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Induced Periodontitis in Rats With Three Ligature Types.

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Objectives The placement of ligatures in the cervical area of rat molars, is considered as a predictable model to induce periodontitis. The present explorative study aimed to compare the efficacy of metal wires, without or with sandblasting, versus silk ligatures in inducing periodontal bone loss in rats.

Methods Wistar rats aged between 14 and 21 weeks were used. The animals were randomly divided into three groups receiving three different types of ligatures (metal wire MW; sandblasted wire SMW; silk ligature SL) around their first right mandibular molar, while the contralateral tooth was left without the ligature and served as control. Three-dimensional images were obtained by microcomputed tomography (micro-CT) and bone loss was evaluated at 24 and 35 days after the placement of the ligature.

Results In the SL group, only two rats retained the ligatures until the end of the 24-day period; all other animals lost the ligatures at some time point. In the SMW, the ligatures were retained only for the 24-day period. In MW group, no ligatures were lost.

Irrespective the group or experimental period, the difference in crestal bone level between ligated and control teeth was in most cases < 0.20 mm, i.e., in 19 out of 25 pairs of teeth. In few cases, the bone crest was more apically located at the control teeth compared to the ligated ones (4 cases each, at both the 24- and 35-day experimental period).

Conclusions Bone loss was minimal during the experimental period, with no significant differences between test and control teeth, nor among the 3 types of ligatures. Metal wires, not even roughened, do not seem a better alternative to silk ligatures for inducing bone loss in the experimental periodontitis model in the rat.