Multicenter Retrospective Study of Implants Loaded with Functional Prostheses 8 Weeks After Insertion

Alejandro Padrós Fradera, PhD,* Esteban Padullés Roig, PhD,† José Maria Arano Sesma, PhD,‡ Norbert Manzanares Mayandía, PhD,† Rosario Canedo Alvarez,PhD,§ Xavier Amell Amell, PhD,* Enric Pedemonte Roma, PhD,* and F. Javier Gil Mur, PhD‖

A multicenter retrospective statistical study was carried out to evaluate whether functional prosthetic loading of an implant 8 weeks after surgical insertion is acceptable clinically. Based on studies in vitro*, which confirm that the fastest and best quality bone healing occurs around implants with surface treatment specifically after sanding with Al_2O_3 and subsequent passivity, this knowledge was applied to clinics. Four hundred and fifteen implants were inserted in 128 patients regardless of the pathology they presented and the quantity or quality of the area of the bone to be treated. Thus, all patients were included in the study independent of their physiological and pathological characteristics. The area of implant insertion, the type of prosthesis used, and the rate of success or survival of implants with bone resorption or mucositis were evaluated. With respect to the total number of implants loaded at 8 weeks, the rate of success for completely successful implants was 95.38%, and the rate of success of both partially and completely successful implants was 99.75%. Functional prosthetic loading at 8 weeks is an appropriate procedure, providing that technology of the implant surface guarantees, once the time has passed, that the osteointegration is achieved and capable of holding loading. (Implant Dent 2005;14:43–49)*

Key Words: immediate loading, surface titanium, functional loading, osseointegration

Immediate loading is a therapeutic possibility as an alternative for patients with implants who wish to recover their appearance and function in a shorter amount of time than that usually proposed by conventional canons of implantology. Bone physiopathology allows, in some conditions, the prosthodontic loading of implants less than 24 hours after their surgical insertions. However, bone immediate loading is still considered a treatment with some risk, although in some conditions, according to the kind of bone[1] and the anatomical area (mandibular symphysis) involved,[2] it is described as having a high rate of success.

Studies carried out with dogs show that the bone/implant contact varies between implants loaded immediately and those loaded in a classic manner, with higher contacts observed in implants loaded immediately.[3] The evolution of implantology (*i.e.*, materials and treatment of implant surfaces)[4–7] and the knowledge of bone behavior before the introduction of an implant allows us to carry out these treatments with higher rates of success and predictability in humans.

*Private practice, Padros Institute, Barcelona, Spain.
†Associate Professor, Coordinator of Master in Implantology, International University of Catalonia, Barcelona, Spain.
‡Private practice, Institute d'Odontología Integral, Barcelona, Spain.
§Private practice, Clínica Cliredent, S. L. El Prat de Llobregat, Spain.
‖Private practice, Clínica Canedo, L'Hospitalet de Llobregat, Spain.
¶Professor, Department of Materials Science and Metallurgical Engineering, Technical University of Catalonia (UPC), Barcelona, Spain.

ISSN 1056-6163/05/01401-043
Implant Dentistry
Volume 14 • Number 1

DOI: 10.1097/01.id.0000156389.81262.b8

Surface treatments of implants *via* sanding with particles from different sources and treatments with acids have revolutionized the healing of the bone around implants and opened new research into reducing the waiting time of prosthetic loading and increasing the rate of success compared with smooth implants. It is known that the organism response, in reaction to morphological and chemical characteristics of the implant surface, changes to obtain (in some cases) a faster or deeper healing and maturation of the bone around the implant.[8] Implant surface treatments achieve several objectives: 1) obtaining a rough surface that facilitates the stability of a blood clot, b) increasing the surface area of contact between the bone and the implant, and c) creating a surface that will be compatible chemically with the osteogenic cells.

Phases of Bone Fracture Repair

In the face of a bone fracture, a reparation sequence is unleashed. This sequence is divided into three sections: activation, resorption, and remodeling. During the activation phase, it has been observed that bone destruction is going to provoke the release of proteins by tissues (*e.g.*, prostaglandins, cytokines, interleukins, *etc.*) that will make the organism activate two cellular types, resorption

cells (*e.g.*, neutrophils and macrophages) and apposition cells (*e.g.*, osteoblasts and fibroblasts). This phase of activation with cellular contribution lasts approximately 15 days.

