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The lingual distalizer system

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SUMMARY Class II molar relationships can be corrected by several methods. In previous systems, orthodontic forces have been applied to crowns and distal movement of the first molar has mainly been by tipping and a rotation of the crowns. A new Lingual Distalizer (LD) has recently been developed to distalize the maxillary molars without the drawbacks of previous appliances. The lingual distalizer is relatively easy to insert, is well-tolerated, does not require patient co-operation and is aesthetic. It distalizes molars without loss of anchorage and moves them with bodily translation.

Introduction

Class II molar relationships can be corrected by several methods. Recently, repelling magnets (Giannelly *et al.*, 1988) and superelastic nickel-titanium coils (Jones and White, 1992) have been used to distalize maxillary molars and establish a Class I relationship. The premolars and canines are then sequentially moved posteriorly to Class I positions. Finally the incisors are aligned and/or retracted.

In both systems orthodontic forces are applied to the crowns. The movement of the first molar is mainly tipping and a rotation of the crowns (Carano, 1991; Bondemark and Kurol, 1994). Even though the initial tipping of the molars is quick and patient co-operation is not necessary, during the second phase the uprighting of the molars is pivotal for the success of the therapy and often patient co-operation with headgear is necessary.

A new Lingual Distalizer (LD) has recently

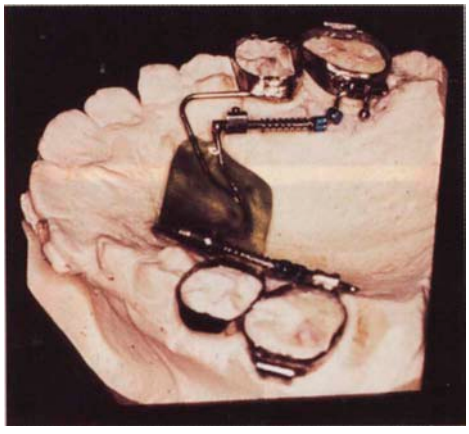

Figure 1 Nance appliance with extended tubes in which bayonet wires, connected to the molars, can slide. A clamp and a stainless steel coil spring are on each tube. The clamps can slide towards the molars and be tightened in order to compress the coils.

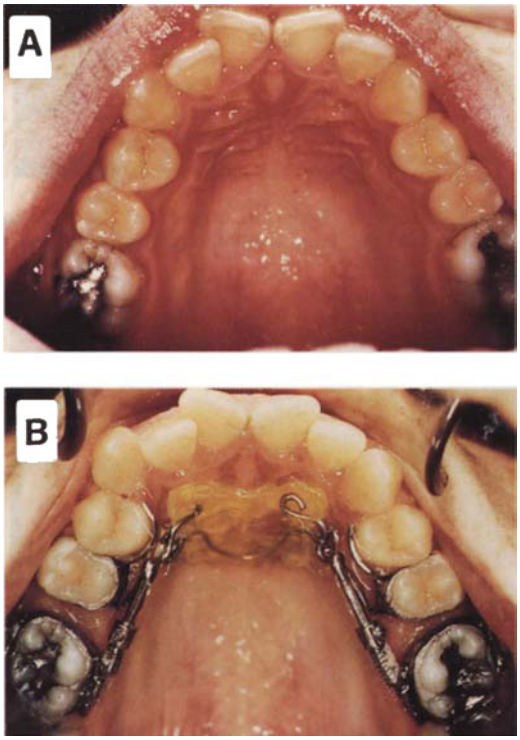

Figure 2 Patient A. Occlusal views of the upper arch (A) before and (B) after distalization.

been developed and used to distalize the maxillary molars without the drawbacks of previous appliances. This article shows the results obtained in two patients treated with the new appliance.

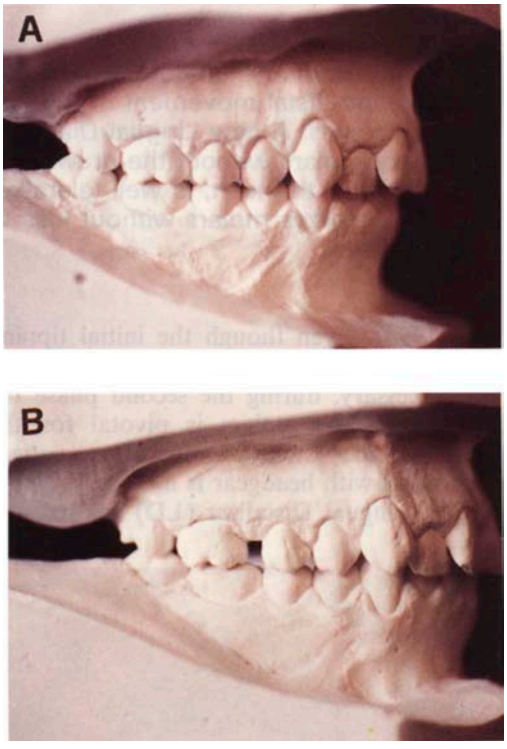

Figure 3 Patient A. Right lateral views of the occlusion (A) before and (B) after 4 months of Lingual Distalizer application.

