Radiographic image processing investigation of bony quality around dental implants

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The purpose of this work was to evaluate the bony quality around dental implants by means of an automatic computational image processing of radiographies based on matching images. Periapical radiographies were used in the analysis. The first radiographic series were taken at the prosthesis placement, ie, no loaded implants, and the second ones at 24 months after the prosthesis placement, ie, after loading the implants. The image registers were obtained through the application of a projective transformation which parameters are achieved by means of an automatically identification of homologous points identified in two or more images. The results showed differences in the radiopacity levels of the radiographies of the processed images which could be related to bony density augmentation. This digital analysis allowed to increase the objectivity of the method to analyze the radiographies beyond the subjective criteria of personal interpretation, and to conclude that the method can be reliable enough to have clinical application.