The resorption phase that begins after 2 weeks causes the bone resorption around the dental implant. This causes a decrease of the primary stability of the implant up to 2 months post insertion. For this reason, implant loading must be avoided between the 2nd and 8th weeks.

The last phase, remodeling phase, which starts at 8 weeks, is characterized by the important influence of biomechanical loading on the bone.[9] This will control the modeling and remodeling, which will allow the bone to adapt to the conditions of loading that it receives.

Healing Phases around the Implant

To understand the justification and function of loading at 2 months, it is important to know that bone biology has three phases of healing around the dental implant. These phases are the osteophytic, osteoconductive, and osteoadaptive phase. In the osteophytic phase, when an implant with a rough surface is inserted in the mandibular or maxillary spongy bone or marrow, only a small quantity of the bone proceeding from trabecular bone of the interior of the marrow is in contact with the implant surface. The coagulation phenomenon will be produced as an initial response. These processes are managed by platelets[10] and will lead production of the osteoid tissue on the implant surface. This phase lasts approximately 1 month. In the osteoconductive phase, which is prolonged for 3 months, the bone will continue being placed on the surface of the metal. In the osteoadaptative phase, there is no increase or loss of the bone on the metal, and when implants are loaded functionally, thin bone layers will continue being enlarged.

Types of Prosthetic Implant Loading in Function

At the World Congress of the Spanish Society of Implants held in Barcelona together with the International Congress of Oral Implantologists in May 2002, a consensus of immediate loading was elaborated to establish protocols of nomenclature according to the waiting time between implant insertions and the achievement of prosthetic loading.[11]

Classic Loading. To receive its definitive prosthesis, loading must take place no less than 6 months after surgical insertion in the superior maxillary bone and 3 to 4 months in the inferior maxillary bone.[12]

Immediate Loading. To be considered an authentic immediate loading, loading must occur in the first 24 hours after insertion of the implant. A higher accumulation of proteins will be led by the application of moderate hydrostatic strengths, tensions, or compressions, leading to faster bone formation.[13]

Early Loading. In early loading, the insertion of teeth on implants occurs during the 2 first weeks after surgical intervention. Subsequently, differentiation in osteoclasts from macrophages will initiate the resorption and renewal of the injured bone that was produced during the insertion of the implant. This initial remodeling process starts 14 days after insertion of the implant and will continue for approximately 2 months.

Retarded Loading. Retard loading occurs more than 2 weeks and less than 8 weeks after implant insertion. This phase is considered dangerous, because it coincides with the resorption phase of bone healing.

The reduction of waiting time during the phases of implant treatment is important for patients and professionals, provided that it does not compromise the successful result of treatment. It has been documented previously that the success of the prosthetic loading at 2 months can be a protocol of treatment.[14]

Klockner Implant System (SOADCO Av. Fiter i Rosell, 4 bis. Escaldes-Engordany, Andorra) implants have a surface that combines an optimum roughness with a passivation treatment that aids in quick bone healing. Thus, prosthetic loading at 8 weeks of insertion should be successful and a common process as well. SK and SK2 y S4 implants (Klockner SA, Barcelona, Spain) were used, and their diameters ranged between 3′2 to 5′5 mm, with the lengths ranging between 10 and 18 mm. They all had surface treatments (sanding with particles of Al_2O_3 – shot blasting) and chemical passivation to improve the corrosion resistance and minimize the ion release in the physiological medium (Table 1).

Table 1. Implant Type and Quantity

Type*	Quantity
3210	8
3212	31
3216	2
3312	1
3512	1
3514	4
3516	2
3810	36
3812	175
3814	58
3816	10
3818	1
4012	1
4014	5
4210	5
4212	41
4214	13
4216	13
5510	1
5512	7

Total number of implants inserted = 415.

* First two numbers indicate the diameter of the implant and the second two numbers indicate its longitude.

