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To seek a longer conservation method of tooth

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Abstract

In Japan, we meet the aging of society, and along with this, people desire to retain their teeth as long as possible. Periodontitis, caries, fracture, and orthodontic issue are known to be as major causes of tooth loss. To correct these problems, clinicians and researchers have made efforts to develop novel and unique therapies. In this context, we have focused on treatment for caries and fracture. To address this issue, we have been attempting to clarify the mechanism of the regeneration of periodontal ligament (PDL) tissue and to develop functional filling materials to permit this event. For the former agenda, we have investigated to define PDL stem cells, signaling and scaffolds based on tissue engineering standpoint. Firstly we have established and characterized two undifferentiated human PDL clonal cell lines that had been immortalized by gene transfer, and then examined the effects of various cytokines and calcium on these cell lines. For the latter agenda, we have prepared calcium-modified 4-META/MMA-TBB resin, and evaluated its bioactive features, such as biocompatibility, formation of hydroxyapatite on its surface, and differentiation-inducing activity for human PDL cells. Thus to elucidate above-described three elements optimal to allow periodontal regeneration, and to develop functional filling materials with characteristics as a scaffold for that will lead us to pioneer a new dental therapy for longer conservation of tooth. This technique may be also prospective in further application for developing the implant retaining PDL tissue or a treatment of periodontitis.

Biography

Hidefumi Maeda is an Associate Professor of Department of Endodontology at Kyushu University Hospital in Japan. With a D.D.S. from Kyushu University in Japan and a Ph.D. in Dental Science from Kyushu University in Japan. His background includes: Membership of 7 Professional Societies, 8 Distinguished Honors and Awards, 2 Research Programs, 50 Publications in refereed journals, 9 Books and 100 Conference Papers and Invited Lectures. He is an accomplished endodontist for innovative therapies for endodontic diseases. The title of his research is "Development of Regenerative Therapies for Periodontal Tissues using Stem Cells".