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Microleakage of Class II Combined Amalgam-Composite Restorations Using Different Composites and Bonding Agents

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Abstract:

Objective: The purpose of the present study was to assess the microleakage of composite restorations with and without a cervical amalgam base and to compare the results of different composites and bonding agents.

Materials and Methods: One hundred and twenty mesio-occlusal (MO) and disto-occlusal (DO) Class II cavities were prepared on sixty extracted permanent premolar teeth. The teeth were randomly divided into four groups of 30 and restored as follows:

In group A, the mesio-occlusal cavity (MO), Scotchbond multi purpose plus + Z250 and in the disto-occlusal (DO) cavity, Prompt-L-Pop + Z250 were applied. As for group B, in the MO and DO cavities, Clearfil SE Bond + Clearfil APX, and varnish + amalgam (In box) + Clearfil SE Bond + Clearfil APX were used respectively while in group C; the teeth were restored with amalgam and varnish mesio-occlusally and with amalgam only disto-occlusally. As for group D, varnish + amalgam (in box) + Scotchbond multi purpose plus + Z250 were applied mesio-occlusally and Varnish + Amalgam (in box) + Prompt-L-Pop + Z250 disto-occlusally.

Marginal leakage was assessed by the degree of dye penetration into various sections of the restored teeth. Chi-square and Fisher's exact tests were used for data analysis.

Results: Microleakage in gingival margin was more than that in occlusal margin ($P < 0.05$) and microleakage of combined amalgam-composite restorations was significantly lower than that of conventional composite and amalgam restorations.

Conclusion: Marginal microleakage decreased by using amalgam at the base of the box in Class II composite restorations.

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