Objectives

Clinical studies[15] have demonstrated that a rough titanium surface is favorable for the union with the bone. It facilitates and accelerates osteointegration and increases the success of the implant treatment. Therefore, the objective of the present study was to evaluate whether the accomplishment of the prosthetic loading of implants at 8 weeks of insertion (instead of waiting the durations established by classical loading) was acceptable clinically for decreasing the duration of treatment.

Table 2. Patient Characteristics

	Patient Sist.	Bruxism	Smoker	Menopausal
With pathology	17	3	0	6
Without pathology	68	17	19	10

Table 3. Anatomic Area of Implant Insertion, Technique Used, and Evaluation of Implants

Technique	Result	Previous Mandible	Previous Maxillary Bone	Posterior Mandible	Posterior Maxillary Bone
Milling	Successful	22	30	87	119
Milling	Preloading failure	2			1
Milling	Reabsorption survives	1	1	3	3
Milling	Mucositis survives	1	1	1	3
Expansion	Successful	38	22	15	57
Expansion	Postloading failure		1		
Expansion	Reabsorption survives				3
Expansion	Mucositis survives				1
Corticotomy	Successful			3	

Table 4. Implant Insertion Year and Evaluation

	1995	1996	1997	1998	1999	2000	2001	2002
Preloading failure						2		1
Postloading failure					1			
Successful	15	19	17	22	64	102	105	32
Reabsorption survives	2		1	5	1	1	1	
Mucositis survives				1	3	1	2	

Materials and Methods

A multicenter prospective study was carried out (in five implantology centers) in which several patients treated by six different professionals were evaluated by means of a fixed implant-supported prosthesis. The implants were inserted in the patients without any specific selection. Visual and radiographic exams were carried out (Table 2). The present study included patients between 21 and 89 years, with a total of 128 patients. Patients who had undergone regenerative treatment, such as sinus floor elevation, expansions *via* by screw-shaped osteotomes, and vestibular regenerations (expansive corticotomy) with implants inserted in the same surgical procedure were situated, provided that the initial fixation of implants was appropriated. Implant insertion was carried out according to the semisubmerged technique described by Padrós *et al*.[16] Patients with regenerations in height or width and whose implants were inserted in a single surgical procedure were not chosen, in which despite having an initial fixation it was considered scarce.

At 8 weeks after insertion of the implant and independently of the insertion area, impressions were taken for the elaboration of a definitive prosthesis. Then, a temporary prosthesis was inserted (fixed or removable as appropriate) with occlusal contact, while a definitive prosthesis was prepared. It was not taken into account whether this phase was more or less longer for the evaluation of implants.

Evaluation of the osteointegration implants was carried out according to the criteria of Adell *et al*[17], *e.g.*, the absence of pain, mucous inflammation, and peri-implantar radiolucidity; immovability; and percussion tympanum sound. Fistula and suppuration were also evaluated. Implants carried out according to these criteria were considered completely successful; otherwise, the implant was counted according to the specific problems encountered. The implants that survived, albeit with some difficulties, were also considered partially successful. The time of control of postloading implants oscillated between 2 and 7 years between 1995 and 2002.

Results

To evaluate the results, implants were divided according to the surgical technique used and their anatomical situation. The results are observed in Table 3. Table 4 shows the results of the implant evaluations with the year of implant insertion. The direct or indirect impression, depending on the case and the professional, is not a relevant fact for the statistic of the case but rather the type of prosthesis that implants receive. The total number of implants and type of prosthetic loading is shown in Table 5. Implants inserted in the maxillary bone and in the mandible were evaluated, and it was specified whether the insertion was in the previous or posterior sector in the same manner as a fixed and removable prosthesis, as observed in Table 6.

Of the 415 implants, three failed in preloading, which presents a 99.27% rate of successful osteointegration. Two of these failures were in patients without pathology and one in a patient post menopause. Of the 412 remaining implants loaded at 8 weeks, only one implant failed complete postloading, 18 were classified as partially successful (11 with bone resorption and seven with peri-implantar mucositis), and 393 were completely successful according to the criteria. Therefore, of the total number of implants loaded at 8 weeks, the rate of success for implants considered to be completely successful is 95.38% and the total rate of success (i.e., of the partially and completely successful implants considered together) is 99.75%.

