



Smoking, Diabetes Mellitus, Periodontitis, and Supportive Periodontal Treatment as Factors Associated With Dental Implant Survival: A Long-Term Retrospective Evaluation of Patients Followed for Up to 10 Years

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During the past decade, the use of osseointegrated implants as a foundation for prosthetic replacement of missing teeth has become highly predictable and successful.¹ However, certain risk factors might predispose individuals to lower success rates.²

Survival of oral implants has been systematically analyzed in the 4th European Workshop on Periodontology in 2002.¹ It is evident that the survival of oral implants is very high. However, an initial loss of 2.5% of all implants is expected in routine implant therapy. After functional loading, implant loss was 2% to 3%, over a 5-year observation period for implants supporting fixed restorations, whereas in overdenture therapy, >5% of the implants were expected to be lost within that period.

Furthermore, Holm-Pedersen *et al*³ reported that 0.5% to 1.3% im-

Objectives: To evaluate the factors associated with long-term implant survival in a large cohort of patients in regular follow-up until data collection.

Methods: The study population consisted of 475 patients who were referred to a private clinic limited to Periodontics and Implantology between November 1995 and July 2006. Data were collected from patient files with regards to smoking habits, periodontal condition, diabetes mellitus, implant survival, and time when implant failure occurred. Patients were divided into those who participated in a supportive periodontal program in the clinic and those who only attended the annual free-of-charge implant examination.

Results: A total of 1626 implants were placed with a follow-up ranging from 1 to 114 months (average 30.82 ± 28.26 months). Overall, 77 (4.7%) implants were lost in 58 (12.2%) patients after a mean period of 24.71 ± 25.84 months. More than

one-half of the patients (246; 51.7%) participated in a structured supportive periodontal program in the clinic, and 229 (48.3%) only attended to the annual free-of-charge implant examination. Smoking and attendance in a regular supportive periodontal program were statistically associated with implant survival. Patients with (treated) moderate-to-advanced chronic periodontal disease demonstrated higher implant failure rates but, this difference did not reach statistical significance. Diabetes mellitus was not related to implant survival in this patient cohort.

Conclusions: Smoking and attendance in a regular supportive periodontal program were found to be strongly related to implant survival. Special attention should be given to continuous periodontal supportive programs to implant patients. (*Implant Dent* 2010;19:57–64)

Key Words: tobacco, periodontitis, diabetes mellitus, supportive therapy, implant failure

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plants are lost per year of function resulting in survival rates of between 80% and 90% after 10 years depending on the clinical situation of the implants and prosthetic rehabilitation.

In a recent systematic review of the literature, it was found that smok-

ing adversely affects implant survival and success and is more pronounced in areas of poor quality, trabecular bone.² Type 2 diabetes may have an adverse effect on implant survival rates, but a definitive conclusion could not be made because of the limited number of

Table 1. Factors Associated With Dental Implant Survival

Factor	No. of Patients (%)	No. of Patients With Failed Implants (%)	<i>P</i> *	No. of Implants (%)	No. of Failed Implants (%)	<i>P</i> *
Smoking						
Yes	63 (13.3)	13 (20.6)	0.0286	226 (13.9)	21 (9.3)	0.0006
No	412 (86.7)	45 (10.9)		1400 (86.1)	56 (4)	
Diabetes mellitus						
Yes	49 (10.3)	4 (8.2)	0.3628	177 (1.09)	5 (2.8)	0.2076
No	426 (89.7)	54 (12.7)		1449 (89.1)	72 (5)	
Periodontal disease						
Yes	311 (65.5)	43 (13.8)	0.1388	1171 (72)	61 (5.2)	0.1498
No	164 (34.5)	15 (9.1)		455 (28)	16 (3.5)	
SPT						
Yes	246 (51.8)	21 (8.5)	0.0114	873 (53.7)	28 (3.2)	0.0028
No	229 (48.2)	37 (16.2)		753 (46.3)	49 (6.5)	

P values in bold represents statistical significance. Smoking and attendance in a regular supportive periodontal program were associated with implant survival. Patients with treated moderate-to-advanced chronic periodontal disease showed higher implant failure rates but this difference did not reach statistical significance. Diabetes mellitus was not related to implant survival in this patient cohort.

