

AESTHETIC-FUNCTIONAL REHABILITATION THROUGH SINGLE RESTORATIONS: IMMEDIATE LOAD

M. BONINO*, G. DE VICO**, C. BAIA***, A. BARLATTANI****

* Department of Prosthodontic, AFar Hospital "Fatebenefratelli", University of Rome "Tor Vergata", Italy

** Department of Oral Patology, Fondation PTV "Tor Vergata", Rome, Italy

*** Dentist in Rome, Italy

**** President of the School of Dentistry, University of Rome "Tor Vergata", Italy

SUMMARY

Aesthetic-functional rehabilitation through single restorations: immediate load

In this case report of monoedentulia we will deal with the positioning of an upper jaw implant in zone 2.6. In such surgery the strategy of a flapless (1, 2) operation with minimum invasive approach has allowed us to combine both the aesthetic and functionality with an immediate provisional rehabilitation, thus saving recuperation time and trouble for the patient (3).

Multidisciplinary character of the execution of this clinical case is underlined, where we associate the knowledge of conservators of the prosthetic; always maintaining respect for the canons of gnathology which must not be left out of consideration.

Key words: global odontology, flapless surgery, delayed postextraction implant, immediate prosthetics through adjoining elemental slots.

RIASSUNTO

Ripristino estetico funzionale tramite restaurazioni singole: carico immediato

In questo *case report* di monoedentulia tratteremo il posizionamento di un impianto nel mascellare superiore in zona 2.6. In tale chirurgia la strategia di un intervento *flapless* (1, 2), con approccio minimamente invasivo, ci ha permesso di abbinare sia l'estetica che la funzione con una riabilitazione provvisoria immediata, ottenendo così una ottimizzazione dei tempi e dei disagi per il paziente (3).

Si vuole sottolineare il carattere multidisciplinare dell'esecuzione del caso clinico, dove associamo le conoscenze della conservativa (4) alla protesi, mantenendo sempre il rispetto dei canoni di gnathologia da cui non è mai possibile prescindere (5).

Parole chiave: odontoiatria globale, chirurgia flapless, impianto postestrattivo ritardato, protesizzazione immediata tramite gli slot degli elementi contigui.



Introduction

The correct planification of the treatment is the most important element for a successful implant therapy, conventionally based on the information gathered through models and x-ray images.

Thus it is necessary to evaluate carefully the bone quality before the implant insertion to identify the sites on patients potentially at risk and to optimize the implant stability and healing time. Among the

various classifications of bone quality, the most utilized is that of Lech and Zarb (1985) consisting of 4 levels of bone density. On the upper jaw, as in our clinical case, the bone density is much reduced in respect to the lower jaw with consequently minor possibility to ensure an adequate primal stability of the fixture, hence of an immediate safe stress load.

And lastly as noted (6) in case of acute infection, there must be a delay or postponement of the implant positioning from extraction, avoiding the use

of a site potentially infected and not suited for the insertion or osteointegration of the fixture. In this specific case, after careful evaluation of the chronic endoparodontal lesion untreatable by element 2.6, following the extraction by non-traumatic techniques, it is nevertheless decided to position a fixture tissue level Straumann postponed by 8 weeks. To optimize healing time, we have chosen a non-functional immediate provisory, making use of the slots obtained from the removal of 2 pre-existing amalgams on adjoining elements. Thus we obtain a comfortable aesthetic restoration and fast execution.

The criteria chosen by the patient were guided by the following parameters:

1. The implant – prosthetic rehabilitation is the chosen treatment.
2. Absence of pathologies that can nullify or invalidate the bone healing.
3. Implant inserted with a torque larger than 32 Ncm.
4. Presence of soft tissue in stable condition.
5. Absence of severe bruxismo.

