



Implant treatment for a patient with aggressive periodontitis associated to diabetes mellitus. Clinical case report.

Surgical phase

Tratamiento implantológico en paciente con periodontitis agresiva asociada a diabetes mellitus. Reporte de caso clínico.

Fase quirúrgica

Dan Morales Hernández,* Lorena Contreras Álvarez,[§] Mario Humberto Rodríguez Tizcareño^{||}

ABSTRACT

Diabetes mellitus is a chronic degenerative disease characterized by a set of metabolic disorders and presence of hyperglycemia. When analyzing the effect of diabetes on implants, bone remodeling process alteration and deficient mineralization have been observed: these factors result in poorer bone integration. The aim of the present study was to describe surgical and implant treatment conducted in order to re-establish function and esthetics of a patient's periodontal and general circumstances. Resulting ridge (flange) preservation as well as elevation of the maxillary sinus achieved a suitable flange to place implants, by means of a tomographic surgical guide in preparation for further rehabilitation of implant-supported prostheses. As a conclusion we might propose that late diagnosis of aggressive periodontitis can lead to edentulism in young patients, which could be solved with endo-osseous implants.

RESUMEN

La diabetes mellitus es una enfermedad crónica degenerativa que se caracteriza por un conjunto de trastornos metabólicos y la presencia de hiperglicemia. Al analizar el efecto de la diabetes sobre los implantes se ha demostrado una alteración en los procesos de remodelación ósea y una deficiente mineralización, que se traduce en una menor oseointegración. El objetivo de este estudio es describir el manejo quirúrgico e implantológico que se llevó a cabo para restablecer la función y estética de una paciente con estas condiciones sistémicas y periodontales. Los resultados de las preservaciones de reborde y elevaciones de piso de seno maxilar lograron un reborde adecuado para la colocación de los implantes por medio de una guía quirúrgica tomográfica para su posterior rehabilitación con prótesis fijas implantoreténidas. Como conclusión tenemos que el diagnóstico tardío de la periodontitis agresiva puede llevar al edentulismo en pacientes jóvenes lo que puede ser solucionado con los implantes endoósseos.

Key words: Diabetes mellitus, aggressive periodontitis, bone integration, tomographic guide.

Palabras clave: Diabetes mellitus, periodontitis agresiva, oseointegración, planeación tomográfica.

INTRODUCTION

Diabetes mellitus (DM) is a systemic disease with many complications which affects the integrity of the human body along its life span. Periodontal disease is one of these complications.¹ Generalized aggressive periodontitis is characterized by affecting subjects under 30 years of age, and causing pronounced natural episodes of alveolar bone destruction. It exhibits generalized proximal insertion loss, affecting at least three teeth other than the third molars and incisors, and it presents a poor serum response of antibodies to infectious agents.² A direct relationship has been established between metabolic disorder and periodontitis incidence and severity.³ The aforementioned conditions have been considered a relative contraindication for placement of tooth implants.

In many research projects it has been mentioned that DM patients exhibit greater tendency to infection and delayed healing. This has been associated to poor glycemic control and hyperglycemia, which exert negative effect on bone formation, causing increased resorption, affecting thus bone integration processes.^{4,5}

- * Graduate.
- § Professor.
- || Coordinator.

Prosthetic and Surgical Oral Implantology Specialty, National University of Mexico (UNAM).

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CLINICAL CASE

A 25 year old female attended the implantology service. As personal history the patient reported suffering type 2 Diabetes Mellitus for three years, controlled with metformin. Oral examination revealed a partially edentulous upper jaw as well as generalized pathological migration, with calculi deposits, purulent exudate, evident gingival inflammation as well as grade I and III mobility. Periodontal probing revealed insertion loss greater than 5 mm (*Figure 1A*). Radiographic studies showed severe bone resorption with multiple bone defects (*Figure 1B*). Based on these facts, the patient received a diagnosis of severe generalized aggressive periodontitis associated to diabetes mellitus, with unfavorable prognosis for all remaining teeth.

After analyzing several treatment alternatives, two surgical phases and one prosthetic phase were devised. In the first phase it was decided to conduct multiple extractions with flange preservation and elevation of bilateral maxillary sinus floor. The second



Figure 1A. Initial clinical photograph.



Figure 1B. Initial panoramic X-ray.

phase was planned once bone graft integration times were fulfilled. This second phase consisted on placement of 12 endo-osseous implants: 6 in the upper jaw, and 6 in the lower jaw. Finally, in the third rehabilitation phase, two fixed implant-supported prostheses were placed.

PREOPERATIVE MEASURES

Before initiating surgical procedure the patient's glycemic level was ascertained with the help of glycated hemoglobin (HbA1c lesser than 7%). Amoxicillin was chosen as antibiotic (12 g per mouth 1 hour before surgery and 500 mg every eight hours for eight days) as well as mouthwash with 0.12% chlorhexidine 3 times a day for 15 days. Amoxicillin was selected as antibiotic since it is a wide-spectrum drug and acts against pathogen agents (streptococci, Gram-positive and Gram-negative anaerobes) which most frequently cause post-operative complications after implant placement.⁶ Antibiotic prophylaxis and use of chlorhexidine 0.12% mouthwash proved to be clearly beneficial to reduce failure rates from 13.5 to 4.4% in type 2 diabetic patients, in a 36 month follow-up period.⁷

SURGICAL TREATMENT

The patient was anesthetized with mepivacaine with 2% epinephrine. Multiple extractions with osteoplasty were conducted, after this procedure, de-mineralized cortical bone allograft and collagen membrane were placed in both arches; the membrane was stabilized with tacks (studs). Healing by first intention was observed in the primary closure of surgical wounds (*Figure 2A-C*).

Immediate full prostheses were manufactured to be then placed in a passive and transitory manner. After this, six months were allowed to elapse in order to achieve healing of soft and hard tissues.

In a second surgical stage, a bilateral maxillary sinus floor elevation was executed with the lateral window technique first described by Taum⁸ and modified by Boyne and James.⁹

Maxillary sinuses were approached by means of an oval osteotomy measuring approximately 15 × 10 mm; the cut bone fragment was removed. During approach to the right side a small perforation was produced (*Figure 3A-B*), therefore, a collagen barrier was placed in order to repair the perforation and protect access to the sinus.^{10,11} It was decided to place bovine bone graft since it has been shown that this type of bone, due to its slow resorption, favors implant integration (*Figure 3C-D*).^{12,13}

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