*z test for proportions.

studies included in the review. A history of treated periodontitis does not seem to adversely affect implant survival rates but it could have a negative influence on implant success rates, particularly over longer periods.²

Hultin *et al*⁴ stated that there are few available studies evaluating the long-term effect of supportive periodontal programs for implant patients. The authors highlighted in their conclusions⁴ the need for such studies to be initiated.

The purpose of this study was to evaluate the influence of smoking, diabetes mellitus, periodontitis, and supportive periodontal treatment as factors associated with long-term (up to 10 years) implant survival in a large cohort of patients who were in regular follow-up until data collection.

MATERIALS AND METHODS

The study population consisted of 475 patients (176 men, 37%; 299 women, 63%; average age 51.96 ± 11.98) who were referred to a private clinic limited to Periodontics and Implantology between November 1995 and July 2006. A total of 1626 implants were placed by a single surgeon (R.A.) in these patients. Implants were placed after completion of periodontal cause-related therapy and periodontal stabilization. Follow-up ranged from 1 to 114 months (average 30.82 ± 28.26 months).

All patients were offered a free-of-charge annual examination and

follow-up after implant placement. Only patients who were in routine follow-up until data collection were included in the evaluation. Demographic parameters (age, gender, etc.) were similar between this follow-up group and the patients who were excluded because of their lack of adherence to follow-up appointments (data not shown).

Data were collected from patient files with regards to smoking habits, periodontal condition, diabetes mellitus, implant survival, and time when implant failure occurred. Patients were also divided into those who participated in a supportive periodontal program in the clinic and those who only attended the annual free-of-charge implant examination.

Data were analyzed with statistical software (SPSS 12.0; SPSS, Inc., Chicago, IL) using *z* test for proportions and χ^2 test. A 5% significance level was used.

RESULTS

Smoking was reported by 63 (13.2%) patients and diabetes mellitus by 49 (10.3%). Periodontal disease was diagnosed in 311 (65.4%) of the patients. Overall, 77 (4.7%) implants were lost in 58 (12.2%) patients after a mean period of 24.71 ± 25.84 months.

In the structured supportive periodontal program in the clinic, 246 patients (51.7%) participated and 229 (48.3%) only attended the annual

free-of-charge implant examination. Smoking and attendance in a regular supportive periodontal program were associated with implant survival (Table 1). Patients with treated moderate-to-advanced chronic periodontal disease showed higher implant failure rates, but this difference did not reach statistical significance. Diabetes mellitus was not related to implant survival in this patient cohort (Table 1). The odds ratio was 1.89 for attendance in a regular supportive periodontal program and smoking ($P < 0.05$) (Table 2).

DISCUSSION

An implant-supported restoration offers a predictable treatment for tooth replacement.⁷⁻⁹ Nevertheless, failures that mandate immediate implant removal do occur.^{6,10-13} The consequences of implant removal jeopardize the clinician's efforts to accomplish satisfactory function and esthetics. For the patient, this usually involves further cost and additional procedures.¹⁴

Reported predictors for implant success and failure are generally divided into patient-related factors (e.g., general patient health status, smoking habits, quantity and quality of bone, and oral hygiene maintenance), implant characteristics (e.g., dimensions, coating, and loading), implant location, and clinician experience.¹⁵

The overall first-year survival rate for dental implants is between

Table 2. Odds Ratio Calculated for Dental Implant Failure

Factor	Odds Ratio	95% Confidence Interval		P*
		Lower	Upper	
Smoking	1.89	1.08	3.30	0.029
Diabetes mellitus	0.65	0.96	1.15	0.49 (NS)
Periodontal disease	1.65	0.87	1.01	0.11 (NS)
SPT	1.89	1.14	3.13	0.012

The table shows that smokers and patients not attending in a regular supportive periodontal program had an odds ratio of 1.89 for implant failure.