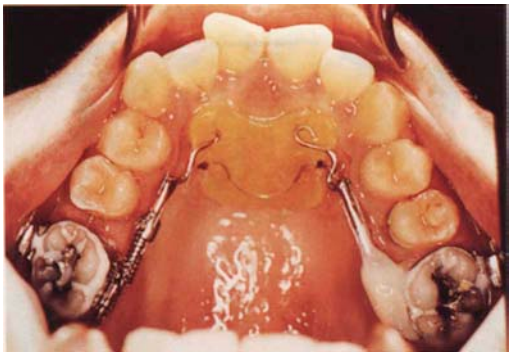

Figure 4 The Lingual Distalizer was transformed into a Nance retainer simply by cutting the arm of the premolar anchorage.

Appliance description

The active components of the Lingual Distalizer are two bilateral 0.9 mm tubes connected to a Nance appliance. A bayonet wire is inserted into the lingual sheath of the first molar bands. On the tube there is a stainless steel coil spring and a clamp (Figure 1). The clamp can slide towards the molar and can be tightened in order to compress the coil. At the time this article was written, stainless steel coil springs were used. Recently nickel–titanium springs have been used with no apparent advantages over stainless steel coil spring.

The force exerted by the spring begins at 150 *g*, and decreases as space is opened. Consequently, the LD is reactivated by sliding the clamp closer to the molar once a month.

Case report A

An 18-year-old female in the permanent dentition presented with a Class II, division 1 malocclusion. The Class II molar relationship was more severe on the right side than on the left. No skeletal abnormalities were recorded by cephalometric analysis. Diagnosis suggested a

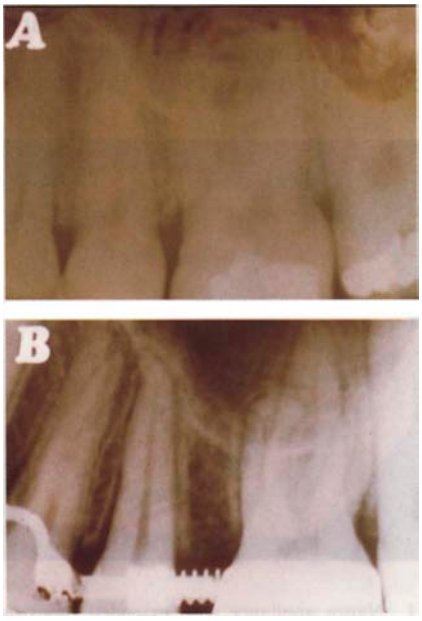

Figure 5 Patient A. Intra-oral radiographs (A) before and (B) after the distalization. The molar roots moved in a parallel fashion from the premolars.

non-extraction treatment plan, except for the upper third molars, which were removed before the insertion of the appliance. The first step in treatment was the insertion of the LD to move the upper first and second molars (Figure 2).

After 4 months, the molars were in a Class I (Figure 3) relationship and the LD was converted into a Nance retainer simply by cutting the arm of the premolar anchorage and removing the bands from the premolars (Figure 4). The 2 mm left and the 3 mm right spaces which opened distally to the second premolars were almost totally created by the distal movement of the first and second molars. The distal movement was a bodily translation of the teeth (Figure 5).

Case report B

A 14-year-old girl with a permanent dentition presented with a Class II, division 1 malocclusion. The Class II molar relationship was more severe on the right than on the left. No skeletal abnormalities were recorded by the cephalometric analysis. The upper third molars were unerupted at the start of therapy and they were left during the distalization.

The LD was inserted to distalize the molars (Figure 6). In this case a Class I correction was obtained (Figure 7) after four months of therapy. A bodily translation of the molars was observed (Figure 8). The total amount of distal movement was 5 mm on the right side and 2 mm on the left.

In patient B, the LD was improved with two modifications. The Nance appliance was bonded to the premolars and the bayonet wire was adjusted so the force would more closely pass through the centres of resistance of the molars. The first modification avoided premolars bands, improving the aesthetics of the appliance and the chair time of the orthodontist. The second modification provided a biomechanical advantage. Distal movement of the upper molars was faster in fact, than in the previous case where the force vectors passed through the crowns.

