

B-4. The 3-dimensional attachment of human periodontal fibroblasts on periodontally involved root surface following treatment with EDTA : an SEM in vitro study

Ah-Young Cho*, Byung-Ock Kim, Hyun-Sun Jang, So-Young Kim,
Seong-Mi Choi

Department of Periodontology, College of Dentistry, Chosun University

Background

A lot of researches have been done to promote the reattachment through the root conditioning of the teeth which had been involved in periodontitis. The researches have shown that the human periodontal ligament fibroblasts(hPDLF) can reattach to the adequately treated root surfaces taken with periodontitis. The aim of this study is to show if the reattachment can take place on the whole root surface by the scanning electron microscope(SEM) and to estimate the future applicability to the replantation of the tooth from a point of view of tissue engineering.

Methods

The hPDLF was isolated from the middle third of the root of periodontally healthy teeth extracted for orthodontic reasons. The cells were cultured in a medium containing Dulbecco's modified Eagle medium supplemented with 10% fetal bovine serum at 37°C in humidified air with 5% CO₂. Sixteen single-rooted teeth were obtained from patients diagnosed with periodontitis. Following scaling and root planing, the teeth were etched with the following concentrations of 24% ethylenediaminetetraacetic acid(EDTA) for two minutes. The hPDLF were placed in total root surface and were harvested for 2 weeks and used as the experimental group(12 teeth). The control group were cultured without the hPDLF. The teeth were fixed in 2.5% glutaraldehyde in PBS. The teeth were randomly divided into four subgroups (mesial, distal, buccal, and lingual surface of the root surface) and surveyed by the scanning electron microscope.

Results

The hPDLF was showed on the root surfaces treated with EDTA in experimental group. No hPDLF could be detected on the control group.

Conclusion

These results show that the reattachment could take place on the whole root surface by the scanning electron microscope.