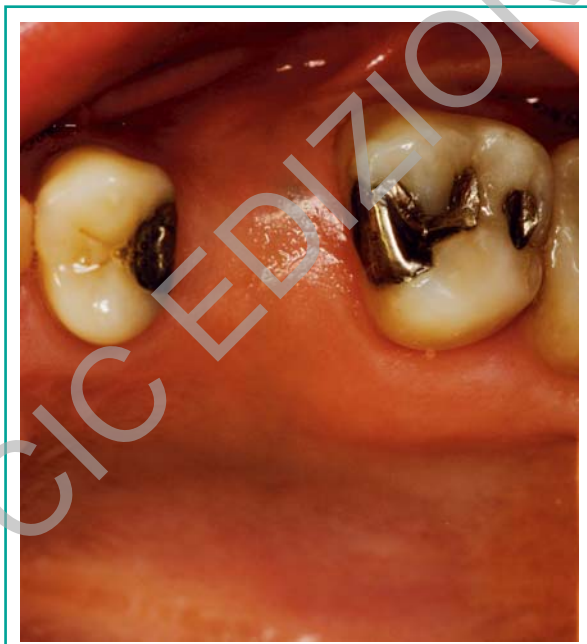


Figure 1
Occlusal vision. Evaluation bone- tissue parameter buccal-palate.

Materials and methods

The utilized implant is a tissue level Straumann 4.8 in diameter, 12 mm in length. It has been positioned with the flapless technique (7) with a mechanical opercolator of 3.5 in diameter, in such a way for post operative pain to be contained and avoid swelling, thus obtaining a faster healing of tissues. Having expected immediate load, we utilized a standard abutment of 4mm in height, serrated with a torque of 35Ncm, an important index of primary stability. Contemporaneously, the acetate resin provisory was positioned and the final dental imprint was taken for the realization of the inlays and of the definitive gold porcelain crown.

Clinical case

We come to observe a young healthy patient, a non smoker who has requested to restore in an aesthetic function (8) his left upper jaw, at the level of the first molar (2.6) (Fig. 1), a tooth lost because of an endo-parodontal lesion that is untreatable (Fig. 2). Having passed the period necessary for the healing of the alveolus or tooth-socket, we examine the bone characteristics of the surgical site that shows

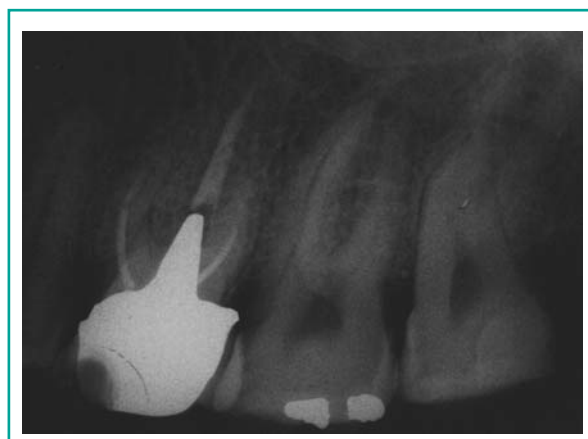


Figure 2
2.6 element damaged to endo-parodontal lesion.

quantitatively and qualitatively (type 1) (Fig. 3) such a to allow a mini-invasive (9) implant approach and immediate load (10,11). Thus we chose to insert with the flapless technique (Figs. 4, 5) a Straumann fixture of 4.8 mm in diameter and 12mm in length (Figs. 6, 7, 8).

The elimination of the borders allow for maintenance of excellent vascularization, allowing both the preservation of the pre-existing architectural tissue and a better healing, thanks to the integrity of the periosteum. It also minimizes in a clear way the post-operative morbidity. The second pre-molar (2.5) and the second molar (2.7) show, at the level



Figure 3
Removed 2.6, obtained healing of the implant site.

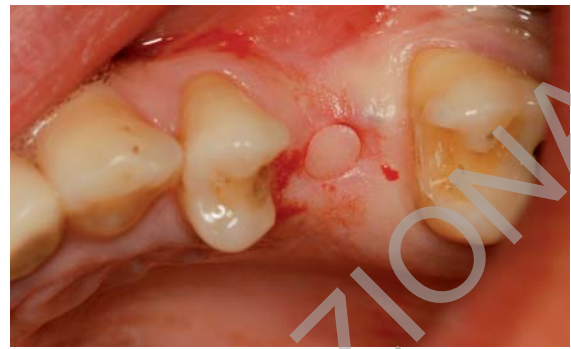


Figure 5
Minimum cat of gum.



Figure 6
The last milling cutter diameter 4.2 at 14mm depth.