Table 5. Type of Prosthesis and Total No. of Implants

Type of Prosthesis	Quantity
Metal-resin	13
Metal-ceramic	214
Ceramic	6
Bars	43
Balls	84
Commemorative plaques	52
Total	412

Table 6. Type of Prosthesis, Implant Position in Mouth, and Result after Minimum of 2 Years after Functional Loading

Prosthesis	Result	Anterior Mandible	Anterior Maxillary	Posterior Mandible	Posterior Maxillary
Metal-resin	Successful	1	4	8	
Metal-ceramic	Successful	6	16	81	103
Metal-ceramic	Preloading failure*	1			1
Metal-ceramic	Reabsorption survives		1	1	2
Metal-ceramic	Mucositis survives		1	1	2
Ceramics	Successful		4		2
Bars	Successful	10	8		22
Bars	Mucositis survives	1			2
Kneecaps	Successful	37	14	10	15
Kneecaps	Preloading failure*	1			
Kneecaps	Fail mobility postloading		1		
Kneecaps	Reabsorption survives	1		2	4
Plaques	Successful	6	6	6	34

* Type of prosthesis that would have been applied in the event of a 'successful at 2 months' result.

Discussion

The criteria for loading at 8 weeks were obtained from the analysis of previous studies and the experience of the authors.[15] The authors consider it relevant that patients with systemic pathologies or undergoing pharmacological treatment were not excluded. Thus, the present study not only evaluates the rate of failures in healthy patients but also includes the possibility of success in those who were excluded previously because of their pathology. The possibility of implant insertion was also included, as many in maxillary bone as in mandible, previous, or posterior areas, without limiting the anatomical areas to those that have a higher rate of success according to studies published previously, as it is the previous area of the mandible situated between the mental foramens.

Roccuzzo and Wilson,[18] Testori *et al*,[19] and Cochran *et al*[8] reported on reducing the traditionally recommended implant loading time and immediate loading. There are many studies[2,3] that defend prosthetic loading of implants on the same day as their surgical insertion, which appears to obtain the best quality and density of the bone around implants.

In the present study, implants were loaded once the resorptive phase of the bone healing was complete, with the degree of integration obtained more than sufficient to hold occlusal loading. On the other hand, some studies describe prosthetic loading of implants that coincide with healing phases as being negative in theory; however, they also report high rates of success, such as those reported by Ericsson *et al*[20] with implants inserted in the mandibular symphysis loaded with fixed prosthesis at 20 days postinsertion, in full resorption phase.

The failed implant postloading was situated in the previous maxillary bone sector connected to a removable prosthesis by means of kneecaps (*i.e.*, spherical anchorages). The patient was a woman who had undergone menopause and was taking antidepressants before and during treatment (*e.g.*, from 2 years pretreatment to post treatment), in whom a total of six implants were inserted in the maxilla. The anterior part of the maxilla is described as the area in which a higher leakage of postloaded implants is registered in patients who carry overdentures anchored with bars or balls.[21,22]

According to the present results, there are no differences between the type of prosthesis achieved and the success or failure of the functional loading prosthesis at 8 weeks after implant insertion, suggesting that different loading times may be necessary between different types of prostheses. There are no differences between the maxillary bone and mandible that suggest different loading times.

Conclusions

Judging by the clinical reality of the present results, implants loaded at 8 weeks obtain a bone fixation capable of holding rotation loadings of 25 or 30 N. The osteofixation is produced in maxillary bone as in the mandible, high-density bone offers greater primary fixation, but spongy bones have a better biological response, probably because of its higher vascularization. The present study shows a 99.75% rate of success in implants loaded functionally 8 weeks after insertion and evaluated after 2 to 7 years postinsertion.

Disclosure

Dr. Alejandro Padros Fradera has a financial interest in Klockner, whose product, dental implants, is mentioned in this article. All other authors claim to have no financial interest in any company or any of the products mentioned in this article.

References

1. Balshi T, Wolfinger G. Immediate loading of Branemark implants in edentulous mandibles: a preliminary report. *Implant Dent*. 1997;6:83–88.

