

## Improvement of the Interface Between the Restoration and the Tooth

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Integrity of the interface between restoration and tooth is one of the most important issues to ensure the quality of restoration. Especially in the case of the direct composite restoration, the internal interfacial integrity and the marginal integrity must be achieved. Selection of the adhesive, handling of the material, and filling technique of the composite resin influence the sealing between tooth and filling. Particularly, the control of shrinkage stress of the composite resin should be carefully performed. Restoration margin is also recognized as the most significant part to determine the esthetic quality as well as the sealing property of the restoration. To create the integrity of the restoration margin, prevention of the enamel fracture at cavo-surface margin should be avoided.

Phosphoric acid etching is generally applied with both etch and rinse type and self-etching type adhesives, however, the phosphoric acid etching to the cavo-surface enamel was confirmed to cause more enamel fracture than self-etching procedure. The frequency of the enamel fracture is also influenced by the direction of enamel prisms at the cavity wall. The applications of marginal bevel and less invasive surface treatment are recommended. For obtaining the color matching between the restoration and surrounding tooth, the newly developed composite resin with the structural color effect exhibit the unique performance, providing us the invisible margin of the restoration. The photonic characteristic of the composite resin and enamel is also discussed in the lecture.