

I.A. C CONCEPT(Integrated Abutment Crown)

70 CASES STUDY

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SUMMARY

The scope of the study is to evaluate the osteointegration of 70 implants following a drilling protocol at 40 r.p.m without, as well as the clinical result of the locking taper between the implant and the abutment.

Introduction

Single restorations are probably the most frequent implant treatment nowadays. The information and patient education minimizes tooth loss and big implant supported rehabilitations are not as common as before. Besides, esthetics and functionality requirements are more demanding.

In this scenario, the planification of the cases and a good connection between the implant and the abutment is crucial to obtain patient satisfaction in single tooth restorations.

Our clinical experience using various types of screwed implant systems, is consistent with the results and complications we found in the analysis of the literature in single tooth implant repairs.

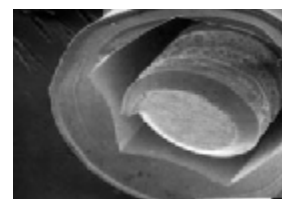


Fig. 1



Fig. 2



Fig.3

Complications after single tooth repairs:

1.- Fixation screw loosening and /or fracture (image1)

In single tooth implant repairs we have screw loosening and/or fracture principally with classic external hex connections. In some cases we have to place two implants to replace a single molar to minimize non desired consequences, following Balshi et al. recommendations. (images 2 and 3)



Fig. 4

2.- Porcelain Fracture (image 4):

If the prosthesis is cemented the treatment of a porcelain fracture is expensive, and in addition we have to minimize the psychological impact on our patient and his near relationship. He may perceive a porcelain fracture as a full restoration failure.

3.- Halitosis (image 5)

In a great number of screwed implants the adjustment between the abutment and the implant is not the adequate to impede the bacteria way between the connection gap. The existence of connection gaps drive to bacterial proliferation, bone loss around the implant abutment connection, and halitosis. The halitosis can be objectively perceived during maintenance controls when the abutment is unscrewed from the implant.

Among all implant systems available nowadays we choose the Bicon implant system as the most appropriate for single tooth repairs. This system accomplishes the functional and the esthetic requirements.

The locking taper connection together with the IAC (Implant Abutment Crown) prevent the most frequent after loading complications in single tooth implants.

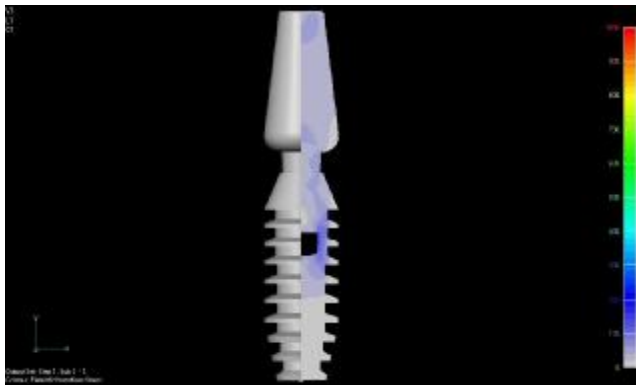
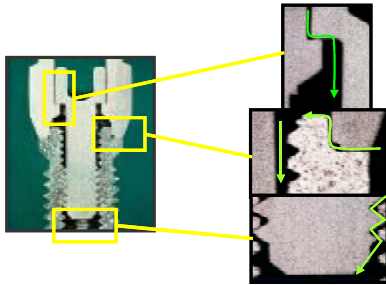


Fig. 6



Fig. 7



Fig. 8



Fig. 9

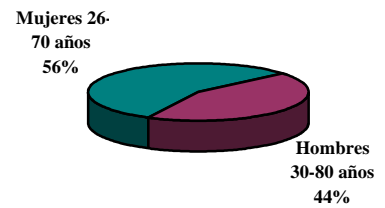


Fig. 10

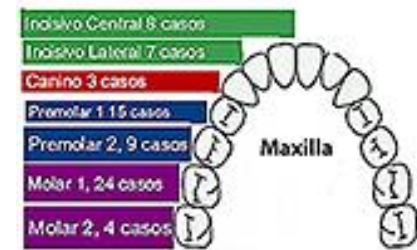


Fig. 11



Fig. 12



Fig. 13

The locking taper has two components:

- 1) The implant with a 1.5° internal conus (images 6 and 7)
- 2) The abutment with a male post of 1.5° to be connected to the implant. After an axial force is applied over the abutment connected to the implant, the connection becomes a cold weld. From this moment on, implant and abutment become a monoblock with a perfect bacterial sealing avoiding all non desired consequences of bacterial colonization that we found in screwed implants.

