

# Die „besondere Publikation“

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Liebe Leserinnen und Leser,  
„Wissenschaftliche Studien gibt es wie Sand am Meer!“  
Diese Aussage mag zwar zutreffen, hilft in der täglichen  
Arbeit in der Zahnarztpraxis jedoch nicht unbedingt wei-  
ter.

So wollen wir Ihnen mehrere Literaturangaben, auf die  
wir bei unseren Recherchen gestoßen sind, in Abstract-  
form zugänglich machen. „Kurz und knapp und doch  
praxisrelevant – dies ist unser Anliegen!“ Wir wünschen  
Ihnen viel Spaß beim Lesen und Nutzen für Ihre Tätigkeit.

## **Clinical performance of DIAGNOdent in the detection of secondary carious lesions**

The diagnostic value of DIAGNOdent in detecting primary occlusal caries has been investigated in many studies, although its use in in vivo detection of secondary caries remains unclear. The aim of this study was to investigate the ability of DIAGNOdent in in vivo detection of secondary caries on teeth with amalgam restorations. The material comprised 51 posterior teeth restored with amalgam material. Bitewing radiographs were taken of all teeth, in accordance with the standard clinical protocol, and analysed by five observers with respect to secondary caries. The restoration margins of each tooth were carefully scanned with DIAGNOdent and the site of the highest reading and its value were registered in a digital picture. The color (stained/unstained) of the restoration margins was also documented. The restoration material was removed and all cavities were examined carefully by two observers together, both visually and by probe. The results showed that the sensitivity and specificity of DIAGNOdent and conventional radiography in detecting secondary caries were 0.60/0.81 and 0.56/0.92, respectively. For DIAGNOdent, 100% of the teeth in the false-positive fraction had stains. Regarding receiver operating characteristic analyses, the Az values were 0.78 and 0.69 for DIAGNOdent and radiography, respectively. We conclude that DIAGNOdent may be used only as an adjunct to conventional methods in detecting secondary caries on teeth with amalgam restorations.

*Quelle: Lasers Med Sci 2005 Aug 31. AMQ Weekly Results: LASERS IN DENTISTRY.*

## **Holographic face models as planning tool in maxillofacial surgery**

The holographic facial profile scan is a new technique for creation of high-resolution, three-dimensional, realistic facial computer models which can be used for surgical planning and documentation in maxillofacial surgery. First, a holographic image of the patient is recorded using a pulsed laser system. In a second step, called holographic tomography, the real image of the patient's hologram is reconstructed by means of a continuous-wave laser. By moving a screen through the real three-dimensional image, it is sliced into a series of two-dimensional projections which are captured with a digital camera. The slices containing the specific two-dimensional information are superimposed to a three-dimensional surface model using special software. The extremely short exposure time of 35 nanoseconds for taking a holographic image is separated from the time-consuming rendering process of the surface model; thus, the obtained models are not affected by the movements of the patient.

*Quelle: Int J Comput Dent 2004 Oct;7(4):339–45. AMQ Weekly Results: LASERS IN DENTISTRY*

## **Caries detection and quantification with DIAGNOdent: prospects for occlusal and root caries?**

A possible consequence of light absorption as the interaction of electromagnetic radiation with molecules of the tooth's hard substances is, apart from the emission of heat, fluorescence. It was demonstrated that the emission spectra of enamel, dentin, and caries look alike upon excitation with red light; however, fluorescence increases with the process of carious destruction. Based on that, the DIAGNOdent System was developed, which simultaneously injects red light into the tooth surface and detects the resulting fluorescence. Due to this design, clinical application is currently limited to accessible occlusal and smooth surfaces. For occlusal caries detection, it was shown that validity and reproducibility could be optimized over classical diagnostic tests for deep dentin lesions with seemingly intact surfaces. The detection of root caries does not play a relevant role in the directly accessible areas, but estimation of the lesion's activity and progression rate is a prerequisite for differentiated lesion management. Excellent reproducibility of the laser fluorescence measurements was confirmed for this scenario. Lesions with a soft surface texture show significantly higher fluorescence values than leathery or hard lesions, and values also increase with increasing cavity depth. DIAGNOdent offers the potential to improve follow-ups and estimation of the prognosis and to support clinical management of primary carious lesions.

*Quelle: Int J Comput Dent 2004 Oct;7(4):347–58. AMQ Weekly Results: LASERS IN DENTISTRY*