

# Retaining Treatment Results with the Advanceable Twin-Block Appliance

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**T**he twin-block appliance has been modified to allow bite advancement by means of a screw system incorporated into the maxillary appliance blocks.<sup>1</sup> This can be advantageous in patients with severe overjets or with limited mandibular protrusion, where the appliance requires later reactivation. The twin-block correction will need to be retained, however, if the fixed appliance phase of treatment is delayed while waiting for permanent tooth eruption,<sup>2</sup> or if fixed appliances are declined or are contraindicated due to inadequate oral hygiene.

The usual solution has been to trim the blocks vertically to enable controlled eruption of the posterior teeth,<sup>3</sup> but the screws and housings of the advanceable twin blocks can interfere with interdigitation. The present article recommends an alternative approach.

## Retention Technique

Posterior open bites can be substantial in high-angle, deep-bite cases after twin-block overjet reduction. Because of the unstable occlusion, early discontinuation of the twin block and fitting of a retainer may lead to a relapse of the overjet. To prevent this, a gradual reduction of functional appliance wear is recommended, as described below:

1. Aim to achieve an edge-to-edge incisor posi-

tion at the completion of active treatment. Because a subsequent relapse of 2-3mm can be expected in most cases, overcorrection of the overjet is advisable.

2. During retention, continue full-time appliance wear for the first three-month appointment interval, reduce to night-only wear for the next three months, and finally alternate nights for three months. This regime can be individualized as required.

Posterior bite closure generally occurs uneventfully, and the overjet returns to Class I. A case is shown to illustrate this approach.

## Case Report

An 11-year-old female presented with significant mandibular retrusion and a 10mm overjet (Fig. 1). She had a deficient vertical facial height with incisor lip-trapping, an excessive overbite, and Class II buccal relationships. The mandibular arch was well aligned and upright. The maxillary central incisors were proclined, but the lateral incisors were retroclined. Cephalometric analysis confirmed a mandibular retrusion with a reduced maxillomandibular plane angle (Table 1). The objective of treatment was to correct the overjet, overbite, and Class II relationship and to align the maxillary incisors.

We used an adjustable bite fork (George Gauge\*) with wax blocks for the initial bite registration. Because the patient had limited mandibular protrusion, the construction bite was taken with a 4mm advancement. The maxillary appliance incorporated a midline expansion screw, and the twin blocks were constructed with 12mm advancement screws\*\* (Fig. 2). The labial bow



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\*\*Screw Advancement System, Ortho-Care (UK) Ltd., 5 Oxford Place, Bradford, West Yorkshire, BD3 0EF, England; www.orthocare.co.uk.

