

JOURNAL *of the*

MASSACHUSETTS DENTAL SOCIETY

Summer 2006



Remembering
Herb Schilder, DDS

HAVE WE DROPPED THE BALL?

IN APRIL 2006, THE *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* PUBLISHED TWO articles that once again confirmed the safety of amalgam restorations. We all know of the vast body of literature supporting the use of amalgam, acquired from independent, peer-reviewed, scientifically valid studies. According to an American Dental Association position paper, major U.S. and international scientific and health bodies—including the National Institutes of Health, the U.S. Public Health Service, the Centers for Disease Control and Prevention, the Food and Drug Administration, and the World Health Organization—are all satisfied that dental amalgam is a safe, reliable, durable, and effective restorative material.

While *we* can accept the fact that amalgam restorations are safe, there is a strong public perception that “mercury” fillings are not good. Our profession has dropped the ball. Instead of educating our patients, we have allowed ourselves to be reactive rather than proactive. Restorative dentists now perform more composite restorations than alloy restorations. Fortunately, the functional properties of composite resins are improving. Techniques are improving. Indirect esthetic restorations are becoming much more popular and functional.

However, as professionals, we have to give our patients the full picture. Indirect and composite restorations are definitely better looking, but they are not always the restorative of choice. Composites do not last as long as amalgams, and more often than not, they are not the material of choice for large posterior restorations.

Many patients can barely afford dental care. Are we performing adequate service to our patients if we do not offer a comparatively inexpensive alternative to the more esthetic options? Wherever appropriate, amalgams should be offered in the case presentation. As practitioners, we know that even the best-placed composite will not last as long as a well-placed amalgam. For those patients who cannot afford a crown or lab-produced restoration, we have a responsibility to provide less expensive alternatives. Too many patients choose to do nothing because they cannot afford what is presented to them. Is this good? Is this ethical?

The Winter 2005 issue of the *Journal of the American College of Dentists* addresses this very problem. In short, Dr. Larry Jenson outlines the fact that dentists have an ethical and professional responsibility to use their judgment to advocate for the patient’s health interests. He states that the patient’s health is always more crucial than the patient’s cosmetic desires. Trust is the issue. We have to make sure that we fulfill our responsibility to present the total picture and all possible options for care. Patients have to be fully informed as to the pros and cons of all restorative alternatives. Informed consent is the key to good, ethical care.

We have a difficult task ahead of us if we want to fulfill these obligations. The marketing of cosmetic dental products is very consumer-oriented. The manufacturers of these products drive the market and contribute to the public perception of what an ideal smile should be. And these manufactured perceptions lead to demands. We must avoid being manipulated. As a profession, we can’t change what the public wants, but we do have a strong responsibility to make sure that their health needs are met in the most appropriate manner. ■



David B. Becker

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Postmaster: Send address changes to: JOURNAL OF THE MASSACHUSETTS DENTAL SOCIETY, Two Willow Street, Suite 200, Southborough, MA 01745.

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Member Publication
American Association
of Dental Editors





Letters to the Editor



The recent article by Dr. Gary Goodall, “Bisphosphonate-Associated Osteonecrosis of the Jaws and Endodontic Treatment: Two Case Reports” (Vol. 55/No. 1 Spring 2006, pages 44–48) was certainly timely. Serious postoperative sequelae following dental/oral surgical therapy in patients who have received or are receiving intravenous bisphosphonates is a concern to us all.

Recent articles in the *Journal of Oral and Maxillofacial Surgery*¹ and *The Journal of the American Dental Association*² discuss bisphosphonate-induced osteonecrosis of the jaws in great detail. The paper by Marx and coworkers followed 119 patients suffering from bisphosphonate-induced osteonecrosis of the jaws and made a number of treatment recommendations, which were discussed by Dr. Goodall.

However, while there is no doubt that intravenous bisphosphonate (BIS) therapy places patients at significant risk for development of osteonecrosis following dental surgical treatment, the danger posed to patients taking oral BIS (e.g., Fosamax and others) is less clearly understood. Only two of the 119 patients Marx et al. reported on had been taking oral BIS; all others had been treated with intravenous BIS. In addition, because these patients were referred to Marx and coworkers following the development of problems, there is no way to know how large a pool of patients taking Fosamax or other oral BIS were treated without problems.

The type of therapy performed and the level of care delivered prior to the development of complications are also unknown. For example, did the complications occur following tooth extraction? Was primary soft-tissue closure attained in the area following appropriate debridement and reshaping of sharp bony edges of the extraction socket, etc.? Dr. Goodall, in discussing why the mandible and maxilla are the only bones affected by this condition, suggests that because alveolar bone is the only bone “connected to the exterior” environment, it is potentially put at greater risk for exposure to “periodontal disease or microtrauma.”

Dr. Goodall goes on to state, “it seems reasonable that the antiangiogenic effect attributed to bisphosphonates might play a role, together with microtrauma and inflammation, in causing ischemic changes in this area.” All of these factors could significantly impact the development of tissue dehiscences and contribute to osteonecrosis in the area.

Such considerations further underscore the need to perform careful, minimally traumatic comprehensive care, to manage soft tissues as greatly and effectively as possible, and

to attain and maintain primary soft-tissue closure whenever performing tooth extraction or implant therapy or regenerative therapies.

Experienced periodontists and oral surgeons have treated tens of thousands of patients taking Fosamax and other oral BIS over the last few years without the development of significant clinical sequelae. We are the lead authors of a study currently being put together which compares the incidence of postoperative problems and/or osteonecrosis following various implant, regenerative, or periodontal therapies in patients being treated with either intravenous BIS, oral BIS, or no BIS.

While the final statistics are not yet compiled, we have not found a greater incidence of osteonecrosis in patients taking oral BIS compared to patients who are not on any type of BIS therapy. This study includes more than 2,000 implants and hundreds of extractions and regenerative procedures.³ Dr. Marx stated at his recent Yankee Dental Congress lecture that a review of patient charts found no patients taking Fosamax or other oral BIS who demonstrated osteonecrosis after extraction and/or implant therapy.

It is important that we all be aware of the potential danger of osteonecrosis in BIS-treated patients. However, it is at least as important that we look at this risk realistically, understand and differentiate between the various types of BIS therapy, and not arbitrarily exclude a very large percentage of older population from needed dental care unless we are certain such exclusion is in their best interest.

The phenomenon of BIS-induced osteonecrosis underscores not only the need for open and informed communication between all members of the dental team and the patient’s treating physician, but also the necessity of examining data appropriately, thinking critically, and formulating logically based treatment decision trees.

Paul A. Fugazzotto, DDS

Scott Lightfoot, DDS

Milton

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Editor's Note: The following is intended to be informational. You should consult with your financial advisor before investing.

EARLY RETIREMENT—IS IT ACTUALLY POSSIBLE?

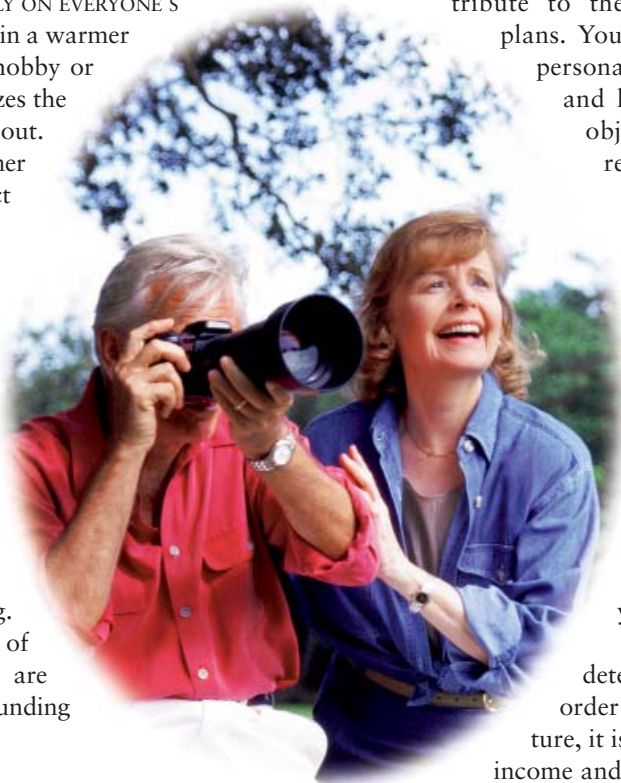
AN EARLY RETIREMENT IS USUALLY ON EVERYONE'S wish list. A relaxing lifestyle in a warmer climate or the pursuit of a hobby or personal interest typically characterizes the vision of what retirement is all about. Unfortunately, retiring later—not sooner—than anticipated is becoming a fact of life. However, a select few are still managing to defy the norm and retire early. You may be asking yourself, “How do they do it?”

