University of Toronto

LEVELING OF THE CURVE OF SPEE IN DEEP OVERBITE CASES TREATED WITH THE INCOGNITOTM LINGUAL APPLIANCE SYSTEM: A RETROSPECTIVE CEPHALOMETRIC ANALYSIS

J Nardone*, B Tompson, A Metaxas, S Suri
Department of Graduate Orthodontics, Faculty of Dentistry, University of Toronto

An excessive curve of Spee (COS) is a common finding amongst orthodontic patients, particularly in those with a deep overbite (OB). The method by which this curve is leveled and the deep bite is corrected is dependent on the orthodontic technique used. Studies investigating leveling techniques using conventional labial appliances have been carried out, but to date, little data exists for lingual systems. The purpose of this retrospective cephalometric analysis was to determine the method of leveling and deep bite correction in patients treated with Incognito™, a fully customized lingual orthodontic appliance system. Pre-treatment and post-treatment cephalometric radiographs were collected and compared for 34 adult patients each with a deep OB and an excessive COS treated with a fully customized lingual bracket and archwire system, Incognito™. Radiographs were examined using Dentofacial Planner v9 Beta (Dentofacial Research Inc., Toronto Canada) and paired t-tests were performed on the data. The mean pre-treatment and post-treatment COS was 1.78 mm (SD: 0.36 mm) and 0.37 mm (SD: 0.41 mm) respectively, indicating a significant amount of occlusal plane leveling (-1.41 mm, SD: 0.49 mm, $p < 0.001$). The mean pre-treatment and post-treatment OB was 5.80 mm (SD: 1.26 mm) and 2.91 mm (SD: 0.86 mm) respectively, demonstrating a significant reduction in the amount of incisor overlap (-2.89 mm, SD 1.27 mm, $p < 0.001$). COS Leveling and deep OB correction was accomplished by mandibular incisor intrusion (-0.92 mm, SD: 0.87 mm, $p < 0.001$), mandibular premolar extrusion (0.85 mm, SD: 0.91 mm, $p < 0.001$), mandibular molar extrusion (0.50 mm, SD: 0.89 mm, $p < 0.05$), in addition to a considerable but variable degree of incisor proclination (mandible: 6.86°, SD: 5.10° $p < 0.001$, maxilla: 2.61°, SD: 5.82°, $p < 0.05$). In this sample of adult patients treated with the Incognito™ lingual appliance system, COS leveling and deep OB reduction were achieved primarily by incisor proclination, and a slightly greater (but not significant) amount of mandibular incisor intrusion versus premolar and molar extrusion.