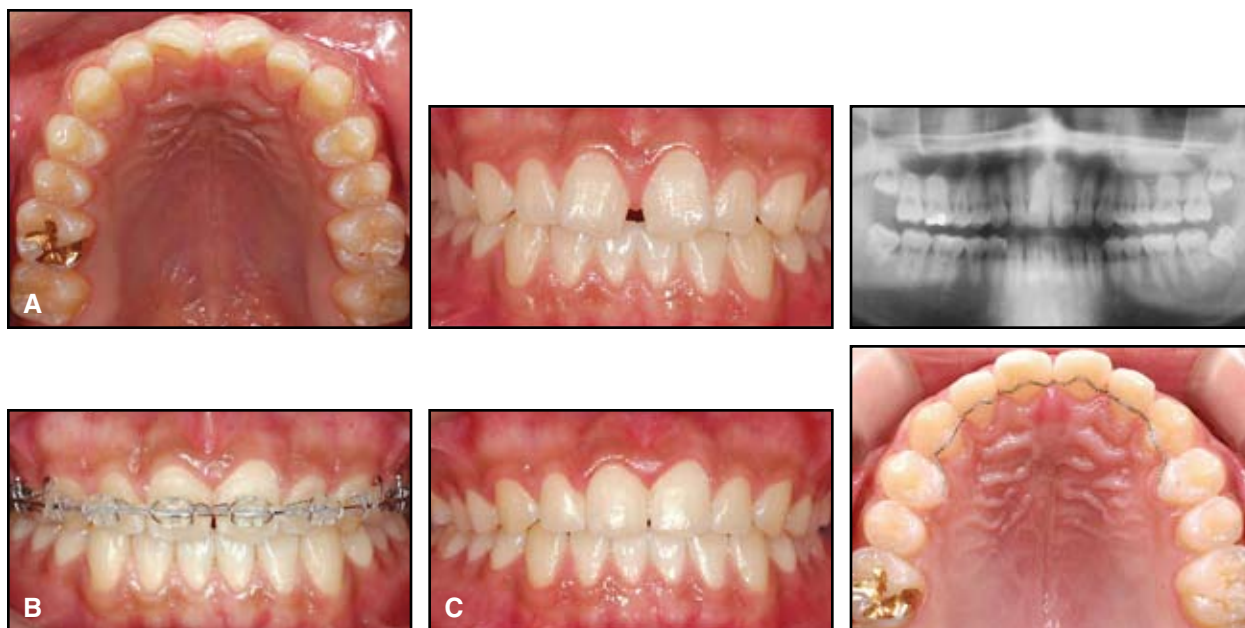


Fig. 5 Case 3. A. 19-year-old male patient with mesial-in incisor rotations and upper midline diastema before treatment. **B.** Diastema closed on .016" x .022" stainless steel main archwire. **C.** Patient after seven months of treatment.



Fig. 6 Case 3. A. Eight months after debonding, excess palatal gingiva removed. **B.** Patient 11 months after gingivectomies.

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