

In Vitro Mechanical Analysis of Different Techniques of Internal Fixation of Combined Mandibular Angle and Body Fractures

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Purpose To evaluate in vitro resistance of 5 techniques of internal fixation of bilateral fractures involving the mandibular angle and body. **Materials and Methods** Twenty-five polyurethane mandibles were used as substrates, fixed with a 2-mm fixation system, and divided into 5 groups: I, 1 4-hole plate, without intermediate space, in the neutral zone of the mandibular body and another similar plate in the external oblique ridge of the contralateral mandibular angle; II, 1 6-hole plate, with intermediate space, in the neutral zone of the mandibular body and a similar plate in the external oblique ridge of the left mandibular angle; III, 1 4-hole locking plate, with intermediate space, in the right neutral zone and another similar plate in the left external oblique ridge; IV, 2 4-hole plates, with intermediate space, one in the tension zone and the other in the compression zone of the mandibular body, and 1 4-hole plate, with intermediate space, in the external oblique ridge of the contralateral mandibular angle; V, 2 4-hole plates with intermediate space, one in the tension zone and the other in the compression zone of the mandibular body and similarly in the buccal side of the left mandibular angle. Mandibles were subjected to vertical linear load tests by a mechanical testing machine (Instron 4411, Instron Corp, Norwood, MA) to record peak load and load for displacements of 3, 5, and 7 mm. **Results** Group I had the least mechanical resistance of all groups, regardless of displacement, and group IV had the greatest mechanical resistance. Among groups II, III, and V, there was no statistically meaningful difference. **Conclusion** Fixation of bilateral mandibular fractures involving the mandibular angle and body using 2 plates in the region of the body and 1 plate in the tension zone in the region of the mandibular angle was the technique that

presented the best mechanical resistance. © 2016 American Association of Oral and Maxillofacial Surgeons.