*Chi-square test.

92% and 97%.¹⁶ An additional 1% of all implants that are initially successful and rehabilitated are lost every year because of complications.¹⁷ In this study, the survival rates fall between the reported survival rates in the literature.¹⁸

Hultin *et al*⁴ conducted a study that systematically reviewed whether supportive implant treatment during a follow-up of at least 10 years after functional loading is effective in preventing biological complications and fixture loss. It was concluded that, to date, there are few available studies that evaluate the long-term effect of supportive programs for implant patients and that there is an urgent need for such studies to be initiated. This report clearly illustrates that there is an important role for regular continuous supportive periodontal therapy in implant patients to increase implant survival over time. In the treatment strategies for periodontitis, the need for supervised training and reinforcement of self-performed oral hygiene is well established. Also, in dental implant patients, instruction in brushing and interproximal cleaning should be initiated as soon as the prosthetic reconstruction is connected. In an elderly patient, reduced capacity of diligence and manual dexterity is not uncommon, thus requiring frequent professional training visits and cleaning of abutment surfaces to remove bacterial biofilms. Although there is no direct evidence in the literature to suggest the importance of supportive therapy for implants as for periodontally treated teeth, periodontal therapy has been suggested to precede implant therapy in partially dentate patients,¹⁹ whereas systematic and continuous

monitoring of the periodontal and peri-implant tissue conditions is suggested to prevent recurrence of periodontal disease and allow early diagnosis and treatment of peri-implant diseases.²⁰

Other environmental- and patient-related factors contribute to implant failures. Nitzan *et al*²¹ report a relationship between marginal implant bone loss and smoking habits. A higher incidence of marginal implant bone loss was found in the smoking group, which was more pronounced in the maxilla. A higher degree of complications, or implant failure rates, were found in smokers with and without bone grafts.^{22,23} However, in an 18-month study of 1183 implants, Kumar *et al*²⁴ report similar survival rates (97% and 94.4%) for smokers and nonsmokers. In this study, smokers exhibited a significantly lower survival rate than nonsmokers. Smokers undergoing both implant-related surgical procedures and dental implantation should be encouraged by their dentists, oral and maxillofacial surgeons, or treating physicians to cease smoking, emphasizing that smoking can increase complications and reduce the success rate of these procedures.

Successful osseointegration has been shown in patients with different types of periodontitis.^{25,26} However, these reports do not offer comparative data between periodontally compromised patients who have been treated and periodontally healthy patients. Nevertheless, a systematic review by Van der Weijden *et al*²⁷ conclude that the outcome of implant therapy in periodontitis patients may be different compared with individuals without such a his-

tory in terms of loss of supporting bone and implant loss.

In a systematic review of implant outcomes in treated periodontitis subjects, Ong *et al*²⁰ conclude that there is some evidence that patients treated for periodontitis may experience more implant loss and complications around implants including higher bone loss and peri-implantitis than nonperiodontitis patients. Evidence was stronger for implant survival than implant success. In this report, periodontal disease patients demonstrated higher implant failure rates but this difference did not reach statistical significance, which could be attributed to the fact that the patients were treated in a periodontal clinic and their periodontal condition was “controlled.” Consequently, appropriate consent should be obtained before implant therapy is provided to periodontal patients.

Diabetes mellitus is one of the most commonly encountered contraindications to dental implant therapy. Glycemic control is viewed as a critical variable in identifying whether patients with diabetes are eligible for implant therapy.^{28–30} This view on the importance of glycemic control in implant success has been reinforced.^{31–33} Several clinical reports suggest that in patients with “well-controlled” type 2 diabetes mellitus, dental implant success rates (92%–100%) may not be significantly compromised.^{32–34} In addition, a large multicenter study of dental implant success report an implant failure rate of only 7.8% for 255 implants placed in “selected” patients with type 2 diabetes mellitus.³¹

The hypothesis that patients with diabetes are appropriate candidates for implants and that compromises in glycemic control may not exclude implant success has been explored.³⁵ This study found no evidence of diminished clinical success or significant early healing complications associated with implant therapy in patients with controlled type 2 diabetes mellitus, which agrees with the former study.

