Evaluation of Pumice, Bur, and Air Abrasion on Sealant Microleakage. JULIE B. DIMOCK*, DDS, MS; DIANE C. DILLEY, DDS; MICHAEL W. ROBERTS, DDS, MScD; EDWARD J. SWIFT, JR, DMD, MS University of North Carolina School of Dentistry.

Purpose: The purpose of this *in vitro* study was to evaluate microleakage of pit and fissure sealants after using three different preparation techniques: 1)traditional pumice prophylaxis and acid etching, 2)bur preparation and acid etching, and 3)air abrasion and acid etching.

Methods: Sixty extracted third molars with no clinical evidence of caries were randomly divided into three groups of 20 each. Teeth were prepared using one of three occlusal surface treatments prior to placement of Delton® opaque light-cured sealant. The teeth were thermocycled between 5±2°C and 55±2°C for 500 cycles with a dwell time of 30 seconds and then stored in saline. All teeth were sealed apically and coated within 1.5 mm of the sealant margin with two layers of nail varnish. The teeth were immersed in a 1% solution of methylene blue for 24 hours to allow dye penetration into possible gaps between enamel and sealant. Three buccolingual cuts parallel to the long axis of the tooth were made yielding four sections and six surfaces per tooth for analysis. The surfaces were scored 0 to 3 for extent of microleakage using a binocular microscope at 25X magnification.

Results: Kruskal-Wallis and *t*-tests revealed no significant difference in microleakage between the three sealant preparation methods.

Conclusion: Neither air abrasion nor enameloplasty followed by acid etching produced significantly less microleakage than the traditional pumice prophylaxis with acid etching.