学位論文内容の要約

Pulpal response to capping with MTA containing phosphorylated pullulan

（リン酸化プルラン含有 MTA セメントの歯髄に対する反応）

博士の専攻分野名称　　博士（歯学）　氏名　戸井田　侑

Summary

Direct pulp capping materials ideally promote the formation of dentin bridge. Mineral trioxide aggregate is mostly used for direct pulp capping. However, this material showed difficult sealing ability and poor handling. Phosphorylated pullulan has recently gained attention because of its high biocompatibility, bioadhesive behavior and dentin regeneration ability. It shows high biocompatibility and is capable to act as a carrier and can adhere to hard tissue. The purpose of this study was to histologically evaluate monkeys' pulpal responses to a newly developed material phosphorylated pullulan containing mineral trioxide aggregates as a direct pulp capping and to evaluate its sealing ability using scanning electron microscopy (SEM). Cavities were prepared in monkey's teeth. The pulps were intentionally exposed and randomly divided into four groups according to the application of pulp capping materials – a newly developed direct pulp capping material containing phosphorylated pullulan (PL), conventional direct pulp capping materials such as NEX-MTA cement (NX), Theracal LC (TH) and Dycal (DY). The teeth were then extracted after 3, 7 and 70 days, fixed and prepared according to routine histological

techniques to observe pulpal reactions. Tissues were demineralized and subsequently sectioned. Sections were stained with hematoxylin / eosin for micromorphological observation. SEM observation was performed to study the pulp capping material / dentin interface.

No serious inflammatory reactions of the pulp, such as necrosis or abscess formation were observed in PL group. For PL, dentin bridge was very thick and dentinal tubule and odontoblast cells were observed at 70 days. SEM observation revealed good sealing ability of PL.