

# The Effect of Bilateral Sagittal Split Osteotomy on Inferior Alveolar Nerve: Three Dimensional Evaluation

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**Objective:** To determine the changes in mandibular canal (MC) course, length and the risk factors for inferior alveolar neurosensory disturbance (IAND) after bilateral sagittal split ramus setback osteotomy.

**Methods:** CBCT images of 21 patients were evaluated using Simplant ProStandalone 13.0. Distances between MC and mandibular bony borders, the least distance between fixation screws and MC was measured. Canal course was automatically extracted in 3D and MC length was measured. Neurosensory disturbance was examined by subjective clinical tests and a questionnaire. Results were evaluated statistically.

**Results:** It was examined that mandibular foramen was located in the middle third of ramus and in the 2nd molar region MC was located in the middle third of corpus supero-inferiorly in most of the patients. It was found that ramus widths and medial lengths were increased, ramus lengths and anterior lengths were decreased, postoperatively. The decrease in MC length was not related with set-back amount. Subjective clinical test results were found compatible with each other except brush-directional stroke test. According to the questionnaire, IAND was apparent in all patients on lower lip and chin, as anesthesia in 94.4% and the recovery after 1-2 years was statistically significant. Preoperative ramus width, medial and lateral cancellous bone thickness, the decrease in MC length, the amount of set-back and screw positions located in the MC were not related with IAND.

**Conclusion:** The most important risk factor for IAND is the surgical procedure. Preoperative 3D examination is the best assistance for a well experienced surgeon for personalized modifications.

**Key words:** Mandibular canal, inferior alveolar neurosensory disturbance; osteotomy