2. Randow K, Ericsson I, Nilner K, et al. Immediate functional loading of Branemark dental implants. An 18-month clinical follow up study. *Clin Oral Implants Res*. 1999;10:8–15.

3. Zubery Y, Bichacho N, Moses O, et al. Immediate loading of modular transitional implants: a histological and histomorphometric study in dogs. *Int J Periodontics Restorative Dent*. 1999;19:343–353.

4. Payne AG, Tawse-Smith A, Kumara R, et al. One-year prospective evaluation of the early loading of unsplinted conical Branemark fixtures with mandibular overdentures immediately following surgery. *Clin Implant Dent Relat Res*. 2001;3:9–19.

5. Misch CE, Bidez M, Sharawy M. A bioengineered implant for a predetermined bone cellular response to loading forces. A literature review and case report. *J Periodontol*. 2001;72:1276–1286.

6. Cochran DL. A comparison of en-

dosseous dental implant surfaces. *J Periodontol*. 1999;70:1523–1539.

7. Calvo MP, Muller E, Garg AK. Immediate loading of titanium hexed screw-type implants in the edentulous patient: case report. *Implant Dent*. 2000;9:351–357.

8. Cochran DL, Buser D, ten Bruggenkate CM, et al. The use of reduced healing times on ITI implants with a sandblasted and acid-etched (SLA) surface: early results from clinical trials on ITI SLA implants. *Clin Oral Implants Res*. 2002;13:144–153.

9. Frost HM. Wolff law and bone's structural adaptations to mechanical usage: an overview for clinicians. *Angle Orthod*. 1994;64:175–188.

10. Schwartz Z, Lohmann CH, Cochran DL, et al. Bone regulating mechanisms on implant surfaces. Proceedings of the 3rd European Workshop on Periodontology. *Implant Dentistry*. Berlin: Quintessence; 1999:41–54.

11. Aparicio C, Rangert B, Sennerby L. Immediate/early loading of dental implants: a report from the Sociedad Española de Implantes World Congress consensus meeting in Barcelona, Spain, 2002. *Clin Implant Dent Relat Res*. 2003;5:57–60.

12. Adell R, Lekholm U, Rockler B, et al. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *Int J Oral Surg*. 1981;10:387–416.

13. Hollinger JO, Buck DC, Bruder SP. Biology of bone healing: its impact on clinical therapy. In: Lynch SE, Genco RJ, Marx RE, eds. *Tissue Engineering. Applications in Maxillofacial Surgery and Periodontics*. Chicago: Quintessence; 1999:17–53.

14. Lazzara RJ, Porter SS, Testori T, et al. A prospective multicenter study evaluating loading of Osseotite implants two months after placement: One year results. *J Esthet Dent*. 1998;10:280–289.

15. Padrós A, Peraire C, Aparicio C, et al. Valoración de la adherencia de células humanas de tipo osteoblástico sobre diferentes tipos de arenados y pasivados en superficies de titanio. *Rev Esp Odontostomatológica de Implantes.* 1999;7:145–152.

16. Padrós A, Sada E, Calvo MA. Técnica Semisumergida: optimización de encía y hueso periimplantario. *Rev Esp Odontostomatológica de Implantes*. 1996; 4:97–101.

17. Adell R, Lekholm U, Branemark P-I. Surgical procedures. In: Branemark P-I, Zarb GA, Albrektsson T, eds. *Tissue-Integrated Prostheses: Osseointegration in Clinical Dentistry.* Chicago: Quintessence; 1985:211–232.

18. Roccuzzo M, Wilson TA. Prospective study evaluating a protocol for 6 weeks' loading of SLA implants in the posterior maxilla: one year results. *Clin Oral Implants Res*. 2002;13:502–507.

19. Testori T, Del Fabbro M, Feldman S, et al. A multicenter prospective evaluation of 2-months loaded osseotite implants placed in the posterior jaws: 3-year follow-up results. *Clin Oral Implants Res*. 2002;13:154–161.

20. Ericsson I, Randow K, Nilner K, et al. Early functional loading of Branemark dental implants: 5-year clinical follow up study. *Clin Implant Dent Relat Res*. 2000; 2:70–77.

