Posters: Implant Therapy Outcomes, Surgical Aspects (Abstracts 098–216)

098 Implant Therapy Outcomes, Surgical Aspects

Clinical, radiological and photelastic evaluation of conventional vs. mini dental implants

Presenter: Taiyeb-Ali T
University of Malaya, Kuala Lumpur, Malaysia
Co-authors: Taiyeb-Ali T, Ali A, Winus N, Mahmoon WA
University of Malaya, Kuala Lumpur, Malaysia

Background: The study comprised two aspects: a retrospective clinical study and photelastic investigation.

Aim: To compare clinically and radiologically the peri-implant tissue status around Conventional (Ankylos®) and Mini Dental Implants (IMTEC®) supporting various prostheses and the stress around these implants supporting overdentures by an in vivo study.

Methods: All 22 patients with mean age 45.5 years (age range 32–65 years) were treated at the Faculty of Dentistry, University of Malaya for missing teeth with implant-supported prostheses. Peri-implant tissue status of 28 Mini Dental Implants (MDI) and 48 Conventional Dental implants (CDI) were examined clinically and radiologically. Clinical parameters assessed included Plaque Index (PI), Bleeding on Probing (BOP), Gingival Index (GI), Probing Pocket Depth (PPD), & Keratinised Mucosa (KM). Radiological assessments of peri-implant bone were conducted using Leica Qwin® image analysis software after more than 1 year (1–3 years) in relation to the baseline radiographs. Statistical analysis was performed using Mann-Whitney test. (1) Photelastic stress analysis of 4 MDI (1.8 mm diameter, 15 mm length) with O-Rall Prosthetic Heads and nylon matrices supporting an overdenture were made. The stresses were compared with that on two conventional Ankylos® implants (3.5 mm diameter, 15 mm length) with ball abutments and gold matrices supporting an overdenture. Unilateral forces of 70,130 and 200 N were applied.

Results: All clinical parameters [PI, BOP, GI, PPD, and KM] and radiological examination showed no statistically significant differences between all CDI and MDI. Mean distal bone loss was statistically significantly less around MDI, supporting removable prostheses [P < 0.05]. Mean GI was significantly greater for MDI vs. CDI, supporting fixed appliances [P < 0.01]. Photelastic analysis showed mild stresses on distal MDI on both unloaded and loaded sides, with higher stress intensity on loaded side with the increase in force to 200 N. Stress concentration was at the apical part of MDI while in CDI it was around the mid length of the implants and in the body of the mandible.

Conclusions and clinical implications: Clinical parameters and bone level status around CDI and MDI were not significantly different. Loaded MDI exhibited different stress concentration patterns as compared with conventional regular diameter implants when used to support overdenture prosthesis.

099 Implant Therapy Outcomes, Surgical Aspects

Survival of autogenous bone graft placed in immediate peri-implant defects

Presenter: Ahn J-J
School of Dentistry, Kyungpook National University, Daegu, Republic of Korea
School of Dentistry, Kyungpook National University, Daegu, Republic of Korea

Background: Immediate implant defects can be treated by grafting of autogenous drill chip bone without use of any artificial grafts or membranes. However, the fate of the autogenous bone graft in the peri-implant defects has not been proven in humans up to this point.

Aim: To evaluate the clinical outcomes of grafted defects and non-grafted defects by measuring bone morphologies under direct visual observation after 1 year loading.

Methods: One hundred twenty-four subjects with a total of 132 teeth were scheduled for extraction and immediate implant placement. Following minimal flap elevation and extraction, implant installation was performed, and then intrasurgical measurements were taken to record the dimension of the surrounding bone walls and marginal defects. Non-submerged implants were used, and the rough and smooth border of the implant was placed subcrestally. Autogenous bone was collected during the drilling procedure and grafted in the peri-implant defect. Defects with or without bone were treated with or without an autogenous bone graft. Healing abutments were connected and flaps were sutured without membranes to allow transmucosal healing. After 4 months the implants were connected with definitive crowns, and loaded. Reometry measurement candidates were selected among those who had the implants functionally loaded over 1 year and fulfilled the following indications. In case additional new implant surgery was necessary in adjacent to the previously measured implant, and extended flap elevation was required. After performing reometry procedure to the indicated implant, the bone measurement was repeated.

Results: Twenty-nine implants of 22 patients were indicated for reometry measurement, and reopened. Mean post implant placement time and prosthesis loading time were 16, 24 months, respectively. Mean amount of autogenous drill chip bone obtained from each osteotomy site was 0.13 cc. At recently most of peri-implant marginal defects were healed with bone completely either in grafted sites or in non-grafted sites. On grafted sites, buccal width, buccal height, lingual width, lingual height increased +0.1 and +1.8, +0.3, +0.6 mm, respectively (n = 13). On non-grafted sites, buccal width, buccal height, lingual width, lingual height decreased -1.4, -1.4, -0.6, -0.1 mm, respectively (n = 17). Statistically significant differences [P < 0.05] were observed in the bone changes between grafted and nongrafted defects.

© 2011 John Wiley & Sons A/S