CONCLUSIONS

Smoking and attendance in a regular supportive periodontal program

were found to be strongly related to implant survival. It is highly recommended to maintain implant patients under a strict supportive periodontal treatment protocol that might contribute to implant survival.

ACKNOWLEDGMENTS

The authors thank Ms. Rita Lazar, Scientific Editor, The Maurice and Gabriela Goldschleger School of Dental Medicine, Tel Aviv University, Tel Aviv, Israel, for scientific editorial assistance.

Disclosure

The authors claim to have no financial interest in any company or any of the products mentioned in this article.

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Abstract Translations

GERMAN / DEUTSCH

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Rauchen, Diabetes mellitus, Parodontitis und unterstützende parodontale Behandlung als Faktoren in Verbindung mit dem Erhalt von Zahnimplantaten: Eine langfristige retrospektive Beurteilung von Patienten mit einem Nachverfolgungszeitraum von bis zu 10 Jahren

ZUSAMMENFASSUNG: Zielsetzungen: Es war beabsichtigt, die Faktoren zu beurteilen, die mit einem langfristigen Überleben von Implantaten bei einer großen Patientengruppe mit regelmäßigen Nachuntersuchungen bis zur Datenzusammenstellung in Verbindung stehen. **Methoden:** Die Studienzielgruppe bestand aus 475 Patienten, die in einer auf Parodontologie spezialisierten Privatklinik im Zeitraum von November 1995 und Juli 2006 behandelt wurden. Die Daten wurden aus den Patientenakten gewonnen. Hierbei wurde besonderer Fokus auf Rauchgewohnheiten, parodontalen Status, Diabetes mellitus, Implantatüberleben und den Zeitpunkt eines eventuellen Implantatversagens gelegt. Die Patienten wurden in Gruppen aufgeteilt. Eine Gruppe bestand aus den Patienten, die an einem unterstützenden Parodontalprogramm in der Klinik teilnahmen, und die andere aus den Patienten, die nur ausschließlich an der jährlichen und kostenfreien Implantatuntersuchung teilnahmen. **Ergebnisse:** Insgesamt wurden 1626 Implantate eingepflanzt. Der Nachverfolgungszeitraum lag zwischen 1 bis zu 114 Monaten (durchschnittlich 30.82 ± 28.26 Monate). Im Ganzen versagten 77 (4.7%) Implantate bei 58 (12.2%) Patienten nach einem durchschnittlichen Zeitraum von 24.71 ± 25.84 Monaten. Mehr als die Hälfte der Patienten (246; 51.7%) nahmen an einem strukturierten Unterstützungsprogramm zur parodontalen Versorgung in der Klinik teil und 229 (48.3%) Patienten besuchten nur die jährliche und kostenfreie Implantatuntersuchung. Rauchen und die Teilnahme am regelmäßigen unterstützenden Parodontalprogramm wurden statistisch mit dem Überleben der Implantate in Verbindung gebracht. Patienten mit einer (behandelten) moderaten bis fortgeschrittenen chronischen parodontalen Erkrankung wiesen höhere Versagensquoten bei der Implantierung auf. Dieser Unterschied erreichte allerdings keine statistische Bedeutsamkeit. Das Vorliegen eines Diabetes mellitus wurde bei dieser Patientengruppe nicht mit dem Implantatüberleben in Verbindung gebracht. **Schlussfolgerungen:** Rauchen und die Teilnahme am regelmäßigen unterstützenden Parodontalprogramm konnten als sehr stark mit dem Überleben der Implantate in Verbindung gebracht werden. Besondere Aufmerksamkeit sollte dem Besuch re-

gelmäßiger und unterstützend wirkender Parodontalprogramme bei Implantatpatienten gezollt werden.

