

IN BRIEF

- A simple alternative way to apply an intrusive force on an anterior tooth.
- The intrusive tooth movement should never be attempted without excellent control of the periodontal condition. If treatment is done properly, both the dental aesthetics and function improve after the intrusion.
- A multistrand wire-bonded retainer could allow safe retention after the intrusion of an anterior tooth. The major objection to these types of retainers is that they make interproximal hygiene procedures more difficult.

An easy way of intruding an upper central incisor

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Discrepancies of the incisal edges of the anterior teeth, particularly in the upper jaw, could adversely affect dental aesthetics. This paper presents an easy and straight forward treatment of such a case, which was accomplished taking the patient's demands and profession into consideration. In dentistry, the social status of the patient could affect the treatment plan.

CASE REPORT

The patient, a 27-year-old female, attended our clinic complaining of an incisal edge discrepancy between her upper central incisors. She had previously received orthodontic treatment with the extraction of a lower central incisor at the age of 17. On intra-oral examination, it was found that the incisal edge of her upper left central incisor was positioned 0.5 mm lower than that of her upper right incisor (Fig. 1). The axial crown angulation (mesiodistal tip) of the left central incisor was also incorrect. Her occlusion otherwise was quite good. The overjet was 3 mm and the overbite was normal. No periodontal and other problems were found during radiographic assessment of the upper incisors.

A short course of fixed orthodontic treatment was proposed for her, but she rejected it because of her profession – she was a broadcaster at the local TV station.

She, therefore, would not accept a lingual approach to orthodontic treatment because of the phonetic problems. Thus, a removable appliance treatment was considered in order to give her the opportunity to take the appliance out as and when it was necessary. Intrusion of the tooth was the aim without correcting the crown angulation.

TREATMENT

An upper removable appliance (Hawley retainer type) was constructed and a button was placed on the acrylic baseplate near the lingual surface of the left central incisor. A crimpable arch hook was also crimped to the labial arch of the appliance at the labial surface of the tooth. An intrusive force of 20 g was directed to the upper left central by placing an intra-oral elastic band between the button and the labial arch (Fig. 2). The aim of the crimpable hook placement was to prevent the sliding of the elastic on the labial arch. We could have achieved the same effect by bending a small loop or adding some solder on the arch wire. The patient was instructed to replace the elastic band every day. The treatment time was 2 months with the removable appliance.

The removable appliance was discontin-

ued when the left incisor was intruded level to the upper right central incisor (Fig. 3). For retention, a piece of multistrand wire, as a fixed retainer, was adapted to the lin-



Fig. 1 Intra-oral view before treatment



Fig. 2 Removable appliance in the mouth

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Fig. 3 Post-treatment view



Fig. 4 Intra-oral view 3 weeks after gingivectomy

gual surfaces of the upper incisors and bonded using a light-curable adhesive resin. After orthodontic treatment, the patient was referred to a periodontist for a minor gingivectomy (crown lengthening) operation on the upper left central incisor. The gingivectomy operation was done by electrosurgery (Fig. 4).

DISCUSSION

Discrepancies of the incisal edges of the anterior teeth could occur due to overeruption, pathologic migration and extrusion of a tooth. Anterior teeth are especially prone to elongation since they are not always protected by occlusal forces inhibiting pathologic extrusion. In these cases, intrusive movement has been recommended to realign the teeth and improve clinical crown lengths and marginal bone levels.¹ Tooth intrusion should only be attempted when the periodontal condition is under control and no pockets of more than 3 mm can be detected by the periodontist.¹ If intrusive movement of a group of teeth were required, a fixed orthodontic treatment and/or extra-oral force application might be necessary. For the uncomplicated cases, the intrusion of one anterior tooth could be done with a removable appliance. However, it should be borne in mind that when the labio-lingual or mesio-distal root move-

ment (torque or uprighting) together with the intrusive movement is required the application of a removable appliance could be contra-indicated.