The key is to take a proactive role in your retirement planning. Naturally, the sooner you begin planning, the more you increase your chances for early retirement. Some retirees may require as much as 80 percent of their preretirement income to meet expenses and maintain their desired standard of living. With the decline in the popularity of traditional pensions, people today are more and more responsible for funding their retirement.

Redefining Retirement

There are many factors that are redefining how Americans approach retirement. Due to financial necessity, or sometimes just an overabundance of leisure time, some retirees are beginning to re-enter the workplace. Many retired executives start their own part-time consulting businesses; others trade in their hectic 70-hour work week for a type of pseudo-retirement in which they work a lot less and spend more time with their families. Part-time work during retirement can be an important supplement to your income, especially if you plan on retiring early.

Another interesting factor changing the shape of retirement is that life expectancies are increasing. For some people, spending one-third of their lives in retirement is a possibility. Relying on retirement plans and Social Security will be increasingly difficult because these retirement mechanisms were not designed to perpetually provide income. Furthermore, as longevity has increased over time, retirement plans have gradually shifted the savings responsibility from employers to employees. The pressure of building adequate retirement savings has been placed directly in the hands of a larger portion of the workforce, which often must take the initiative and con-



tribute to their company-sponsored retirement plans. Your retirement assets, as well as your personal savings, will have to work longer and harder to help fulfill your personal objectives, regardless of whether you retire early or not.

An often-overlooked aspect of retirement planning is money management once retirement has begun. To help ensure an adequate pool of retirement assets, your money will have to continue working for you throughout your retirement years. Inflation—along with the amount of income withdrawn from your retirement plan—will have a direct effect on how long you can live comfortably. Thus, personal savings will continue to be an overall part of your financial plan.

Budgetary constraints will also determine your retirement lifestyle. In order to better ascertain your financial picture, it is best to project what your retirement income and expenses will be. Unfortunately, this process may be more challenging than it sounds. You will need to consider everything from greens fees at the local golf course to health insurance costs. In addition, you will have to factor in inflation and how your income needs will change throughout the years.

For those who desire an early retirement, certain penalties may apply for early withdrawals from retirement plans. All options need to be studied, and the consequences of any action taken should be reviewed by a professional.

Get Involved

Today, early retirement is still a viable option. Remaining on firm ground financially and working part-time, if necessary, have become integral parts of a successful retirement. By maximizing your personal savings to the best of your ability, you will increase your chances of reaching your retirement goals. Remaining active and focused on attaining your retirement planning goals is particularly necessary if you are contemplating, or are forced into, early retirement. ■

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GEORGE GONSER, MBA

Mr. Gonser is the managing director of MDSIS.

TAKE A TRIP WITH MDSIS

WHAT BECKONS YOU THIS SUMMER? THE VINEYARDS IN Tuscany? The Cliffs of Moher in Ireland? Or the beaches of the Caribbean?

Nothing can ruin a trip abroad quite like a trip to the emergency room or an unforeseen delay or cancellation in your journey. Fortunately, there's travel insurance for these situations, and MDS Insurance Services, Inc. (MDSIS), can provide it for you. First, though, there are some key terms you need to know:

1. Duration

How long will you be going for? The longer you plan on being away from your home country, the more comprehensive the coverage you are likely to need.

2. Destination

Where are you going? The more remote the location, the more importance you should place on features like emergency evacuation and air ambulance coverage. Conversely, a visitor to a northern European country should be more interested in the maximum benefits for hospitalization, as evacuation would be a less likely course of action for treatment.

3. Home Country Coverage

What does your existing health plan cover? If you already have a good benefits plan, it is a smart idea to double-check exactly what is covered while you are out of the country. Most domestic U.S. health plans limit coverage to a maximum of 30 or 60 days outside of the United States, and health maintenance organizations (HMOs) and preferred provider organizations (PPOs) will likely impose severe out-of-network penalties for all but the most basic emergency care. More importantly, you will want to ensure that you have 24-hour access to emergency evacuation if you are sick or hurt in an area where quality care is not available. For those over the age of 65, Medicare will not cover treatment outside the United States. If you do not have any domestic coverage, travel insurance is a must.

Once you have answered these questions, you will need to know what benefits and policy provisions to look for in a travel medical plan.

Short Trips (Two Weeks or Less)

Assuming you have solid coverage at home, you may only need a small supplemental plan, with features like emergency evacuation and 24-hour worldwide assistance, along with a limited benefit for medical expenses (\$10,000 to \$50,000 is typical).

Intermediate Trips (Two Weeks to Six Months)

The longer you are away, the less likely your U.S.-based plan will cover you, and you should therefore place more importance on the medical benefits of the plan. In addition to a higher emergency evacuation benefit, your plan should cover between \$100,000 and \$1 million in medical expenses. Other features to look for include coverage for a family member to come to your assistance if you are hospitalized in a foreign country, and an option to include "hazardous activities"—extreme sports such as scuba diving, skiing, and bungee jumping.

Long Trips (Six Months or More)

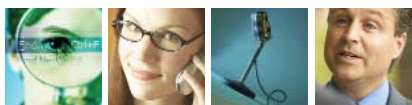
Because you are traveling for such an extended period of time, the travel insurance you purchase will most likely be your primary—or only—health insurance. Be sure that your plan includes all of the above, with higher maximum benefits (\$1 million or more) as well as some provision for coverage when you return home. If you or a family member spends a year abroad but returns home for a vacation, make sure you are still covered.

All of the plan types discussed above share some common features: You will normally have a deductible and coinsurance to meet, and preexisting conditions are usually excluded. Worldwide assistance is sometimes done by the plan administrator or sometimes through an independent assistance company.

To provide this coverage, MDSIS, is working with International Medical Group (IMG), the national leader in travel insurance plans. IMG offers many travel-related insurance plans, including Patriot Travel Medical Insurance Plans and Patriot T.R.I.P., T.R.I.P. Elite, and Student T.R.I.P. programs, which provide coverage that can help you recover unused nonrefundable payments and deposits should your trip be cancelled or interrupted for a variety of reasons. Benefits are also provided for travel delays, baggage delays, emergency medical treatment, emergency medical evacuation, and more.

Purchasing trip and medical insurance plans before you depart can mean security and peace of mind while you are away, and allow you to concentrate on the exciting and fulfilling adventure that international travel can and should be.

For more information, go to www.mdsis.org, click on "Products," and then select "Travel Insurance Plans" to peruse travel and trip insurance options. Or you can call MDSIS at (800) 821-6033. ■



VIEWPOINT

TODD BELF-BECKER, DMD

Dr. Belf-Becker is a general dentist in Revere and Boston, where he is part of a three-generation family practice.

LIGHTS! CAMERA! DISTRACTION!

IS HOLLYWOOD RUINING DENTISTRY? WHENEVER I GO TO THE movies and see certain movie stars (who shall remain nameless), I wince. I get distracted from the movie itself. All I can see is white. Blinding white teeth. And I can't look away. To me, the whiteness is grotesque. But to many—that is, the movie-going public—that whiter-than-white smile is an ideal.

These unnaturally and unrealistically white teeth set a standard for beauty. And that is what celebrities do—they create images that the general public then wants to emulate. But it is continually distressing that white-white-white teeth have become the goal. As is the case with many other “beauty” issues—from weight to clothes to wrinkles—with teeth, the societal ideal is exceedingly difficult, if not impossible, to attain.

Ours is a superficial society, a society of white. Toothpaste, mouthwashes, commercials, and makeover reality TV shows all either subliminally or just blatantly tell people that white teeth are the answer, and anything less than that bright white is ugly, unseemly . . . and fixable. Perhaps the hope for change instilled by this media barrage is the most damaging, as people will not be content unless they “improve” themselves to more closely resemble the images thrown at them at the multiplex and in magazines—images that were most likely airbrushed or enhanced with CGI anyway.

