Clinical evaluation of supporting structures around miniimplant supported lower overdentures in controlled diabetic patients

Thesis

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Introduction

Introduction

Tooth loss may be caused by many biological, economical, or educational factors. Bone volume and density are maintained by compressive and tensile forces which are transmitted to the bone through the teeth, therefore tooth loss lead to lack of bone stimulation and residual ridge resorption which have severity related to local factors in the mandible and systemic factors in the maxilla.

Residual ridge resorption lead to many anatomical changes that may affect the treatment choice of edentulism as it affects the denture bearing areas which may adversely affects stability, retention, and support of the complete denture.

Diabetic edentulous patients suffer from disturbances in blood circulation that affects many vital organs, and chronic hyperglycemia leads to inhibition of osteoblastic differentiation rather than increasing osteoclastogenesis, chronic hyperglycemia causes deleterious effects on extracellular matrix adherence, growth, and accumulation.

Treatment of edentulous patients may include construction of conventional complete denture, construction of tooth-supported over-denture or implant-supported or retained overdenture when all natural teeth are missing and residual ridge is unfavourable to provide

retention, support, and stability for the conventional treatment modality.

Complete denture is the traditional treatment modality for complete edentulism but many anatomical factors may interfere with its retention, stability, and support therefore preprosthetic surgical procedures may be indicated, but sometimes even such steps can not enhance the condition, in this case, implant treatment may be the choice.

In healthy individuals with acceptable bone height and width as examined radiographically implant treatment will provide more patient satisfaction but in diabetic patients the protocol of implant treatment is different to avoid operative or postoperative complication or failure of the treatment, therefore low invasive surgical steps should be followed. The question here is how can bone response be different between healthy and controlled diabetic patients treated with the similar protocol??

Review of literature

Literature review

Edentulism and its sequalae:

Repeated tooth extraction results in complete edentulism, extraction may be due to biological factors such as: dental caries and periodontal diseases, or due to patient-related factors like costs of other options of dental treatment other than extraction. Edentulism is directly proportional to the patient's age and it is the most common existing condition.[1,2]

Teeth loss due to dental diseases results in various health, psychological, and social problems. The relationship between missing teeth and socio-economic factors such as: age, gender, educational level, and occupation was studied and it was revealed that tooth loss is more over 60 years and less between 18-30 years, and it is more in females than males, as the educational level increases the tooth loss is less.[3]

Alveolar ridge resorption after teeth extraction occurs as one of the problems in prosthetic dentistry rehabilitation. Edentulism leads to lack of bone Stimulation by transmission of compressive and tensile forces to bone through the teeth therefore teeth loss leads to reduction of width and height of bone volume and reduction of bone trabeculae and density.[4,5]

Flabby ridge is related to severity of residual ridge resorption, which is related to female gender and systemic diseases in mandible and related to local factors in maxilla like denture quality and previous use of removable partial denture. Severity

of residual ridge resorption is not related to the duration of edentulism.[6]

Resorbed mandibular ridge has morphometric characteristics which reflects changes in the relative composition between cortical and trabecular bone area due loss of height and total area. The percentage of cortical area increased with increased residual ridge resorption, while cortical porosity and thickness reduced from mesial and distal regions and remain unaffected from lingual aspects.[7]

Mandibular bone height has no effect on patient satisfaction with function, chewing ability, comfort, and stability, it is not matter how much the mandibular bone but edentulous patient will benefit more from implant-retained denture than from conventional denture.[8]

Residual ridge resorption especially in posterior area of the mandible leads to prominent mylohyoid and internal oblique ridge covered by thin movable unattached mucosa, while continuous resorption in the anterior residual ridge make the superior genial tubercle to be the superior aspect.[9]

Portions in the basal bone of mandible may resorb severly and causes dehiscence of mental foramen which serve as a part of the supporting area of the denture resulting in acute pain and paresthesia of lower lip, and the mandibular body is at higher risk of fracture even under low impact forces.[10,11]

Mental foramen location in relation to the crest of the residual ridge correlated negatively with number of years patients from