UNIKLINIK KÖLN | Centre of Dental Medicine | Department of Operative Dentistry and Periodontology University Hospital of Cologne

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Disinfection of Carious Dentin With Sodium Hypochlorite-Supported Incomplete Excavation

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Introduction

- Complete excavation is not supported by evidence
- Incomplete excavation has a risk of failure for restoration
- An advantageous strategy could be the disinfection of carious-infected dentin
- Disinfection of root canal walls: NaOCl (gold standard)

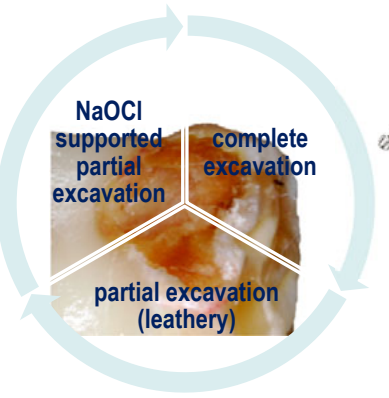
Objectives

- To evaluate the disinfecting effect of sodium hypochlorite during partial caries excavation of deciduous teeth in vitro
  - Primary endpoint: Counts of microorganisms in dentin samples

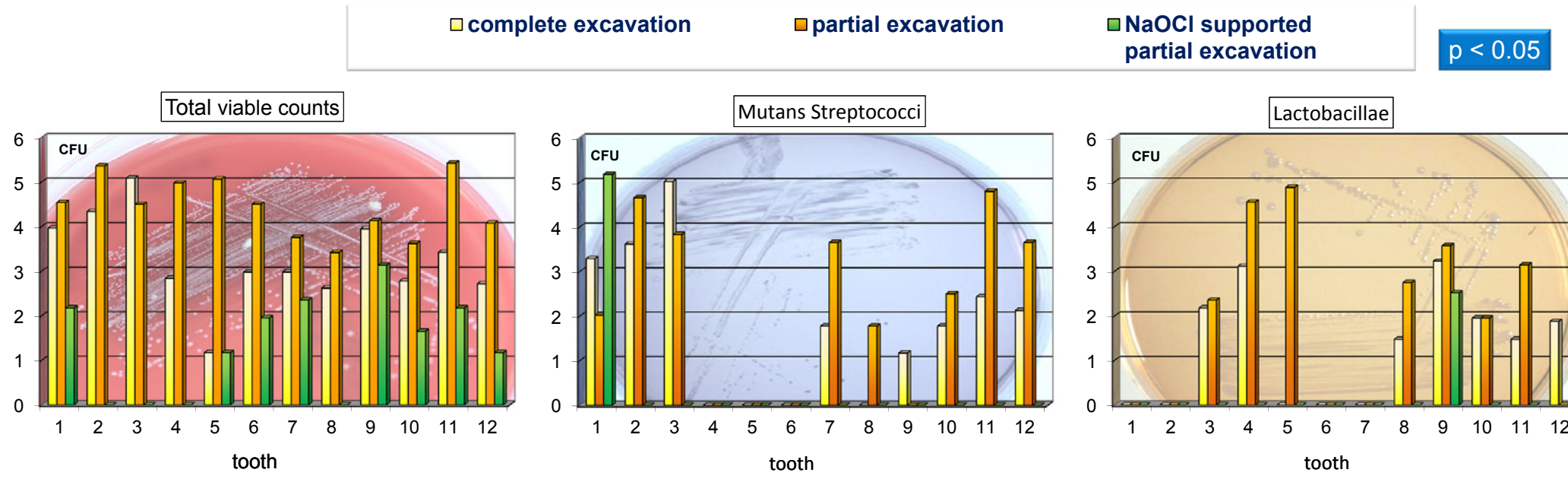
Materials and Methods

12 freshly extracted primary teeth from children with early childhood caries (ECC)

- Sectioned into three parts through the center of the defect
- Treated within 2 h after extraction:
  1. **complete caries excavation**
  2. **partial caries excavation**
  3. **partial caries excavation with 1% NaOCl**
- Excavation procedures: round bur in a torque-controlled handpiece, simulated clinical conditions, 37 ° C
- Rinse: 65 ml ringer lactate, dentinal debris samples
- Vortexed dentin samples: anaerobically grown on blood, MSB and Rogosa agars



Results



Discussion

- Complete excavation: even so, microorganisms are left behind
- Partial excavation: pulp protection
- NaOCl:
  - effective against caries pathogens
  - no side-effects on pulp (< 15 min)
- Partially excavated adhesive restorations
  - sealing of carious dentin
  - clinically successful
- Adhesive procedure has to be adapted

Conclusions

1. Application of sodium hypochlorite during partial caries excavation will disinfect the remaining dentin more effectively than complete caries excavation
2. Sodium hypochlorite-supported incomplete excavation should be considered a clinical standard, as it is for root canal treatment