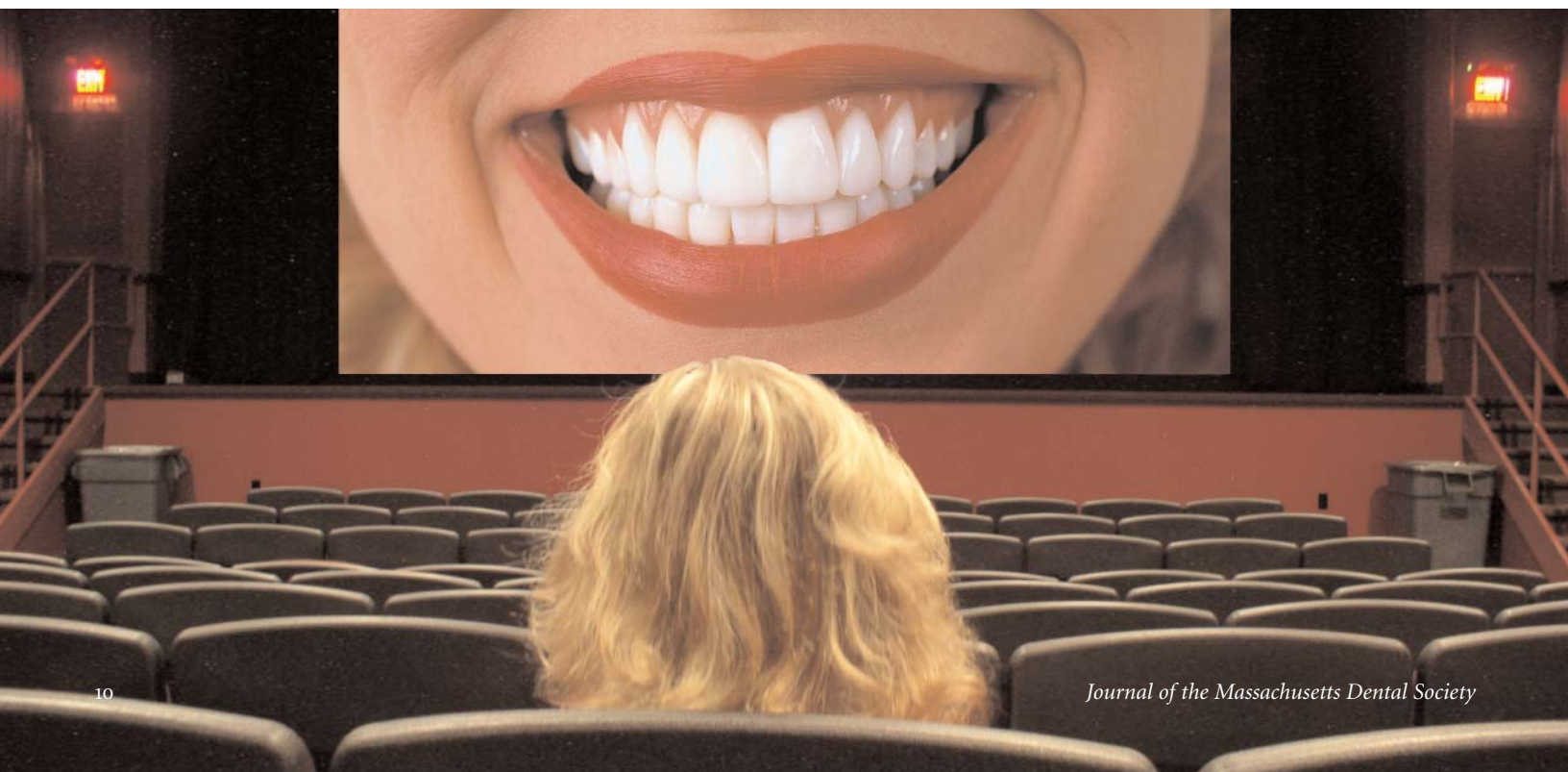
I'm not saying that patients shouldn't be bleaching their teeth. I'm not saying it's bad for people to want to change and/or improve their appearances. But the problem with our

society is that it is too easy to go overboard, partly from that influx of media, advertising, and celebrity worship, and partly from a lack of self-control.

There are some certainties regarding human behavior. Patients will not take antibiotics for their full courses. Patients will not moderate the amount of bleach they glop into their home trays at night (because more is faster and better?). And going overboard can be harmful—to both tissues and state of mind. For some people, it can be truly difficult to read the directions or be patient, especially when esthetics is at stake.

Dentists know that teeth aren't supposed to be luminous, but patients believe otherwise. So the big question is: What can be done? That is, how can we—as members of a profession that have the best interests of our patients and their teeth at heart—change the common perception of a choice as being black or white, such as having white teeth or being unattractive?

Without copping out, I believe the answer is: Nothing. We cannot afford to alienate our patients by refusing to provide them with bleaching. We can express our opinions, but we cannot order patients to agree. We can advise, but we cannot go against the all-encompassing media. As long as movie stars blind us when they smile, we can do nothing to stop moviegoers from wanting that, too. What we *can* do is not get caught up in the hype ourselves, so we can provide our patients with the best care possible. ■



4th Annual MDS Beacon Hill Day



On May 24, more than 50 MDS members descended upon the State House to participate in the 4th Annual MDS Beacon Hill Day, lending support for dentistry's legislative agenda while helping to prevent adverse bills from being referred out of committee.



Senator Andrea F. Nuciforo Jr. (D-Pittsfield) delivered the keynote address and spoke in support of the Society's push to create a volunteer dental license. H.2676—An Act Relative to Volunteer Dentistry has been referred to the House Committee on Bills in Third Reading. Sen. Nuciforo—who is the Senate Chair of the Joint Committee on Financial Services, which has jurisdiction over all insurance matters in the Commonwealth—implored the crowd to stay steadfast in their efforts over the remaining weeks of the session to enact H.2676 into law.



Attendees began their day with a luncheon in the State House's Great Hall with their elected officials. For those lawmakers who could not attend the luncheon, MDS members visited them in their State House offices and passed along information packets that included the Society's position on several matters. MDS members made a point to thank legislators for the programmatic reforms recently implemented in the MassHealth program as well as the restoration of funding for adults.



MDS President Alan Gold, DDS, applauded the attendees for taking time out of their practices to demonstrate to Beacon Hill lawmakers that dentistry will continue to take an active role in all legislative matters related to oral health. Dr. Gold also reminded the attendees that their participation in the various grassroots campaigns in the past year was key in defeating the dental assistant bill, denturist bill, and several bills relating to amalgam (mercury).

The House of Representatives and the Senate were both in session that day, and many attendees took advantage of the opportunity to sit in the galleries and view the legislative body in action as the Senate deliberated the budget and the House deliberated nurse staffing levels. Plans are already under way for the 5th Annual MDS Beacon Hill Day, which will likely be scheduled for May 2007. ■

Remembering “The Professor”



JOSEPH WILLIAMS, DDS, FACD, FICD

Dr. Williams is an endodontist with a private practice in Brookline.

Editor’s Note: Herbert Schilder, DDS, was an endodontist, as well as chair and professor of the department of endodontics at the Boston University School of Dental Medicine. Dr. Schilder, who served as president of the Massachusetts Dental Society in 1981–1982 and who epitomized the strong connection between organized dentistry, academia, and the private practice of dentistry, passed away on January 25, 2006. Dr. Joseph Williams, his colleague and friend, shares his thoughts on the legacy of this pioneer in the profession.

We recently lost Dr. Herbert Schilder, a man who was, by any measure, one of the most influential teachers of modern, rational endodontic therapy. He was “The Professor” to hundreds of graduate students and thousands of dentists around the country and the world. He was my teacher, partner, and friend for my entire professional career.

Herb possessed a towering intellect with an ego to match and an intensity of personality to surpass both; thus the many “Schilder stories” which abound. Many are true, many are repeated with hyperbole, but the bottom line is this: Herb Schilder changed the stature of modern endodontics for the better. Patient care, results of treatment, education of practitioners, and understanding of the specialty have all benefited from his influence. Herb’s genius was his ability to articulate very complicated concepts and techniques into easily understood vernacular.

My first encounter with Herb came in September of 1968. I had been accepted to the BU program on a phone call from one of my mentors to Dr. Henry Goldman, the dean of the school. I arrived in Boston, met my seven classmates, attended orientation, and found myself in a 1950s setting on the campus of the old Boston University School of Medicine in a clinical facility out of prehistory. My classmates, who were very sophisticated, said, “Don’t worry about it, it will be worth it.” I had my doubts.

The class had our first meeting and orientation with Dr. Schilder, at which time he welcomed us all to Boston and explained the program and what was expected of us, which was quite a lot to absorb in a short time. We all made our-

selves familiar with the clinical facility and proceeded to treat patients with the skills and knowledge that our backgrounds provided.

