

Cariesdiagnostic and Composite representation with one system

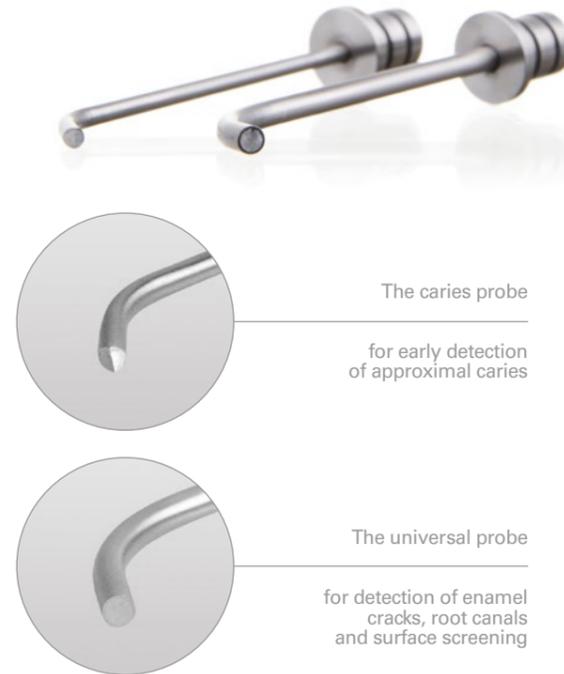
Approximal caries diagnosis. Enamel cracks recognition. Composite representation

DIA-STICK for the cariesdiagnostic

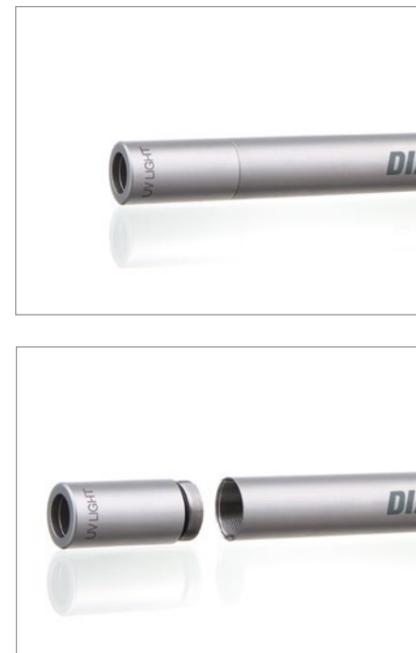
The caries probe with specially polished surface was developed for the early detection of approximal caries. Clinical studies have shown that more than twice as many carious defects can be detected with the help of transillumination compared to normal probes and mirrors. It has also been proven that fibre optics reveal more dental caries than X-ray examinations, as demonstrated by studies of Prof. Dr. Pieper.

The DIA-STICK set consisting of:

- Handpiece
- White Light
- Caries probe
- Universal probe
- Batteries LR1
- UV Light (optional)



DIA-STICK with change essay

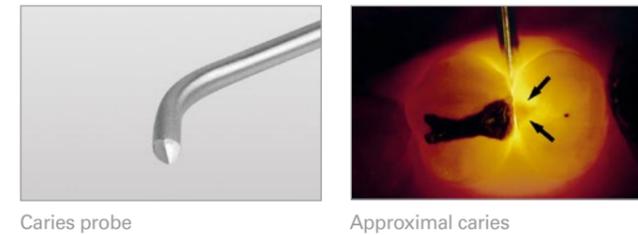


DIA-STICK with White Light and UV Light

The handle of the device has been improved: an interchangeable attachment set allows easy switching between White Light and UV Light.

The UV Light attachment allows composite material to be made visible. This technology exposes undesirable material residues when placing and removing composite fillings.

