

Poliklinik für Zahnärztliche Prothetik

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Radiodefektoskopie: Potentials and limits

(Möglichkeiten und Grenzen der Röntgendefektoskopie)

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Abstract: Radiodefektoskopie is a non-destructive quality control method to detect structural defects such as shrink cavities and pore formation in dental metallic castings. The purpose of this study was to determine the optimal setting for different x-ray units depending on the radiolucency of the alloy tested and the dimensions of the defect. Three different medical x-ray units (Siemens Heliodont, Siemens Multigraph, Morita LAB-X 708) were used to test samples of the noble metal, titanium alloy and chromium cobalt alloys which were standardized by drilling holes of different depths and diameters. In titanium alloy samples drill holes with a diameter of 0.3 mm and a residual metal thickness of 1.75mm could be identified while in chromium cobalt alloy samples flaws of 0.3mm in diameter and with a residual thickness of 1.25mm were detectable. Both the Heliodont and the Morita unit failed to indicate flaws in the noble alloy samples. Only the Siemens Multigraph allowed the detection of flaws with a diameter of 0,3 mm and a residual metal thickness of 0.75mm. From these results it may be concluded that routine x-ray controls may be a useful method to evaluate the quality of titanium and chromium cobalt castings.
