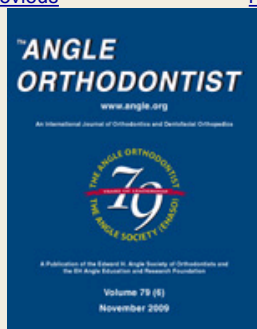


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Original Article

## Effects of Intrusive Force on Selected Determinants of Pulp Vitality

Rita Veberiene<sup>a</sup>, Dalia Smailiene<sup>b</sup>, Jovita Danielyte<sup>d</sup>, Adolfas Toleikis<sup>e</sup>, Arvydas Dagys<sup>c</sup>, and Vita Machiulskiene<sup>f</sup>

### Abstract

**Objective:** To determine the activity of aspartate aminotransferase (AST) in the pulp of orthodontically intruded teeth and to test the sensitivity of these teeth by means of electrical pulp testing (EPT).

**Materials and Methods:** The study sample consisted of 21 healthy subjects who needed extraction of first premolars for orthodontic reasons. In every subject, one premolar included in a 0.016"–0.022" stainless steel spring from the first molar and loaded by the force was regarded as a test tooth. The magnitude of the intrusive tipping force for every tooth was calculated with the use of ANSYS 10.0 software. The contralateral premolar was used as a control tooth. After 7 days, the spring was removed, and EPT was applied to test and control teeth. The teeth were extracted, and the dental pulp was removed. AST activity in the pulp was determined spectrophotometrically at 20°C.

**Results:** Estimated mean AST activity values ranged from 0.572 ± 0.097 U/mg in the test teeth to 0.348 ± 0.053 U/mg in the control teeth ( $P < .01$ ). The EPT test showed significant differences between test and control teeth ( $P < .001$ ). The mean estimated magnitude of the intrusive tipping force was 61 ± 4.5 g.

**Conclusion:** Seven days of orthodontic intrusion can cause metabolic changes in the pulp expressed by increased AST activity. The increased threshold in the pulp reaction to EPT indicates changes in the neural response of the pulp.

**Keywords:** [Aspartate aminotransferase](#), [Dental pulp](#), [Pulp vitality](#), [Orthodontic intrusion](#)

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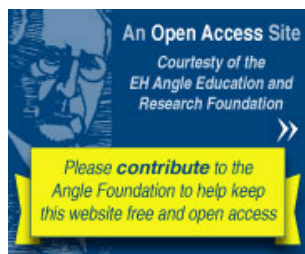
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