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The impact of concentrated growth factor and low-level laser therapy on osseointegration of dental implants: An experimental study on sheep

Abstract

This study aims to assess the effect of the Concentrated Growth Factor (CGF) with low-level laser therapy biostimulation (LLL) in the healing of bone around dental implants in an animal model. Four male sheep in good, healthy condition were utilized for the study. Sheep were divided into two groups, each model serving as two observation subgroups. The tibia of each sheep was subjected to random surgical procedures, with a one and two-month gap between each operation. A total of 40 dental implants were implanted, with each sheep receiving ten implants (five implants in each tibia). The groups were divided as follows: group 1 (Control), in which ten implants were placed in each sheep (five dental implants in each tibia), and group 2 (Study group in which ten implants were placed in each sheep (five dental implants in each tibia) with Sacco's Membrane (concentrated growth factor) and LLLT Biostimulation. Densitometric analysis was performed using digital radiography, immunohistochemical, and histopathological assessment. The findings of the present investigation revealed a statistically significant disparity in the extent of bone development surrounding dental implants at four and eight weeks, with the study group exhibiting a more favorable outcome than the control group. In conclusion, using CGF in conjunction with low-level laser treatment biostimulation has contributed to new bone formation and the establishment of osseointegration