The following Tuesday morning, we attended our first lecture by Dr. Schilder, at which time it was obvious that the physical appearance of the clinic had nothing to do with the quality of the education we were about to receive. Dr. Schilder’s eloquence, knowledge, and charisma were astounding, and we left that first encounter with an enthusiasm for the field, an enthusiasm that remains with us today.

After six weeks, Dr. Schilder announced that he would be devoting most of his time to teaching and administrating. He invited three of us to come into his office and become his associates. One of the fellows left after three weeks; the other left after three months. I stayed for 38 years.

Our clinical practice was very successful and most of the day-to-day endodontic therapy was performed by Dr. Sydell Shaw and myself, with Herb coming into the office for three half-days a week, during which time he exercised his amazing skills and gave me the chance to learn from him on a very intense and personal level. He pushed us to excel beyond our capacity to do so. Sydell was the one who kept everything calm and saw to it that staff, doctors, and patients all worked together for the best possible care. I was the “Producer.” It was my role to take care of the emergencies, complete the cases in a timely manner, and keep the referring dentists satisfied with our results.

And Then History Was Made

The technique that Herb was so famous for came about gradually. Herb was educated at New York University in the 1950s. He continued on at the NYU College of Dentistry, with Lou Grossman as his mentor. He then attended the University of

Pennsylvania for endodontics, and came to Boston as a silver cone advocate. The small canals were filled with silver wires and the large canals were filled with laterally condensed gutta-percha. Herb used a #3 spreader to compact the gutta-percha in the large canals and an amalgam plugger to compact heated gutta-percha around the silver wires in the pulp chamber space.

One day, he broke a spreader and used it to compact the gutta-percha around a silver wire, and when the final X-ray was taken it showed a puff of sealer at the apex of the root canal. Thus was fabricated the first Schilder plugger and the beginning of the warm gutta-percha technique that would influence the entire field for years to come and change the face of endodontics.

The education at Boston University was very much a team effort. Drs. Henry Goldman, Morris Reuben, Harold Levin, Sam Rubin, Bob Rosencranz, Seymour Melnick, Lou Laudani, Mike Fine, Bill Walker, and many others saw to it that the “Schilderian” approach to therapy was carried out to the letter.

Herb’s ability to articulate this system and the rationale for the science of endodontics is what made the Boston University School of Dental Medicine (BUSDM) program the foremost in the world. People came from all over to learn from Herb how to perform clinical endodontics. With Dr. Spencer Frankl as dean and Herb as chairman of the department, BUSDM educated hundreds of endodontists who were at the top of their classes and many of whom have gone on to improve and lead the field of endodontics.

I just returned from our annual meeting in Honolulu, where I attended a lecture by a good friend and colleague, Dr. Arnaldo Castellucci from Florence, Italy. Dr. Castellucci was asked to speak about access cavities in endodontics. He took this mundane topic and delivered a presentation that showed mastery and knowledge that was the best I have ever seen. His last slide was a picture of himself and Herb with the title “Here is a man who changed our lives.”

The science of endodontics owes Dr. Herbert Schilder for much of its current respect as a clinical entity, and those of us who lived, taught, and treated patients with him will forever miss his presence. ■



Left to right: Former MDS Executive Director Matt Boylan, Dr. Herb Schilder, former American Dental Association President Dr. Abraham Kobren, and former MDS President and current president and CEO of Eastern Dentists Insurance Company Dr. Charles Hapcook.



Left to right: Mrs. Joan Schilder, Dr. Herb Schilder, BUSDM Dean Dr. Spencer Frankl, BU Trustee and Chairman of BUSDM Board of Visitors Marshall Sloane, and Mrs. Barbara Sloane at the dedication of the Joan and Herbert Schilder Endodontic Research Center on December 8, 1997.



Dr. Herbert Schilder and BUSDM Dean Dr. Spencer Frankl are flanked by graduate students at Dr. Schilder’s last continuing education course in 2003. Dr. Schilder retired from teaching at BUSDM in April 2003.

Oral Appliance Management of Obstructive Sleep Apnea: A Case Report



Removable oral appliances worn during sleep—such as the Herbst appliance shown here—that reposition the mandible in an anterior position can effectively reduce mild or moderate apnea.

LARRY Z. LOCKERMAN, DDS

Dr. Lockerman is a consulting dentist to several sleep disorders centers. He is a diplomate of the American Board of Dental Sleep Medicine and the American Board of Orofacial Pain, and a member of the medical staff of the Sleep Disorders Center & TMJ/Headache Center at UMass Memorial Medical Center in Worcester and the Sleep HealthCenters in Newton.

Editor's Note: The American Board of Dental Sleep Medicine and the American Board of Orofacial Pain are not recognized by the American Dental Association as official specialty boards.

Abstract

Obststructive sleep apnea (OSA) and snoring are common related conditions with major health and social implications. OSA is a progressive disease with symptoms of daytime sleepiness and chronic cardiovascular morbidity. A mandibular advancement oral appliance is the only nonsurgical management modality available if continuous positive airway pressure (CPAP) cannot be tolerated.

A patient who had been diagnosed with OSA was successfully treated but developed a posterior open bite and symptomatic temporomandibular joints (TMJ). An integrated approach to managing his OSA and TMJ conditions enabled him to have a comfortable and stable bite and to continue using his obstructive sleep apnea appliance.

Management of OSA with an oral appliance should be handled by a dentist who is trained and experienced in the overall care of oral health, temporomandibular joints, dental occlusion, and associated structures.¹ A team approach starting with the diagnosis of OSA by a physician and management by a dentist is described.

Introduction

Obstructive sleep apnea is a common disorder with symptoms of excessive daytime sleepiness, cognitive impairment, and increased cardiovascular disease. OSA is a condition in which the tongue is drawn back during breathing, blocking the airway. When oxygen levels in the brain drop, the sleeper partially awakens and the tongue returns to its normal position. This cycle of short interrupted sleep prevents the person from attaining restful sleep. People with this condition have a constant feeling of tiredness and also tend to snore very loudly. There is a high risk of cardiovascular disease, as well as other medical problems, if OSA is not managed.

Many studies have been published reporting that oral appliances—often called mandibular repositioning appliances (MRAs)—worn during sleep that reposition the mandible in an anterior position can effectively reduce mild or moderate apnea symptoms.²

Case Report

A 53-year-old male teacher had an initial polysomnography study with an apnea-hypopnea index (AHI) of 11.3, which indicates mild obstructive sleep apnea. He had a class II, division 1–type bite. Range of motion of the mandible was a normal opening of 35 mm, with all excursions 8 mm. He had no TMJ tenderness with palpation, no joint noise, and no facial muscle tenderness.

After using a removable Herbst appliance for apnea management nightly for four months, he developed a posterior open bite during the daytime and reported pain while chewing in the area of his TM joints. Although he now had palpable tenderness at both TM joints, the patient refused to stop using the Herbst appliance because he was sleeping better and felt rested in the morning. He was given a lower, thin (approximately 2 mm thick), hard acrylic



Patient is using a thin lower hard acrylic appliance during the daytime to stabilize his TMJ in a class I molar bite relationship.



Post-restorative crowns were placed on the patient's posterior teeth, and facial veneers were placed on the patient's anterior teeth to establish a comfortable bite position.

appliance to wear during the daytime; however, he was informed of the risks of a permanent bite change if he continued using the appliances.

A follow-up sleep study with the Herbst appliance showed significant improvement with an AHI of 1.5, down from 11.3. Tomograms were taken of the patient's TM joints while he wore his daytime appliance, and his condyles appeared centered in the fossa of his TM joints.

Restorative dentistry was then completed by placing overlay ceramic restorations on all of his posterior teeth and positioning labial ceramic veneers on all of his

anterior teeth. A new Herbst appliance was made to protrude his mandible during sleep on the new restorations. A follow-up visit one year later showed a stable occlusion with no facial pain or discomfort.

Discussion

Management and treatment for OSA falls into two categories: nonsurgical and surgical. Nonsurgical management includes continuous positive airway pressure and oral appliance management. Surgical treatment includes a variety of different throat surgeries and maxillofacial advancement surgery.

