

## ORAL SANCTION OF PATIENTS WITH DIABETES MELLITUS IN SURGICAL DENTISTRY

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### ANNOTATION

Oral Complications of poorly controlled diabetes mellitus may include xerostomia, bacterial, viral, and fungal infections (including candidiasis), poor wound healing, increased incidence and severity of caries, gingivitis and periodontal disease, periapical abscesses, and burning mouth symptoms. Oral findings in patients with uncontrolled diabetes most likely relate to excessive loss of fluids through urination, altered response to infection, microvascular changes, and possibly, increased glucose concentrations in saliva. Independent of the severity of plaque accumulation, gingivitis, periodontitis and periodontal bone loss are associated with Diabetes Mellitus, especially when poorly controlled. Defects in immune status, altered bacterial flora and microvascular disease are the postulated pathogenesis of diabetic periodontal disease. Evidence indicates that bacteremia associated with periodontitis contributes to insulin resistance and destruction of pancreatic islet cells. Diabetic patient may complain of dry mouth. Xerostomia be a manifestation of hyperglycemia associated dehydration or impaired salivary gland function. Oral candidiasis occurs commonly in poorly controlled diabetics. Oral lesions are more common in patients with diabetes. A significantly higher percentage of oral lesions, especially candidiasis, traumatic ulcers, lichen planus, and delayed healing, has been seen in individuals with Type diabetes, as compared with a control population. Alterations in the immune system may be

responsible for the appearance of lichen planus in diabetes. Diabetic neuropathy may lead to oral symptoms of paresthesia's and tingling, numbness, burning, or pain caused by pathologic change involving nerves in the oral region. Diabetes has been associated with oral burning symptoms. Early diagnosis and treatment of diabetes may allow for regression of these symptoms, but in longstanding cases, the changes may be irreversible **Methods**

A systematic literature research based on the PRISMA statement was conducted to answer the PICO question “Do diabetic patients with dental implants have a higher complication rate in comparison to healthy controls?”. We included 40 clinical studies and 16 publications of aggregated literature in this systematic review.

### **Results**

We conclude that patients with poorly controlled diabetes mellitus suffer more often from peri-implantitis, especially in the post-implantation time. Moreover, these patients show higher implant loss rates than healthy individuals in long term. Whereas, under controlled conditions success rates are similar. Perioperative anti-infective therapy, such as the supportive administration of antibiotics and chlorhexidine, is the standard nowadays as it seems to improve implant success. Only few studies regarding dental implants in patients with prediabetic conditions are available, indicating a possible negative effect on developing peri-implant diseases but no influence on implant survival.

### **Conclusion**

Dental implant procedures represent a safe way of oral rehabilitation in patients with prediabetes or diabetes mellitus, as long as

appropriate precautions can be adhered to. Accordingly, under controlled conditions there is still no contraindication for dental implant surgery in patients with diabetes mellitus or prediabetic conditions.

### Background

Nowadays, oral rehabilitation is increasingly achieved through the insertion of dental implants. This takes into account the patient's and practitioner's growing desire for aesthetically and chewing-functionally demanding as well as minimally invasive solutions with a high durability. Nevertheless, with increasing numbers of inserted implants, complications are becoming more common. A sufficient osseointegration of the previously placed implants is inevitable for early implant survival. During the osseointegration, however, bone remodeling plays an increasingly crucial role for implant success.

Diagnostic criteria for diabetes mellitus are a fasting plasma glucose in venous plasma with a concentration of  $\geq 126$  mg/dL, a HbA1c  $\geq 6.5\%$ , a 2-h postload plasma glucose measurement of  $\geq 200$  mg/dL or a random plasma glucose  $\geq 200$  mg/dL in the presence of symptoms of hyperglycaemia, such as polydipsie or polyurie. Prediabetic conditions are defined as an intermediate hyperglycaemia, that do not attain diabetes thresholds. However, both are very common metabolic disorders, that cause hyperglycemia leading to micro- and macroangiopathies. They are known to be associated with periodontitis, delayed wound healing and an impairment of bone metabolism.

Diabetes mellitus as well as prediabetic conditions represent a common and increasing health problem with extensive harmful effects on the entire organism. Although diabetes mellitus has been regarded as

a relative risk factor for dental rehabilitation with implants, dental implant surgery was developed to be the most suitable and comfortable instrument for dental and oral rehabilitation in the past decades.

Hence, this systematic review aimed to give an update on current literature on effects of pre-diabetes and diabetes mellitus on dental implant success, especially on postoperative complications, peri-implantitis and implant failure rates.

#### Materials and methods

The substructure of the systematic review is based on the PRISMA 2020 statement/checklist. The focused question was built according to the PICO (population, intervention, comparison, outcome) scheme. It answers the questions “Who are the patients?—diabetic patients” for “P” or population, “What are they exposed to?—dental implants” for “I” or intervention, “What do we compare them to?—healthy controls” for “C” or comparison and for “O” or outcome “What is the outcome?—the complication rate”. Accordingly, the focused question is: “Do diabetic patients with dental implants have a higher complication rate in comparison to healthy controls?”. A registration has not been performed and no review protocol has been prepared.

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