

# What is DIFFERENT in Operative Dentistry?

J. D. Overton, D.D.S.

## Management of Soft Dentin:

The first time I heard a dentist seriously discuss routinely choosing to leave soft decayed dentin in teeth was 1987. I was a second-year AEGD resident with a DDS diploma that was 9 years old so I had placed several thousand direct restorations by that time. I concluded in a heartbeat that this dentist was a buffoon and proceeded on my merry way confident in my clinical experience and training. Everyone knows that a good dentist gets all of the demineralized dentin out of the tooth. If getting that last bit of damaged dentin exposed the pulp chamber, then that was what the tooth needed. I was wrong!

Now it is sometimes my job to help my experienced instructors that have stood in those comfortable shoes, confident that the aggressive management of soft dentin is the only correct thing to do, change the way they do business. If a tooth has no history of unstimulated pain and a vital normal pulp then we consider a pulp exposure to be an iatrogenic event. That is correct. We now teach that leaving soft dentin near the pulp, is a superior treatment to total soft dentin removal resulting in a pulp exposure (1). While



Overton

Dr. J.D. Overton is Head, Division of Operative Dentistry, Department of Restorative Dentistry, University of Texas Health Science Center, San Antonio, Texas (UTHSCSA).

## Abstract

There have been both large and small changes in operative dentistry in the last 30 years. Extension for prevention is no longer the mantra. The design features of amalgam preparations have moved into the smallest preparations possible to gain full access to the carious dentin. The default Class 2 amalgam or resin composite is a slot preparation with no preparation of the occlusal fissures. Class 1 fissure caries once implied the entire fissure system was to be cut out. Now only the known carious portions of the fissure are cut away, the tooth is restored, and the remaining fissures in that tooth are sealed. Resin composite preparations have no depth requirements and saucer shaped boxes are more favorable for lowering shrinkage strains on the bonded walls. Re-mineralization of proximal lesions that can be seen on a radiograph is now a proven successful service for many lesions that are at or just into the dentin by radiographic interpretation. The largest paradigm shift has been in the decision that in vital teeth with normal pulps soft dentin can be left over a vital asymptomatic pulp with every expectation that the direct restoration will be successful long term.

### KEY WORDS:

Preparation design, amalgam, resin composite, fissures, caries, re-mineralization

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# A Comparison of Shear Bond Strengths on Bleached and Unbleached Bovine Enamel

Andrew M. Dietrich, D.M.D., Jeryl English, D.D.S., M.S.,  
Kathleen McGrory, D.D.S., M.S., Joe Ontiveros, D.D.S., M.S.,  
John M. Powers, Ph.D, Harry I. Bussa Jr., D.D.S., M.S.,  
Anna Salas-Lopez, D.D.S., M.S.

## INTRODUCTION

Beginning in the early 1980's, bonding of orthodontic brackets had become the routine for attaching fixed appliances to teeth, replacing the need to fit and cement bands on each tooth (1). This eliminated a frustrating and time consuming process that often required the extraction of teeth because 4-6 mm of space was taken up by band material. Many different products and bonding techniques have come to the market, but the gold standard still seems to be the acid etch technique introduced by Buonocore in 1955 (2). This technique uses a 15 second application of 37 percent phosphoric acid to the enamel surface. After etching, the tooth is rinsed and dried. Primer is then applied and light cured before a bracket is bonded with resin cement. Over the years this technique has been modified

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The University of Texas Dental Branch at Houston, Departments of Orthodontics and Restorative Dentistry and Biomaterials

All correspondence and requests for reprints should be sent to:  
Andrew Dietrich, 1 Hermann Museum Circle Apt 3085, Houston, TX 77004

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## Abstract

**Introduction:** This study investigated whether tooth whitening with two different bleaching systems affects the shear bond strength achieved using an orthodontic self-etching primer.

