

THE EFFECT OF OZONE TREATMENT ON SHEAR BOND STRENGTH OF TWO DIFFERENT ADHESIVE SYSTEMS AT VARIOUS AGING PERIODS TO TOOTH SUBSTRATES

Abdulghani I. Mira*, Mohamed T. Hamed**, Motaz Ghulman*** and Ghada H. Naguib****

ABSTRACT

The purpose of this study was to determine the effect of ozone application on the shear bond strength of resin composite using two different adhesive systems to both enamel and dentine substrate after different aging periods.

Three hundred and sixty sound teeth were used in this study. The teeth were divided into two equal groups according to the tooth substrates. The teeth were received no ozone treatment, 20-seconds and 40-seconds. Total etch and self-etching adhesive systems were used and a resin composite cylinders were used to restore all teeth. The teeth were stored in 75% ethanol solution at different ageing periods.

The results showed that a statistical significant difference was found between the ozone treated groups and control groups at different aging periods in enamel and dentin for both total etch and self-etching adhesive systems.

Ozone gas for 20 and 40 seconds is a favorable procedure to improve the shear bond strength of resin composite to enamel and dentine. Ozone gas for 20 and 40 seconds is a favorable procedure to reduce bond hydrolysis by aging.

INTRODUCTION

The techniques used in carious dentine removal have developed since GV Black, in 1893, initially proposed the principle of "extension for prevention" in the operative treatment of carious lesions. However, in recent years, with the advent of adhesive restorative materials and subsequent developments in minimal cavity design, this widely accepted principle has been challenged and is now considered

too destructive method for caries removal that lead to undesirable removal of tooth structure. Due to this excessive loss of sound tissue, efforts have focused on new minimal invasive techniques such as sono-abrasion, air abrasion, laser, carisolve gel, pronase enzyme and ozone.^{(1), (2)}

The novel treatment with ozone has been introduced as a revolutionary alternative to conventional drilling and filling. It does not advice

* Assistant Professor, and Consultant Operative / Easthetic Dentistry Depart., Vice Dean for Academic Affairs, Faculty of Dentistry King Abdulaziz University

** Lecturer of Fixed Prosthodontics Faculty of oral and Dental Medicine, Cairo University.

*** Assistant Professor and Consultant Operative / Easthetic Dentistry, Chairman, Conservative Dental Sciences Depart., Faculty of Dentistry King Abdulaziz University.

**** Assistant Lecturer of Biomaterials, Faculty of Oral and Dental Medicine, Cairo University.