

# 32<sup>nd</sup> Annual World Dentistry Summit

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### Periodontal regeneration with autologous periodontal ligament derived cell sheets. A safety and efficacy study in ten patients

Various approaches have been introduced to regenerate periodontal tissues; however, these approaches have limited efficacy for treating severe defects. In this study, we isolated periodontal ligament (PDL)-derived cells from patients and created cell sheets with “Cell Sheet Engineering Technology”, using temperature-responsive culture dishes. Subsequently, the safety and efficacy of autologous PDL-derived cell sheets were evaluated in a clinical setting. A single-arm and single-institute clinical study were performed to verify the safety and efficacy of autologous PDL-derived cell sheets in patients with periodontitis. Wisdom teeth were extracted from patients diagnosed with chronic periodontitis, and periodontal tissues were scraped for cell sources. Three-layered PDL-derived cell sheets were constructed using temperature-responsive culture dishes and transplanted in an autologous fashion following standard flap surgeries. Bony defects were filled with beta-tricalcium phosphate granules. Clinical variables were evaluated at baseline, 3 months, and 6 months. Cone-beam computed tomography was performed at baseline and 6 months. Additionally, the mid-long-term follow-up has been performed with patients’ agreements. Our method was found to be safe and no severe adverse events were identified. All the findings, including reduction of periodontal probing depth, clinical attachment gain, and an increase of radiographic bone height, were improved in all 10 cases at 6 months after the transplantation. These therapeutic effects were sustained during a mean follow-up period of  $55 \pm 19$  months, and there were no serious adverse events. The results of this study validate the safety and efficacy of autologous PDL-derived cell sheets in severe periodontal defects during mid-long-term follow-up.

### Biography

Takanori Iwata has received his DDS and Ph.D. from Tokyo Medical and Dental University and worked as a postdoctoral fellow for the University of Michigan, School of Dentistry. Now, he is an Associate Professor in Tokyo Womens Medical University and doing both basic and clinical types of research. He has published more than 40 papers and is interested in the mode of action how mesenchymal stem cells regenerate periodontal tissue.

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