Effect of enamel matrix derivative application for healing after transplantation of teeth with periodontitis

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[Introduction]
Enamel matrix derivative (EMD) is reported to enhance the formation of new connective tissue attachment following teeth replantation. However, it is not known EMD would induce formation of more connective tissue attachment on a periodontally involved root. The purpose of this study was to evaluate the effect of EMD on periodontal healing after transplantation of teeth with reduced periodontal ligament.

[Materials and Methods]
Twenty incisors of four beagles (female 1 year old; mean weight, 10.3kg) were used. After the teeth were extracted, the periodontal ligament and cementum 5 mm from the coronal part of the roots were removed while those in the apical part were preserved. Ten teeth were immediately transplanted following application of EMD on the root (EMD group). Ten teeth were prepared as described above and immediately transplanted (Control group). Eight weeks after transplantation, the specimens were prepared for histological analysis.

[Results and Discussion]
New cementum formation in the EMD group was significantly greater than that in the control group. Ankylosis in the EMD group was significantly smaller than that in the control group. However, there was no significant difference between two groups in the root resorption. The application of EMD prior to the implantation enhanced cementum formation and inhibited ankylosis on the root planning surface near the remained periodontal ligament. However, this study suggested that root resorption could occur in the coronal part of the root planning surface in the case of extensive root planning surface.