

Histological changes in human dental pulp following application of intrusive and extrusive orthodontic forces.

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Abstract

The aim of this study was to compare the effects of orthodontic extrusive and intrusive forces on histological changes of the human dental pulp. In this clinical trial, 20 sound upper first premolars from 20 patients scheduled for extraction for orthodontic reasons were selected. They were divided into 3 groups, based on the time intervals for histological evaluation (7 days and 7 weeks). In each group, 10 teeth received orthodontic extrusive forces, 10 teeth underwent intrusive forces, and 10 teeth served as controls. After each period, teeth were extracted and prepared for histological examination under light microscopy and some histological parameters were evaluated. The data were statistically analyzed by Kruskal-Wallis and Mann Whitney tests. Of the parameters evaluated, just vacuolization and disruption of the odontoblastic layer showed statistically significant differences between the control group and both of the experimental groups in each test period ($P < 0.05$). Additionally, there was no significant difference between 7-day and 7-week intervals in each experimental group, except for fibrosis in the extrusive group which significantly increased after 7 weeks of force application ($P = 0.001$). Histological pulp changes following extrusive and intrusive force applications for 7 days and 7 weeks show no difference from each other.

Reaxys Database Information

Indexed Keywords

EMTREE medical terms: adolescent; adult; article; cell vacuole; cementum; clinical trial; comparative study; controlled clinical trial; controlled study; dentin; female; fibrosis; human; instrumentation; lesions and defects; male; mechanical stress; odontoblast; orthodontics; pathology; periodontal disease; premolar tooth; pulpitis; randomized controlled trial; time; tooth disease; tooth pulp; tooth pulp disease; ultrastructure; vascularization

MeSH: Adolescent; Bicuspid; Dental Cementum; Dental Pulp; Dental Pulp Calcification; Dental Pulp Necrosis; Dentin; Dentin, Secondary; Dilatation, Pathologic; Female; Fibrosis; Humans; Male; Odontoblasts; Orthodontic Appliance Design; Orthodontic Extrusion; Pulpitis; Root Resorption; Stress, Mechanical; Time Factors; Tooth Movement; Vacuoles; Young Adult

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