The abutment can be oriented or positioned in any of the 360° different positions. This is a very important feature to make and adjust the prosthesis (image 8)

This main mechanical characteristic allows us:

- Immediate loading of the abutments in a very easy way
- Extra oral crown cementation (metal ceramic or all ceramic) over the abutments. (image 20)
- IAC (Implant Abutment Crown) placement.



Fig. 14



Fig. 15

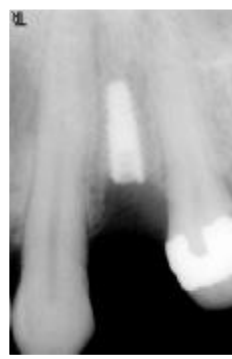


Fig.16



Fig.18



Fig. 17



Fig. 19

I.A.C Description

This advanced prosthodontic concept, takes advantage of the 360° positioning capabilities of the Bicon system and the new polyceramic materials that can be bond to the abutment, and permits to make a dental piece layer by layer including dentin, enamel and incisal.

Once the impression is took, (silicon or poliether), with an abutment analog and an implant analog a stone model is made.

The dental laboratory will be able to make a full tooth over the definitive abutment. The tooth will be made layer by layer, light curing each layer. Finally, polish the dental masterpiece. (images 9 and 12)

I.A.C Advantages:

The polyceramic material is less technician sensitive than ceramic. The material can also be manipulated at the dental office to add, remove or modify by the prosthodontist.

The modification of a ceramic crown involve several high temperature firing processes that diminish the final restoration mechanical characteristics. An eventual fracture of the polyceramic material can be easily repaired in the dental office.

This material is absolutely biocompatible and cytotoxic. Do not damage the soft tissue.

The union of the polyceramic and the abutment is chemical, so PFM maladjustments are not tried to be solved with cement.

We can adjust the soft tissue with the polyceramic material (IAC)

Study scope

- 1.- To analyze the Osseo integration of 70 Implants with a drilling protocol of 40 rpm without irrigation
- 2.- To evaluate the clinical results of the taper lock connection between the abutment and the implant.

Materials and methods

From January 2003 to December 2004, 70 Bicon TPS implants were placed in maxilla to be loaded after the integration time (10 weeks) with 70 IAC prosthesis.

The study was carried out on 55 patients. (31 female, 24 male) (image 10)

Distribution of the different replaced dental pieces (image 11)

IC	8
IL	7
C	3
PM 1	15
PM2	9
M 1	24
M 2	4

70



Fig. 20



Fig. 21



Fig. 23



Fig. 22



Fig. 24

From the 70 implants placed, 16 were immediate post extraction (one from a previous screwed fractured implant and another with a periapical radio lucid focus) (images 12,14) (images 15,18) 3 implants were immediately loaded.

4 implants were placed with sinus lift and bone regeneration techniques.

After 10 weeks, 3 implants were not properly integrated. (integration 97.5%)

Three out of four non integrated implants, two were placed again with total success after ten additional weeks.

Planification

- 1) Alginate impression
- 2) Plaster model
- 3) Abutment selection based on mesiodistal and vestibule lingual distances. There are some plastic models to help you define the ideal abutment (image 19)
- 4) Surgical guide

Surgery

- 5) Drilling
 - a. Pilot burr at 1200 rpm with external irrigation to get the final working depth
 - b. Latch reamers at 40 rpm without irrigation
 - c. In some cases osteotome technique
- 6) Implant insertion, 3 mm under the bone ridge
- 7) Second surgery after 10 weeks

Prosthesis

- 8) Preparation of the selected abutment
- 9) Impression
- 10) Adjustment and occlusion cast
- 11) Prosthesis placement

Images 9,20

Results:

From the 70 crowns placed in maxilla with a 2 years follow up:

No polyceramic fracture.

One IAC disconnected from the implant three days after placement.

Yearly X-Ray controls showed no diminish of bone level. In some cases a bone augmentation was observed. In maintenance controls, no implant presented bad smelling and no patients referred halitosis.

Images 22,24

Images 23,24



No bone loss in X-Ray yearly controls.
The IAC concept improves the single tooth implants treatments basically due to the abutment implant connection that avoids bacterial penetration, maintaining health and esthetics of the soft tissue

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Conclusions

The 40 rpm drilling technique without irrigation does not change the integration process, and offers the advantage of fresh bone recovering during surgery.

The immediate stability of the implant does not rely on the threads, but on the length and width of the implant.

The union of the new polyceramic materials to mechanized abutments and the locking taper prevent the major complications of classic screwed unit prosthesis.

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