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Graftless Rehabilitation of the Edentulous Jaws, with Immediate Function and Immediate Implantation.

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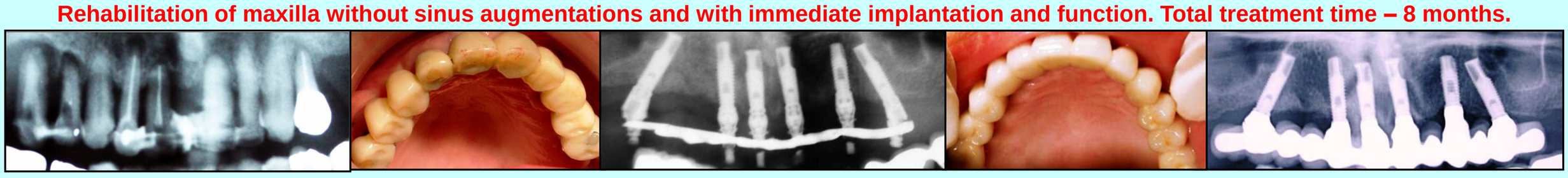
Topic: Implant therapy outcomes, surgical aspects

Preliminary results (up to 6 years) of ongoing prospective clinical research.

Rehabilitation of maxilla without sinus augmentations and with immediate implantation and function. Total treatment time – 8 months.



Before treatment | Screw-retained acrylic provisional with immediate function | Final cemented 12-units PFM bridge

Background

The rehabilitation of the edentulous maxilla and mandible, is very often a complicated procedure in those patients who desire for non removable and aesthetic prosthesis. Very often the placement of implants in the posterior maxilla and mandible, is impossible without prior bone grafting.

Graftless rehabilitation by placing implants in the remaining bone volume is a challenge. Immediate function and immediate loading on implants placed in post extraction sockets add to this challenge.

Aim of the study

The objectives of this study are to evaluate:

- The surgical outcome of Tilted Implants as alternative to Bone Grafting.
- Predictability of Immediate Loading especially in the Maxilla.
- Predictability of Immediate Implantation with and without Immediate Loading.

Methods and Materials

279 patients (117 males and 162 females) with the mean age of 59 years were participated in this clinical study.
206 full arches, 28 hemi arches and 98 posterior partial segments (all in both jaws), were restored without prior grafting, by the use of 546 Tilted implants and 1032 Axial implants. (Total 1578 implants).

The Tilted implants were placed in extreme angularity up to 45 degree located mesially to the maxillary sinuses, or to the mental foramens.

Immediate function was applied on 294 Tilted implants, and on 405 Axial implants. (Total 699 implants)

Immediate implantation in post extraction sockets, was applied with 99 Tilted Implants and with 497 Axial Implants. (Total 596 implants).

Immediate implantation followed by immediate loading was applied on 68 Tilted implants and on 221 Axial implants. (Total 289 implants).

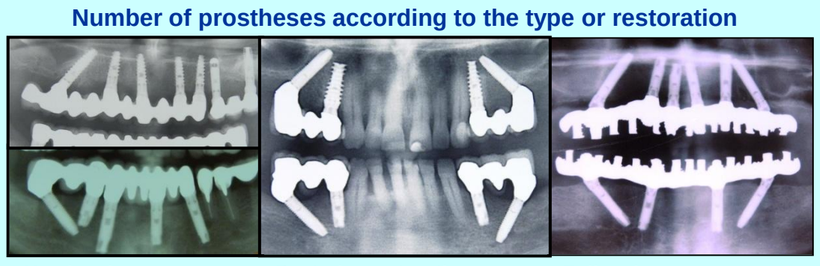
The patients were followed periodically for 6-72 months after the surgery, with clinical and radiographic evaluation.

