Digital Panoramic Assessment of Maxillary Implant Insertion Areas among Controlled Type2 Diabetic Patients

A THESIS

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ABSTRACT

Background:

Restoring the edentulous maxilla with dental implants is a complex and challenging procedure especially for individuals with type 2 diabetes mellitus. Type 2 diabetes mellitus significantly increases the risk of bone loss. Appropriate pre-placement planning, in which radiograph plays a pivotal role for assessment of bone architecture, evaluate bone support and amount at the potential implant recipient site of a dental implant, allows the dentist to place these implants with relative ease and predictability. Panoramic radiograph is a useful tool for the measurement of alveolar bone heights and localization of anatomic landmarks in planning for the placement of dental implants in the jawbones.

Aim of the study:

Pre operative digital panoramic assessment of the vertical bone heights of edentulous maxilla of controlled type 2 diabetes mellitus patients for implant length selection and planning.

Materials and methods:

The sample composed of 100 male participants with edentulous maxilla, age ranged between (42-81) years old. The total sample attended to the dental implant unit of Al-Shaheed Nasser Al-Mousawi of dental specialist centre in Najaf city. They were examined from November /2010 to March/2011.

The sample was divided into:

- Control group: included 50 healthy subjects.

- Study group: included 50 controlled type 2 diabetic patients.

Assessment of controlled type 2 diabetes mellitus was done by two laboratory tests; fasting plasma glucose and HbA1c according to the recommended values stated by American Diabetes Association in 2010.

Panoramic image was taken for every subject in both control and study groups. Five sites in the maxilla were measured on every image, a reference line was drawn to join the inferior points of the orbits (reference line). The midline was determined by images of the nasal septum, anterior nasal spine, and nasopalatine foramen. One vertical line was drawn through the mesial margin of the infraorbital foramen from the reference line to the alveolar crest for each side of maxilla, and another vertical line was drawn through the inferior margin of the zygomatic process of the maxilla to the alveolar crest for each side of maxilla. The infraorbital vertical line and the zygomatic vertical line were approximate to the maxillary first premolar and to the maxillary first molar, respectively. The measurements *at* (midline), (first premolar) and (first molar) areas represented the vertical distances from reference line to the alveolar crest. The collected data were processed and analyzed by using Medcalc software program (version 11.5).

Results:

The statistical analysis showed that: the right-left mean difference for vertical bone height measurements of maxilla at anterior, premolar and molar sectors was statistically non significant among control groups, similar result was obtained among study group.

There was a highly significant difference for vertical bone height measurements of maxilla between control and study groups at anterior, premolar and molar sectors with (p-value < 0.001).

In control group there was statistically no significant difference for vertical bone height measurements of maxilla with ageing.

Also in study group there was statistically no significant difference for vertical bone height measurements of maxilla with ageing, while among diabetes mellitus study group a linear regression model was used to assess the effect of age and duration on the value of vertical bone height measurements and the most affected variable was the duration followed by age, statistically there was significant difference for vertical bone height measurements of maxilla with duration of diabetes mellitus.

Conclusion:

Edentulous subjects with type 2 diabetes mellitus had more alveolar bone resorption even they had a control state of the disease unlike the healthy non-diabetic one and the bone resorption progressed with increased duration of the disease.