Acrylic Customized X-Ray Positioning Stent for Prospective Bone Level Analysis in Long-Term Clinical Implant Studies

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Background
Long-term evaluation of dental implants and their surrounding structures is crucial to provide more information concerning the success or failure of these therapies in clinical trials. The radiographic analysis, in conjunction with the clinical evaluation of the implant sites, is the best non-invasive method for bone level determination. Among the diverse radiographic techniques, the periapical technique has proven to be the most accurate method for the linear measurement of alveolar bone height. However, the diagnosis of progressive bone loss or the identification of bone gain from one radiographic examination to the next may be very difficult to interpret due to errors in the alignment of successive images. To overcome this problem, Updegrave detailed the paralleling extension-cone technique and introduced the Rinn system, the first film holder to keep the film parallel to the tooth and in a flat position, but still not producing acceptable images for continuous reproduction. Ever since, numerous systems have been proposed to obtain superimposable dental radiographs but have not proven to prevent projection errors effectively as they fail to ensure the realignment of the initial imaging geometry.

Aim
This poster describes a technique to produce individualized X-ray positioning devices for obtaining optimally projected intraoral radiographs of dental implants with long term stability.

Materials & Methods
Clinical & Laboratorial Procedures

Conclusions
The template here described for X-ray standardization is adapted from a commercially available system meant for radiovisiography. This X-ray alignment device minimizes variations in X-ray imaging geometry and prevents angular distortion and alignment errors between two consecutive radiographs, thus making matching images that are superimposable, which allows a quantitative analysis of longitudinal radiographic crestal bone changes.

References