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One-piece narrow diameter implants to treat single narrow edentulous spaces. Case Series.

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INTRODUCTION:

Single edentulous spaces with limited bone availability are cases of complex resolution. Implants of reduced diameter can be used when the width of edentulous space is reduced. These implants require a simplified surgical and prosthetic procedure, avoiding the use of complementary regenerative techniques, such as bone grafts.

One piece implants, MDL® 2.5 mm in diameter from Intra-lock®, are described as multifunctional implants since they present a one-piece structure with different lock alternatives. The system is ideal for long-term denture stabilization or fixed prosthetics.

PURPOSE:

Evaluate the clinical behavior of one-piece narrow diameter implants (NDI) to treat single narrow edentulous spaces. One year observation period.

MDL implants ® of 2.5 mm in diameter and 13 mm in length were used. To define the range of marginal bone loss (MBL) during the observation period, the implants were analyzed clinically and radiographically every 6 months.

MATERIALS AND METHOD:

1) Inclusion Criteria

- 1.- 18 years old and older
- 2.- Single edentulous spaces in the aesthetic zone
- 3.- No radiographic evidence of infection, root resorption or trauma

MATERIALS AND METHOD

II. Surgical Procedures



III. Rehabilitation stages



IV. Data Collection

- 10 MDI implants were placed in 8 patients. 2.5 mm x 13 mm implants with a cemented abutment was the standard of treatment
- After surgery, temporary crowns were placed. The final restorations were done after 6 months.
- Marginal bone Loss (MBL) was evaluated using standardized periapical radiographs of each implant which were taken right after surgery and 6 months later.
- Esthetic evaluation was performed using standardized photographs and Pink Esthetic Score PES. This study presents the results of the first 6 months follow-up period.

MATERIALS AND METHOD

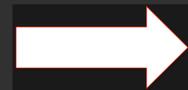
V. Evaluation Criteria.

1- Success of narrow diameter implants



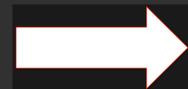
Albrektsson success criteria

2- Marginal bone loss



From the implant platform to the first implant-bone contact

3- Esthetic evaluation



Pink esthetic escore (PES) by Fürhauser

1- Success of NDI

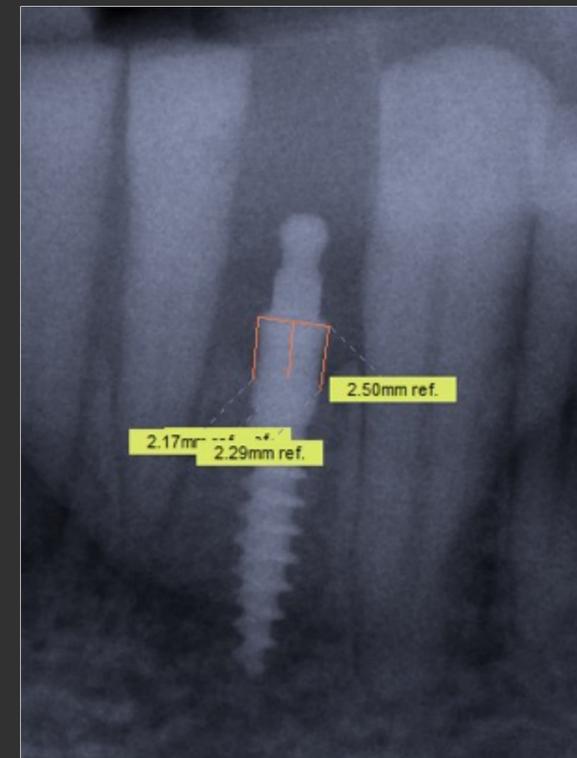
It was evaluated using the five variables of Albrektsson.

2- Marginal bone loss

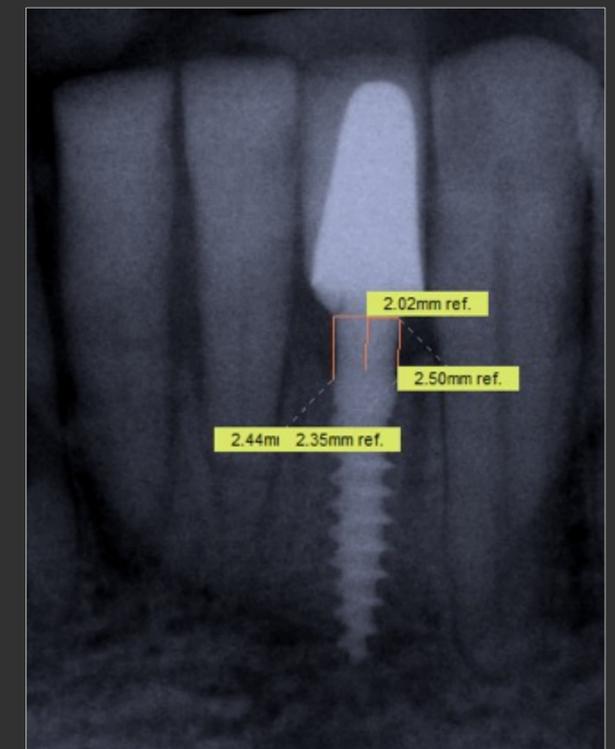
Marginal bone Loss (MBL) was evaluated with two standardized periapical radiographs of each implant, which were taken right after surgery, 6 months and a year later.

