

CHAPTER 6

CONCLUSIONS

Miniscrew implant is obtained mainly by the mechanical retention of the screw into the bone. The study of the mechanical retention of the miniscrew implants plays an important role to better understand the nature of failure and optimum application of this device.

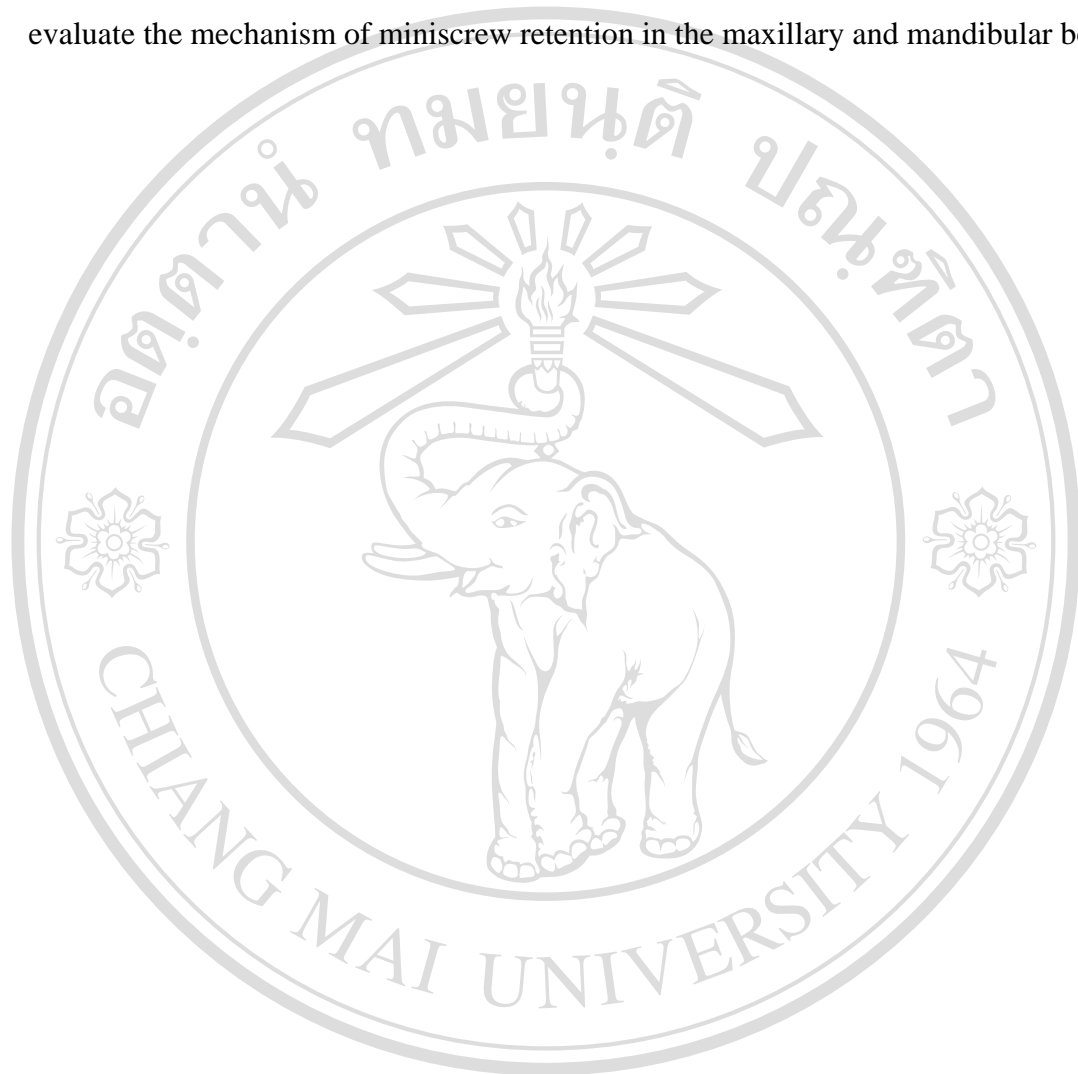
According to the findings of this systematic review, the use of insertion angles for miniscrew implant placement has been recommended by only a minority of protocols. In addition, the use of insertion angles has been recommended mainly to prevent root damage. Although most articles suggested miniscrew implant insertion angles of 30-40 degrees to the maxillary and 10-20 degrees to the mandibular dentoalveolar bone, there was no consistency regarding the anatomical reference for the measurements.

Although the insertion angulation has been suggested to increased mechanical retention, there are not sufficient evidence-based studies to confirm the hypothesis that the use of reduced miniscrew-bone angulation would improve significantly the biomechanical performance of miniscrew implants. Moreover, it is unknown to what extent the insertion angulation would significantly improve the biomechanical performance of the miniscrew implant in the maxillary or mandibular bone.

There is no scientific evidence that use of reduced angulation would improve the biomechanical performance of the miniscrew implants. Evaluation of the effects of insertion angulation on the biomechanical performance of the miniscrew implants is necessary.

In the present study, the use of miniscrews inserted at angulations exhibited different mechanical characteristic patterns on the maxillary and mandibular bones. In the maxillary bone (thin cortical bone), the use of insertion angulation was not effective to improve the mechanical properties of miniscrews. On the other hand, the use of insertion angulation played an important role on the mechanical retention of miniscrews inserted in the mandibular bone. Miniscrew inserted with reduced

angulation (30 degrees) angulation was effective on the anterior portion of the mandible. The thickness and density of the cortical bone plays an important role on the mechanical retention of miniscrew implants. Further studies are still necessary to evaluate the mechanism of miniscrew retention in the maxillary and mandibular bone.



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