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## Quality of Fissure Sealants Assessed Using Light-induced Fluorescence

**Language:** English

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### Objectives

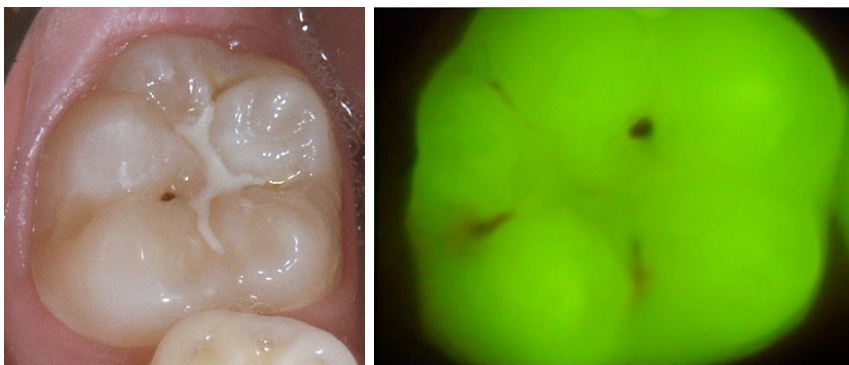
Testing the potential of light-induced fluorescence (LF) for judging the quality of fissure sealants in comparison with clinical assessment

### Material and Methods

- 34 fifteen-year-old adolescents were involved in the study
- Visual examination of 280 occlusal surfaces with aid of compressed air and magnifying glass (3.5x) after plaque disclosing (Miraton, Hager) and professional tooth-cleaning
- Sealants were scored clinically as (1) present with marginal integrity and (2) partial loss and detectable margin with or without a discoloured fissure
- Capturing of fluorescence images of all smooth surfaces by a QLF/clin (light source: 35 W Xenon microdischarge arc lamp)
- Images were stored with an Inspektor QLF 2.00 programme
- LF images were assessed by two examiners
- Record of presence or absence of red fluorescence

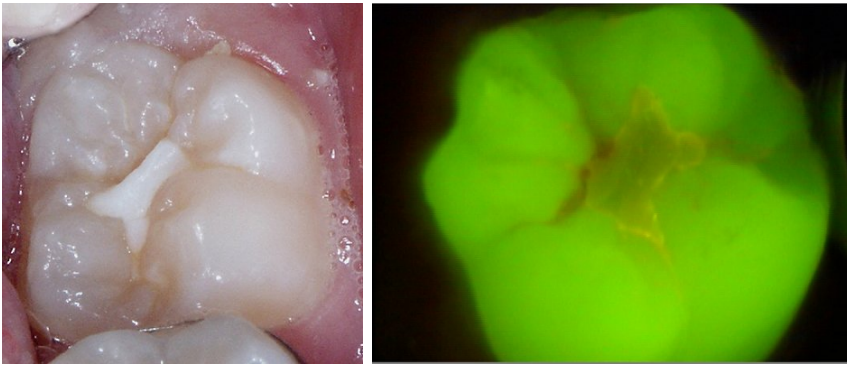
### Results

- A total of 89 sealants was scored. 37 sealants were clinically intact and 52 revealed a failure. Figure 1A/1B



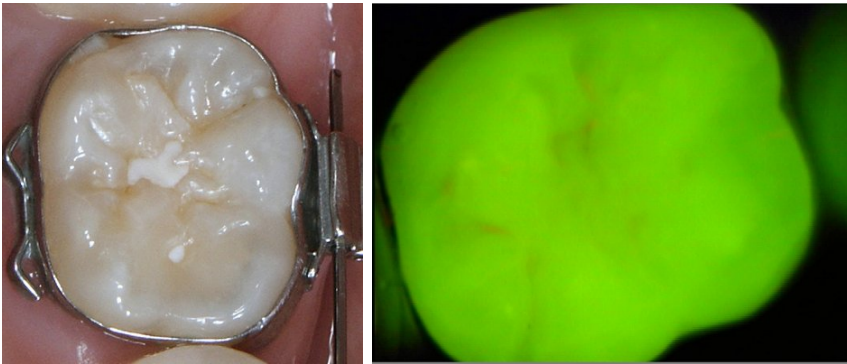
Partial sealant loss with exposed discoloured fissure and localized enamel breakdown in the lower first molar (46) combined with red fluorescence of these areas

- In 52% of all cases with partial loss discoloured fissures were observed.
- LF images showed red fluorescence at the margin of 10 sealants clinically scored as intact (1). Figure 2A/2B

