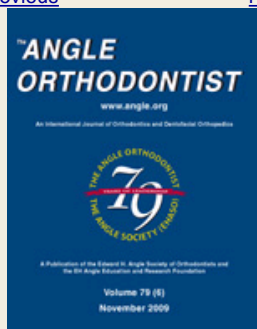


Volume 79, Issue 2
(March 2009)
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Original Articles

Opening of Circumaxillary Sutures by Alternate Rapid Maxillary Expansions and Constrictions

Yu-Chi Wang^a, Peter M. S. Chang^b, and Eric Jein-Wein Liou^c

Abstract

Objective: To analyze quantitatively the circumaxillary suture opening after alternate rapid maxillary expansions and constrictions (Alt-RAMEC).

Materials and Methods: Twelve inbred cats were randomly grouped into two equal groups for 1 week of rapid maxillary expansion (RME) (1 mm/day) or 5 weeks of Alt-RAMEC (1 mm/day). At the end of the experiment, the craniofacial skeleton of each cat was harvested. Each circumaxillary suture was then probed at three sites with a 0.5-mm pointed periodontal probe. A smooth probing without penetration was an ineffective suture opening (<0.5 mm), while a probing with penetration was an effective suture opening (>0.5 mm). For each suture, the quantity of suture opening (%) was the effective suture opening/(effective + ineffective suture opening). The intergroup differences were analyzed by chi-square test ($P < .05$).

Results: Five weeks of Alt-RAMEC opened the circumaxillary sutures significantly more than 1 week of RME. This affected the circumaxillary sutures running coronally and articulating directly to the maxilla (56.9% vs 36.1%, $P < .001$), the sutures running sagittally, but articulating indirectly to the maxilla (94.4% vs 64.8%, $P < .001$), and the sutures running coronally, but articulating indirectly to the maxilla (58.3% vs 33.3%, $P < .01$). The sutures running sagittally were opened significantly more (94.4%–100.0%) than those running coronally (56.9%–58.3%), no matter if they articulated directly or indirectly with the maxilla.

Conclusions: Alt-RAMEC opens both the sagittally and coronally running circumaxillary sutures quantitatively more than conventional RME. However, more than 5 weeks of Alt-RAMEC would be needed to increase the opening of the coronally running circumaxillary sutures. (*Angle Orthod.* 2009;79;)

Keywords: [Rapid maxillary expansion](#), [Sutures](#)

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