

Caries prevalenz and decalcification after treatment with buccal and lingual appliances - first results of a prospective randomised split mouth study

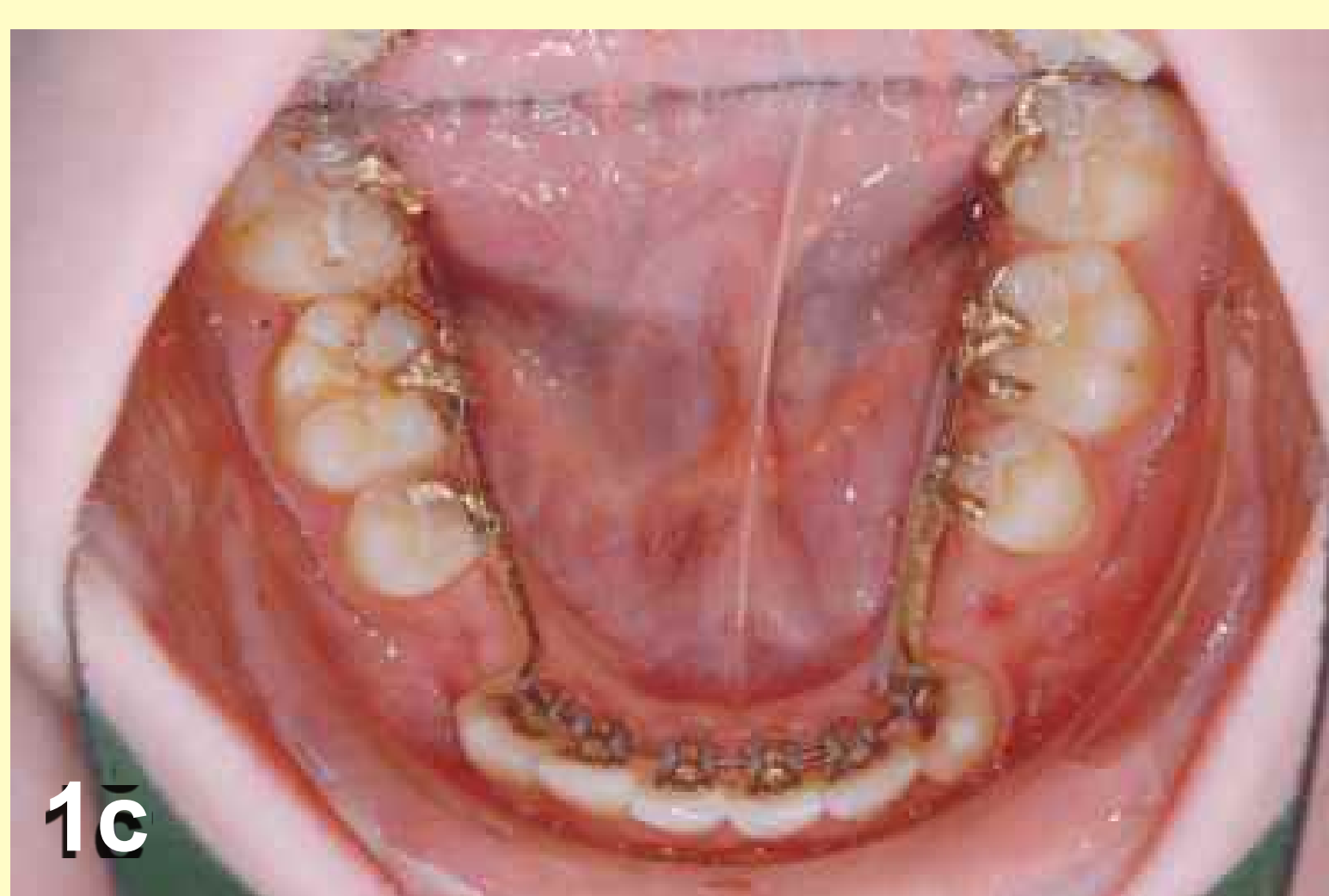


P. Schmedt auf der Günne¹, R. Attin², R. Schwestka-Polly³

¹ Private practice, Bad Essen (Germany)

² Department of Operative Dentistry, Georg-August-University Göttingen (Germany)

³ Department of Orthodontics, Medical School Hannover (Germany)



Introduction: Comprehensive orthodontic treatment with fixed appliances averages out at 1-2 years if not more in extremely difficult cases.

During this time, the patient should see to optimal mouth hygiene in order to prevent irreversible damages to the teeth such as decalcification caused by plaque. It is unfortunate that there are still too many damages remaining when treating with fixed labial appliances. All in all, a labial tooth surface seems to be extremely susceptible to decalcification. Previous studies by Boersma et al. resulted in the fact that 97% of the patients treated with fixed labial appliances were affected by labial decalcification, but only an average of 30% of all buccal tooth surfaces showed decalcification [1].

