Surgery and oral hygiene on artificial periodontal defects in beagle dogs. A clinical, radiographical and histological investigation

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of oral hygiene has not been differentiated properly. The aim of the present
investigation was to evaluate the effect of periodontal surgery with and
without daily tooth brushing and of daily tooth brushing alone on artificial
periodontal defects in beagle dogs. The surgical treatment consisted of
replaced mucoperiosteal flap procedures with recontouring of alveolar bone.

Beagle dogs have been chosen as experimental animals, since it is known
that the beagle periodontium reacts quite similar to human periodontium re-
garding bacterial plaque in corresponding situations of health and disease. Furthermore, beagle dogs are easy to handle, allowing daily tooth brushing.

Artificial periodontal defects have been created by placing copper bands
around the second, third and fourth premolars of the lower jaw, following
intrasulcular incisions. A soft diet allowed accumulation of bacterial plaque. After three weeks, the bands were replaced by cotton ligatures. Eleven weeks later the cotton ligatures were removed.

One week after the formation of the artificial defects, one side of the
lower jaw in all dogs was surgically treated by means of mucoperiosteal flaps
and osseous recontouring. The other side of the lower jaw served as the
control side. In seven dogs all teeth were cleaned daily with a toothbrush, six dogs were refrained from any oral hygiene. All dogs were scaled and polished twice yearly.

To evaluate the experimental model and the artificial defects, registra-
tions were made at the control sides of the non-brushed dogs. One week after
formation of the defects, the gingiva was profoundly inflamed. Probing depths obtained average values of 4.5 millimeter. Variations in depth were minimal, suggesting that artificial defects can be produced with accuracy. Alveolar bone was significantly reduced and revealed a horizontal type of bone loss. Histologically, the defects exhibited features indentical to normal occurring periodontal lesions.

SUMMARY.

Surgical treatment of periodontal disease is a generally accepted and
frequently applied method. There is, however, still no agreement regarding the
long term results of such a treatment. Plaque control is accepted as an essential part of periodontal treatment. However, in most studies evaluating periodontal surgical treatment, the role of oral hygiene has not been differentiated properly. The aim of the present investigation was to evaluate the effect of periodontal surgery with and

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Within the two years of evaluation, the artificial defect changed from an acute lesion into a more chronic lesion. Furthermore, it revealed distinct regeneration tendencies. But assuming that this phenomenon occurred proportionally in all groups, differences between experimental and control groups are still possible to recognize. Conclusions can be drawn accordingly.

From the clinical, radiographical and histological results, it can be concluded that:
In beagle dogs with artificial periodontal defects,
1. Periodontal surgery, when not combined with oral hygiene, is not an effective method of treatment of periodontal disease. There are indications that such an approach is even harmful to the supporting tissues.
2. Periodontal surgery combined with oral hygiene, results in a distinct improvement of periodontal health as stable results are obtained. But the benefit of surgery supplemental to oral hygiene, is questionable when probing depths are less than five millimeters.
3. Oral hygiene is not a supplemental, but a decisive factor in periodontal treatment. Results of periodontal surgery gradually disappear when oral hygiene is not maintained. The finding that the maturation of the periodontal tissues is not completed two years after surgery, may be an explanation.
4. Oral hygiene without further treatment, has definitely a positive effect on the health of the periodontium: Inflammation disappears, probing depths will be reduced and bone formation is stimulated. Whenever the choice between stimulation of oral hygiene and surgery without proper control of oral hygiene has to be made, the decision must definitely be on oral hygiene.

The conclusions of this clinical, radiographical and histological investigation in beagle dogs are essentially in accordance with recent clinical studies in human. As long as the limitations of the experimental model are observed, the presented conclusions are applicable to periodontal treatment in human.

SAMENVATTING.

Chirurgische behandelingsprocedures en veelvuldig borstelen hebben een effect. Het doel van de onderzoeksactiviteiten is uiteen te nemen over de resultaten op een langdurige onderwerp. Bij het onderzoek werden cementen en keramieken gebruikt.

Beagle honden werden in een experimenteel model gebruikt, bij de mens reageert het parodontium op gezondheid en ziekten van de tanden te borstelen. Bij 13 beagle honden van 14 weken oud werd met het zachte dieet een ernstige ontsteking van de tanden veroorzaakt. Bij 11 honden werd het tandsteen verwijderd.

Ten einde het experiment te verrijken, werd bij de controle zijde van de defecten in de beagle honden een gemiddeld 4,4 procentontsteking gemeten, hetgeen betekent dat het alveolaire bot niet in overeenstemming was met de normale waarden.

Het kunstmatige cementspel van een acute fase met een schijnsel in alle groepen.