Bio-markers and pattern of root resorption in deciduous teeth

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The aims of this study were to investigate the pattern and distribution of root resorption in deciduous teeth and to identify dentine matrix proteins in the gingival crevicular fluid which may act as bio-markers for root resorption.

The pattern of root surface resorption of exfoliating deciduous molar teeth extracted for orthodontic reasons was observed using computerised 3D tomography. Gingival crevicular fluid (GCF) was collected from 40 second deciduous molars undergoing active resorption in 9-10 year olds. In the control group crevicular fluid was collected from erupted lower second premolars. Phosphoproteins were then examined by SDS-PAGE and electro-blotted onto nitrocellulose to allow immunodetection with the polyclonal antibodies (Western blot analysis). The presence of dentine phosphoprotein (DSP) and dentine matrix protein (DMP) in the GCF was examined by slot blot analysis in control and experimental groups.

The pattern of deciduous tooth root resorption was uneven and appeared to be similar whether a permanent successor was present or not. DMP was not detected in control or experimental groups. DSP was present and elevated in roots that were resorbing compared to controls. Roots which were more than half resorbed had significantly increased levels of DSP when compared to those with less than half the root resorbed.

DSP was identified in the GCF of resorbing teeth. DSP is specific to dentine and therefore could be used as a bio-marker to detect and quantify root resorption.

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