Loss of teeth is often followed by overeruption of the opposing teeth and consequent esthetic, functional, and occlusal issues. Such overerupted teeth must be corrected prior to any prosthetic rehabilitation. Since coronal-reduction techniques\cite{1,2} may require additional endodontic and periodontal treatment before final crown restorations, overerupted teeth are typically treated with orthodontic intrusion.

Surgically assisted methods such as corticotomy\cite{3,4} or surgical impaction\cite{5} increase the risks and cost of treatment. Extraoral devices require patient cooperation. Orthodontic correction using fixed appliances and bite planes\cite{6} may cause extrusion of the anchorage unit. Miniscrews can provide absolute skeletal anchorage without the need for patient cooperation, but are more invasive.\cite{4,7-10} This article suggests a way to intrude overerupted upper molars using anchorage from clear aligners.

**Case Report**

A 69-year-old female was referred by her general dentist with a missing lower right second molar, left first molar, and left second molar. She had a Class I molar and canine relationship with good overjet, slightly excessive overbite, and minor anterior crowding (Figs. 1,2A). Her upper right second molar, left first molar, and left second molar were overerupted due to the lack of antagonists. The alveolar bone loss seen initially on the panoramic x-ray was relatively horizontal, with no vertical bone defects that could be worsened by intrusion. The patient’s periodontal disease had been successfully treated, but she continued her recommended periodontal maintenance visits during orthodontic treatment.\cite{11}

Invisalign* therapy was planned to intrude the overerupted upper molars, thus gaining space for implants and prosthetic replacement of the missing lower molars while aligning the anterior teeth (Fig. 2B,C). To provide mechanical retention and support for the desired intrusion, attachments were ordered on the upper right second premolar, right first molar, left first premolar, and left second premolar—the teeth adjacent to those planned for intrusion (Fig. 2D). Lingual bite turbos were prescribed on the upper incisors to help level the mild overbite; additional attachments were used on the lower premolars and molars to level the curve of Spee.

Twenty pairs of aligners were delivered for the initial treatment phase. In 40 weeks of treatment, the upper right second premolar, left first molar, and left second molar were intruded enough to provide an acceptable occlusal plane for prosthetic rehabilitation (Fig. 3). After consultation with the restorative dentist, eight sets of refinement

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aligners were ordered for detailing (Fig. 4). During this phase, the upper molars were tipped lingually to create a more coordinated posterior archform with the anticipated implant-supported crown replacements of the lower right second molar, left first molar, and left second molar.

Overall treatment time was 56 weeks. Post-treatment records demonstrated anterior leveling and alignment, accompanied by intrusion of the overerupted upper molars without unwanted side effects on the adjacent teeth (Fig. 5). Following replacement of the missing lower molars, the pa-
tient was instructed to wear a clear retainer in the upper arch at night, and a 3-3 fixed retainer was bonded in the lower arch.

Discussion

Only one previous case report has documented molar intrusion using the Invisalign system. This esthetic technique does not compromise oral hygiene or periodontal health in adult patients, and it avoids the need for invasive coronal-reduction.

Fig. 2 ClinCheck** records. A. Pretreatment. B. Projected post-treatment (continued on next page).

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procedures such as grinding or subapical osteotomy. Even without skeletal anchorage, it does not result in extrusion of the adjacent teeth. This may be due to a posterior bite-block effect from the aligners’ constant occlusal coverage, which enhances the active intrusion of the molars and negates the extrusive vectors of force on the anchorage teeth from the attachments supporting the molar intrusion.

Because the use of clear aligners for molar intrusion depends on patient compliance, case selection is an important issue—as in all Invisalign

Fig. 2 (cont.) ClinCheck** records. C. Superimposition of pretreatment and projected post-treatment. D. Labial attachments and lingual bite turbos.
Teamwork and an open line of communication between general dentist and orthodontist are essential in determining the patient’s needs and achieving treatment goals.

A controlled clinical trial would not only add validity to the clinical experience presented in this article, but would also enable more accurate assessment of the efficacy of this method, perhaps quantifying the amount of intrusion that can be achieved.

**Fig. 3** Upper-molar intrusion achieved in 40 weeks with 20 sets of aligners.

**Fig. 4** Superimposition of pre-refinement and projected post-refinement ClinCheck records.
REFERENCES


Fig. 5 Patient after 56 weeks of treatment, showing molars in normal occlusal plane.