Figure 4
Mechanical opercolator and inlay preparation after amalgam removal.



Figure 7
Insertion of fixture 4.8 in diameter 12 mm.

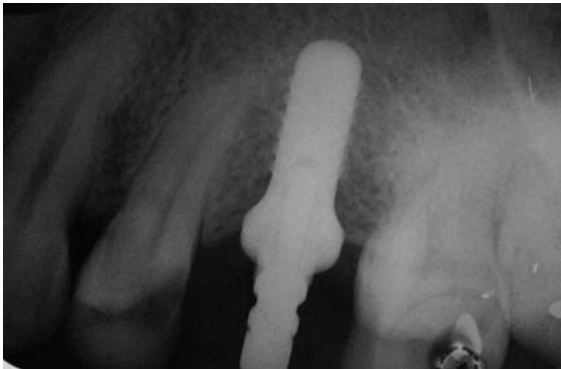


Figure 8
Rx Check.

of the adjoining dental surface in the surgical site, second class restorations in amalgam, that, in the precincts of restoration and aesthetics in the quadrant in question, we shall substitute it with two inlays (12) in composite (13) for which we will proceed to an adequate preparation of the cavity (Fig. 9). We will decide, therefore to use the remaining slots from the dismantling of the pre-existing reconstruction as ulterior anchorage for the provisory, with clear advantages of mechanic nature in the ditribution of the load force on the newly positioned implant. The presence of the 2 rests at the provisory level in fact guarantees the distribution of masticator loads with adjoining dental elements



Figure 9
Removed fixture carrier. Complete occlusal vision.

to the fixture and annul the marginal forces that, following a rotational action, results in damage in the initial fase of osteointegration (Fig. 10).

At a second monent, but of the sama sitting, we proceed with the final and definitive imprint both of the abutment (standard 4mm) using the “closed” technique with a rack and relative transfer, and of the cavity for the inlay (Figs. 11, 12). Than we proceed to the registration of the occluded ties and the lifting of the facial arch, indispensable for the transfer to the odontotechnician (14) the information necessary for the finalization of the laboratori fase.

Upon isolation with a rubber dam, we proceed



Figure 10
View of the well finished provisory.



Figure 11
View restoration space.



Figure 12
Imprint with inlays and abutment.



Figure 14
Vestibular accommodation of transfer.

with the cementation of 2 inlays in composite (Fig. 13). Following this is the crown test (15) (Figs. 14, 15, 16) and the complete evaluation of the centric rapports, lateral and protrusive (Figs. 17, 18) of the entire restoration. Lastly, we cement the crown in gold-porcelain on the implant (Figs. 19, 20).

What has been described here demonstrates the multiplicity of aspects to be taken in consideration in the treatment of this cases, that even if of no particular complexity, require however the consideration of contemporaneous surgical problems, prosthetics and conservation. Among these merit in particular:

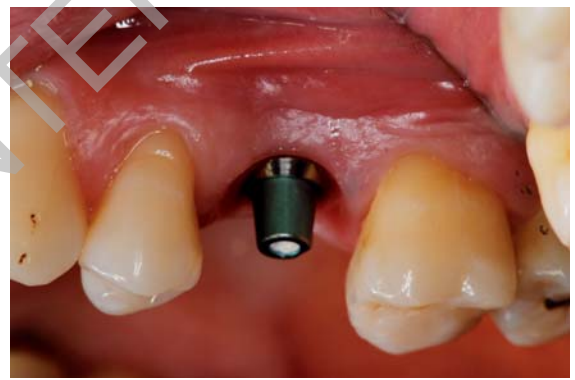


Figure 15
Soft tissue form around the implant.



Figure 13
Cementation of inlays.



Figure 16
Occlusal view of the quadrant.



Figure 17
Laterality movement (canine guide).



Figure 20
Prosthetic restoration, vestibular view.



Figure 18
Protrusive.



Figure 19
X-ray control after 6 month.

1. Evaluation of implant site (16).
2. Evaluation of soft and hard tissues (17).
3. Thorough Study of x-ray images and investigations.
4. Careful observation of adjacent dental elements.
5. Thorough study of centric and functional guides (18).
6. Correct timing.

