

A Computed Tomographic Image Study on Thickness of the Modified Infrazygomatic Crest Site Between Patients with Class I and Class III Skeletal Pattern

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Abstract

Objectives: To compare thickness of modified infrazygomatic crest (IZC) and determine an optimal area for the miniscrew insertion in modified IZCs in skeletal Class I and Class III patients.

Methods: Cone-beam computed tomography images of IZCs of 15 of skeletal Class I patients and 15 skeletal Class III patients were oriented using Dolphin Imaging software. Four axial slices were done at vertical levels of 5, 6, 7, and 8 mm apical to the buccal cemento-enamel junction of the maxillary first molar (U6). Parameters measured were buccal cortical bone thickness, buccal plate thickness of the distobuccal root of the U6 and mesiobuccal root of the maxillary second molar, and thickness of modified IZC with different angles of insertion, 55°, 60°, 65°, and 70° to the U6 occlusal plane. Independent-sample t-tests were performed ($p < 0.05$).

Results: Buccal cortical bone thickness in skeletal Class III patients (1.55 ± 0.30 mm to 1.64 ± 0.40 mm) was significantly greater than skeletal Class I patients (1.34 ± 0.36 mm to 1.39 ± 0.35 mm). Thickness of modified IZC in skeletal Class I and Class III patients showed no statistically significant differences. More than 6 mm of thickness of modified IZC were found at vertical levels of 5 and 6 mm in skeletal Class III patients and 5 mm in skeletal Class I patients.

Conclusions: Optimal areas for IZC miniscrew insertion were found at vertical levels of 5 and 6 mm in skeletal Class III patients and at vertical levels of 5 mm in skeletal Class I patients with 55°-70° insertion angles.

Keywords: buccal cortical bone thickness, Class I skeletal pattern, Class III skeletal pattern, miniscrew implant, modified infrazygomatic crest site