Herbst treatment with reduced mandibular cast splints - “revisited”

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Conclusion

In contrast to our initial recommendation (von Bremen et al. 2007) and despite the fact that RMS-Herbst appliances are more economical, they cannot be recommended for standard clinical use. Correspondingly, we have returned to use TMS-Herbst appliances in our department.

Aim

To analyse whether the amount of anchorage loss during Herbst appliance treatment using reduced mandibular cast splints (RMS = Lower second premolar to second premolar) is really comparable to total mandibular cast splints (TMS = Lower molar to molar).

Material & Methods

Both before (T1) and after (T2) Herbst treatment SO- and standard cephalometric analyses as well as a dental cast analysis were performed in 100 Class II RMS-Herbst patients (57 females, 43 males) with an average age of 14.6 years. 34 Class II TMS-Herbst patients (15 males, 19 females) served as controls for the cephalometric data (Weschler and Pancherz 2004).

Results

The lower incisors proclined significantly (p<0.001) more in the RMS (12.9 degrees) than in the TMS group (9.3 degrees) (Fig 1). As a result of this anchorage loss an average space of 0.4mm (max=1.75mm) opened between the lower second premolar and the first molar in 62 RMS-patients (Fig 2). The amount of lower incisor proclination changes increased gradually from the pre-peak (11.9 degrees) to the young adult RMS-group (14.3 degrees) (Fig 3). Increased professional experience resulted in a relatively smaller incisor proclination (-1.7 degrees, n.s) associated with RMS-treatment (Fig 4).

<table>
<thead>
<tr>
<th>RMS: IiL/ML-Orthodontists</th>
<th>RMS: IiL/ML-Postgrad. students</th>
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<tr>
<td>Pre-peak (n=13)</td>
<td>Peak (n=42)</td>
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<tr>
<td>Post-peak (n=28)</td>
<td>Young adult (n=17)</td>
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p>0.05

Fig 1 Individual treatment changes (T2-T1) for lower incisor inclination changes [IiL/ML(d)].

Fig 2 Space opening during RMS-Herbst treatment.

Fig 3 Lower incisor inclination changes [IiL/ML(d)] in the four different skeletal maturity groups.

Fig 4 Individual treatment changes (T2-T1) for lower incisor inclination changes [IiL/ML(d)] in RMS treatment performed by certified orthodontists (n=25) and postgraduate students (n=75).