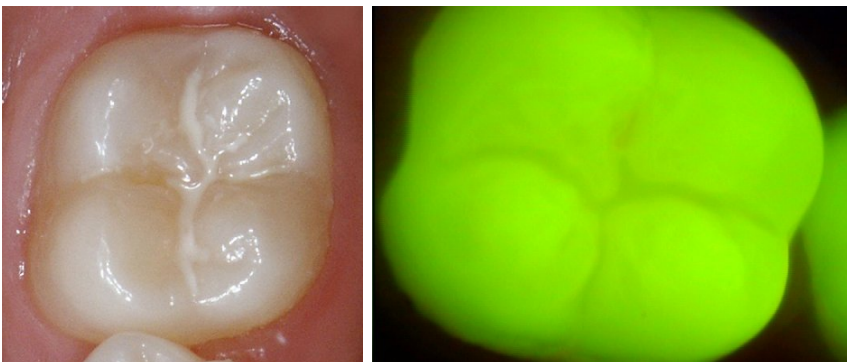


Partial sealant loss (GIC) with exposed undicoloured fissure in the lower second molar (37) and distinct red fluorescence of the exposed fissure area

- Partial sealant loss was combined with red plaque fluorescence in the exposed undicoloured fissure in 17 of 26 cases. Figure 3A/3B, 4A/4B, 5A/5B

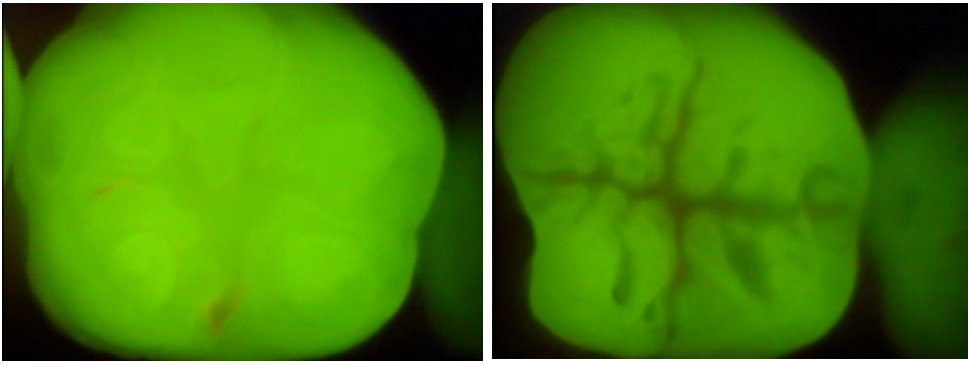


Partial sealant loss with exposed undicoloured fissure in the lower second molar (47) and minimal red fluorescence of the exposed fissure area



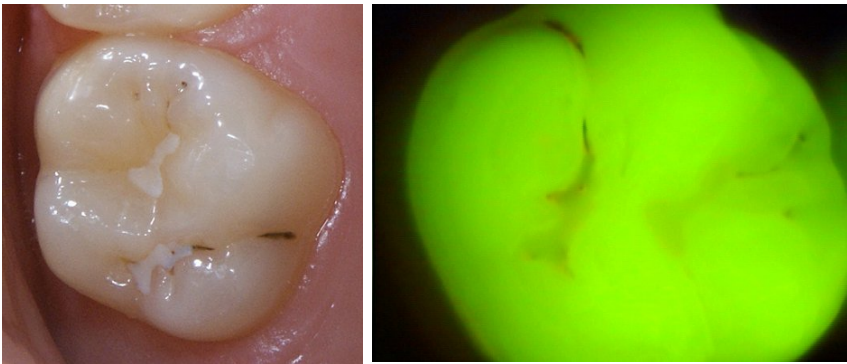
Partial sealant loss with exposed undicoloured fissure in the lower first molar (46) and minimal red fluorescence of the exposed fissure area