$$\text{Marginal bone Loss (MBL)} = t_0 - t_1$$

t_0 : Implant installation



t_1 : At the time of rehabilitation



MATERIALS AND METHOD

3- Esthetic evaluation

Esthetic evaluation was performed using standardized photographs and Pink Esthetic Score PES.

Photographic evaluation



Reference tooth

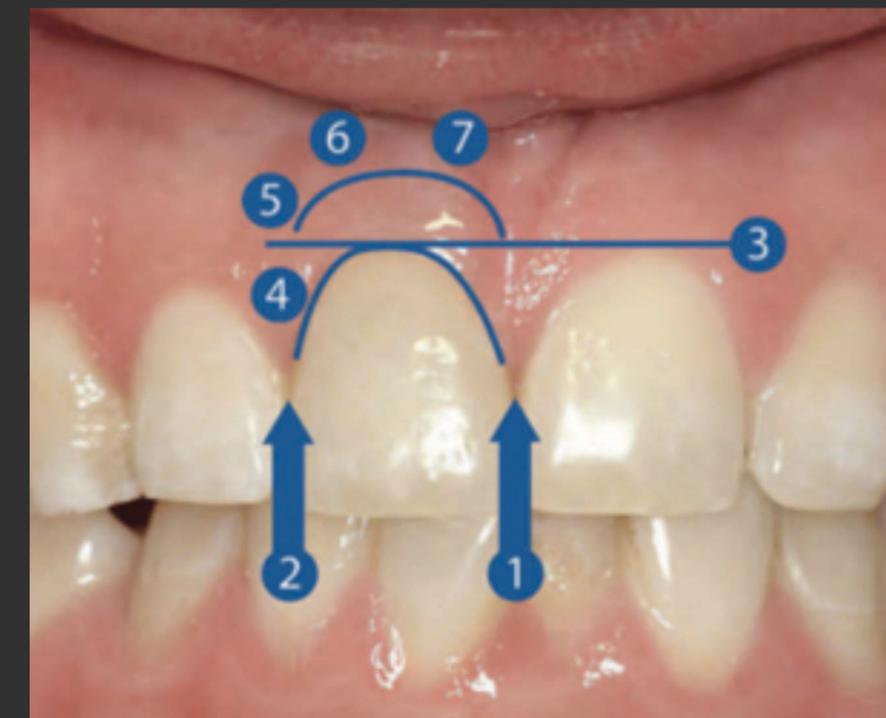
Single-tooth implant crowns evaluated

V. Evaluation Criteria.

Table: Variables of the PES

Nº	Variables
1	Mesial papilla
2	Distal papila
3	Level of soft-tissue margin
4	Soft-tissue contour
5	Alveolar process
6	Soft-tissue color
7	Soft tissue texture

Photographic evaluation PES



The questionnaire was handed to 3 individuals of variable specialization (one prosthodontist and two periodontics).

Pink esthetic score

9.83 ± 2.59

RESULTS:

The implant's success rate was 100% during one year of follow-up period. Only minor problems were reported with immediate temporization. The bone loss average was $0.46 \text{ mm} \pm 0.47.$, resulting in a significantly less bone loss than the reported in literature. The aesthetic evaluation PES average was 9.83 ± 2.59 (range 4-13 points), which is a clinically acceptable value. There were significant differences between the evaluators.

Success rate	100%
Marginal bone loss	$0.46 \text{ mm} \pm 0.47$
Pink esthetic score	9.83 ± 2.59



CONCLUSION:

Clinical and radiographic results of the one year follow up, suggest that narrow diameter implant (NDI) are an acceptable solution for the rehabilitation of single narrow edentulous spaces in the anterior esthetic region. It is extremely important the correct handling of the implant's in their three-dimensional placement , as well as , the provisional temporization and final rehabilitation. Future studies with larger sample size and a long-term observation period as proposed to three years will allow to obtain more definitive conclusions.

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