Aim: This prospective randomised study wants to compare

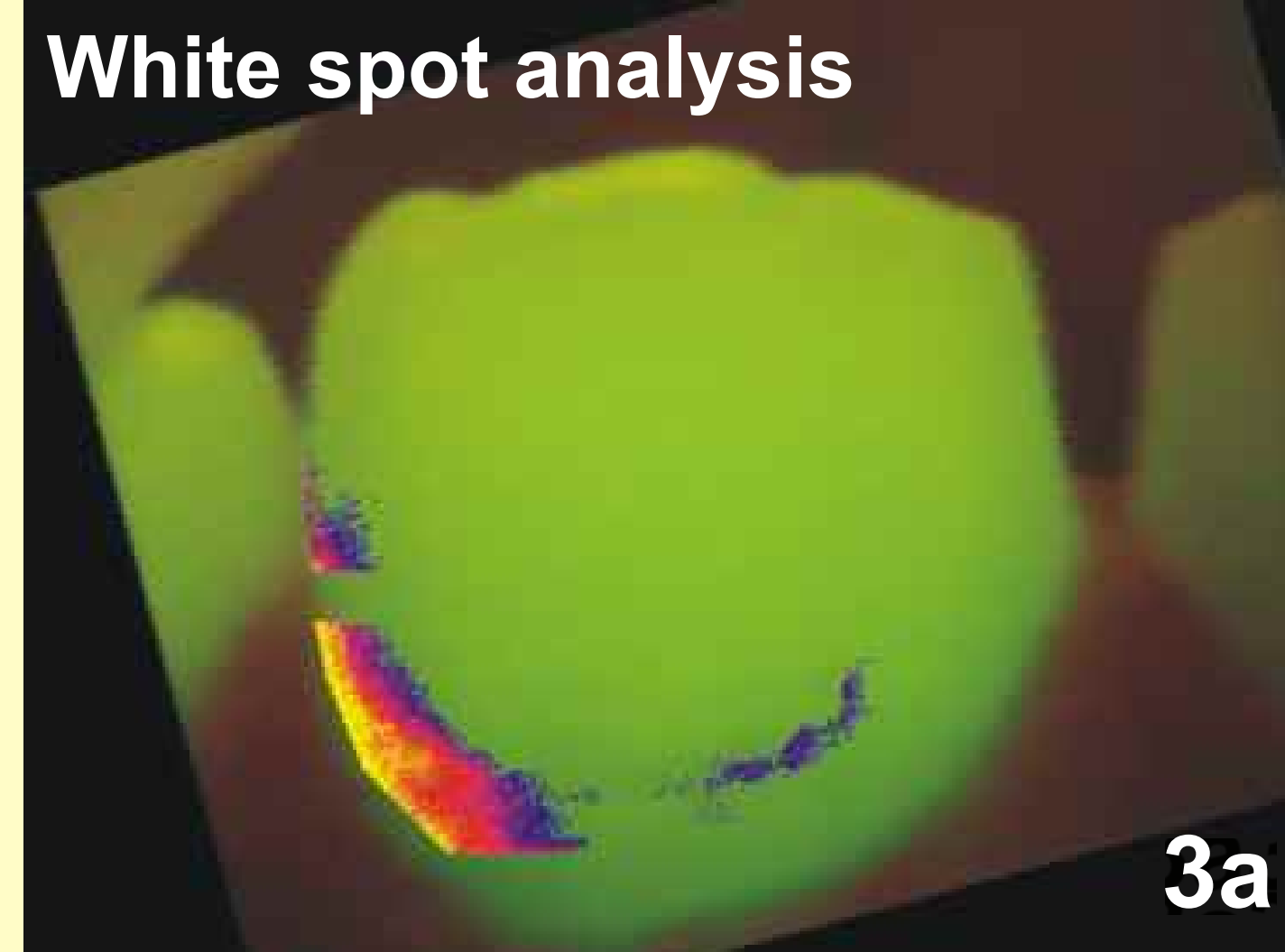
the development and progress of decalcification when treating with labial and lingual appliances.

Material and method: 30 adolescent patients were bonded in fixed appliances. In one jaw there was placed a labial, in the other one a lingual appliance. There was a draw, which jaw would get bonded in a lingual appliance (Figs.1a-c).

