

Efficacy of lower arch leveling, lower incisors' root resorption, and pain associated with the correction of curve of spee using different orthodontic archwires: A randomized clinical trial

Yousef Nasrawi

Jordan University of Science and Technology, Jordan

Objectives: To compare between 3 Arch Wires (AWs) for leveling Curve of Spee (COS) in terms of efficacy of reduction, External Apical Root Resorption (EARR), pain experienced, and the lower arch dimensional changes during COS leveling.

Trial design: Randomized clinical trial.

Setting: Jordan University of Science and Technology Postgraduate dental clinics.

Material and Methods: Fifty-three subjects with $COS > 5$ mm were included in this study. The subjects were randomly divided into three groups based on the AW used: group 1, 0.017X0.025-inch Stainless-Steel (SS) AW; group 2, 0.019X0.025-inch SSAW; and group 3, 0.021X0.025-inch β -titanium (TMA) AW. The intervention was randomly allocated using the permuted random block size of 3 with a 1:1:1 allocation ratio. In the three groups, a 5-mm depth reverse COS was placed in the AWs. The following time points were defined for COS assessment: T1, before interventional leveling AW placement; and T2–T7, 1–6 months after interventional leveling AW placement. Records consisted of dental study models and Peri Apical (PA) radiographs.

Pain scores were recorded using a visual analog scale. Patients were followed up on a monthly basis until $COS < 1.5$ mm.

Main Outcome: Measures COS depth reduction, lower incisors' EARR, pain scores, and arch dimensional changes.

Results: An overall reduction of 3.82 mm, 4.47 mm, and 3.85 mm of the depth of COS was achieved in groups 1, 2 and 3, respectively. The mean differences of 0.65 mm between groups 1 and 2 and 0.62 mm between groups 2 and 3 were significant at $P < 0.05$. Lower incisors' EARR during leveling COS ranged from 0.68 to 0.72 mm, from 0.63 to 0.82 mm, and from 0.53 to 0.88 mm in groups 1, 2 and 3, respectively ($P > 0.05$). Higher pain scores were reported by group 2 subjects during the first 24 h. Arch length and width increased significantly in groups 2 and 3 ($P < 0.05$). In all groups, COS leveling was achieved by lower incisor intrusion and proclination and lower molar extrusion.

Conclusion: All investigated AWs were effective in leveling COS with minimal lower incisors' EARR (< 1 mm). COS was leveled by lower incisors' intrusion and proclination and lower molar extrusion. Pain scores were the highest in group 2 during the first 24 h.

28th World Congress on Dentistry and Oral Health

October 07, 2022

Webinar

Clinical Relevance: The 3 investigated leveling AWs were effective for the leveling COS and at the same time safe on the roots of the lower anterior teeth.

Biography

Yousef Nasrawi graduated from Jordan University of Science and Technology in 2015 and was among the top 10% of the batch. In the following two years, in 2016 he received a membership in the Royal College of Surgeons-Ireland, and in 2017 he received another membership in the Royal College of Surgeons and Physicians–Glasgow. In 2020 he has finished his Master's degree in Orthodontics from Jordan University of Science and Technology, and in the same year, he had obtained the American Dental Board. He is working currently in both clinical practices and in Jordan University of science and technology as a lecturer. His main interests are in orthodontics generally and in contributing to the advanced technological methods in biomechanics specifically.

Received: July 22, 2022; **Accepted:** July 24, 2022; **Published:** September 12, 2022