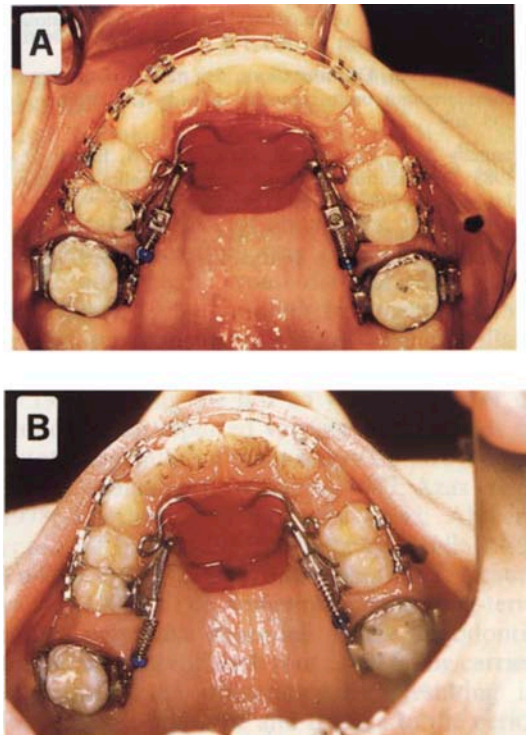

Figure 6 Patient B. Occlusal views of the upper arch (A) during and (B) after distalization.

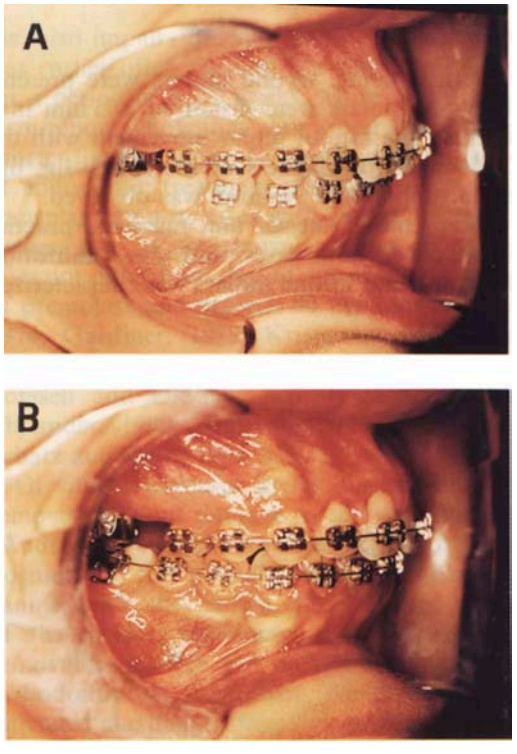

Figure 7 Patient B. Right lateral views of the occlusion (A) during and (B) after distalization.

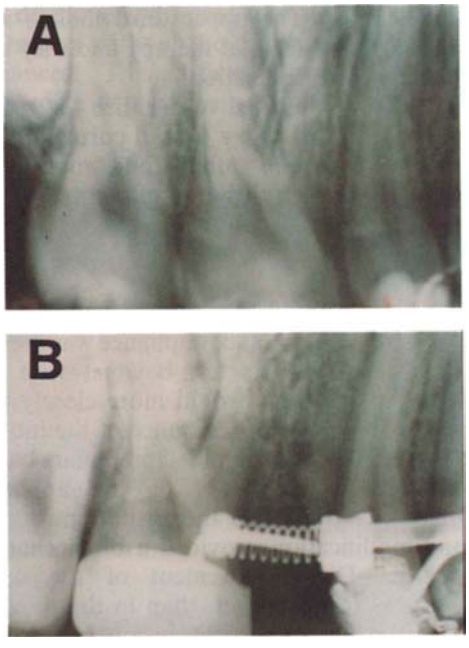

Figure 8 Patient B. Intra-oral radiographs (A) before and (B) after the distalization. The molar roots moved in a parallel fashion far from the premolars.

Discussion

In both patients, second molars were present. Maxillary molars were distalized 3–5 mm in 4 months. The rate of molar movement with the LD is equal to magnets or the Jones–Jig, but neither tipping nor rotation was observed.

The premolar–incisor unit remained practically stable in both cases, and the distalization of the first and second molars was characterized by translation of the teeth. Another advantage of the LD is that it can be easily converted into a passive Nance appliance with the molars held in the new distal position and no relapse occurring.

The LD Carano-Testa is relatively easy to insert, is well tolerated, does not require patient co-operation and is aesthetic. It distalizes molars without loss of anchorage and moves them with bodily translation. This appliance can be easily used for asymmetric Class II molar relationships. At the present time more than 30 cases have been treated with the LD with no cases of palatal irritation being reported. The only areas of redness were seen under the Nance button after removal of the appliance.

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