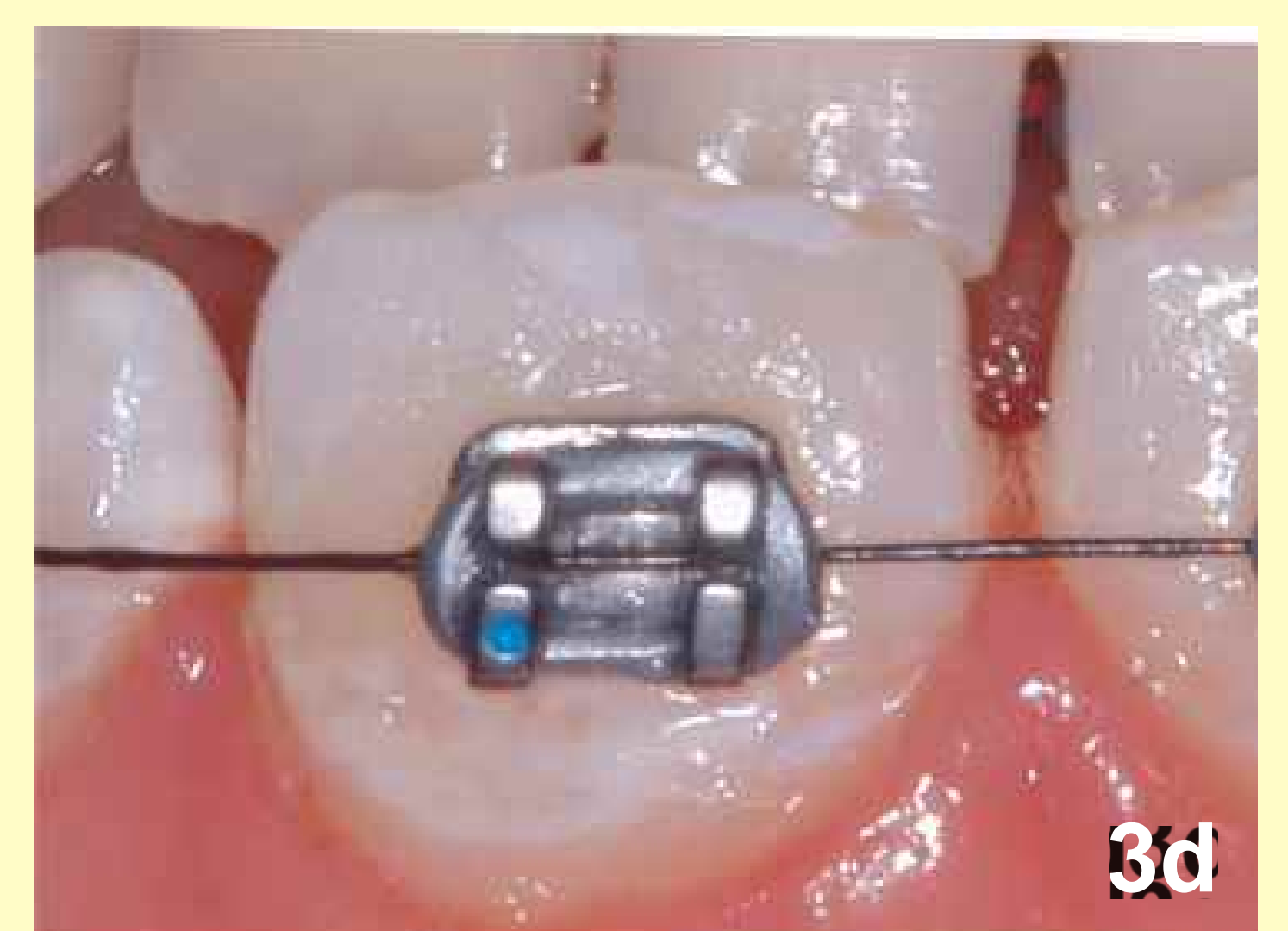
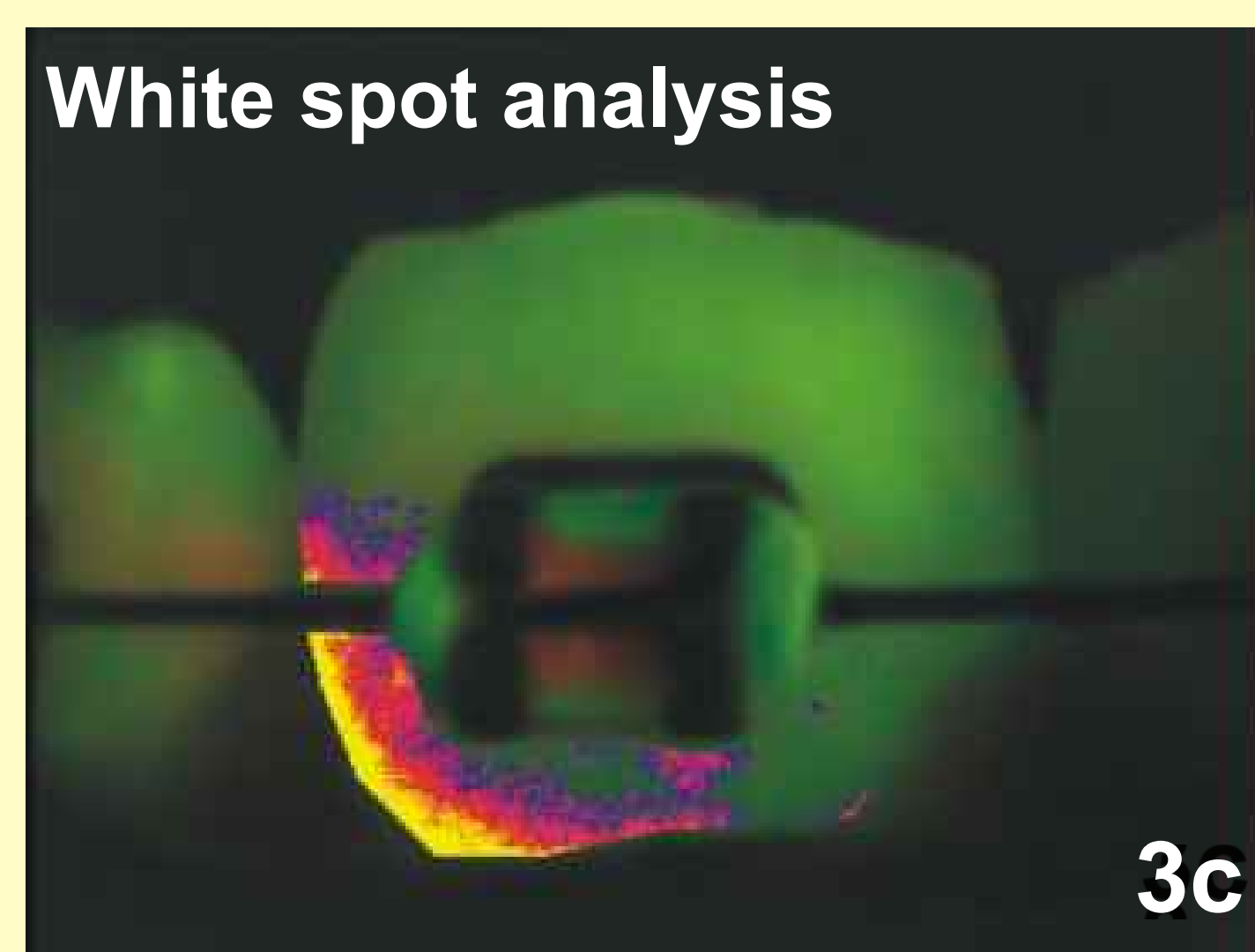
The QLF method was used for objective evaluation (Fig. 2). The respective examinations were carried out before, during and after treatment (Figs. 3a-d).