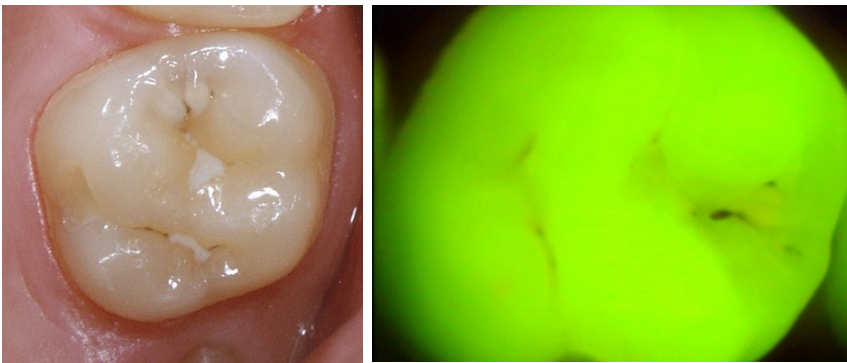


Clinically intact fissure sealants in lower molars (46, 47) with minimal red fluorescence at sealant margins on the first molar as well as on the sealant surface of the second molar

- The relation of sealant loss with brown discoloured fissures with or without red fluorescence was 10 to 15. Figure 6A/6B, 7A/7B



Partial sealant loss with exposed brown discoloured fissure and minimal red fluorescence of the exposed fissure area of the first upper molar (16)



Partial sealant loss with exposed brown discoloured fissure with red fluorescence of the exposed fissure area of the first upper molar (26)

## Conclusions

- LF enables a sensitive assessment of sealants quality.
- It is debatable whether the presence of marginal gaps at a sealant would automatically justify sealant replacement.

*This Poster was submitted by Prof. Dr. med. dent. Roswitha Heinrich-Weltzien.*

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## 32 Quality of Fissure Sealants Assessed Using Light-induced Fluorescence

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### AIM

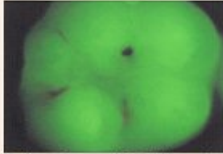
Testing the potential of light-induced fluorescence (LF) for judging the quality of fissure sealants in comparison with clinical assessment

### MATERIAL AND METHODS

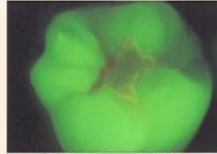
- 34 fifteen-year-old adolescents were involved in the study
- Visual examination of 280 occlusal surfaces with aid of compressed air and magnifying glass (3.5x) after plaque disclosing (Miraton, Hager) and professional tooth-cleaning
- Sealants were scored clinically as (1) present with marginal integrity and (2) partial loss and detectable margin with or without a discoloured fissure
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### RESULTS

- A total of 89 sealants was scored. 37 sealants were clinically intact and 62 revealed a failure.
- In 52% of all cases with partial loss discoloured fissures were observed.
- LF images showed red fluorescence at the margin of 10 sealants clinically scored as intact (1).

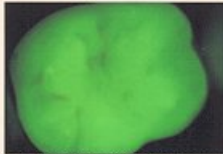


Partial sealant loss with exposed discoloured fissure and localized enamel breakdown in the lower first molar (46) combined with red fluorescence of these areas

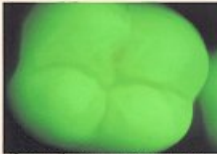


Partial sealant loss (GIC) with exposed undicoloured fissure in the lower second molar (37) and distinct red fluorescence of the exposed fissure area

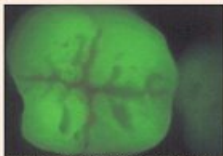
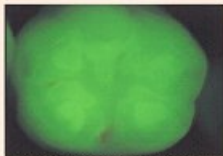
- Partial sealant loss was combined with red plaque fluorescence in the exposed undicoloured fissure in 17 of 26 cases.



Partial sealant loss with exposed undicoloured fissure in the lower second molar (47) and minimal red fluorescence of the exposed fissure area

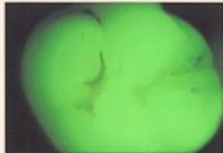


Partial sealant loss with exposed undicoloured fissure in the lower first molar (48) and minimal red fluorescence of the exposed fissure area

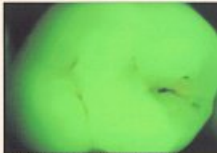


Clinically intact fissure sealants in lower molars (46, 47) with minimal red fluorescence at sealant margins on the first molar as well as on the sealant surface of the second molar

- The relation of sealant loss with brown discoloured fissures with or without red fluorescence was 10 to 15.



Partial sealant loss with exposed brown discoloured fissure and minimal red fluorescence of the exposed fissure area of the first upper molar (14)



Partial sealant loss with exposed brown discoloured fissure with red fluorescence of the exposed fissure area of the first upper molar (28)

### CONCLUSION

- LF enables a sensitive assessment of sealants quality
- It is debatable whether the presence of marginal gaps at a sealant would automatically justify sealant replacement