

I-3. The effect of osteotome technique on primary implant stability according to implant fixture diameter

Kim Su-Hyun¹, Jae-Kwan Lee¹, Chan-Jin Park²

¹Department of Periodontology, College of Dentistry, Kangnung National University

²Department of Prosthodontics, College of Dentistry, Kangnung National University

Background

Primary stability is a fundamental criteria of implant success. There has been various trials to increase initial stability and bone to implant contact. The objective of osteotome technique is to preserve all the existing bone by minimizing or even eliminating the drilling sequence of the surgical protocol. The bone layer adjacent to the osteotomy site is progressively compacted with various bone condensers (osteotomes) this will result in a denser bone to implant contact. This improved bone density helps to optimize primary implant stability in low density bone. The use of wide implant is one of methods to increase primary stability. They can be used in special situations in which they can increase the surface area available for implant anchorage and improve their primary stability.

Materials and Methods

225 implants of different diameter (3.3mm, 3.73mm, 5.0mm) and same length (10mm) were placed in bovine ribs by conventional drilling and Osteotome technique. Osteotome technique was compared with conventional drilling method by resonance frequency measurements according to the implant fixtures diameter.

Results and Conclusion

1. The average of ISQ value was slightly higher in osteotome technique, but there was not statistically significant in regular and narrow implant ($p < 0.05$).
2. Either osteotome technique or conventional technique, ISQ value was significantly higher as increasing of implant diameter ($p < 0.05$).
3. ISQ value of drilling technique was higher than those of osteotome technique in wide implant. It was assumed to be caused by difference in final preparation diameter.

key words : osteotome technique, primary stability, implant fixture diameter