If a patient cannot tolerate CPAP and oral appliances, a surgical approach can be considered. Surgery in the throat can be done several different ways. The Standards of Practice Committee of the American Academy of Sleep Medicine concluded after a review of literature that laser-assisted uvulopalatoplasty (LAUP) is not recommended for the treatment of sleep-related breathing disorders.³ Uvulopalatopharyngoplasty (UPPP) is a poorly conceived operation for most patients with OSA.⁴ There are limited studies with newer surgical methods like radiofrequency lesioning, but long-term results are unknown. Maxillofacial advancement surgery is highly successful in patients with mild to severe OSA.⁵

Nonsurgical management for OSA includes the use of CPAP and oral appliances. The use of nonprescription treatments (including external nasal dilator strips, lubricant spray or drops, dietary supplements, and magnetic pillows and mattresses) has very limited data to support a beneficial effect, and many studies do not evaluate product safety with extended use.⁶

Dentists must consider the efficacy and safety of appliances since they will be used for many years. More than 25 different types of appliances are available for OSA management.

Appliances are most effective when used for mild to moderate OSA conditions. A four-year follow-up study with mild to moderate OSA patients showed significantly higher success and normalization rates with oral appliances compared to the UPPP group.⁷ MRI and cephalometric X-ray studies with mandibular advancement oral appliances have shown an increase in upper pharynx airway space.⁸

An MRA can cause a TMJ synovitis and changes in the occlusion such as posterior or anterior open bites⁹ that might not involve intra-articular changes.¹⁰ Some patients will not respond to mandibular advancements; 70 percent mandibular advancement may be sufficient and further protrusion may elongate the airway anteroposteriorly and collapse it laterally.¹¹ Success of oral appliances is related to sleep posture; sleeping on one's back can reduce the efficacy of an appliance.¹²

Bite changes as well as muscle and TMJ pain have been documented in some patients with long-term mandibular advancement appliances for the

treatment of OSA. Any degree of mandibular advancement could result in TMJ problems as well as occlusal changes. Case examples of bite changes have been reported in the literature.¹³ Improper appliance selection can contribute to the above problems. The risks of bite changes should be reviewed with the patient and balanced with the morbidity and mortality health risks of no management.

Conclusion

Oral advancement appliances have been in use for more than 20 years, and extensive scientific evidence exists that details their safety and efficacy. These appliances have been a valuable therapeutic modality even in some patients with severe OSA. The use of oral appliances is well supported in the scientific literature, and many physicians and sleep centers have augmented services to their patients through inclusion of a sleep disorders dentist on their team.¹⁴

It is critical that the treating dentist has knowledge in sleep disorders, as well as expertise in the management of TMJ disorders and of head-and-neck pain.

Risks of not managing OSA outweigh the risk of a permanent bite change. However, it is the position of the American Academy of Dental Sleep Medicine that a dentist is not qualified to diagnose sleep-related breathing disorders, including OSA.¹⁵ If a sleep disorder is suspected, the patient must be informed and referred to a physician for an evaluation. ■

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Finn Brudevold's Laboratory:

The Forsyth Institute, 1958–1986

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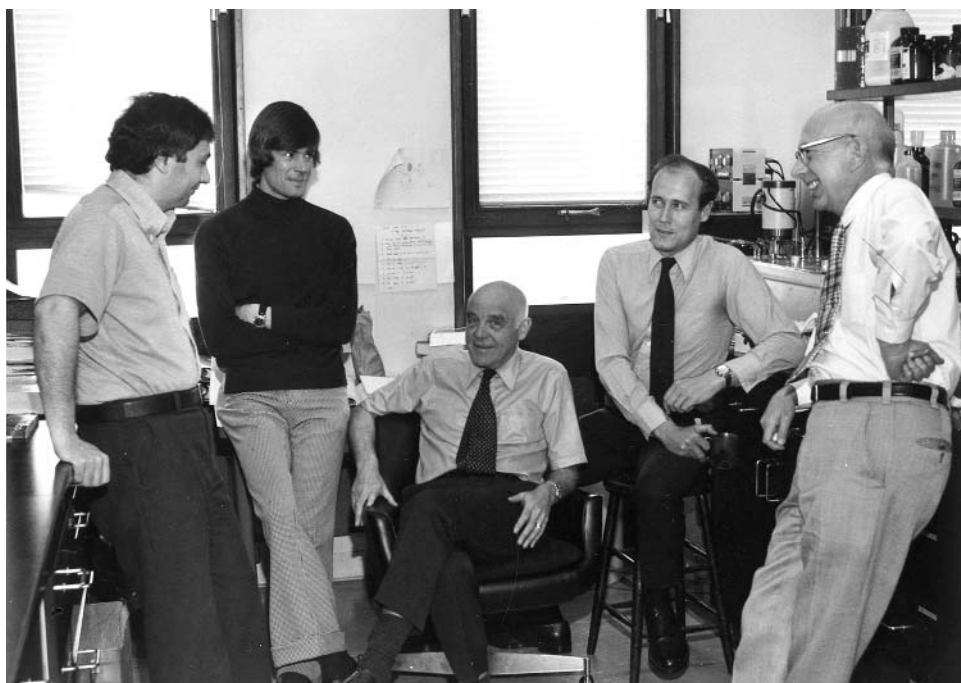
The years 1930–1931 ushered in the initial group of Rockefeller Fellows at the University of Rochester School of Medicine and Dentistry, the first time in this country that an organized attempt was made in a university framework to formally train dental researchers. A 2001 article published in the *JOURNAL OF THE MASSACHUSETTS DENTAL SOCIETY*—“A Research Model for Dental Science” (Vol. 49, No. 4, pages 30–31)—examined the preliminary phase of this innovative project. One of the early members, Norwegian émigré Dr. Finn Brudevold, arrived at the Forsyth Dental Infirmary for

Children in 1958. His mission was to start a small laboratory in inorganic chemistry and continue his research on the causation and prevention of dental decay. For almost 30 years, Brudevold's ever-expanding laboratory acted as a template for the far-reaching discipline now known as sialogy, the biological laws of saliva.¹

Brudevold received his dental training in Norway. One of his professors was a Forsyth intern who inspired him to seek biologic solutions to dental problems. As an instructor in his alma mater, Norway's State Dental School, Brudevold soon realized that there was little clinical hope of solving the problem of dental caries. However, the University of Minnesota was well known in Oslo, so he decided to spend a year there learning new aspects of dentistry.²

Fluoride research began at two universities in the United States: the University of Rochester and the University of Minnesota. The Graduate Medical Research Fund of the University of Minnesota sponsored the Laboratory of Physiological Chemistry. Wallace D. Armstrong, a physician and physiologist, coauthored several papers with Peter Brekhus, a dentist who worked with him in the laboratory.

In two related papers given at the International Association for Dental Research (IADR) in 1937, they considered a “Possible Relationship Between the Fluorine Content of Enamel and Resistance to Dental Caries.” In their discussion of the *in vitro* study of extracted teeth, Armstrong and Brekhus concluded: “The fact that the relatively slight amounts of fluorine in mottled enamel are accompanied by profound changes in its properties make it seem entirely possible, in the light of the evidence presented above,



Dr. Finn Brudevold and his team of researchers led the way in researching the causation and prevention of tooth decay at Forsyth: (left to right) Dr. Paul DePaola, Dr. John Crawford, Dr. Brudevold, Dr. Donald Hay, and Dr. John Hein.



Dr. John B. MacDonald, director of Forsyth from 1956 to 1962.



Dr. Paul Gron, inorganic chemist and clinic director at Forsyth.



Dr. Reidar Sognaes, a University of Rochester researcher, studied saliva and radioisotopes.

that optimum quantities of this element in enamel might be associated with an increased resistance to caries without the deleterious effects on the appearance and the structure produced by an excessive fluorine content.³ Brudevold would spend the next 50 years of his research life expanding the parameters set forth in their tentative conclusion.

After receiving his American dental degree, Brudevold matriculated at the University of Rochester, where his early work concentrated on the apatite crystalline structure of teeth, their organic components, and their hardness. During the period from 1931 to 1938, Basil Bibby, Harold Hodge, Richard Manly, and Martin Deakins studied the chemical and physical changes caused by dental decay. Initial work on the use of the topical application of fluoride as a caries preventive agent began with Hodge and Bibby during the period of 1939 to 1941. During this same period, Joseph Volker and Hodge established the mechanism by which fluoride could decrease the solubility of tooth structure.

Around this time, Volker—along with Reidar Sognaes—first demonstrated rapid exchanges between the inorganic components on teeth and those in saliva and blood with radioisotopes.⁴ Toward the end of the decade, Kanwar Shourie, Wayne White, and John Hein, working in Hodge's laboratory, demonstrated the ability of complex fluorides (monofluorophosphate) to prevent decay.

