

여송신인 학술상 후보 OV - 2

**Changes of implant stability in the mandible
from installation to the loading period. :
A clinical study on the measurement of implant
stability using resonance frequency analysis.**



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Resonance frequency analysis (RFA) has been increasingly served as a non-invasive and objective method for clinical monitoring of implant stability in many situations. And standardized baseline data using RFA are urgently required. This study was performed to evaluate RFA value changes in two-stage surgery group and one-stage surgery group in patients. Forty-seven mandibles in consecutively implant installed patients were selected for this study and 141 fixtures were installed. Ninety-three fixtures were double threaded, machined surface design (Branemark® MK III, Nobel Biocare AB, Göteborg, Sweden) and 48 fixtures were root form, threaded, HA-coated surface one (Replace™, Steri-Oss/Nobel Biocare AB, USA). Among those, each 10 fixture was installed in one-stage group patients. ISQ values were measured using Osstell™ (Integration Diagnostics Ltd. Sweden) during fixture installation, at

healing abutment connection and in the loading period for two-stage surgery group patients and during at each 4, 6, 8, 10, 12 week and in the loading phase for one-stage surgery group patients and evaluated the changes according to the time and fixture type. Additional parameters such as bone quality, bone quantity, fixture length, marginal bone resorption, cover screw exposure were also assessed and evaluated correlation with ISQ value changes.

The followings were concluded from this study :

1. In two stage surgery group, mean and SD of ISQ values of machined surface implants were 76.85 ± 3.74 , 75.76 ± 5.04 , 75.73 ± 4.41 and those of HA-coated surface implant were 75.05 ± 6.23 , 77.58 ± 5.23 , 78.32 ± 4.29 during fixtures installation, at healing abutment connection and in the

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- loading period, respectively.
2. In two-stage surgery group, machined surface and HA-coated surface implants showed minimal ISQ changes with time if they were installed at the sites showing at least intact cortical plate and good bone qualities.
 3. In two-stage surgery group, HA-coated implants had a tendency to show somewhat increased ISQ values with time.
 4. In one-stage surgery group, the ISQ values of machined surface and HA-coated surface implants decreased until 4 or 6 week and maintained at plateau for 1-3 week and increased to the loading period.
 5. In one-stage surgery group, the ISQ values of HA-coated surface implants were likely to show shorter decreased and plateau period than machined surface ones.
 6. There was no correlation between installed fixture length and ISQ value at fixture installation ($r=0.038$).
 7. There was a moderate to good negative correlation between ISQ changes and marginal bone level score changes in two-stage group ($r=-0.520$, -0.505).
 8. There was a moderate to good positive correlation between marginal bone level scores and cover screw exposure in two-stage group ($r=0.618$).