

Important Numbers in Implant Dentistry

133



Controlled Clinical Trial about Implant stability with 133 Anyridge Implants in the posterior maxilla

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Objectives

The aims of the present Clinical Controlled trial were to evaluate the primary and secondary stability of implants in the posterior maxilla in three different conditions of bone regeneration

Materials and Methods

Prospective Non-Randomized Interventional Clinical Trial. Patients were allocated into three groups: (A) native bone, (B) partially re-generated bone, and (C) nearly totally regenerated bone (prior sinus lift and filling with at least 8 months of healing). Insertion torque (IT) and implant stability quotient (ISQ) of the implants (Anyridge, Megagen®) (fig.1) were measured at placement, to evaluate whether satisfactory high primary stability (IT 45N/cm; ISQ 60) was achieved; ISQ was measured 15, 30, 45, and 60 days after placement, to investigate the evolution to secondary stability. Implant torque was determined during implant surgery with a Novag® motor with a 20:1 reduction and/or the help of an implant calibrated torque key (fig.2). RFA was expressed by the implant stability quotient (ISQ), evaluated through Osstell® analysis on two perpendicular assessments (fig.3). Certification of smart-peg insertion at 10N/cm was made with Meg-torque engine. (fig.4) The present study is registered in the ISRCTN registry with ID ISRCTN33469250.



Fig. 1



Fig. 2



Fig. 3



Fig. 4

Results

133 implants (Anyridge, Megagen®) were installed in 59 patients :55 fixtures were placed in Group A, 57 in Group B, and 21 in Group C. Fifty-two implants had satisfactory high primary stability (IT 45N/cm; ISQ 60), according to the protocol (table 1 and 2). A positive correlation was found between all variables (IT, ISQ at t=0, t=60), and statistically higher IT and ISQ values were found for implants with satisfactory high primary stability. Significant differences were found for IT and ISQ between the groups (A, B, and C) (fig.5) but not between groups B and C; however, the median values of ISQ were very high (table3) and no drops were reported in the median ISQ values during the healing period in any of the groups. (fig.6)

GRUPO	TORQUE	ISQ T=0	ISQ T=15	ISQ T=30	ISQ T=45
A	25	25	12	12	8
B	20	20	13	12	10
C	7	7	7	7	7
Total	52	52	32	31	25

Table 1

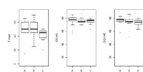


Fig. 5

Variable	N	Min	1 st quart	mediana	Media	2 nd quart	Maximo
Torque	133	5.00	25.00	35.00	37.62	50.00	70.00
ISQ t=0	133	10.00	43.00	72.50	69.06	77.00	87.00
ISQ t=60	133	49.50	67.50	73.50	71.80	77.50	86.00
IT (N)	52	45.00	45.00	50.00	52.50	60.00	70.00
ISQ t=0 (N)	52	70.00	75.00	77.25	77.63	79.00	87.00
ISQ t=15 (N)	32	59.50	72.00	76.25	75.56	79.12	85.50
ISQ t=30 (N)	31	59.50	72.50	76.00	75.35	79.25	87.00
ISQ t=45 (N)	25	60.00	73.50	75.50	75.64	76.64	86.00
ISQ t=60 (N)	52	60.00	74.50	77.50	76.57	79.00	86.00

Table 2

	ISQ t=0	ISQ t=15	ISQ t=30	ISQ t=45	ISQ t=60
A	76.9	79.25	77.75	76.50	76.89
B	75.2	77.50	74.00	75.75	75.89
C	77.3	76.50	75.50	76.50	74.59

Table 3

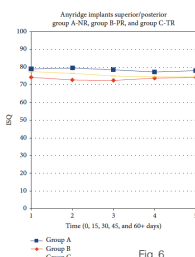


Fig. 6

Conclusions

The evaluation of the primary and secondary implant stability may contribute to higher implant survival/success rates in critical areas, such as the regenerated posterior maxilla.

The implant system used in this study (Anyridge) showed linear ISQ progression, without a significant drop of stability values within the first two months of healing (most critical phase). This last finding may be related to the surgical protocol adopted, but also to the macrotopographical features (threads design) and to the surface of the implant used in this study, characterized by a peculiar nanotopographic design.

References

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2. L. Malchiodi, L. Balzani, A. Cucchi, P. Ghensi, and P. Nocini, "Primary and secondary stability of implants in postextraction and healed sites: a randomized controlled clinical trial," *The International Journal of Oral and Maxillofacial Implants*, vol. 31, no. 6, pp. 1435–1443, 2016.