Abstract: Objectives: The purpose of this study is to review the different aspects of silane coupling agents and surface conditioning in restorative dentistry.

Methods: Today, silane coupling agents are used as adhesion promoters. Silanes are effective in facilitating adhesion between resin composite and silica-based dental material. They do not bond effectively to non-silica based dental restorative materials such as zirconia, metals or metal alloys. Surface conditioning of these non-silica based material with silica coating improves the bonding. Silanes are also used as adhesion promotions in ceramic restorations and their repairs with resin composites. This current review will focus on these aspects of silane coupling agents: their properties, limitations and the clinical problems with the use of silanes. It will also focus on the current surface conditioning methods as well as new surface conditioning techniques.

Results: Several surface conditioning methods such as selective infiltration etching, silica-coating, grit blasting, chemical treatment are being used clinically to enhance the adhesion of resin composites to non-silica based restorative materials. Other approaches are under investigation. The clinical problem of using silanes in adhesion promotion is the bond degradation over time in oral environment.

Keywords: silane, resin composite, adhesion, surface conditioning

Presentation: Oral