SCHLÜSSELWÖRTER: Tabak, Parodontitis, Diabetes mellitus, unterstützende Therapie, Implantatversagen

SPANISH / ESPAÑOL

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Fumar, diabetes mellitus, periodontitis y tratamiento periodóntico de apoyo como factores asociados con la supervivencia de implantes dentales: Una evaluación retrospectiva de largo plazo en pacientes seguidos hasta 10 años

ABSTRACTO: Propósito: Evaluar los factores asociados con la supervivencia a largo plazo de implantes en un grupo numeroso de pacientes en seguimientos normales hasta la recolección de datos. **Métodos:** La población del estudio consistió en 475 pacientes, derivados a una clínica privada limitada a periodóntica e implantología entre noviembre de 1995 y julio de 2006. Los datos se recolectaron de la historia del paciente con respecto a fumar, condición periodóntica, diabetes mellitus, supervivencia del implante y tiempo en el que falló el implante. Se dividió a los pacientes entre los que participaron en un programa periodóntico de apoyo en la clínica y los que solamente completaron el examen anual del implante gratis. **Resultados:** Se colocaron un total de 1626 implantes con un seguimiento que varió entre 1 y 114 meses (promedio 30.82 ± 28.26 meses). En general, 77 (4.7%) implantes se perdieron en 58 (12.2%) pacientes luego de un período medio de 24.71 ± 25.84 meses. Más de la mitad de los pacientes (246; 51.7%) participaron en un programa periodóntico de apoyo en la clínica y 229 (48.3%) solamente participaron en el examen anual del implante gratis. Fumar y concurrir a un programa regular periodóntico de apoyo estuvo estadísticamente asociado con la supervivencia de los implantes. Los pacientes con enfermedad periodóntica crónica moderada a avanzada (tratados) demostraron una tasa más alta de falla del implante, pero esta diferencia no alcanzó un nivel estadísticamente significativo. La diabetes mellitus no estuvo relacionada con la supervivencia de los implantes en este grupo de pacientes. **Conclusiones:** Se encontró que fumar y concurrir a un programa regular periodóntico de apoyo estaban altamente relacionados con la supervivencia del implante. Se deberá prestar atención especial a programas continuos periodónticos de apoyo para los pacientes con implantes.

PALABRAS CLAVES: tabaco, periodontitis, diabetes mellitus, terapia de apoyo, falla del implante

PORTUGUESE / PORTUGUÊS

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Tratamento de tabagismo, diabete melito, periodontite e periodontal de suporte como fatores associados à sobrevivência de implante dentário: Avaliação retrospectiva de longo prazo de pacientes acompanhados por até 10 anos

RESUMO: Objetivo: Avaliar os fatores associados à sobrevivência de implante de longo prazo numa grande coorte de pacientes em acompanhamento regular até a coleta de dados. **Métodos:** A população do estudo era formada por 475 pacientes encaminhados a uma clínica particular limitada à Periodontia e Implantologia entre novembro de 1995 e julho de 2006. Os dados foram coletados de prontuários de pacientes com relação a hábitos de fumar, condição periodontal, diabete melito, sobrevivência de implante e momento em que ocorreu a falha no implante. Os pacientes foram divididos em aqueles que participaram de um programa periodontal de suporte na clínica e aqueles que compareceram apenas ao exame de implante anual gratuito. **Resultados:** Um total de 1626 implantes foi colocado com um intervalo de acompanhamento de 1 a 114 meses (média 30.82 ± 28.26 meses). No total, 77 (4.7%) implantes foram perdidos em 58 (12.2%) pacientes após um período médio de 24.71 ± 25.84 meses. Mais da metade dos pacientes (246; 51.7%) participou de um programa periodontal de suporte estruturado na clínica e 229 (48.3%) compareceram apenas ao exame de implante anual gratuito. O tabagismo e o comparecimento a um programa periodontal de suporte regular foram estatisticamente associados à sobrevivência de implante. Os pacientes com doença periodontal crônica (tratada) moderada a avançada demonstraram taxas mais altas de falha de implante, mas essa diferença não alcançou significado estatístico. A diabete melito não estava relacionada à sobrevivência de implante nessa coorte de pacientes. **Conclusões:** Descobriu-se que o tabagismo e o comparecimento a um programa periodontal de suporte regular estavam fortemente relacionados à sobrevivência de implante. Especial atenção deve ser dada a programas periodontais de suporte contínuos para pacientes de implante.

