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AESTHETIC ORTHODONTICS

Six-Month Adult Aesthetic Orthodontic Treatment

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While cosmetic dentistry has commanded more attention with recent breakthroughs, such as all-ceramic crowns, veneers, composite materials, and intraoral cameras, the demand for adult cosmetic orthodontic treatment has also increased. It has been estimated that in 1970, only 5% of adults aged 18 or older sought consultations for comprehensive orthodontic treatment.[1] In 1990, four times that number sought consultations for orthodontics.

Currently, adults present with chief complaints about the crowding of their teeth more frequently than anything else.[2] Many adult patients want to straighten their teeth, but they are unwilling to wear braces for 2 or more years. Patients presenting with a physiologic occlusion and a desire for aesthetic improvement can benefit from orthodontic correction that requires only a short treatment time of 6 months or less. Adults who have their teeth straightened experience a better body self-image and higher self-esteem.[3,4] The general public is focused on a noncrowded, aesthetic tooth arrangement more so than orthodontists, who are also concerned with occlusal and skeletal relations.[5] A short, 6-month treatment can very well enhance periodontal and occlusal aspects of the patient's dentition. Treatment, therefore, serves as an adjunct to final periodontic and restorative treatment, even though the main focus remains cosmetic.

Simultaneously treatment planning the orthodontics with the cosmetics, crown and bridge, and periodontics in the same office facilitates a well-orchestrated cosmetic result, which can be more difficult to achieve through cross-communicating between specialists. In this context, limited cosmetic orthodontic treatment is best done by general practitioners on patients who otherwise may not opt for comprehensive orthodontic treatment.

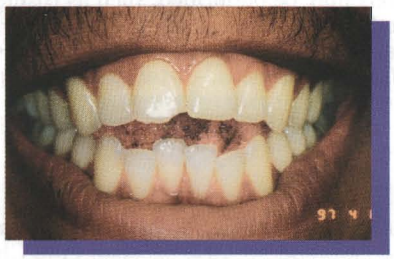

Figure 1. Before

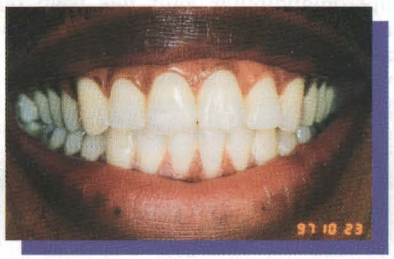

Figure 2. After

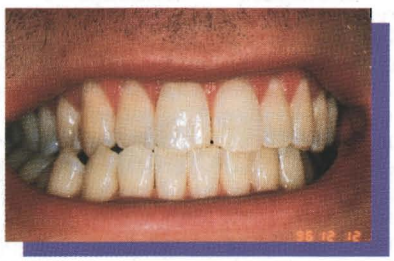

Figure 3. Before

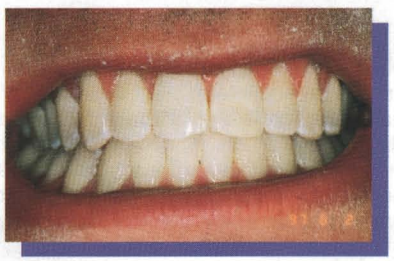

Figure 4. After

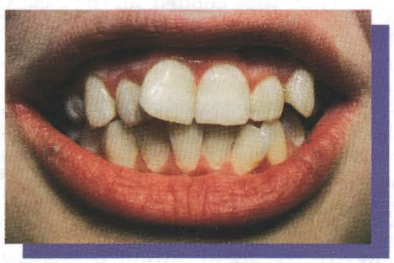

Figure 5. Before

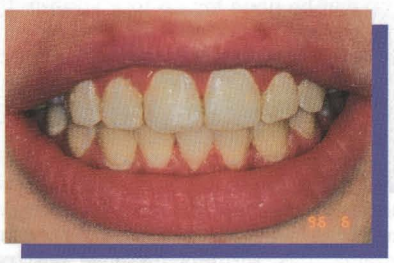

Figure 6. After

METHOD

The first aspect of case selection involves a discussion of the patient's chief complaint. Patients should be given a list of orthodontic and cosmetic problems and asked to indicate their objective(s) for seeking treatment. In almost 90% of adult cases, relieving anterior crowding is the primary con-

cern. This figure is based on 20 to 25 new orthodontic consults per month for 6 months in my general practice.

When the patient is committed to treatment, a database of information should be obtained from panoramic and full-mouth radiographs, intraoral and extraoral photographs, and models. A problem list is then reviewed with the patient followed by a comprehensive treatment plan. The orthodontic aspect should be cosmetically oriented, specifically excluding skeletal problems. Because the profile and posterior occlusion are not to be changed significantly, a lateral cephalometric X-ray is not necessary.[6]

The treatment sequence includes the following:

- data collection and records;
- prophylaxis, fluoride application, oral hygiene instruction, and endodontic and periodontic disease resolution;
- extraction of third molars and a lower incisor when necessary (other teeth may rarely need to be extracted);
- cosmetic orthodontics; and
- bleaching, crowns, and cosmetic bonding when indicated.

If the patient prefers not to wear Hawley retainers, teeth can be retained by splinting after settling has occurred.