After Rochester, Brudevold affiliated with Bibby at Tufts University as a research clinician for three months. Because of World War II, Brudevold and his wife journeyed to Scotland to administer dental care to the Norwegian expeditionary force. After the cessation of hostilities in 1945, he rejoined the Tufts faculty, and then in 1949 returned to the Eastman Dental Dispensary at the University of Rochester. Bibby became director of the Dispensary in 1947 and transformed it into a clinical research facility closely allied to the medical school. Brudevold spent the next eight years doing laboratory work at Eastman and earned a master's degree from the University of Rochester. He explored fluoride technologies and investigated fluoride accumulation on the surface of the tooth enamel; even though dental enamel absorbed a low concentration of fluoride, it exhibited 20 times higher concentration on the surface. His work began to focus on sodium fluoride solutions and their delivery systems.

A Collaborative Environment

Urged by Dr. John MacDonald, Forsyth's new director, Brudevold accepted a dual appointment from Harvard University and Forsyth in 1958. At Forsyth, he extended his work on the chemical analysis of dental enamel and the absorption of trace elements that included fluoride. His group also analyzed salivary composition and calculus formation.

In his small, well-equipped laboratory, Brudevold established the collaborative

environment he had experienced at Rochester, and he was always accessible. As a full-time researcher, unencumbered by teaching duties, Brudevold continued his work. He was joined by Dr. Paul Gron, a Danish dentist and inorganic chemist, Dr. Benjamin Amdur, an organic chemist trained at Rochester, and Harold McCann, an analytical chemist. A few years later, Dr. Reidun Aesenden, a Norwegian dentist, joined him and helped perfect an enamel biopsy technique to measure the amount of fluoride uptake.

During the late 1950s, Procter & Gamble patented the first fluoridated toothpaste accredited by the American Dental Association. The University of Indiana's Joseph Muhler used stannous fluoride as the preventive agent. However, Brudevold was not impressed with stannous fluoride and contended that sodium fluoride was the better chemical compound. As a chemist, he thought of a number of different ways to increase the uptake of the fluoride ion into the outermost layer of enamel. With a lower pH, the enamel surface was the more susceptible but tended to decalcify. Because the equation was reversible, Brudevold loaded the system with phosphate to recalcify the outer layers. He later invented acidulated phosphorylated fluoride (APF), which he subsequently placed in a gel for better absorption.²

Like his predecessors at Rochester, Brudevold did not patent his discovery, which was funded by government grants



Dr. Edgard Moreno applied the laws of thermodynamics to his research at Forsyth.

for general use. The early Rockefeller Fellows spent their research lives sharing their findings and trying to resolve one of man's most ubiquitous diseases: dental caries. Their reward was to extend the limit of science and to develop a practical solution for their effort.

The Science of Dental Research

As an active participant in the annual meetings of the IADR, Brudevold was always interested in attracting trained scientists to enhance his laboratory. The 1950s and 1960s ushered in a time when basic researchers began to enter the fields of dental research that had previously been the province of self-trained dentists. During the late 1950s, Brudevold met Dr. Edgard Moreno, a physical chemist who was employed by the National Bureau of Standards. When his Forsyth colleague Harold McCann suddenly passed away, Brudevold asked Moreno to come to Forsyth to deliver several lectures on his area of expertise. Because Moreno liked the atmosphere at Forsyth and the potential opportunity to put his findings to practical use, he accepted the offer.

After graduating from high school in his native Colombia, Moreno earned a doctorate in soil chemistry at the University of California, Berkeley. At that time, Berkeley was one of the nation's leading scientific institutions. For the next 27 years, Moreno brought his experience in physical chemistry to his new position at Forsyth.



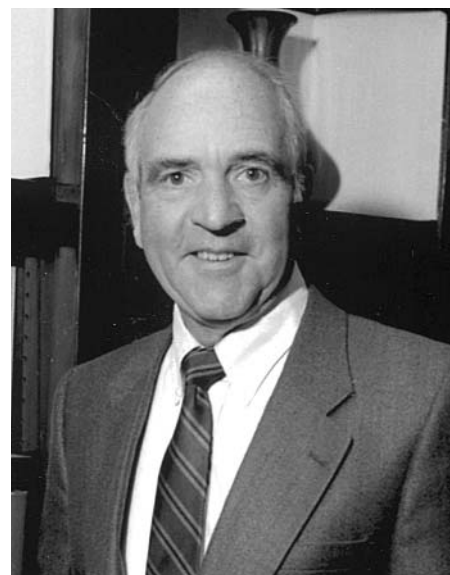
Biochemist Dr. Donald Hay was director of Forsyth's Bioadhesion Department for 30 years.

Experienced in working with calcium phosphate, Moreno applied the laws of thermodynamics to the surface chemistry of the calcium phosphate-rich enamel, and he played a key role in improving our understanding of the carious lesion and the role of topical fluorides in its prevention. His work on solubility properties was essential in defining the thermodynamic driving forces for demineralization and remineralization processes that take place at the tooth surface not yet broken by the carious lesion. His results provided a rational basis for the interpretation of these laboratory findings and the formation of a hypothesis to guide future work.⁵

During the early 1960s, Irving Shapiro, a chemist from Unilever Ltd. in Bedford, England, visited Brudevold's laboratory. After Shapiro's short stay, Brudevold asked him to contact any of his coworkers who might be interested in coming to Forsyth. A young associate, a biochemist named Donald Hay, accepted Brudevold's invitation.

The Hay Years

Hay enjoyed the scientific atmosphere at Forsyth and the cultural opportunities of Boston. He joined the laboratory in 1965 and followed the research agenda set forth by Brudevold. Brudevold continued to try to force fluoride ions into the hydroxyapatite crystals of the enamel surface. A nitrogenous layer on the enamel's surface thwarted his work. Hay was given the task of eliminating



Dr. Ronald Gibbons theorized that for an organism to colonize any site, it first has to attach to it.

this layer and substituting it with a hydroxyl ion so that APF solution could be absorbed more easily. The result was his discovery of the acquired pellicle, which would become his most important contribution.

By 1969, Hay became director of the newly created Bioadhesion Department, which he chaired for the next 30 years. After a decade, he collated his published scientific findings and successfully defended his doctoral thesis ("Some Observations on Human Salivary Proteins") for an extramural PhD from London University. Moreno's seminal work on the differential adsorption and chemical affinity of proteins for apatitic surfaces set the stage for a number of collaborative papers with Hay, including "The Effect of Human Salivary Proteins on the Precipitation Kinetics of Calcium Phosphate." Hay began to separate out the human salivary acidic proline-rich proteins in the supersaturated saliva that created the pellicle; it separated the tooth from both salivary action and hypercalcification.⁶

During the late 1950s, Forsyth Director Dr. John B. MacDonald chose Dr. Ronald Gibbons, an anaerobic microbiologist, to join his small department. His analytical skills and ability to formulate the correct question made Gibbons unique. Over the next decade, his work on dental caries and possible attachment mechanisms provided by dextrans led Gibbons into the scientific area for which

“If anyone ever writes a history of the development of Forsyth into the leading private dental research center of the world, you certainly deserve to be recognized as a chief contributor to the development.”—Forsyth Director Dr. John Hein to Dr. Finn Brudevold

he is famous. He recognized that for an organism to colonize any site, it first has to attach to it. This idea led to the central role of adhesion in the pathogenesis of infectious disease.

Gibbons’s early work on the attachment of streptococci to oral surfaces led to numerous studies of adhesion as a determinant of virulence throughout the body. Bacterial specificity was the key. The mechanism centered on the presence of specific adhesions on the surface of different bacterial species that would attach to specific receptors on the surface of mammalian cells or pellicle-coated hard tissues. He also studied the inhibition of attachment of various substances such as sugars, amino acids, and proteins.

Working closely with Hay, Gibbons demonstrated that different oral bacteria would attach to different pure proteins present in the saliva. Gibbons and Hays showed the molecular basis of this attachment for specific species and demonstrated that the configuration of the receptor protein was critical for the binding process.

The two investigators found hidden receptors on proline-rich proteins that would be exposed if the protein was adsorbed on a hard surface such as enamel. Gibbons and Hays reasoned that possession of an adhesion by a species that would bind to a salivary protein when it was attached to a tooth, but not when it was free in the saliva, would favor its retention in the mouth by promoting colonization on the stable hard surface.⁷

In 1966, Frank Oppenheim, a young Swiss dentist from the University of Zurich who held a degree in dentistry and oral biology, joined the Forsyth faculty to work in Brudevold’s laboratory. Intrigued by a simple in vitro experiment he performed in which calcium phosphate precipitated out, he sought to understand how the same chemicals in the super-rich saliva did not precipitate in vivo onto the teeth.