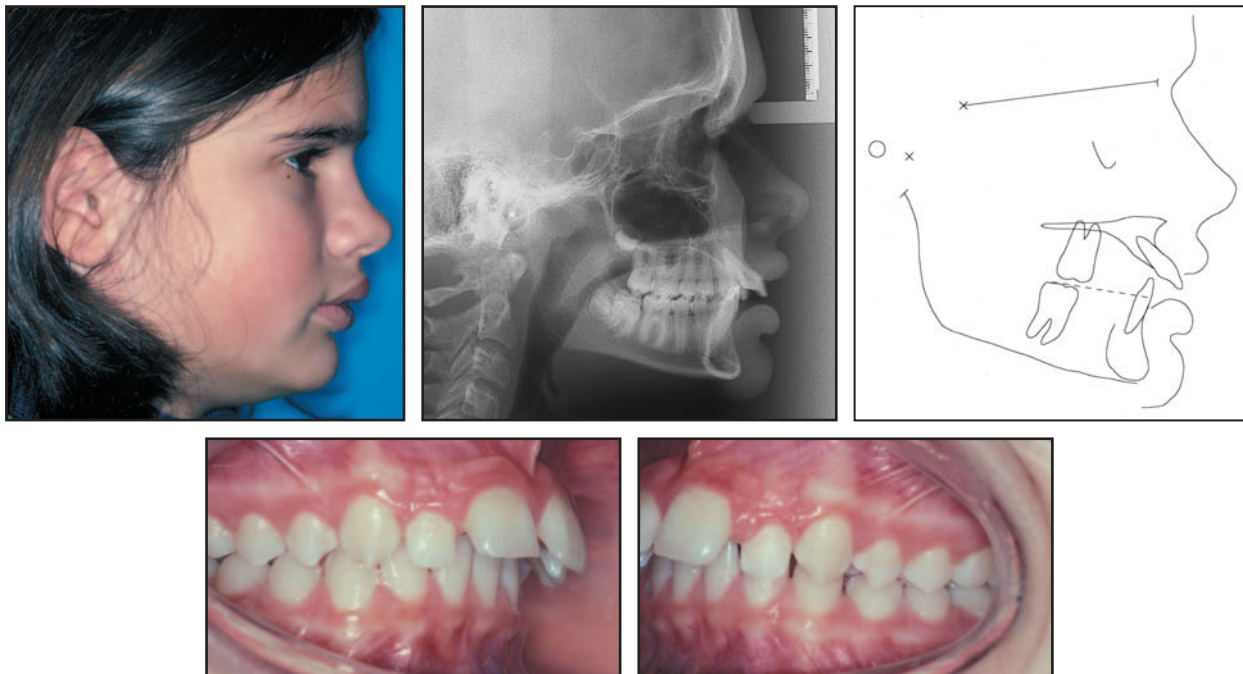


Fig. 1 11-year-old female patient with severe mandibular retrusion and deep bite before treatment.

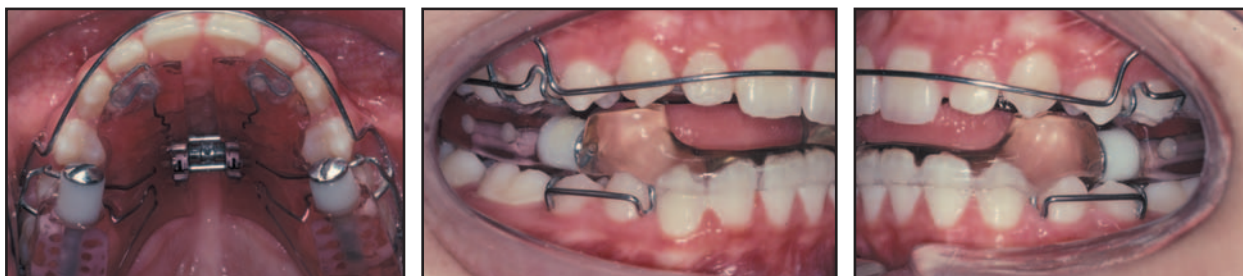


Fig. 2 Advanceable twin-block appliance.

was gently activated, and acrylic was trimmed away palatal to the central incisors; “Z” springs were placed to procline the lateral incisors.

Maxillary expansion was begun at the first visit with one-quarter turn per week. Two 3mm bite advancements were made at six-week intervals by adding 3mm acrylic spacers to the advancement screw threads. An edge-to-edge bite was achieved in six months (Fig. 3).

Appliance wear was reduced to night-time only after three months and to alternate nights after another three months. Appliances were dis-

continued after eight months’ retention.

The labial bow reduced the central incisor proclination, and the “Z” springs aligned the lateral incisors. The posterior bite closed fully during the appliance withdrawal phase. The patient was followed up at three-month intervals, and records were taken one year post-retention (Fig. 4). The final overjet was 2mm, the overbite had settled favorably, the buccal segments had stabilized in a Class I relationship, and the maxillary incisors remained well aligned (Table 1). Both patient and orthodontist were satisfied with the

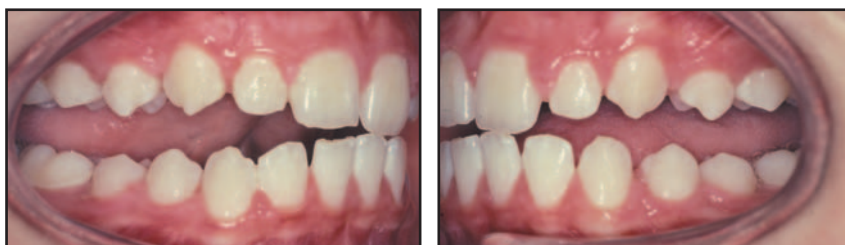


Fig. 3 After six months of active treatment.

