

東北大学大学院歯学研究科 インターフェイス口腔健康科学 第112回学術フォーラム

Forum for Interface Oral Health Science

Dental Pulp Regeneration: Future Challenges

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Dental pulp, which originates from neural crest-derived mesenchyme, plays a crucial role in fueling immune defense and tissue regeneration. Recently, dental pulp has become a major study subject in the field of dental tissue engineering that many scientists are immersed in. Indeed, pulp regeneration has been a clinically recognized treatment modality since January 2011, when the American Dental Association (ADA) adopted it as a new treatment modality. The goal of pulp regeneration therapy is to restore the physiological functions of the dentin-pulp complex, thereby increasing the longevity of natural teeth. The pulp-dentin complex includes pulp vasculature, nociceptive and sympathetic/parasympathetic nerve fibers, functional odontoblasts lining the dentin surface, and interstitial fibroblasts as well as stem/progenitor cells that serve to replenish all pulp cells lost from normal turnover or injury. In this lecture, the current knowledge of antimicrobial treatment for pulp regeneration as well as new antimicrobial therapies for enhanced disinfection will be discussed. The benefits and challenges to be encountered in pulp regeneration using cell transplantation will be presented from a clinical perspective. Finally, the strategies to overcome the challenges of stem cell-based pulp regeneration will be discussed.

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