**Methods:** The sample of 210 bovine incisors was divided into three groups. One group served as the control, while the other two groups received either an over-the-counter "white strip" bleaching regimen (Opalescence TresWhite) or a "power bleaching" in-office regimen (Opalescence Boost). Each bleaching group was divided into three groups to be tested at three time intervals post-bleaching: immediately, 24 hours, and 7 days.

**Results:** When compared to the control, the shear bond strength attained on Opalescence TresWhite treated specimens was not significantly lower at any time interval post-bleaching. Immediately after bleaching and 24 hours after bleaching, the Opalescence Boost treated groups showed significantly lower shear bond strengths than both the control groups and the Opalescence TresWhite groups.

**Conclusions:** Bleaching with 38 percent hydrogen peroxide immediately and 24 hours before bonding reduced the shear bond strengths. After seven days the bond strengths were normal. Bleaching with 10 percent hydrogen peroxide in the form of white strip material did not reduce shear bond strengths.

### KEY WORDS:

Tooth bleaching, hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), dental bonding, orthodontic adhesives

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# Dental Burs and Endodontic Files: Are Routine Sterilization Procedures Effective?

Archie Morrison, D.D.S., M.S., FRCD(C); Susan Conrod, D.D.S.

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Diseases may be transmitted by indirect contact when dental instruments contaminated by one patient are reused for another patient without adequate disinfection or sterilization between uses (1). The process of sterilization is designed to render instruments free of all microbial life, including bacterial spores, which can be very difficult to kill (1, 2). Any procedure that eliminates bacterial spores will also kill viruses such as HIV, hepatitis C, and hepatitis B (1).

There are no degrees of sterility; rather, an instrument is sterile or it is not (2). Resterilization of dental instruments for reuse on another patient happens regularly in all dental clinics (3). Resterilization is simply the repeated application of a steriliza-



Conrod



Morrison

Dr. Conrod is a resident in the department of oral and maxillofacial surgery, Dalhousie University, Halifax, Nova Scotia.

Dr. Morrison is an associate professor of oral and maxillofacial surgery, Dalhousie University, Halifax, Nova Scotia.

Correspondence to: Dr. Susan Conrod, Oral and Maxillofacial Surgery, QEII HSC VG Site, 1278 Tower Road, Halifax, NS B3H 2Y9. The authors have no declared financial interests in any company manufacturing the types of products mentioned in this article. This article has been peer reviewed.

## Abstract

**Purpose:** The complex miniature architecture of dental burs and endodontic files makes precleaning and sterilization difficult. Devising a sterilization protocol for endodontic files and dental burs requires care, and some have suggested that these instruments be considered single-use devices. One purpose of this study was to determine the effectiveness of various sterilization techniques currently used in dentistry for the resterilization of dental burs and endodontic files. The second aim was to determine whether new dental burs and endodontic files, as supplied in packages from the manufacturer, are sterile.

**Materials and Methods:** The sterility of new (unused) and used dental burs and endodontic files before and after various sterilization procedures was analyzed. New burs and files were tested immediately after removal from manufacturers' packaging, with or without prior sterilization. Burs and files that had been used in various dental offices were precleaned, packaged, resterilized and then tested for various pathogens. Each item was individually removed from the sterilization packaging, transferred by sterile technique into Todd-Hewitt broth, incubated at 37°C for 72 hours and observed for bacterial growth.

**Results:** Sterilization procedures were 100 percent effective for unused burs and unused files but were less than 100 percent effective for all other test groups. Contamination rates following sterilization ranged from 15 percent for one group of used burs ( $p = 0.01$ ) to 58 percent for one group of used files ( $p < 0.001$ ).

**Conclusions:** Dental burs and endodontic files, as packaged by the manufacturer, are not sterile and should therefore be sterilized before first use. The resterilization procedures tested here were not adequate, and more rigorous sterilization procedures are needed. If such procedures cannot be devised, these instruments should perhaps be considered single-use devices.

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