

**Effect of smear layer thickness and
chlorhexidine application on shear
bond strength of resin composite
bonded to normal dentin utilizing one
step self-etch adhesive**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ
أَنْتَ الْعَلِيمُ الْحَكِيمُ
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.
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List of abbreviations

Abbreviation	Refer to
BIS-EMA	Bisphenol a polyethylene glycol dietherdimethacrylate
BIS-GMA	Bisphenol a glycidyl methacrylate
CHX	Chlorhexidine
HEMA	Hydroxy ethylmethacrylate
MDP	Methacryloyloxydecyl dihydrogen phosphate
PEGDMA	Polyethylene glycol dimethacrylate
Sic	Silicon carbide paper
SL	Smear layer
TEGDMA	Triethylene glycol dimethacrylate
UDMA	Urethane dimethacrylate
μ TBS	Micro Tensile Bond Strength

INTRODUCTION

Bonding to dentin is considered one of the major challenges due to the structural variations of normal dentin.¹ Cutting in dentin impart meanwhile quality of roughness, which may alter dentin wetness and permeability. The degree of surface roughness varies according to the type of cutting tools used, such as carbide burs, diamond abrasives points and air abrasive cutting equipment's.²

Smear layer is generated from dentin cutting during cavity preparation by rotary instruments acting as a pathway of microleakage. To obtain strong adhesive bonding of the restorative materials to dentin and enamel, smear layer must be removed or altered. This could be done by acids or chelating compounds, however, removal and/or modification of smear layer and superficial selective demineralization of dentin, followed by penetration and polymerization of adhesive monomers result in hybrid layer formation.³

The primary way that dentists treat the clinical signs of infection caused by caries is through the surgical removal of the diseased parts of the tooth structure and closing the area with an inert filling material. However, still, no criteria are available to judge if the carious tissue is completely removed. During preparation, the excavation of the colored and softened dentin cannot remove all the bacteria from the cavity.⁴

Failure to mechanically remove the infected tooth structure and achieve complete sterilization of the cavity preparation can lead to micro-leakage, increased pulp sensitivity, pulpal inflammation, and secondary caries thus, necessitating replacement of the restoration.⁵

After removal of the carious dentin, it is important to eliminate any remaining bacteria that may be present on the cavity walls, in the smear layer, at the enamel-dentin junction, or in the dentinal tubules.⁶ An antibacterial