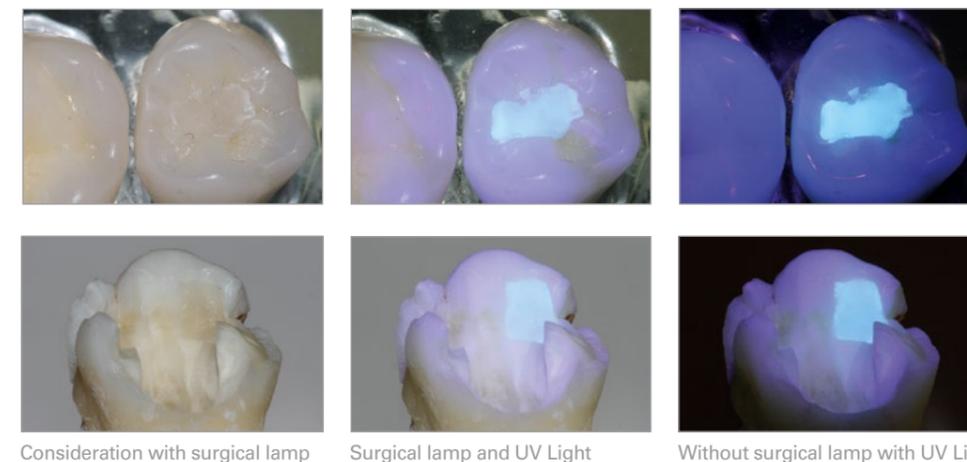
The caries probe with a special grind for early detection of approximal caries



The universal probe for detection of enamel cracks, root canals and surface screening



DIA-STICK with UV Light and universal probe for residues of composite to make visible (Function exclusively with fluorescent composite materials).



I.C.LERCHER DIA-STICK for the cariesdiagnostic (fibre-optic trans-illumination)

Introduction

Fibre-optic trans-illumination (FOTI) of the hard tooth structure using a light probe was introduced three decades ago for the purpose of detecting tooth decay. Since then, there has been controversy over its value, and in particular, the issue of whether trans-illumination is capable of replacing radiographic diagnosis.

In fact, fibre-optic trans-illumination by light probe is a radiation-free, fast and inexpensive addition to clinical examination. The combination of all information obtained through visual examination, FOTI and x-ray imaging enhances the diagnosis of approximal carious lesions. The monitoring of caries during regular check-ups is significantly facilitated through the use of the cold light diagnostic probe. Incipient lesions are readily visible and the progression of such lesions is also easy to identify. Trans-illumination can be used to detect infractions or help locate root canals (where no surgical microscope is available). It also shows up plaque and dental calculus for the purpose of preventive dental care. In paediatric dentistry, trans-illumination is a useful alternative if the child is not yet ready to tolerate intraoral imaging procedures.

The technology

Light probes with large light-emitting apertures can easily result in irradiation and false negative results. In response to this problem, light sources were developed with small light-emitting apertures and tapered, wedge-shaped fibre-optic tips (Pieper and Schurade); they are capable of detecting three times as many approximal lesions than is the case with mirror and dental loupe. Regular dental caries checks using bitewing radiography (every two years) complement the six-monthly clinical examination with FOTI.

How it works

Switch off the surgical light. Ideally, the examination should be performed after a scale and polish procedure to rule out deposits due to plaque and calculus. After air drying

the teeth, place the light source at the start of the interdental space and move it slightly back and forth. Viewed from the occlusal, an approximal carious lesion appears in the lateral tooth region as a stationary dark zone (shadow) within the trans-illuminated tooth due to the modified refraction index of the demineralised carious tooth substance. The extent of the dentine caries can often be gauged on the basis of the orange "halo" next to the dark zone.

Clinical example

Potential approximal caries on the mesial of tooth 35. Fibre-optic trans-illumination shows an obvious shadow, and the bitewing radiograph clearly shows the spread of dentine caries, indicating the necessity for treatment to conserve the tooth.

Case study context:



35 mesial suspected approximal caries



X-ray diagnosis: 35 C3 mes



Trans-illumination: 35 mesial D3, occlusal C1, 34 distal C1

2. Case study:



14 distal suspected approximal caries



Trans-illumination: 14 distal, the dark shadow shows the enamel lesion, while the red halo gives an indication of the spread of the dentine caries



Preparation 14 od, Representation of the defect



Completed composite filling 14 od

Result

Calculus, plaque, enamel fissures and shadows from metal fillings on the adjacent tooth (amalgam, gold) as well as enamel hypoplasia can give false positive results. However, with a bit of experience in using the light source it is possible to correctly evaluate these results. By changing the angle of illumination and shifting the position of the light source towards the mouth these manifestations can be differentiated from carious lesions.

It is important to make sure that the batteries are in a good state of charge and to change them in good time to prevent light loss.

The developed interchangeable attachment set with UV Light helps to detect composite residue e.g. following removal of orthodontic braces, because the packings in composite fillings fluoresce. Even existing non-carious composite and ceramic fillings can be better identified using UV trans-illumination.

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