Follow-up distribution

Mean follow up: 33 months

Months	Patients
6-12	28
13-24	60
25-36	71
37-48	74
49-60	23
61-72	23
Total	279

Number of prostheses according to the type or restoration



Hemi arch:
Maxillary – 22
Mandibular - 6

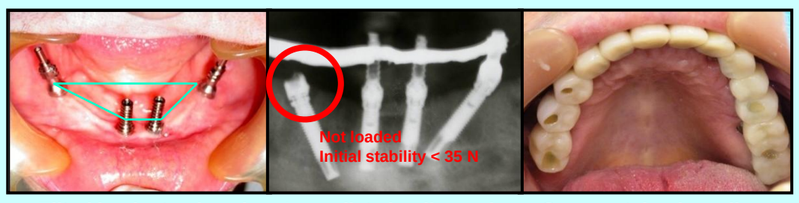
Posterior restorations:
Maxillary - 88
Mandibular - 10

Full arch:
Maxillary - 131
Mandibular - 75

Main surgical principles

Tilted distal implant in extreme angularity | Additional 2 - 4 axial implants In the anterior zone | Immediate implantation in post-extraction sockets with imm' load

Bone augmentation of any defects | Splinting transfers by pattern resin to obtain accuracy | Impression at the Surgery session



Tilted implants placed most distally possible for optimal distribution of forces | Immediate loading only on implants with initial stability > 35 N | Screw retained acrylic temporary with passive fit delivered within 2 days

Various final restoration options

Screw retained PFM or Metal-acrylic bridge | Fixed denture | Cemented PFM bridge

Results

Tilted implants distribution according to implant location

Maxillary tooth Position	Tooth No. 16	Tooth No. 15	Tooth No. 14	Tooth No. 24	Tooth No. 25	Tooth No. 26
Quantity of implants	46	71	7	13	73	52
Mandibular tooth Position	**Tooth No. 46**	**Tooth No. 45**	**Tooth No. 44**	**Tooth No. 34**	**Tooth No. 35**	**Tooth No. 36**
Quantity of implants	20	53	4	3	54	16

Length of final full arch with 1 distal cantilever each side :
10 teeth arch – 2nd premolar occlusion - 6.5 % of cases
12 teeth arch – 1st molar occlusion - 61.0 % of cases
14 teeth arch - 2nd molar occlusion - 32.5 % of cases

93.5 % of cases received full arch without prior grafting

15 Titled implants were failed (CSR=97.25%), from which 8 implants were immediate loaded (CSR=97.28%), 2 implants were immediate implanted (CSR=97.98 %), and 1 implant was immediate implanted and loaded (CSR=98.53%).

21 Axial implants were failed (CSR=97.97%), from which 10 implants were immediate loaded (CSR=97.53%), 10 implants were immediate implanted (CSR=97.99%), and 6 implants were immediate implanted and loaded (CSR=97.29%).

No significant differences were detected in referring to CSR of tilted and axial implants, neither between maxilla and mandible nor between method of implantation: (immediate loading, delayed loading, immediate implantation with and without immediate loading).

Limited peri-implant bone loss was found with no difference between tilted and axial implants.

100 % success in cases, after re-implantation of strategic failed implants, with almost no mechanical complications.

93.5 % of cases received full arch restoration without prior grafting.

Type	Quantity	Failure	CSR %
Tilted	294	8	97.28
Axial	405	10	97.53
Total	699	18	97.42

Immediate loading results

Type	Quantity	Failure	CSR %
Tilted	252	7	97.22
Axial	627	11	98.25
Total	879	18	97.95

Delayed loading results

Type	Quantity	Failure	CSR %
Tilted	99	2	97.98
Axial	497	10	97.99
Total	596	12	97.99

Immediate implantation results

Type	Quantity	Failure	CSR %
Tilted	68	1	98.53
Axial	221	6	97.29
Total	289	7	97.58

Immediate implantation with immediate loading results

Conclusions

Graftless rehabilitation of the atrophied maxilla and mandible, with the use of titled implants with immediate function and immediate implantation, to support fix prostheses, can be considered as a predictable technique, with an excellent prognosis and with considerable benefits.

Sinus grafting and Onlay Bone grafting can be avoided in majority of cases.

References

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Rehabilitation of very severe atrophied mandible without onlay grafts with immediate function – Total treatment time 7 months.

Before treatment | Screw retained provisional with immediate function | Final screw retained PFM bridge

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