Original Article

Clinical and histological evaluation of the effect of magnesium oxide administration on relapse after orthodontic teeth movement (Rabbit Model Study)

Abstract

OBJECTIVE: This study aimed to evaluate the clinical and histological administration of magnesium
oxide (MgO) supplementation on orthodontic relapse and bone remodeling.
MATERIALS AND METHODS: Twenty male albino rabbits were classified into four groups
(five animals for each as two control (positive and negative), plus two experimental (low dose 40 mg/kg)
and (high dose 80 mg/kg)/b.w. daily). An orthodontic force was applied (40 gm) to the lower incisors
using modified orthodontic appliance adapted on the lower central incisors. During the period of
retention, MgO was given orally. Relapse was estimated after appliance removal. A digital Calliper
was used to compete the space between incisors' mesial tips of rabbits at six successive time
points (0, 3, 7, 10, 15, and 21 days). Histologically, osteoblast, osteoclast, and osteocyte account
were assessed. Data analyses were performed by SPSS using ANOVA and Tukay HSD ($P \leq 0.05$)
for statistically significant differences between groups.
RESULTS: The high dose group had a lower relapse rate than the low dose and control groups.
Histologically, the high dose group had more osteoblasts and osteocytes than low dose and control
groups. While osteoclasts were significantly lower than the control group in low and high dose groups.
CONCLUSIONS: MgO supplementation during an orthodontic retention phase, particularly at a level
of high dose, clinically decreased orthodontic relapse in a rabbit model. Histologically,
MgO has a significant effect on alveolar bone after the orthodontic retention period.