Occlusal caries in young permanent teeth - Location and re-treatments

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Objectives: To map the location of occlusal caries lesions in need of restorative treatment in the young permanent dentition, and to relate re-treatment of sealants and restorations to the location of the lesions.

Methods: 521 primary, occlusal caries lesions in patients aged 6-17 years participating in the SEAL-DK, RCT-project, were included. 69 clinicians recorded the location of the lesions, the treatments, and any re-treatments during a 5-year follow-up period. 368 lesions received resin sealants and 153 resin restorations. Chi-square test was used for statistical analysis of associations between location of lesion and need for re-treatments.

Results: 200 (38%) lesions were recorded on $M1_{inf}$, 182 (35%) $M1_{sup}$, 95 (18%) $M2_{inf}$, 35 (7%) $M2_{sup}$, and 9 (2%) on premolars. Most lesions were located centrally (33%) and distally (34%) in the fissures, 9% mesially, and 16% showed multiple locations. The occlusal location of the remaining lesions (8%) was not recorded. Significant difference was found between occlusal location of lesion and tooth types (p=0.000). Central lesions were most frequent on $M2_{sup/inf}$, distal lesions on $M1_{sup}$ and premolars, and mesial lesions on premolars. Premolars showed no multiple locations. The randomized choice of treatment was independent of tooth types (p=0.15) and occlusal location of lesion (p=0.89). After 5 years, 163 (44%) sealants and 11 (7%) restorations were re-treated. The frequency depended on tooth types (p=0.01) with fewest re-treatments in premolars (11%) and $M2_{inf}$ (19%) compared to 37-38% for the remaining tooth types. Re-treatments varied from 30% for centrally located to 35% for distally, 39% for mesially, and 40% for multiple located lesions (p=0.46).

Conclusions:
The location of occlusal caries lesions in the young permanent dentition varied with the tooth types and the specific parts of the fissure systems. Frequency of re-treatment was significantly influenced by tooth types but not the occlusal location of the lesions.