PALAVRAS-CHAVE: tabaco, periodontite, diabete melito, terapia de suporte, falha de implante

RUSSIAN / РУССКИЙ

АВТОРЫ: Rachel Anner, доктор стоматологии, Yoav Grossmann, доктор стоматологии, Yael Anner и Liran Levin, доктор стоматологии.

Курение, сахарный диабет, пародонтит и поддерживающая пародонтальная терапия как факторы, связанные со степенью приживаемости имплантата: длительная

ретроспективная оценка пациентов при наблюдении свыше 10 лет

РЕЗЮМЕ. Цели. Оценить факторы, связанные с приживаемостью имплантата в долгосрочной перспективе, в большой группе пациентов при регулярном наблюдении вплоть до сбора нужного количества данных. **Методы.** Популяция, вошедшая в исследование, состояла из 475 пациентов, наблюдавшихся в частной клинике у специалистов по пародонтологии и имплантологии с ноября 1995 г. по июль 2006 г. Из карточек пациентов были набраны данные, касающиеся пристрастия к курению, состояния пародонта, наличия у них сахарного диабета, приживаемости имплантата и времени, через которое произошло отторжение имплантата. Пациенты были разделены на тех, кто принимал участие в клинической программе поддерживающей пародонтальной терапии, и тех, кто только посещал клинику для ежегодного бесплатного обследования с целью оценки состояния имплантата. **Результаты.** Всего было установлено 1626 имплантатов, период наблюдения составил от 1 до 114 месяцев (в среднем $30,82 \pm 28,26$ месяцев). В итоге не прижилось 77 (4,7 %) имплантатов у 58 (12,2 %) пациентов. Период, спустя который произошло отторжение, в среднем составил $24,71 \pm 25,84$ месяца. Более половины пациентов (246; 51,7 %) принимали участие в организованной по определенной схеме клинической программе поддерживающей пародонтальной терапии, и 229 (48,3 %) посещали клинику только для ежегодных бесплатных обследований с целью оценки состояния имплантата. Была зафиксирована статистически значимая зависимость между курением и посещением мероприятий программы регулярной поддерживающей пародонтальной терапии и приживаемостью имплантата. Пациенты (проходившие лечение) с хроническим пародонтозом со степенью тяжести от средней до сильной показали более высокий процент отторжения имплантата, но эта разница не достигла уровня статистической значимости. Связь между наличием сахарного диабета и приживаемостью имплантата в данной группе пациентов не наблюдалась. **Выводы.** Была выявлена существенная связь между курением и посещением мероприятий программы регулярной поддерживающей пародонтальной терапии и приживаемостью имплантата. Особое внимание должно быть уделено длительным программам поддерживающей пародонтальной терапии для пациентов с имплантатами.

КЛЮЧЕВЫЕ СЛОВА: табак, пародонтоз, сахарный диабет, поддерживающая терапия, отторжение имплантата

TURKISH / TÜRKÇE

YAZARLAR: Rachel Anner, DMD, Yoav Grossmann, DMD, Yael Anner and Liran Levin, DMD.

Dental implant sağkalımı ile ilişkili faktörler olarak sigara içme, diabetes mellitus, periodontit ve destekleyici periodontal tedavi: 10 yıla kadar takip edilen hastaların uzun-süreli retrospektif değerlendirmesi