21. Watson CJ, Tinsley D, Sharma S. Implant complications and failures: the complete overdenture. *Dent Update.* 2001;28:234–238.

22. Jemt T, Book K, Linden B, et al. Failures and complications in 92 consecutively inserted overdentures supported by Branemark implants in severely resorbed edentulous maxillae: a study from prosthetic treatment to first annual check-up. *Int J Oral Maxillofac Implants*. 1992;7:162–167.

Reprint requests and correspondence to:
Alejandro Padrós, PhD
C/Martí i Juliá 6-8 Bajos
08034 Barcelona
Spain
Phone: 932051997
Fax: 932801596
E-mail: info@institutopadros.com

Abstract Translations [German, Spanish, Portugese, Japanese]

AUTOR(EN): Alejandro Padrós Fradera, PhD*, Esteban Padullés Roig, PhD**, José Maria Arano Sesma, PhD***, Norbert Manzanares Mayandía, PhD**, Rosario Canedo Alvarez, PhD*****, Xavier Amell Amell, PhD****, Enric Pedemonte Roma, PhD*, F. Javier Gil Mur, PhD******. ** Privat praktizierender Arzt, Padros Institut, Barcelona, Spanien. ** A.O. Professor, Koordinator des Lehrkörpers für Implantologie, Fachbereich Prothetik, Internationale Universität von Katalonien. *** Privat praktizierender Arzt, Institute d'Odontologia Integral, Barcelona, Spanien. **** Privat praktizierender Arzt, Clinica Cliredent, S.L. El Prat de Llobregat, Spanien. ***** Privat praktizierender Arzt. L'Hospitalet de Llobregat, Spanien. ****** Professor, Fachbereich für Werkstpoffkunde und Eisenhüttenwesen (CMEM), technische Universität von Katalonien (UPC). Schriftverkehr: Alejandro Padrós, PhD, C/ Marti i Julíá 6-8 Bajos, 08034, Barcelona, Spanien. Telefon:932 51997, Fax: 932801596. eMail: info@institutopadros.com*

Funktionelle Belastung von Implantaten durch Protheseneinsatz 8 Wochen nach Einpflanzung: retrospektive multizentrische Studie

ZUSAMMENFASSUNG: Es war zu bewerten, inwieweit eine funktionelle prothetische Belastung eines Implantats 8 Wochen nach operativem Einsatz aus klinischen Gesichtspunkten zu befürworten ist. Hierzu wurde eine retrospektive multizentrische Statistikstudie durchgeführt. Auf Basis von Laborversuchen, die bestätigen, dass eine Knochenheilung am schnellsten und besten bei Implantaten mit zusätzlicher Oberflächenbehandlung vonstatten geht (hier am besten durch Schleifen mit Al_2O_3 und nachfolgender Passivität), wurde entschieden, diese Kenntnisse auf die klinische Anwendung zu übertragen. 128 Patienten wurden insgesamt 415 Implantate eingesetzt. Dies geschah ungeachtet der spezifischen Pathologie oder der Quantität und Qualität des Knochengewebes im zu behandelnden Bereich. Folglich wurden auch alle Patienten ungeachtet ihrer psychologischen und pathologischen Charakteristiken in die Studie mit aufgenommen. Es erfolgte eine Beurteilung des Einpflanzungsbereichs, des verwendeten Prothesentyps und der Erfolgsquote der Implantate mit entwickelter Knochengewebsresorption oder Schleimhautentzündung. In Relation zur Gesamtzahl der nach 8 Wochen belasteten Implantate betrug die Quote der im Gesamtverlauf als erfolgreich zu bewertenden Implantierungen 95,38%. Bei Aufnahme der teilweise wie vollständig erfolgreich verlaufenen Implantierungsbehandlungen belief sich die Rate auf 99,75%. Die funktionelle Belastung eines Implantats durch Protheseneinsatz stellt ein korrektes Vorgehen dar. Dies setzt aber voraus, dass die Oberflächenbeschaffenheit der Implantatoberfläche innerhalb einer angemessenen Zeit eine Knochengewebsintegration garantiert und fähig ist, die entsprechende Belastung auszuhalten.