Although a fixed orthodontic appliance system was the ideal treatment option for the case presented here, the patient's profession necessitated the treatment approach to be altered. The removable appliance, which was designed for this case, provided a controlled intrusion without any buccal or lingual tipping of the upper left central incisor. It is important to apply light continuous forces during the intrusion movement.² The intrusive force created with this removable appliance was light (20 g), and quite effective.

The removable appliance with the labial bow and Adams clasps on the first permanent molars had sufficient retention for this case, while the elastic band used for intrusion has a counter effect of trying to dislodge the anterior part of the appliance. However, when retention of the appliance is critical, anterior or mid-arch clasping should be achieved to prevent the appliance from being dislodged. For instance, an appliance with Adams clasps on the first premolars as well as on the first molars, and a labial bow soldered to the premolar clasps could provide satisfactory retention for most similar cases.

The orthodontic result was retained by a multistrand wire retention appliance. This type of bonded retainer permits slight movement of all bonded teeth and segments of teeth during function.³ However, with these retainers, maintenance of a high standard of oral hygiene is mandatory to prevent palatal gingival inflammation. In addition, these are not indicated in deep overbite cases when the multistrand wire comes into contact with the lower incisors in occlusion.³

At the end of active orthodontic treatment, the patient was referred to a periodontist for a minor gingivectomy operation. It was thought that this operation was necessary to correct the difference between the clinical crown lengths of the upper central incisors. In other words, the aim of the operation was to expose the full crown length of the intruded tooth. In this case, there already was a slight gingival discrepancy between the upper central incisors at the beginning of the orthodontic treatment and this dis-

crepancy had become more apparent at the end of the active orthodontic treatment. However, this gingival discrepancy was mainly due to the gingival tissue migrating in the vestibulo-gingival direction after the intrusion of the upper left central tooth. Therefore a 0.5–1 mm excision was planned as clinical and radiographic evaluation confirmed that there was an adequate biological width of the gingiva; the gingival margin being 2.5 mm coronal from the CEJ.

Although the goal of the gingivectomy operation is mainly elimination of suprabony pockets and gingival enlargements by resection of gingival tissue, it also has a value for exposing crown and cavity margins, for minor crown lengthening procedures.⁴ However, it is contra-indicated when the attached gingiva is narrow or absent, or there are infrabony pockets and/or thickening of marginal alveolar bone. The gingivectomy operation can be performed surgically by means of scalpels, electrodes, laser beams, or chemicals.^{4,5} Minor gingivectomy procedures are often indicated for exposure of preparation margins, and for elimination of pseudopockets because of gingival hyperplasia. The operation performed in this case was a minor gingivectomy operation including a minor gingivoplasty. The use of an electrosurgical device is recommended for this type of minor procedure to reduce hemorrhage. The bone must not be touched during the operation because the heat generated by electrodes might cause irreparable tissue damage and loss of periodontal support.⁵

A clinician always prefers to choose the ideal treatment for their patients. Sometimes, however, a reasonable alternative method is required, and an acceptable outcome can be achieved.

1. Melsen B, Agerbaek N, Markenstam G. Intrusion of incisors in adult patients with marginal bone loss. *Am J Orthod Dentofac Orthop* 1989; **96**: 232–241.
2. Zachrisson B U. Chapter 12: Bonding in Orthodontics. In: Graber T M and Vanarsdall R L (ed) *Orthodontics Current Principles and Techniques*. 3rd ed. pp611–615. St Louis: Mosby Company, 2000.
3. Mitchell L. *An Introduction to Orthodontics*. pp147–148. Oxford: Oxford University Press, 1998.
4. Rateitschak K H, Rateitschak E M, Wolf H F and Hassell T M. *Periodontology*. pp 273–287. New York: Georg Thieme Verlag, 1989.
5. Carranza F A. The gingivectomy Technique. In: Carranza F A and Newman M G (ed) *Clinical Periodontology*. 8th Edition. pp588–592. Philadelphia: W. B. Saunders Company, 1996.