

## CANARY CASE STUDIES

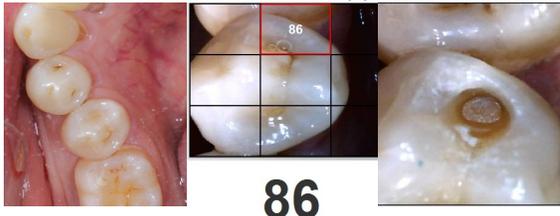
### DETECTING PIT AND FISSURE CARIES

Detecting early pit and fissure caries is very challenging. Radiographic imaging is of minimal diagnostic value due to large amounts of surrounding enamel<sup>i</sup>. A number of studies have found dental explorers inefficient for the diagnosis of occlusal caries.<sup>iii</sup> There are a number of concerns with the use of the explorer in detecting pit and fissure caries:

- Cavitation in pit and fissure caries occurs, using an explorer stick to detect caries only finds larger lesions
- Probing an occlusal pit or fissure could convert a small lesion into a larger one<sup>v</sup>
- The probing could produce irreversible traumatic defects in areas that have the potential to remineralize
- Probing can inoculate the fissure with microorganisms transferred from other intraoral sites<sup>vi</sup>
- A stick or catch with an explorer may be due to fissure morphology or probe pressure rather than a caries.

The Canary can provide you with an additional diagnostic tool.

**RESULT:** The Canary System detected a subsurface lesion that would have otherwise gone undetected with conventional diagnostic methods (radiograph and explorer). Early detection and treatment avoided more invasive treatments such as a large restoration or endodontic therapy.



### DETECTING INTERPROXIMAL CARIES

#### FINDINGS:

Bitewing radiograph of the Mesial of the upper 1st molar showed no evidence of decay. Canary scan showed interproximal decay.

#### TREATMENT:

A conservative preparation of the early lesion provided the patient with a small long lasting restoration while saving tooth structure. Evidence of radiographic decay would have taken several more months leading to additional tooth destruction and spread of carious bacteria.



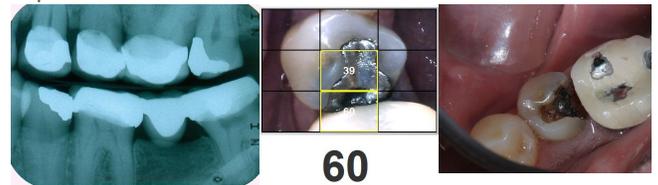
### DETECTING CARIES BENEATH AN AMALGAM RESTORATION

#### FINDINGS:

A routine bitewing radiograph did not reveal pathology; the patient reports no symptoms associated with this tooth, but the concern was margin integrity of amalgam. Canary scan resulted in a 60 on the mesial marginal ridge and 39 on the buccal cusp, indicating caries and microleakage around the amalgam.

#### TREATMENT:

Removal of the restoration revealed a large carious lesion under the mesial aspect of the buccal cusp (CN 60) and caries also on the mesial margin (CN 39). Undetected, it would have led to either a undermining of the buccal cusp leading to fracture or pulp exposure.



### DETECTING FRACTURES

#### FINDINGS:

Patient reported pain on mesial aspect of bicuspid. No crack visible. Canary Scan of 88 indicates that a significant crack is present.

**TREATMENT:** Removal of the crack preserves the integrity of the lingual and buccal cusps preventing unnecessary breakage and the potential for more extensive and costly treatment in the future.



<sup>i</sup> McKnight-Hanes C, Myers DR, Dushku JC, Thompson WO, Durham LC.

*Radiographic recommendations for the primary dentition: comparison of general dentists and pediatric dentists.* *Pediatr Dent.* 1990 Jul-Aug;12(4):212-216

<sup>iii</sup> Flaitz CM, Hicks MJ, Silverston LM. *Radiographic, histologic, and electronic comparison of basic mode videoprints with bitewing radiography.* *Caries Res.* 1993; 27(1): 65-70.

<sup>iii</sup> Penning C, van Amerongen JP, et al, *Validity of probing for fissure caries diagnosis.* *Caries Res* 26:445-9, 1992

<sup>iv</sup> Lussi A, *Comparison of different methods for the diagnosis of fissure caries without cavitation.* *Caries Res* 27:409-16, 1993

<sup>v</sup> Yassin OM. *In vitro studies of the effect of a dental explorer on the formation of an artificial carious lesion.* *ASDC J Dent Child.* 1995 Mar-Apr;62(2):111-117

<sup>vi</sup> Ekstrand K, Qvist V, Thylstrup, A, "Light microscopic study of the effect of probing in occlusal surfaces"; *Caries Research*, 1987; 21: 368 – 374

<sup>vii</sup> Penning C, Van Amerongen JP, Seef RE, ten Cate, JM "Validity of probing for fissure caries diagnosis"; *Caries Research*, 1992; 26(6): 445 – 449