SCHLÜSSELWÖRTER: unmittelbare Belastung, Titanoberfläche, funktionelle Belastung, Knochengewebsintegration

AUTOR(ES): Alejandro Padrós Fradera[1] PhD, Esteban Padullés Roig[2] PhD, José María Arano Sesma[3] PhD, Norbert Manzanares Mayandía[2] PhD, Rosario Canedo Álvarez[5] PhD, Xavier Amell Amell[1] PhD, Enric Pedemonte Roma[1] PhD, F. Javier Gil Mur[6] PhD. *[1]Práctica Privada, Instituto Padrós, Barcelona, España. [2]Profesor Asociado, Coordinador del Master en Implantología, área de prótesis, Universidad Internacional de Catalonia. [3]Práctica Privada, Instituto de Odontología Integral, Barcelona, España. [4]Práctica Privada, Clínica Cliredent, S.L., El Prat de Llobregat, España. [5]Práctica Privada, Clínica Canedo, L'Hospitalet de Llobregat, España. [6]Profesor, Departamento de Ciencia de Materiales e Ingeniería Metalúrgica (CMEM), Universidad Técnica de Catalonia (UPC). Correspondencia a: Alejandro Padrós, PhD, c/ Martí i Juliá 6-8 Bajos, 08034, Barcelona, Spain. Teléfono: 932051997, Fax: 932801596. Correo electrónico: info@institutopadros.com*

Estudio retrospectivo de varios centros de implantes cargados con prótesis funcionales después de 8 semanas de la colocación

ABSTRACTO: Se realizó un estudio estadístico retrospectivo de varios centros para evaluar si la carga prostética funcional de un implante, 8 semanas después de su colocación, era clínicamente aceptable. Según estudios in vitro, que confirman que la curación del hueso más rápida y de mejor calidad ocurre alrededor de implantes con tratamiento de la superficie, específicamente después de lijar con Al_2O_3 y posterior pasividad, se decidió aplicar este conocimiento a las clínicas. Se colocaron 415 implantes en 128 pacientes independientemente de la patología que presentaron y la cantidad o calidad del área del hueso a tratar. Por lo tanto, se incluyeron en el estudio todos los pacientes independientemente de sus características patológicas y fisiológicas. Se evaluaron el área de la colocación de los implantes, la clase de prótesis usada y la tasa de éxito o supervivencia de los implantes con reabsorción del hueso o mucositis. Con respecto al número total de implantes cargados a las 8 semanas, la tasa de éxito de implantes completamente exitosos fue del 95,38%; y la tasa de éxito de los implantes completa y parcialmente exitosos fue del 99,75%. La carga prostética funcional a las 8 semanas es un procedimiento correcto, siempre que la tecnología de la superficie del implante garantice, una vez que ha pasado el tiempo, se logre la osteointegración y sea capaz de retener las cargas.

PALABRAS CLAVES: carga inmediata, titanio para la superficie, carga funcional, oseointegración

AUTOR(ES): Alejandro Padrós Fradera, PhD, Esteban Padullés Roig, PhD, José Maria Arano Sesma, PhD, Norbert Manzanares Mayandía, PhD, Rosário Canedo Alvarez, PhD, Xavier Amell Amell, PhD, Enric Pedemonte Roma, PhD, F. Javier Gil Mur, PhD. *Clínica Particular. Instituto Padros, Barcelona, Espanha. Professor Associado. Coordenador do Mestrado em Implantologia: área de prótese. Universidade Internacional da Catalunha. Clínica Particular. Instituto de Odontologia Integral, Barcelona, Espanha. Clínica Particular. Clínica Cliredent, S.L. El Prat de Llobregat, Espanha. Clínica Particular. Clínica Canedo. L'Hospitalet de Llobregat, Espanha. Professor, Departamento de Ciências de Materiais e Engenharia Metalúrgica (CMEM). Universidade Técnica da Catalunha (UPC). Correspondência para: Alejandro Padrós, PhD, C/ Martí i Juliá 6-8 Bajos, 08034, Barcelona, Spain. Telefone: 932051997, Fax: 932801596, E-mail: info@instituopadros.com*

Estudo Retrospectivo Multicentro de Implantes Carregados com Próteses Funcionais Após 8 Semanas de Inserção