Working in the laboratory with Hay, the two men published a series of papers on the organic fraction of salivary proteins. Their research resolved the riddle of the enamel pellicle, or biofilm, that allowed both demineralization and mineralization to occur but acted as a complex chemical buffer against endless calcium phosphate precipitation onto the teeth from the supersaturated saliva. Oppenheim later went on to earn a PhD in biochemistry at Boston University, where today he is director of a 10-person research team on oral biology that focuses on salivary chemistry.⁸

The pellicle, as well as plaque formation, has given us the necessary information on why most people are able to retain their dentition through life. Unlike other cellular reparative systems in the body, erupted enamel has no vital cells. When we drink acidic agents like soda pop or orange juice, we wash away the pellicle and open the enamel surface to demineralization. The supersaturated saliva, guided by a complex enzyme system, lays down a new pellicle and starts to remineralize the demineralized area. Dental floss, fluoridated toothpaste, and mouth rinse keep the acids from the biofilm and remove plaque from the tooth surfaces. The fluorides are incorporated in the surface hydroxyapatite crystals, further strengthening the surface layer.

Conclusion

The research on fluoride uptake that began in the late 1930s at the University of Minnesota and the University of Rochester has yielded a complex series of biological systems vital to our survival. As we enter the next millennium, stannous fluoride is no longer used and has been replaced by sodium fluoride in Crest toothpaste because the latter is absorbed more readily by the enamel and does not stain. Also, Colgate employs monofluorophosphate as its main fluoride component, and Brudevold’s APF in gel form is still used successfully as a topical fluoride.

In 1984, Dr. John Hein, director of Forsyth during the time when most of this groundbreaking work occurred, wrote to his colleague Finn Brudevold: “Since 1961, the total grants that you have generated for support of research at Forsyth total \$4,213,291. We don’t have a Millionaire’s Club but if we did, you certainly would be a charter member of it. If anyone ever writes a history of the development of Forsyth into the leading private dental research center of the world, you certainly deserve to be recognized as a chief contributor to the development. You deserve to be very proud of your accomplishments. I know that I am.”⁹

The paradigm for a communal egalitarian American model of laboratory research was developed at the University of Rochester. Finn Brudevold adopted the prototype at Forsyth and John Hein extended it to the Forsyth Dental Center during his 29 years as director. (Brudevold retired in 1986 and Hein in 1989.) The center has grown into one of dental medicine’s most successful and distinguished private research enterprises. This era saw the profession come of age as a learned discipline and set the stage for a new generation of scientific investigators. ■

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Evaluation of Spatter Generation and Contamination During Instrument Cleaning Prior to Sterilization

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Over the past few decades, considerable interest has arisen in improving infection control in dentistry.¹⁻⁶ In particular, concerns over the spread of human immunodeficiency virus (HIV) and hepatitis B virus (HBV) to healthcare workers have energized efforts at improving infection control.⁶⁻⁸ This has inspired improved infection control procedures, new federal and state Occupational Safety and Health Organization (OSHA) regulations, and research into infection transmission, all of which have led to attempts to elucidate the basic principles of disease transmission in order to help dental care providers improve infection control in their practices.⁹

Disease transmission from infected to susceptible hosts requires that each component of an appropriate “chain of infection” be present.⁸ At least six modes of microbial transmission have been identified, including direct, indirect, ingestion, aerosolization, sexual, and insects. In the dental environment, the three relevant major modes of microbial transmission include: direct contact with infectious lesions, blood, or saliva; indirect transmission via transfer of microbes by contaminated intermediate agents; and aerosolization via airborne transfer of blood, saliva, and/or nasopharyngeal secretion droplets.¹⁰

Aerosolization is one mode of transmission of microbial infections that is in need of additional investigation. Dental aerosols and spatter droplets constitute possible vehicles for transmitting infection. Aerosols and spatter generated during certain dental procedures can contain microbial concentrations high enough to be judged occupationally hazardous.¹⁰⁻¹⁷ This has inspired the use of preprocedural mouth rinses for reducing the risk of transmission of infections to dental care providers.^{10,18-22}

Presently, concern over the hazards that contamination from spatter and aerosol dissemination may pose to dental personnel has focused on those generated during patient treatment. But aerosols and spatters pose an occupational hazard to more than just the dentist and the patient. One area of infection dissemination that has been overlooked is the spatter generated by cleaning dental instruments prior to autoclaving. The brushes used to clean instruments may act as reservoirs for microorganisms that can be dislodged from dirty instruments. Since the brushes

used to clean instruments are wet much of the time, microbes can easily multiply in the moist, warm environment. These brushes can potentially pose a health hazard to practice personnel who are responsible for cleaning instruments prior to autoclaving.

It has been shown that a preprocedural mouth rinse with antiseptics significantly reduces the bacterial content of aerosols and spatters produced during dental procedures.¹⁸⁻²⁰ Thus, a similar tactic may be employed with scrubbing brushes. If these brushes are kept in a disinfectant solution when not in use, the bacterial content of any spatters produced during instrument cleaning may be reduced. Consequently, the potential risk of disseminating infection to dental personnel may be diminished.

Material and Methods

In conducting the research for this article, the following materials were used: three sets of dental instruments, each set consisting of one mirror, one explorer, and three scalers. The brushes used were hand scrub brushes with a nylon back and bristles. A commercially available solution of iodophor (Wescodyne) diluted in water at a ratio of 1:213 was used as the disinfecting agent and was kept in a plastic cubical-shaped Rubbermaid reservoir, deep enough to keep the bristles immersed in the disinfectant when they were not in use (see Figure 1). The researcher wore barrier protection, including rubber gloves, a facemask, and a gown so as to minimize contamination by her own microorganisms.

The experiment was divided into three phases. In Phase One, a control tryptic soy agar (TSA) plate was exposed to the ambient air for 15 minutes covered and then incubated at 21°C for a period of 72 hours. A second agar plate was swabbed directly with an autoclaved brush that had previously been used to clean a set of used instruments. A third agar plate was directly swabbed with a used cleaning brush (see Figure 2). A fourth plate was swabbed with a used cleaning brush that was kept immersed in the disinfectant reservoir when not in use. After being swabbed, the latter three plates were exposed to the ambient air for 15 minutes, covered, and then incubated under the same conditions and length of time as the control plate.

In Phases Two and Three, both TSA plates and blood agar (TSA 5% SB) plates were used. The TSA plates were used to detect the presence of general contamination by bacteria. The blood agar plates were used to detect oral bacterial species because these plates indicate the presence of alpha-haemolytic streptococci, which produce a green or hazy discoloration of the blood agar with colonies of about 1 mm in diameter.

In Phase Two, a set of instruments contaminated by use on patients during oral examination and prophylaxis procedures was scrubbed under tap water with

used cleaning brushes for a period of five minutes. The experimenter held the instruments over the sink, level to the adjacent countertop during the scrubbing process. Both TSA and blood agar plates were placed at distances of 12 inches and 24 inches from the sink on the countertop, the TSA plates to the left of the sink and the blood agar plates to the right. TSA and blood agar plates were also attached to the researchers' facemask. Just as in Phase One, plates were exposed to the ambient air for 15 minutes, covered, and then incubated for 72 hours at 21°C.



Figure 1. Hand scrub brushes were disinfected in a commercially available solution of iodophor diluted in water when they were not in use.



Figure 2. An agar plate was directly swabbed with a used cleaning brush. After being swabbed, the plate was exposed to ambient air for 15 minutes, covered, and then incubated.

Phase Three was conducted identically to Phase Two, with the only difference being that the brush had been kept in a reservoir of disinfectant solution when not in use.

Results

Table 1 shows a striking difference in the degrees of bacterial contamination observed in the agar plates that had been exposed to spatters generated by instrument cleaning. First—not too surprisingly—the degree of bacterial contamination appeared to be a function of distance from the sink. However, statistical analyses were not performed to determine if the difference was significant.