Preliminary results: The study was initiated one year ago. The present results indicate the following:

1. Before treatment, lingual tooth surfaces show less decalcification than labial ones. Especially in the aesthetically important anterior teeth segment there was solely labial decalcification.
2. When treating with lingual appliances, labial decalcification already has been there before treatment does not become worse, or exceptionally, slightly.



Situation before bonding



Situation 3 month after bonding

3. When treating with labial appliances, labial decalcification already has been there before treatment does become considerably worse to some extent.
4. On lingual tooth surfaces new decalcification possibly caused by plaque accumulation around the bracket does not develop as often as on labial ones.

Discussion: This study clearly showed that a lingual appliance is the more gentle option for the tooth. No surprise, as in general, labial tooth surfaces develop decalcification more often than lingual ones and therefore, they can be classified as being more susceptible.

Conclusion: Especially for patients running a high risk of developing decalcification (e.g. labial decalcification before) a gentler lingual appliance should be used in combination with the usual prophylactic measures against tooth decay.

When using modern appliances with respect to avoiding decalcification the lingual technique is the method of first choice.

References:

- 1) Boersma JG, van der Veen MH, Lagerweij MD, Bokhout B, Prah Andersen B: Caries prevalence measured with QLF after treatment with fixed orthodontic appliances: influencing factors. Caries Res.2005;39(1):41-7.
- 2) Van der Veen MH, de Josselin de Jong E: Application of quantitative light-induced fluorescence for assessing early caries lesions. Monogr Oral Sci.2000;17:144-62.