THE CASE FOR ENAMEL REPROXIMATION

Because the postextraction health of the temporomandibular joint has been questioned, bicuspid extraction is now done with less frequency than in the past. It provides a result that is not always aesthetic or stable, has been slowly decreasing in popularity (almost 8% between 1988 to 1993), and remains controversial, varying widely among practitioners.[7-10] Almost 1.5 years is required to close the extraction spaces, and nonextraction patients have fuller lip support following treatment.[11] Expansion is also a questionable method of treatment because long-term stability is doubtful.[12]

However, enamel reproximation allows for minimal localized tooth movements, fewer extractions, maintenance of lip support, and shorter treatment time. Begg theorized that crowding of most dentitions is actually the result of decreased proximal wear, which our evolutionary predecessors once experienced.[13] Therefore, enamel reproximation would seem to be the most natural available remedy for relieving crowding.

Enamel reproximation (air-rotor stripping) can be done for up to a 10-mm arch-length discrepancy. Sheridan recommends limiting reproximation to 1 mm per contact or 0.5 mm per proximal surface.[14,15] Frequently, more than this can be done without noticeable change in tooth morphology or sensitivity because it's done throughout 6 months in conjunction with fluoride treatments. It has also been theorized that the resultant flat interproximal contacts may actually increase posttreatment stability.[16] Anterior lower arch crowding greater than 4 mm should be treated with the extraction of a lower incisor followed by reproximation to minimize the black triangular space at the gumline. In most cases, a space determination is performed by resetting the teeth on the models with wax to measure the space required. This also allows a preview of the aesthetic result for the patient and the doctor.

APPLIANCES

Brackets should be bonded to the first molars using a straightwire technique and NiTi wires. Posterior brackets with a larger (0.022) bracket slot placed in an ideal, aligned position minimize posterior occlusal changes. Successive reproximation using double-sided fine diamond discs (Brasseler), is followed by the use of fluted carbide burs for finishing and rounding enamel edges. Interproximal overreduction can rarely cause transient tooth sensitivity.

All teeth should be gradually aligned with local reproximation, progressively heavier wires, and chain elastics. The principal tooth movements include rotations, tipping, and vertical movements as opposed to translation and root torquing. By minimizing root movement and bone remodeling, treatment time is decreased. Profile change, relapse, and root blunting are also minimized, which is significant because root blunting can occur when moving roots greater distances throughout a longer period. Retainer wear is recommended for 6 months (full time), 6 months (at night), and 3 nights per week until stability is achieved. Posttreatment fiberotomies should be performed for all rotations. Following 2 months of retainer wear to allow for occlusal settling, cosmetic alterations may be performed, such as cosmetic bonding, bleaching, all-ceramic crowns, enamelplasty, and gingivectomies. Teeth deficient in a mesial-distal dimension (peg laterals, enamel erosions, or broken teeth) should be built up before treatment to allow for proper final tooth positioning.

CASE 1

The patient's chief complaint was minor crowding and an anterior open bite. Clear brackets were bonded to the first molars, and 0.014, 0.016, and 0.018 round NiTi wires were placed with single elastic ties for a 6-month duration. Enamel reproximation was performed (within the first three visits) on teeth Nos. 8 and 23 through 26 using a fine Brasseler disc. The patient requested that the midlines coincide, so more was done by tooth No. 26. Vertical 4-mm elastics were worn on Nos. 8 to 25 and 9 to 24. The case was finished with chain elastics to close all remaining spaces. Following treatment, the patient was instructed to wear retainers only at night. The incisal chip on Tooth No. 8 was bonded at the last visit before the photo.

CASE 2

A 27-year-old male wanted to eliminate his anterior scissors bite because of the destruction of his incisors. He was a skeletal class III and did not want surgery. The lowers were reproximated (Nos. 25 through 28), and chain elastics were placed to lingually tip the teeth within 6 months to establish a normal occlusion. Incisally bonded composite was used to open the bite temporarily and move the teeth lingually. The composite bite plane was removed. It was recommended, that the patient splint the mandibular anteriors to prevent a relapse to the skeletal class III position.

CASE 3

An 18-year-old female presented with a chief complaint of anterior crowding. A lower central incisor was extracted with her wisdom teeth. Chain elastics were used to pull together the remaining incisors. The uppers were then straightened with enamel reproximation on teeth Nos. 6 through 11, NiTi wires, and chain elastics. The patient was instructed to wear "mini" Hawley retainers at night. The posterior occlusion was not affected, and the treatment was completed in 6 months.

CONCLUSION

Six-month adult cosmetic orthodontic treatment has almost a 60% acceptance rate among new patient consults in my practice, and posttreatment satisfaction is high. Many adults who undergo treatment have previously declined comprehensive treatment in other offices. Enamel reproximation, extraction of a lower incisor for space, and limited occlusal change are among the modalities making this treatment unique and well-accepted by patients. Offering clear or lingual appliances increases the patient's cosmetic options. Treatment planning the orthodontic and restorative phases together facilitates patient understanding and communication and delivers an outstanding cosmetic service. Patients with TMD, skeletal chief complaints, severe over/underjet, occlusal problems, or very deviated midlines may opt for comprehensive treatment by an orthodontist. However, for the majority of adult patients with simply unaesthetic, crowded or spaced, functionally efficient, and non-TMD dentitions, dentists should focus on the aesthetic chief complaint by performing conservative attenuated treatment in the general practice.✦

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