



Caries Detection: What is New?

Al-Wattar WM*

Department of Oral Pathology, College of Dentistry, Al-Mustansiriya University, Iraq

*Corresponding author: Warkaa Mahmood Ali Al-Wattar, Lecturer, Department of Oral Pathology, College of Dentistry, Al-Mustansiriya University, Iraq, Tel: +9647906542217; E-mail: a_warkaa@yahoo.com

Received date: December 28, 2017; Accepted date: January 19, 2018; Published date: January 26, 2018

Copyright: © 2018 Al-Wattar WM. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Editorial

The early detection of dental caries represents a challenge for dental professionals in order to get a better prognosis. In addition to early detection; a precise and accurate diagnosis is also important. This is required effective practices and devices to get suitable methods for prevention or restorative procedures which required efficacy, validity and reproducibility to be a successful method. There are many methods available varied from predictable to recent tools.

These followings are the types of diagnosis methods used for the detection of dental caries:

Traditional diagnosis

The traditional detections of caries were carried out by using probe and mirror as well as the use of dental radiograph.

Use of dental explorer

Dental explorer or sickle probe is an instrument in dentistry commonly used for detecting the presence of dental cavities. The use of these instruments is a method of optical and demonstrative detection of dental caries which depend on the "catch" of probe tip in order to discover occlusal caries.

However, this method has a disadvantage of relocation of cariogenic microorganism from one tooth to another as well as possibly disturbs the integrity of the tooth enamel surface due to the use of hand pressure.

Radiograph

Radiograph is mainly use for the detection of proximal carious lesions because it is difficult to be seen. However; there is a drawback of this technique that cannot detect white spot lesions (incipient caries) on the enamel surface which required about 30-40% of mineral loss from tooth surface before the carious lesions is even visible to clinician radiographically.

Optical caries detection methods

There are different types of these methods such as Thermo-photonic Lock-In Imaging (TPLI) tools that used Infra-Red (IR) radiation emitted from carious lesion after stimulation by a light source. It is very effective in early detection and cost effective and has a great potential as a commercially practical diagnostic imaging device in dentistry.

Another tool which is Fluorescence Carious Tooth Structure will fluoresce anything such as spectra from air techniques which use a 405 nm LED that causes porphyrins from caries producing bacteria to

fluoresce. Caries will produce a red color and healthy teeth will fluoresce green.

Midwest Caries ID also uses LED to measure the caries reflection sign. The major difference from other techniques is instead of a numerical read out; the caries ID has a red and green indicator light for caries. This makes monitoring any progression of caries or remineralization more difficult. The device also beeps; the faster the beep the more decay present. The caries ID can be used for smooth surface, pits and fissures and interproximal surfaces.

Soprolife from Acteon improves your skill to find caries by combing an intra-oral camera for normal enhanced viewing through magnification from 30-100 times using white light. Turning a switch on the headpiece changes the lighting to diagnosis mode. This allows you to view healthy tooth structure caries which shows up red.

The most recent methods are using LLL (Low Level Laser) to examine the tooth for decay. When the tooth absorbs the laser light there will be two main effects; the laser light is transformed into luminescence and there is a release of heat (less than 1 degree Celsius). This heat will not harm the tooth but gives significant data on the tooth to a depth 5 mm below the surface such as Kavio Diagnodent which emits an increasing audio tone and digital read out indicating the amount of caries present.

It is accepted to be use on smooth surface and pits and fissures but not for interproximal use. The scale of this device varies from 0-9 degree. It's efficacy in determine the presence and magnitude of the caries process is well documented but there will be no specific reading identifying the need for treatment should be begin. The Diagnodent can be intensive because the probe is small so for large coverage areas like mandibular molar; multiple readings would have to be recorded by an assistant or the dentist for each pit or fissure in the tooth.

DEXIS CariVu device for caries detection using non-ionizing diagnostic method accomplished to measure, monitor and recode the changes in the structure of enamel, dentin and cementum. It is a dense, portable device for caries detection that uses original Infra-Red transillumination technology to detect carious lesions and cracks mainly of occlusal interproximal and recurrent carious lesions.

Using transillumination technology and non-ionizing radiation, CariVu discloses the tooth's structure of any caries lesion or cracks. By embracing the tooth and bathing it in near Infra-Red light; CariVu makes the enamel appear transparent white porous lesions trick and absorb the light. This allows the clinician to see the tooth exposing its structure and actual structure of any caries lesions with very high accuracy. The lesion like X-ray will seem as dark areas mainly for smooth surface caries, occlusal and proximal caries, also initial and secondary caries as well as cracks.

Optical coherence tomography devices have been used to evaluate sealant efficacy, caries on smooth, occlusal and proximal surfaces, erosion and cracks by producing images of the microstructure of tooth tissues evaluated from the outer surface toward the pulp thus allows both qualitative and quantitative measure of caries tooth structure in depth.

From the two dimensional depth imaging, a 3 dimensional image can be computed. It's not affected by plaque or calculus, it's used to examine the occlusal caries and secondary carious lesions development under sealants or adjacent to restorations.