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A numerical investigation to achieve optimum intrusion of a maxillary central incisor in lingual orthodontics

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The objective of the present study was to devise an optimum force system by specifying toe (Θ) for an intrusive force to achieve intrusion of a maxillary central incisor in lingual orthodontics. The geometrical model of a maxillary central incisor with normal inclination was developed. The total six different positions of the bracket slot were considered according to three different heights (h) from the incisal edge as 3 mm, 4 mm, 5 mm and two different horizontal distances (x) from incisor surface as 2 mm and 3 mm. The finite element analysis was performed to verify the calculated values of Θ for all the aforesaid six positions of the bracket slot. In finite element analysis, the results were shown in the form of vectors of nodal displacements along with undeformed and deformed models. The desired intrusion of a maxillary central incisor was observed. Thus, the devised force system from a geometrical model was verified with finite element analysis. For x=2 mm and 3 mm, no toe was required at heights h=4 mm and 3 mm, respectively. Thus, the almost pure intrusion can be achieved at these positions of bracket slot. Hence, these two positions can be considered as better positions of bracket slot.

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Orthodontics: Creating new vision

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Nowadays there are a lot of different approaches in orthodontics. We have a variety of different appliances – fixed (both labial and lingual), functional, growth guidance. We have hundreds types of appliances in use, but we still have important questions unanswered like: There are side-effects; there is controversy about when to start orthodontic treatment; there is still no consensus about the causes of malocclusion; there is a marked lack of information about long-term stability; finally there are TMD and sleep apnea – the etiology of these conditions I believe should be better understood in order to prevent them in early stages. The United States of America are known as the motherland of contemporary orthodontics. So I decided to shoot a documentary about the orthodontics in order to collect different opinions and create a wider vision on the problems we currently have in the specialty. I've crossed the continent two times and filmed 9 interviews with American orthodontists. From that material I've edited my film. In my lecture I'm going to talk about the experience I've gained during the creation of this project and also about the conclusions I can make now regarding the controversy in orthodontics.

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