



CFAO GRADUATE STUDENT POSTERBOARD ABSTRACTS

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Patient compliance and pain perception using low-intensity pulsed ultrasound (LIPUS) to accelerate tooth movement

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Introduction:

SmileSonica Inc. is a Canadian medical device company which produces the Aevo System™ to enhance or accelerate orthodontic tooth movement via therapeutic ultrasound (LIPUS). When used for one 20-minute period per day as a complement to braces, the Aevo System enhances osteoblast and osteoclast activity resulting in accelerated alveolar bone remodeling and, therefore, faster orthodontic tooth movement and reduction in root resorption.

Purpose:

To clinically assess patient compliance and pain perception with the Aevo System.

Subjects and methods:

Eight subjects (12 to 23 y.o.) from a university-based (4) and private orthodontic office site (4) with full fixed braces and 1st premolar extractions, used the Aevo System on a requested daily basis for 20 minutes, until extraction space closure was accomplished employing a split-mouth design. Compliance was ascertained from the Aevo System in-clinic software and a pain perception questionnaire was completed by the subjects.

Results:

Preliminary data are presented in this research report. Patient compliance varied from 38.8% - 99.3%. On average patients from the private office were more compliant (74.8%) than university-based patients (54.3%). On a pain perception scale from 1 to 10 (1= no pain and 10 = extreme pain), 7 of 8 patients recorded a score of 1, and 1 patient, a score of 3, which was also the only patient with a pain score in the control group.

Generally, from the five multi-site study across Canada, results show that the Aevo System provides a statistically significant increase in tooth movement rate ($p < 0.05$), with an average percentage increase of 29.0% in tooth movement, compared to the control. It was also shown that the Aevo System had a statistically significant decrease in root resorption rate ($p < 0.05$), with the control having a root resorption rate on average 220.8% higher than Aevo System. Finally, there was no increase in adverse events or pain reported for the Aevo System as compared to the control ($p < 0.05$).

Conclusions:

There exists a wide range in patient compliance in system usage. Patients do not perceive any increase in pain when using this device. Tooth movement is accelerated.