

Resonance Frequency Analyze of the primary and secondary implant stability of dental implants

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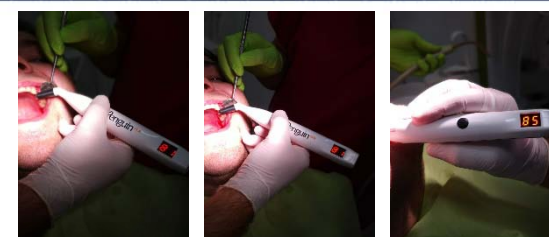
Background: One of the most important factors for the longevity of dental implants is their primary and secondary stability. Primary stability is related to the quality of the local bone and the quantity of bone, the type of implant and the technique of placement. Secondary stability is increased by bone formation and remodeling between the implant / tissue interface and surrounding tissue.

Aim: The main goal of our study was to determine the primary and secondary stability of dental implants in patients with Ankylos[®] dental implants.

Material and methods: This clinical study will be performed in a private dental office "Dent estet" in Stip, Republic of N. Macedonia. The implants were surgically implanted by a specialist oral surgeon. The stability of the implants will be measured by analyzing the resonant frequency using the instrument, called PenguinRFA(Integration Diagnostics, Sweden AB). Implant Stability Quotient - ISQ is the measurement unit of this diagnostic tool, the measurement units range from 1 to 99 and higher values show better stability of the implants. The implants will be positioned according to the two-phase protocol of implantation, where the implant was implanted in the first phase, and then we will determine the primary stability with the PenguinRFA (Resonance Frequency Analyze). In the second phase after three months, the second measurement was carried out and the secondary stability was determined. Statistical processing was performed in statistical program Statistica 7.1 for Windows.

Results: The average values for ISQ for primary stability in subjects with Ankylos[®] implants vary in the range 63.84 ± 9.6 units, while for secondary stability the values vary in the interval 75.56 ± 10.7 units. The secondary stability of these implants is significantly higher than the primary stability (for $p < 0,01$ precisely for $p = 0.00$). It should be noted is that the determined relationship between the ISQ values of the primary and secondary stability of Ankylos[®] implants showed a high positive correlation. Also it is noted that, the increasing of ISQ values for primary stability were accompanied by an increasing of the ISQ values for secondary implant stability.

Conclusion: Determining primary and secondary implant stability has greatly influence on the longevity of the dental implants. Based on our research, it was noted that the increasing the ISQ values measured for primary implant stability was accompanied by an increased ISQ values related to secondary implant stability. Because of this, it can be concluded that the increased primary stability of the implants goes along with increased secondary stability of the implants.



Primary stability average value	Secondary stability average value
63.84 ± 9.6	75.56 ± 10.7

