10.5005/jp-journals-10019-1208

EDITORIAL

Accuracies in Radiographic Evaluation of Crest Bone Changes Around Dental Implants

Pravinkumar G Patil

How to cite this article: Patil PG. Accuracies in Radiographic Evaluation of Crest Bone Changes Around Dental Implants. Int J Prosthodont Restor Dent 2018;8(3):71.

Source of support: Nil

Conflict of interest: None

Crestal bone level changes are considered to be one of the most vital clinical parameters to decide the success of the dental implants. The evaluation of crestal bone level changes around dental implants is conventionally done with the help of intraoral periapical radiographs and/or computerized tomography scans.[1] However, intraoral radiographic evaluation is routinely performed in clinical cases. In 1986, Albrektsson et al., suggested the standard for the successful implant, i.e., 1.5 mm or less bone loss in the first year after implant placement and 0.2 mm or less vertical bone loss a year later.[2] However, in clinical cases, many factors are altering the accuracy of the radiographic evaluation like the buccolingual position of the implant-fixture, tube angulation, film/sensor angulation, or X-ray beam orientation and so on. Moreover, the distortion of buccal and lingual bone margins may result in overestimation of bone heights. Hence strict parallelism between fixture axes and film plane is essential to obtain valid results using intraoral films or sensors (in case of digital radiography).[3] X-ray beam orientation changes can alter the validity of serial films. Benn estimated the validity of radiographic measurements of marginal bone height changes around the implants and concluded that the X-ray beam angulation may not allow the accurate evaluation of the bone level changes using serial/longitudinal X-ray films for +9 to –6° from a tangent to the fixture.[4] Conventionally, the distance between the first screw thread to the top of the alveolar crest in the parallel periapical radiograph is measured to assess crestal bone changes.[1] This way of evaluation is practiced in both clinical cases as well as in research studies since many years from the 1990s and not much better developments have been observed. The distance from the crest of the bone and the first thread or the neck of the implant is sometimes so small that precise measurement is difficult between these two close points. To minimize such inconsistencies and measurement errors, the technique has been proposed to measure the radiographic crestal bone level from the tip of the implant body instead of the first screw thread.[5] The normalizing formula given can later be used to moralize the measured values to minimize the errors in measurements. Although further research is recommended to validate this technique.

REFERENCES

1. Gholami H, Mericske-Stern R, Kessler-Liechti G, Katsoulis J. Radiographic bone level changes of implant-supported restorations in edentulous and partially dentate patients: 5-year results. Int J Oral Maxillofac Implants 2014;29:898-904.
2. Albrektsson T, Zarb G, Worthington P, Eriksson RA. The long-term efficacy of currently used dental implants: review and proposed criteria of success. Int. J. Oral Maxillofac Implants. 1986;1:11-25.
3. Sewerin IP. Errors in radiographic assessment of marginal bone height around osseointegrated implants. Scand J Dent Res 1990;98:428-433.
4. Benn DK. Estimating the validity of radiographic measurements of marginal bone height changes around osseointegrated implants. Implant Dent. 1992 Spring;1(1):79-83.
5. Patil PG, Nimbalkar-Patil S. A radiographic measurement technique for crest bone changes related to dental implants. J Prosthet Dent 2015;113:350-351.

Managing Editor and Senior Lecturer

International Journal of Prosthodontics and Restorative Dentistry, School of Dentistry, International Medical University, Kuala Lumpur, Malaysia

Corresponding Author: Pravinkumar G Patil, Managing Editor and Senior Lecturer , International Journal of Prosthodontics and Restorative Dentistry, School of Dentistry, International Medical University, Kuala Lumpur, Malaysia, e-mail: pravinandsmita@yahoo.co.in