ÖZET: Amaç: Veri derlenmesine kadar düzenli şekilde takip edilen geniş hasta kohortunda uzun-süreli implant sağkalımı ile ilişkili faktörleri değerlendirmek. **Yöntem:** Çalışma popülasyonu, Kasım 1995 ile Temmuz 2006 arasında sadece Periodontik ve İmplantoloji çalışması yapan bir özel kliniğe havale edilen 475 hastadan oluştu. Hasta dosyalarından sigara içme alışkanlıkları, periodontal durum, diabetes mellitus, implant sağkalımı ve implant başarısızlığının tarihine ilişkin bilgiler toplandı. Hastalar, klinikteki destekleyici bir periodontal programa katılanlar ve sadece yıllık ücretsiz implant tetkikine gelenler olmak üzere iki gruba ayrıldı. **Bulgular:** Hastalarda toplam 1626 implant yerleştirildi ve takip süresi 1

ila 114 ay arasında değişti (ortalama 30.82 ± 28.26 ay). Genel olarak, 58 (%12.2) hastada 77 (4.7%) implant ortalama 24.71 ± 25.84 ay sonra başarısızlığa uğradı. Hastaların yarısından fazlası (246; 51.7%) klinikte yapılan destekleyici bir periodontal programa katılırken, 229 (48.3%) hasta sadece yıllık olarak yapılan ücretsiz implant tetkikine geldi. Sigara içmenin ve düzenli şekilde destekleyici bir periodontal programa katılmanın sağkalım ile istatistiksel açıdan anlamlı düzeyde ilişkili olduğu görüldü. Orta ila ileri derecede (tedavi edilmiş) kronik periodontal hastalığı olan olgularda daha yüksek implant başarısızlık oranları görüldüyse de bu farklılık istatistiksel açıdan anlamlı değildi. Bu hasta kohortunda diabetes mellitus implant sağkalımı ile bağlantılı bulunmadı. **Sonuç:** Sigara içmenin ve düzenli şekilde destekleyici bir periodontal programa katılmanın sağkalım ile büyük ölçüde ilişkili olduğu görüldü. İmplant hastalarına sürekli periodontal destek programları sunmaya özen gösterilmelidir.

ANAHTAR KELİMELELER: tütün, periodontit, diabetes mellitus, destekleyici tedavi, implant başarısızlığı

JAPANESE / 日本語

デンタルインプラント生存関連要因としての喫煙と糖尿病ならびに歯周炎、そして補助的歯周病治療:10年間まで追跡した患者の長期回顧研究

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研究概要:

目的: データ収集まで定期フォローアップで大人数のコホート集団患者を対象に、長期インプラント生存に関連した要因調査を目指した。

方法: 研究対象グループは1995年11月から2006年7月までの期間に、歯周病ならびにインプラント治療専門プライベートクリニックに紹介を受けた475名の患者で構成した。患者ファイルを基に喫煙習慣や歯周の状態と並んで糖尿病やインプラント生存、そしてインプラント失敗発生時のデータを収集した。また患者をクリニックの補助的歯周病プログラム参加したグループと、年一回の無料インプラント検診のみに通院したグループに分けた。

結果: 合計1626本のインプラントが埋入され、フォローアップ期間は1ヶ月から114ヶ月の範囲を設けた (平均 30.82 ± 28.26 ヶ月)。全体的には、平均期間 24.71 ± 25.84 ヶ月間後に58名 (12.2%) の患者が77本 (4.7%) のインプラントを喪失した。半数以上の患者 (246; 51.7%) がクリニックの体系化した補助的歯周病プログラムに参加し、229名 (48.3%) は年一回の無料インプラント検診のみに通院した。喫煙と定期補助的歯周病プログラム参加はインプラント生存に統計上関連が認められた。治療処置を受けた中度から重度の慢性歯周病患者には高度のインプラント失敗率が見られたが、統計上重要な差異には至らなかった。このコホート患者集団では糖尿病とインプラント生存の関連は見られなかった。

結論: 喫煙と定期補助的歯周病プログラム参加はインプラント生存に確実に関連していることが判明した。インプラント患者向け継続歯周病補助的プログラムには特別な配慮を向けるべきである。

