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Abstract

SANTOS, Ana Cristina Soares et al. An *in vitro* comparison of the force decay generated by different commercially available elastomeric chains and NiTi closed coil springs. *Braz. oral res.* [online]. 2007, vol.21, n.1, pp. 51-57. ISSN . doi: 10.1590/S1806-83242007000100009.

This *in vitro* study was designed to compare the forces generated by commercially available elastomeric chains and NiTi closed coil springs, and to determine their force decay pattern. Forty elastomeric chains and forty NiTi closed coil springs were divided into 4 groups according to the following manufacturers: (1) Morelli?/SUP>, (2) Abzil?/SUP>, (3) TP Orthodontics?/SUP> and (4) American Orthodontics?/SUP>. The specimens were extended to twice their original length and stored in artificial saliva at 37°C. Initial force was measured by means of an Instron universal testing machine and then at 1, 4, 7, 14, 21, and 28 days. The results revealed that the elastomeric chains delivered a mean initial force of 347 g for Morelli?/SUP>, 351 g for American Orthodontics?/SUP>, 402 g for Abzil?/SUP>, and 404 g for TP Orthodontics?/SUP>. The NiTi closed coil springs generated a mean initial force of 196 g for American Orthodontics?/SUP>, 208 g for TP Orthodontics?/SUP>, 216 g for Abzil?/SUP>, and 223 g for Morelli?/SUP>. The mean percentage of force decay observed after 28 days for the elastomeric chains was 37.4% for TP Orthodontics?/SUP>, 48.1% for American Orthodontics?/SUP>, 65.4% for Morelli?/SUP>, and 71.6% for Abzil?/SUP>. After 28 days, the NiTi closed coil springs presented a mean percentage of force decay of 22.6% for American Orthodontics?/SUP>, 29.8% for Abzil?/SUP>, 30.6% for Morelli?/SUP>, and 45.8% for TP Orthodontics?/SUP>. At the end of the study, significant differences were observed between the

elastomeric chains and the NiTi closed coil springs. The results indicated that the studied NiTi closed coil springs are more adequate for dental movement than the elastomeric chains.

Keywords : Orthodontics, corrective; Orthodontic appliance design.

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