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Title:

Strain-induced adaptation: A determinant for effective prosthodontic therapy

Description:

Functional loads to teeth are transferred through the dynamic bone-PDL-cementum complex in ways that are poorly understood. The importance of this dynamic complex lies in the fact that bone is integrated with the ligament, and ligament is integrated with cementum. As a result, the balanced crosstalk between tissues can be easily tipped toward increased formation or resorption with loading and/or disease. These formations, that is, adaptations will be discussed within the context of loading. *Ex vivo* biomechanical studies using higher spatial and chemical resolving technologies (micro X-ray computed tomography) and strain mapping (digital volume correlation (DVC)) will be discussed to highlight the effect of complex/tissue adaptations to loading in ways that were not previously possible. Results will also highlight the importance of subsurface strains proximal, distal and around the dental implants. Our discussion will focus on tissue adaptations to loads and how function-induced strain can modulate tissue properties relevant to prosthodontics therapies.

Learning objectives

- Daily function can prompt adaptations
- *In situ* biomechanical studies with high resolution x-ray microscopy may help identify adaptations as precursors to biologic complications in prosthodontics therapies.
- Newly gained insights will review which function-compromising adaptations are reversible and why.