

論 文 要 旨

A novel auxiliary device enhances the miniscrew stability under immediate heavy loading simulating orthopedic treatment

新規骨固定補助装置は顎整形治療を想定した即時高荷重条件下でも
歯科矯正用アンカースクリューの安定性を向上させる

山形 勁太

ABSTRACT

Objectives: To evaluate miniscrew stability and perform a histomorphometric analysis of the bone around the miniscrew under a load corresponding to orthopedic force.

Materials and Methods: Thirty-two miniscrews were implanted into eight rabbit tibias. Auxiliary group rabbits received auxiliary devices with miniscrews (n=8, 28 days; n=8, 56 days) and those in the nonauxiliary control group received miniscrews without auxiliary devices (n=8, 28 days; n=8, 56 days). Elastics were placed between miniscrews to apply a load of 5 N. Miniscrew stability was evaluated using Periotest. Bone-to-implant contact (BIC) and spike implantation depth were measured histomorphologically.

Results: Periotest values in the auxiliary group were significantly lower than those in the nonauxiliary group at all periods. There was no significant difference in BIC between the auxiliary and nonauxiliary groups at 28 or 56 days post-implantation. The implantation spike depth in the auxiliary group was significantly greater at 56 days compared to that at 28 days. Newly formed bone was observed around the spike of the auxiliary device at 56 days.

Conclusions: The results suggest that the use of miniscrews in conjunction with auxiliary devices provides stable skeletal anchorage which may be useful in orthopedic treatments.