

---

---

**A Comparative Study of a Conventional Pit and Fissure Sealant and a Flowable Composite: Using Three Different Bonding Systems. CHAN T\*, DEAN JA, MOORE BK, PLATT JA, Indiana University School Dentistry.**

**Objectives of study:** The purpose of this in-vitro study was to compare fissure penetration and microleakage of a conventional pit and fissure sealant when compared to a flowable composite used as a pit and fissure sealant, when using three different bonding systems: traditional phosphoric acid, single bottle, and self-etching primer bonding systems.

**Experimental method:** 150 extracted caries-free human third molars were randomly divided into 6 treatment groups. Delton DDS sealant or Revolution flowable composite were placed in the third molars after using either a phosphoric acid (Delton EZ etch), single bottle system (Opti-bond) or self-etching primer system (Prompt L-pop). All groups were thermocycled, followed with immersion in methylene blue for 18 hours. Fissure penetration and microleakage were examined by mesial and distal flat-ground cuts. Fissure penetration was either complete or incomplete. Microleakage was either present or absent.

**Essential results:** Based on the generalized estimating equations model used, the interaction between materials and adhesive systems was non-significant for penetration ( $p= 0.8311$ ). The interaction between materials and adhesive systems was significant for microleakage ( $p= 0.0382$ ).

**Conclusions:** There was no significant difference in penetration between the conventional pit and fissure sealant and the flowable composite, regardless of the adhesive system used. There were significant differences in microleakage among those three adhesive systems when adjusted for materials used. Using a conventional pit and fissure sealant, microleakage was 0.59 times lower when using phosphoric acid compared to self-etching primer and 0.41 times lower when using single bottle system compared to self-etching primer. Using flowable composite, microleakage was 0.22 times lower when using phosphoric acid compared to self-etching primer and 0.27 times lower when using single bottle system compared to self-etching primer.