controls were completely sealed with two coats of nail polish. The rest of the teeth received two coats of nail polish leaving 2mm all around the restoration margins.

All specimens were subjected to thermocycling of 200 cycles between water baths of 4±2°C and 65±2°C with a dwell time of 15 seconds in each bath.

The teeth were suspended in 2% methylene blue dye solution (pH 7), with complete immersion in the dye for 7 days. The teeth were washed under tap water, dried and sectioned longitudinally in bucco-lingual direction (Fig 1).

The specimens were examined under stereomicroscope (Sterostar zoom stereomicroscopic microscope, Reichert Jung Co/Germany) at 10 x magnification.

The linear extent of dye penetration was measured from cavosurface margin of the access cavity to the most apical extent of dye penetration i.e the point where the dye no longer penetrated along cavity walls or into the canal or into the restorative material itself. The length from cavosurface margin to the apex of the tooth was also measured and percentage linear microleakage was estimated. An ocular attachment calibrated with a 2mm stage micrometer was used for measurements. Dye penetration was evaluated blindly by two evaluators twice on two different days in order to reduce the inter and intra observer bias.

All observations were subjected to statistical analysis. The ‘t’ test for the difference of means was used for analysis.

RESULTS AND DISCUSSION

In the past few years, stress has been laid on the fact that coronal seal is as important as apical seal for successful endodontic treatment. Hence presence of a permanent restorative material in the access cavity which provides good marginal seal is important2,3,4. The currently available adhesive restorative materials form a good potential to obtain a good coronal seal.

The importance of coronal seal is evident by the results of positive control in this study. Teeth designated as positive controls did not have any restorative material in their access cavity and showed total leakage (Fig 2).

In the present study, the maximum percentage linear microleakage for Vitremer was greater than that of Spectrum TPH. (Table 1 & 2) (Fig 3). Statistical analysis showed that it was not statistically significant (p>0.05) (Tables 3 & 4).

The results of the present study indicate that the coronal sealing ability of resin modified glass ionomer is comparable to resin composite, but do not provide a total seal which 20 is in agreement with studies by Quinn5 and Ferrari and Davidson10, who compared the marginal sealing ability of these materials in class V cavities. Quinn5 reported no significant difference in microleakage along enamel margins of Class V restorations restored with hybrid composite resin used with Scotchbond multipurpose and All-bond2 (two fourth generation bonding agents) when compared with two resin modified glass ionomers, Vitremer and Fuji II LC. This is in contrast to that of Carman and Wallace11 who reported greater coronal sealing ability of light cured glass ionomer compared to composite resin when used in access cavities of molars. The variation in results may be attributed to difference in experimental technique. Also, used of Fuji II LC involved removal of the smear layer with 10% polyacrylic acid. In contrast to posterior composite resin used by them, in the present study, hybrid composite resin with a fifth generation bonding agent, which has better bonding than the older generations, was used6.

Acid base reaction and light curing property of Vitremer enhance bonding to tooth structure. In addition, the primer contains maleic acid, which alters the smear layer to enhance bonding to tooth structure. The surface application of low viscosity resin, in the form of finishing gloss further reduces marginal gaps12.

Due to incorporation of the resin, it undergoes polymerisation shrinkage. Hinoura et al13 reported shrinkage of 3.2 to 4.7% using resin modified glass ionomers as liner or base. This is compensated by storage of water, during which the material undergoes hygroscopic expansion14. However the initial polymerisation shrinkage induces stress, resulting in crazing of enamel. This accounts for inability of resin modified glass ionomers to provide total seal18.

Prime and Bond 2.1, the fifth generation bonding agent used with Spectrum TPH gives a bond strength of 26MPa, according to manufacturer, which is well above the critical 15MPa level. The use of total etch technique removes smear layer, widens dentinal tubules and causes demineralisation of intertubular dentin. The primer in the bonding agent, PENTA ,wets the collagen network, resulting