キーワード: タバコ、歯周炎、糖尿病、補助的療法、インプラント失敗

CHINESE / 中国語

以吸菸、糖尿病、牙周炎和支援牙周治療做為牙科植體存活的相關因素：最多 10 年的患追蹤長期回顧評估

作者：Rachel Anner, DMD, Yoav Grossmann, DMD, Yael Anner 和 Liran Levin, DMD

摘要：

目的：評估在大組群的同期患者當中，從定期追蹤到資料收集時的長期植體存活的相關因素。

方法：研究總體包含從 1995 年 11 月至 2006 年 7 月之間因為牙周病和植體種植而轉介至某私人診所的 475 名患者。從患者檔案收集和吸菸習慣、牙周病況、糖尿病、植體存活以及植體失敗發生時間相關的資料。將患者分為參加診所的牙周支援計畫以及只參加年度免費植體檢查兩組。

結果：合計置入 1,626 顆植體，追蹤時間從 1 個月到 114 個月 (平均 30.82 ± 28.26 月) 不等。整體而言，58 名患者 (12.2%) 在平均 24.71 ± 25.84 個月之後失去 77 顆植體 (4.7%)。超過一半以上的患者 (246 人；51.7%) 參加診所的結構型牙周支援計畫，另外 229 (48.3%) 人只參加年度免費植體檢查。吸菸及參加定期牙周支援計畫與植體存活有統計上的相關性。罹患中度到後期的慢性牙周疾病的患者 (經治療) 顯示有較高的植體失敗率，不過，這個差異並不具統計顯著性。糖尿病與這個同期患者組群的植體存活無關。

結論：研究發現吸菸與參加定期牙周支援計畫和植體存活高度相關。應特別關注植牙患者的持續牙周支援計畫。

關鍵字：菸草、牙周炎、糖尿病、支持療法、植體失敗。

KOREAN / 한국어

치과 임플란트 생존과 관련된 인자로서의 흡연, 당뇨, 치주염 및 치주 지지요법: 최대 10년까지의 장기 후향적 추적관찰 평가 연구

저자: 레이첼 에이너 (Rachel Anner), DMD, 요아브 그로스만 (Yoav Grossmann), DMD, 야엘 에이너 (Yael Anner) 및 라이란 레빈 (Liran Levin), DMD

요약:

목적: 본 연구의 목적은 대규모 환자 코호트를 대상으로 정기적 추적관리를 통해 장기간 임플란트 생존과 관련된 인자들을 평가하는데 있다.

방법: 연구집단은 475명의 환자로 구성되었으며, 이들은 모두 1995년 11월과 2006년 7월 사이에 개인 치주 및 임플란트 클리닉에서 치료를 받았던 환자들이었다. 환자 기록에서 흡연습관, 치주 상태, 당뇨, 임플란트 생존 및 임플란트 실패 시점과 관련된 자료를 수집하였다. 환자들을 클리닉에서 치주 지지프로그램에 참여했던 그룹과 연례적 무료 임플란트 검사만 받았던 그룹으로 나누었다.

결과: 총 1626개의 임플란트가 식립되었고 추적관찰기간은 1개월에서 114개월 사이였다 (평균 30.82 ± 28.26 개월). 전체적으로, 77개(4.7%의 임플란트)가 평균 24.71 ± 25.84 개월 이후 58명(12.2%)의 환자에게서 소실되었다. 환자들의 절반 이상(246; 51.7%)이 클리닉에서 치주 구조 지지요법 프로그램에 참여하였고, 229명(48.3%)은 매년 무료 검사만 시행 받았다. 흡연과 정기적 치주 지지프로그램 시행은 임플란트 생존과 통계적 관련성이 있었다. (치료된) 중등도-진행 단계의 만성 치주질환 환자에서 임플란트 실패율이 높았음이 증명되긴 했으나, 이 차이는 통계적으로 유의하지는 않았다. 당뇨는 본 환자 코호트에서의 임플란트 생존과 관련이 없었다.

결론: 흡연과 정기적 치주 지지요법 프로그램에의 참여는 임플란트 생존과 강한 연관성이 있음이 확인되었다. 임플란트 시술 환자에 대한 지속적 치주 지지요법 프로그램에 특별한 관심을 기울여야 하리라 생각된다.

키워드: 담배, 치주염, 당뇨, 지지요법, 임플란트 실패