

# Osseointegration Dental Implants in Diabetic Patients - An Over View Study

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## Abstract

**Background:** Dental implant surgery has developed to a widely used procedure for dental rehabilitation and it is considered a safe and predictable procedure. Diabetes mellitus is a chronic disease that presents hyperglycemia and causes different side effects. The patients with poorly controlled diabetes suffer from impaired osseointegration, elevated risk of peri-implantitis and higher level of implant failure.

**Case:** We report our experience of a successful osseointegration of 4 dental implants to a 58 years old female diabetic patient. At first the extractions of the teeth were performed and after 8 months four implants were inserted under local anesthesia (lidocaine containing adrenaline 1:100 000).

The supportive administration of antibiotics and chlorhexidine seems to improve the implant success.

**Conclusion:** Based on the treatment protocol the wound was healed without complication and it was evident the good integration of four dental implants with absence of osteomyelitis.

**Key words:** dental implant, diabetic patient, osseointegration

## INTRODUCTION

Diabetes Mellitus is characterized by high blood glucose level and inability to produce /use insulin. Glucose level in blood is increased after food intake. Insulin is then released from beta cells in pancreas into the blood (1,2). This hormone binds to specific receptors in body cells and helps absorption of glucose into these cells, which in turn normalizes blood glucose levels (3,4). However, diabetic patients present difficulties in secreting insulin or there is cellular resistance to insulin or both. This leads to many symptoms and complications. Generally patients with poorly controlled or uncontrolled diabetes mellitus are at risk of infection and poor wound healing. Other complications of diabetes include: metabolic disturbances, hypertension, congestive heart failure, retinopathy, cataracts, blindness, nephropathy, ulceration and feet gangrene, neuropathy (5,6).

Dentists should carefully manage the diabetic patient by examining history, clinical signs, symptoms, laboratory tests and refer him/her to the physician if needed.

## CLINICAL CASE

A 58 years old female patient presented to our clinic with a chief complaint of teeth mobility and difficulty of eating. Clinical and panoramic radiographic examination revealed a severe lower teeth (Fig. 1.a). According to the medical history the patient had diabetes mellitus type 2 for 3 years. Laboratory investigation showed a good level of glycemic control. The patient was given

a detailed explanation concerning the present state, alternative treatment plans and the proposed procedures.

At first the extractions of the teeth were performed and after 8 months four implants were inserted under local anesthesia (lidocaine containing adrenaline 1:100000).

In order to avoid any infective complication after the intervention the patient was placed on Augmentin 625 mg for 5 days. She was asked not to chew on the surgical area for the first 4 weeks postoperatively. The patient was instructed to maintain good oral hygiene. Based on the follow-up of the patient it was evident the good wound healing and absence of osteomyelitis. The clinical examination 3 months after the intervention showed the good healing and good implants integration (Fig. 1.b).



**Figure 1a.** Panoramic radiographic examination of the patient



**Figure 1b.** Would healing 3 months after the intervention

## DISCUSSION

Diabetic patients have increased inflammatory response, reduced wound healing and microvasculature changes which contribute to periodontal and gingival diseases such as periodontal abscess (7). Patient with uncontrolled diabetes mellitus may also suffer from: xerostomia, poor wound healing, infection, oral ulceration and lesions, candidiasis, burning pain in the mouth, periapical abscess and caries. These are due to excessive loss of tissue fluid altered response to infection, microvascular changes and increase glucose level in saliva.

Recognizing conditions that place the patient at a higher risk of complications will allow the surgeon to make informed decisions and refine the treatment plan to optimize the outcome (8). It is recommended good oral hygiene and restrict to instructions of dentist to prevent infection, impaired wound healing and osteomyelitis from happening. The supportive administration of antibiotics and chlorhexidine seems to improve implant success.

Based on literature, it was demonstrated that patients with poor glycemic control had greater decrease in implant stability and required longer time for healing but most of the implants attained nearly baseline stability in long duration even in poorly controlled diabetic patients (9).

Probable factors affecting survival of dental implants associated with rehabilitative factors are: type of restoration fixed/removable, implant location maxillary/mandibular, implant length, bone type and quality surgical protocols (10).

## CONCLUSION

Dental implants are safe and predictable procedures for dental rehabilitation in diabetics. Survival dental implants in diabetic well controlled patients appears as good as in general population. Patient should be treated under correct surgical and prosthetic protocol. Therefore a risk-adapted dental recall is helpful to detect early signs of gingivitis which can easily be treated by dental/implants cleaning to avoid serious periimplant infections.

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