Sealant and Topical Fluoride in Fissure Caries Prevention - 3-Year Results

Bao Ying Liu¹, Edward C.M. Lo¹, Chun Hung Chu¹, Huan Cai Lin²
¹Faculty of Dentistry, Hong Kong University, Hong Kong, China, ²Sun Yat-sen University, Guangzhou, China

Aim: To investigate the effectiveness of topical fluorides and resin sealant in fissure caries prevention in permanent molars.

Material and methods: A 3-year trial with ethical approval was conducted among healthy schoolchildren aged 8–9 years who regularly used fluoridated toothpaste. They were randomly allocated into:
- Group 1 – resin sealant;
- Group 2 – silver diamine fluoride (SDF) solution, annual application;
- Group 3 – NaF varnish, semi-annual application; and
- Group 4 – placebo control.

Development of caries into dentine was evaluated semi-annually over three years by a single blinded examiner.

Results: Over 95% of 501 children (50% boys, 1539 molars) were followed for 3 years. Sealant placement significantly decreased the hazard (95% CI of hazard ratio: -1.81, -0.08) of developing fissure caries while SDF (95% CI: -1.16, 0.37) and NaF (-0.69, 0.75) did not.

Conclusion: Sealant placement was effective in fissure caries prevention in this child population. No conclusion on topical fluoride applications could be drawn.