RESUMO: Um estudo estatístico retrospectivo multicentro foi realizado para avaliar se a carga protética funcional de um implante, 8 semanas após a inserção cirúrgica, é clinicamente aceitável. Baseado em estudos in vitro, que confirmam que a cura óssea mais rápida e de melhor qualidade ocorre em torno de implantes com tratamento de superfície, especificamente após arear com Al2O3 e subseqüente passividade, foi decidido aplicar este conhecimento a clínicas. 415 implantes foram inseridos em 128 pacientes, independentes da patologia que apresentavam e da quantidade ou qualidade da área do osso a ser tratado. Assim, todos os pacientes foram incluídos no estudo, independente de suas características fisiológicas e patológicas. A área da inserção dos implantes, o tipo de prótese usada e a taxa de sucesso ou sobrevivência de implantes com reabsorção óssea ou mucosidades foram avaliadas. Com relação ao número total de implantes carregados em 8 semanas, a taxa de sucesso para implantes totalmente bem-sucedidos foi de 95,38%; e a taxa de sucesso tanto de implantes parcialmente bem-sucedidos quanto totalmente bem-sucedidos foi de 99,75%. Carga protética funcional em 8 semanas é um procedimento correto, contanto que a tecnologia da superfície de implante garanta, uma vez passado o tempo, que a osseointegração seja alcançada e capaz de segurar as cargas.

PALAVRAS-CHAVE: Carga imediata, titânio de superfície, carga funcional, osseointegração.

機能補綴でloadされた装着8ヶ月後のインプラントの複数拠点における追跡調査

著者：アレハンドロ・パドロス・フラデラ、PhD[1]、エステバン・パドゥリェズ・ロイグ、PhD[2]、ホゼ・マリア・アラノ・セズマ、PhD[3]、ノルベルト・マンサナレス・マヤンディア、PhD[2]、ロザリオ・カネド・アルバレス、PhD[5]、ザビエル・アメル・アメル、PhD[1]、エンリク・ペドモンテ・ロマ、PhD[1]、ハビエル・ギル・ムア、PhD[6]

概要：

目的：機能補綴によるインプラントの外科的装着8ヶ月後のloadingの臨床的許容度を評価するために、複数拠点による統計的追跡調査が行われた。表面処理を受けた、特にAl_2O_3研磨後に受動的体勢に置かれたインプラントの周囲においては最良かつもっと速い骨治癒が起こることを確認した試験管内研究の結果、この知識の臨床適用を図ることが決定された。

方法と素材：128人の患者に、その病理学的条件と骨処理部の数と質に関わりなく415本のインプラントが埋入された。これにより、生理学・病理学的な個別性と独立した調査対象を得ることができた。

結果：インプラント装着部、補綴の種類の違い、骨吸収または粘膜炎に対するインプラントの生存率が評価の対象とされた。装着8ヶ月後にloadingされたインプラント総数において、完全な成功例の成功率は95.38%；部分的成功例と完全な成功例を足した成功率は99.75%だった。

結論：インプラント装着8ヶ月後に機能補綴をloadingする方法は正しい技法であり、正しいインプラント表面処理さえ伴えば、時間経過によってosseointegrationが達成しloadingを保持することが可能になる。

キーワード：即時loading、表面チタン、機能loading、osseointegration

[1]パドロス・インスティテュートで開業（バルセロナ、スペイン）
[2]インターナショナル・ユニバーシティー・オブ・カタロニア准教授、インプラント学補綴部門コーディネーター・オブ・マスター
[3]開業、Institute d'Odtologia Integral（バルセロナ、スペイン）
[4]開業、Clinica Clirедent, S.L. El Prat de Llobregat（スペイン）
[5]開業、Clinica CanedoL'Hospitalet de Llobregat（スペイン）
[6]インターナショナル・ユニバーシティー・オブ・カタロニア（UPC）材料科学冶金工学部（CMEM）教授

問い合わせ先：Alejandro Padrós, PhD, C/ Martí i Julià 6-8 Bajos, 08034, Barcelona, Spain
電話：932051997　ファックス：932801596　Eメール：info@institutopadros.com