Conclusion

The correct planification of the treatment is the most important element for successful therapy. In conclusion, only a global vision of odontology often allows one to facilitate the answers to solutions that need multidisciplinary odontologic actions and proceedings. A similar approach obviously translates in a noteworthy advantage for the patient that can benefit from a less invasive operation, in less time with immediate satisfaction for the aesthetic element

References

1. Hahn J. Single-stage, immediate loading, and flapless surgery. *J Oral Implantol* 2000; 26: 193-198.
2. Paul SJ, Jovanovic SA. Anterior implant-supported

- reconstructions: a prosthetic challenge. *Pract Periodontics Aesthet Dent*. 1999 Jun-Jul; 1185: 585-90.
3. Magne P, Magne M, Belser U. Natural and restorative oral esthetics. Part III: Fixed partial dentures. *J Esthet Dent* 1994; 6: 14-21.
 4. Mangani F, Sigalot C, Vanini L. Intarsi in resina composita nel restauro estetico dei settori latero-posteriori. *Dent Mod* 2001; 2: 25-64.
 5. Lundeen HC, Gibbs CH. Advances in occlusion, 1:9, John Wright, PSG, Inc, Boston 3. Gibbs CH, Masserman: "Functional movements of the mandible". *J Prost Dent* 1971; 26: 601.
 6. Favero GA. Osteointegrazione clinica: I Principi di Branemark. Ed Masson 1994; 21: 251-60.
 7. Rocci A, Martignoni M, Gottlow J. Immediate loading in the maxilla using Flapless surgery, implants placed in the predetermined positions, and prefabricated provisional restorations: A retrospective 3-year clinical study. *Clin Impl Dent Res* 2003; 5 (Suppl 1): 29-35.
 8. Bonino M, De Vico G, Bonino F, Barlattani A. Terapia impiantare in zona estetica: temporizzazione con transfer da impronta modificato. *Quintessenza Impl* 2007 Dic; 4: 17-23.
 9. Chiapasco M. Early and immediate restoration and loading of implants in completely edentulous patients. *Int J Oral Maxillofac Implants* 2004; 19 Suppl: 76-91.
 10. Landsberg CJ. Socket seal surgery combined with immediate implant placement: a novel approach for single-tooth replacement. *Int J Periodontics Restorative Dent* 1997 Apr; 17 (2): 140-9.
 11. Morton D, Martin WC, Ruskin JD. Single-stage Straumann dental implants in the aesthetic zone: considerations and treatments procedures. *J Oral Maxillofac Surg* 2004 Sep; 62 (9 suppl 2): 57-66.
 12. Suh BL. All Bond 2: Il sistema adesivo universale in ambiente umido della quarta generazione. *Attualità Dentale* 1993; 9 (19): 14-30.
 13. Vanini L, Toffenetti F. Nuovi concetti estetici nell'uso dei materiali compositi. *Quaderni di progresso stomatologico a cura degli 'amici di Brugg'*, 1995, 13.
 14. Martignoni M, Schönenberger AJ. Precision fixed prosthodontics: Clinical and laboratory aspects. Chicago: Quintessence 1990: 255-258.
 15. Fradeani M, Redemagni M. An 11-year clinical evaluation of leucite-reinforced glass-ceramic crowns: a retrospective study. *Quintessence Int* 2002; 33: 503-510.
 16. Salama H, Salama M, Garber DA. Techniques for developing optimal peri-implant papillae within the esthetic zone. I. Guided soft tissue augmentation: The three-stage approach. *J Esthet Dent* 1995; 7 (3): 3-9.
 17. Abrahamsson I, Cardaropoli G. Peri-implant hard and soft tissue integration to dental implants made of titanium and gold. *Clinical Oral Impl Res*. 2007 Jun; 18 (3): 269-74. Epub 2007 Feb 13.
 18. Fanucci E, Spera E, Ottria L, Barlattani A jr, Fusco N, Mylonakou I, Broccoli P, Barlattani A, Simonetti G. Il movimento mandibolare di Bennet: comparazione tra sistemi tradizionali di registrazione e TC a 64 strati. *Oral & Implantol* 2008 Apr-Giu; 1 (1): 20-25.

Correspondence to:

Dott. Mario Bonino

Tel. 06 86214508

E-mail: mariobonino@libero.it