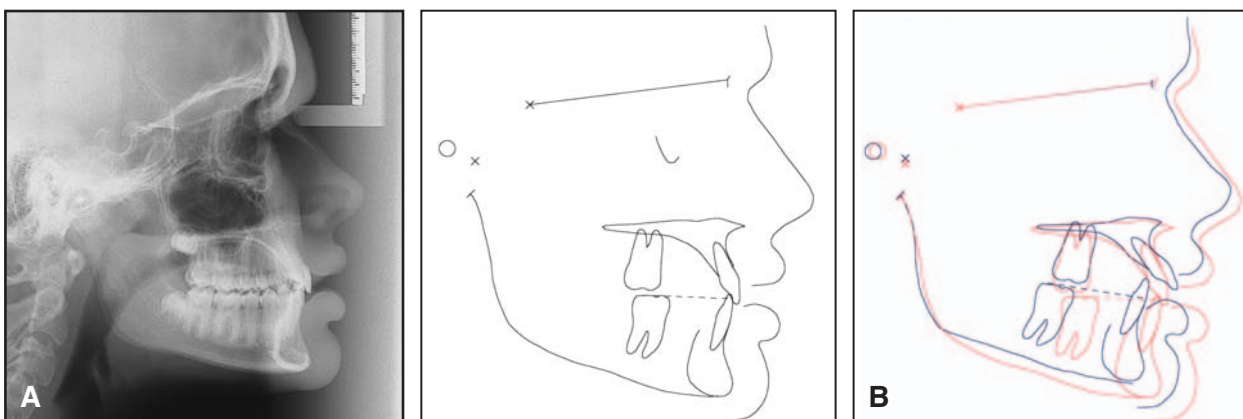
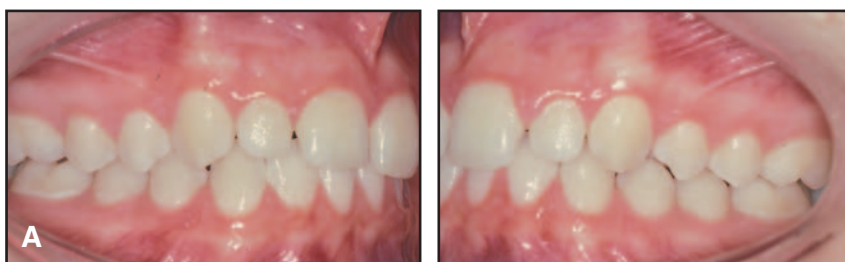


Fig. 4 A. Patient one year post-retention. B. Superimposition of cephalometric tracings before treatment and one year post-retention.

**TABLE 1  
CEPHALOMETRIC DATA**

	Pre-treatment	Post-Treatment
SNA	83.5°	82.5°
SNB	79.0°	82.0°
ANB	4.5°	0.5°
Maxillomandibular plane	19.0°	19.0°
LAFT/TAFH	53.5%	53.0%
U1-Maxillary plane	128.5°	109.0°
L1-Mandibular plane	98.5°	90.5°
L1-APo	0.0mm	0.5mm

outcome, so that no further active treatment was required.

## Discussion

This gradual reduction of modified twin-block wear has been used successfully in more than 350 patients. The method seems to maintain the overjet reduction while allowing natural closure of the posterior open bite.

Why this occurs is not certain, but the lips probably contribute some incisor support, which, combined with nocturnal appliance wear, may be sufficient to allow a controlled relapse of the overcorrected overjet toward a normal relationship. On the other hand, there appear to be no soft-tissue factors encouraging a preservation of the posterior open bite. With diminishing appliance wear, there is little to prevent the buccal segments from erupting. If the molar relationship has been overcorrected, it will also relapse into a Class I occlusion.

This simple method of retention saves chairtime and effort, since no block trimming is required. Because it can also be used with the conventional twin-block appliance (without advancement screws), we have not trimmed any of our twin blocks for more than 10 years.

## REFERENCES

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3. Clark, W.J.: *Twin Block Functional Therapy*, Mosby, St. Louis, 1995.