Abstract

Aim: Core buildup composite resins with prefabricated posts are commonly used to restore endodontically treated teeth. This study compared the sealing ability of Core Max II and Panavia F<sub>2</sub> cement with total-etch and self-etch adhesive systems.

Methods and Materials: Sixty recently extracted human second premolar teeth were chosen and their crowns were cut 3 mm above the CEJ. After preparing proximal boxes (±4 mm buccolingually and 3 mm occlusogingivally dimensions) and finishing root canal therapy, the teeth were randomly divided into four groups (n=41): groups 1 and 4, Core Max II without and with total-etch adhesive; groups 4 and 1, Clearfil photocore composite, A shade, and Panavia F<sub>2</sub> cement without and with self-etch adhesive respectively. The Dentatus posts (# Long) were used in canals approximately 8 mm depth. According to manufacturer guidelines, pins were cemented and cores were restored. After keeping the specimens for 48 hours at 37°C and 100% humidity, they were thermally cycled for 300 cycles, sealed with nail varnish except 1 mm beyond the margins of restoration, and then immersed in a 0.5% fuschin basic for 48 hours. Samples were embedded in clear epoxy resin, sectioned mesiodistally, and observed at ×20 magnification. The microleakage was assessed under stereomicroscope and the results were recorded in percentage of dye penetration to the whole path from the cavosurface margin of the proximal boxes to the end of the post. Analysis of variance and the Tukey test were used to evaluate the data (p=0.05).

Results: Groups 1 and 4 had the highest and the lowest values of microleakage respectively. Microleakage of Panavia F<sub>2</sub> cement was lower than for Core Max II and for both cements using adhesive made the microleakage smaller than without it (p<0.05).
**Conclusion:** Application of adhesive using Core Max II cement and Panavia F\(^*\) cement is strongly recommended to decrease microleakage. Self-etch adhesive performed better than total-etch adhesive.

**Clinical Significance:** With regards to microleakage, the self-etching primer displayed better sealing than that obtained with the total-etching, two-step dental adhesive.

**Keywords:** Microleakage, core buildup composites, adhesive systems.