For Phase Two, the agar plate located 12 inches from the sink had 112 colonies and the blood agar plate at the same distance had 115 colonies, while at 24 inches from the sink the ordinary agar plate had 70 colonies and the blood agar plate had 71 colonies. As for the plates attached to the experimenter’s facemask, the agar

plate had one colony while the blood agar plate had five colonies. This indicated that bacterial contamination decreased with increased distance from the sink. However, despite this decrease, spatter containing bacteria still reached the level of the experimenter’s facemask. This indicated that the action of vigorously scrubbing dirty instruments in the sink generated spatters that traveled both outwards and upwards.

A comparison of the results in Table 1 from Phases Two and Three indicate that the practice of storing cleaning brushes in a reservoir of cold disinfectant solution steadily reduces the degree of bacterial contamination encountered. The plates located 12 inches from the sink showed zero bacteria on both the agar and the blood agar plates, as well as on the plates attached to the facemask.

With the plates that were placed 24 inches from the sink, there were two colonies on the ordinary agar plate and three colonies on the blood agar plate;

the reasons for this are not readily apparent. Reviewing the results from Phase One, the control plate that was exposed to the ambient air was found to have zero bacteria after incubation, which indicates that contamination due to environmental bacteria was minimal. When an agar plate was swabbed directly with a used cleaning brush, the plate was completely covered with bacterial colonies after incubation. This indicates that with their warm, moist environment, cleaning brushes make an excellent reservoir for the growth of microorganisms that can then be disseminated to dental personnel.

Discussion

Dental personnel can still face the risk of exposure to significant spatter dissemination of oral bacteria despite the use of rigorous barrier techniques. Scrubbing brushes that have been used for cleaning instruments for any length of time can quickly accumulate large quantities of oral bacteria.

Under conditions of normal use and storage, brushes provide ideal environments for bacterial growth. Bacteria dislodged from brushes and dirty instruments during cleaning can be disseminated by spatters to dental personnel, posing possible health hazards. One can reduce the potential risks from such exposure by increasing the efficiency of conventional barrier techniques, such as replacing single-layered, preformed, cup-style masks that have low filtration rates with multi-layered, preformed, cup-style facemasks with greater filtration effectiveness.¹⁷

In addition to the reliance on barrier techniques, this study found that bacterial contamination from spatters could be greatly reduced by the simple technique of storing brushes in a plastic reservoir of disinfectant solution when not in use. After a brush has been used, it should be rinsed and then, after having the excess water shaken out of it, submerged in the reservoir in a solution of fresh disinfectant.

The finding that spatter contamination can be reduced by the practice of immersing used brushes in disinfectant is not unlike the finding that preprocedural mouth rinsing with a disinfectant mouthwash can reduce the risk of bacterial contamination from aerosols and spatters generated by dental procedures.¹⁷⁻²² Since

Table 1: Analysis of Degrees of Bacterial Contamination

Phase	Experimental Condition	Number of Colonies on Plate After Incubation	
Phase 1	Control plate.	0 colonies	TSA agar
	Swabbed directly from autoclaved brush onto plate.	0 colonies	TSA agar
	Swabbed directly from ordinary used brush.	Plate was completely covered with bacterial colonies.	
	Swabbed directly from used brush. Brush was immersed in disinfectant when not in use.	0 colonies	TSA agar
Phase 2	Plates located 12 inches from sink. Instruments were scrubbed with an ordinary used brush.	112 colonies	115 colonies
	Plates located 24 inches from sink. Instruments were scrubbed with an ordinary used brush.	70 colonies	71 colonies
	Plates located on researcher’s facemask. Instruments were scrubbed with an ordinary used brush.	1 colony	5 colonies
Phase 3	Plates located 12 inches from sink. Instruments were scrubbed with a used brush that was immersed in disinfectant when not in use.	0 colonies	0 colonies
	Plates located 24 inches from sink. Instruments were scrubbed with a used brush that was immersed in disinfectant when not in use.	2 colonies	3 colonies
	Plates located on researcher’s facemask. Instruments were scrubbed with a used brush that was immersed in disinfectant when not in use.	0 colonies	0 colonies

this technique is both simple and inexpensive, we see no impediments to its adoption as an enhancement of infection control in dental offices.

Two possible alternatives to the recommendations of this study for eliminating or reducing spatter from brushing: hands-free, scrubless, precleaning of instruments by ultrasonic cleaning (or thermal disinfection),^{3,23} or filling the sink 4–5 inches deep with the cleaning solution and then brushing the instruments while they are submerged in the cleaning solution.

The authors find both of these alternatives to be problematic. The first is problematic because, despite the recommendations of the American Dental Association (ADA) Council on Scientific Affairs and the ADA Council on Dental Practice,²⁴ it is the authors' experience that instruments must still be manually scrubbed to remove gross debris that ultrasonic cleaning does not remove.

The second proposed alternative is problematic because, in the authors' judgment, it is impractical for most dental offices. Therefore, our proposed recommendation of rinsing brushes after use, shaking out the excess water, and submerging the brush in a reservoir of a solution of fresh disinfectant would still be in order. Since most dental offices still rely on manual scrubbing for precleaning instruments prior to autoclaving, the recommendations proposed in this study for reducing bacterial contamination of spatters should find favor because of their simplicity and affordability.

In the future, we hope to continue the research on ways to enhance the efficacy of our proposed infection control technique, including the use of a cold sterilizing solution (such as 3.4% alkaline glutaraldehyde) instead of a disinfectant. Also, we would like to conduct further research on the development of new reservoir containers specifically designed for holding scrubbing brushes.

Conclusion

It was found in this study that there is significant bacterial contamination from spatters produced by the scrubbing of dirty instruments. This contamination may pose a significant hazard to dental personnel. The findings of this study support the need for universal barrier

precautions for protecting personnel. In addition, contamination can be greatly reduced by the simple practice of storing cleaning brushes in a reservoir of disinfectant solution when not in use so as to keep the bristles fully immersed. ■

Acknowledgments

The authors wish to thank Dr. Gerard Kugel for his contribution in editing the manuscript, and Ms. Debra Farmelant for her assistance in the preparation of this manuscript.

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A Clinico-Pathologic Correlation

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Figures 1a and 1b. Intraoral picture of lesion extending onto buccal, lingual, mesial, and distal portions of left edentulous maxilla and measuring approximately 4.0 cm long and 2.5 cm wide.

History

A 64-year-old healthy female presented to Tufts University School of Dental Medicine department of oral and maxillofacial surgery from the oral pathology department for evaluation and treatment of a lesion in the left maxilla.

According to the patient, she had hyperplastic tissue in the left maxilla for a period of nine years that was affecting the fit of her partial denture. She had been treated during that time period with excision of the tissue (which revealed fibromas on pathological evaluation), extraction of teeth in the area, and refabrication of her partial dentures. Two months prior to her presentation, she had a recurrence of the hyperplastic tissue, which continued to proliferate after excision of the tissue. Pathologic evaluation at that time revealed a peripheral ossifying fibroma. The patient stated that the lesion had grown significantly since the procedure and she has been unable to wear her partial denture.

Clinical evaluation revealed a hypertrophic proliferative mass extending from the maxillary left lateral incisor to the left molar region (see Figures 1a and 1b). Teeth #12, 13, and 14 are missing.

Differential Diagnosis

- Peripheral ossifying fibroma
- Peripheral giant cell granuloma
- Pyogenic granuloma
- Aggressive fibromatosis

Histologic and Radiographic Findings

The patient underwent a computed tomography (CT) scan of the maxilla with soft- and hard-tissue reformatting (with and without contrast) and a repeat biopsy of the lesion.

The CT scan showed a destructive lesion within the left maxilla, which contained a soft-tissue component extending both medially and laterally. There were bony spiculations noted within this lesion, but it was not clear whether these calcifications were within the tissue or if this was evidence of destroyed maxillary bone. There was a slight enhancement of the lesion on the contrast views. The findings were most consistent with an aggressive tumor rather than an infective process (see Figures 2a and 2b).

Microscopic evaluation of the lesion of the left posterior maxillary ridge noted a stratified squamous epithelium exhibiting mild hyperkeratosis. The underlying lamina propria consisted of cellular fibrous connective tissue exhibiting plump fibroblasts lacking atypia, and an overall architecture of a storiform pattern. In some of the areas, there was increased cellularity with associated osteoid formation (see Figures 3–6). The diagnosis was aggressive fibromatosis and peripheral ossifying fibroma. Some of the histological features of benign fibrous histiocytoma were also evident.

The patient was scheduled to undergo complete surgical resection of the soft tissue and intrabony components of the lesion. Due to the aggressive nature of the lesion and its history of recurrence, complete surgical excision with generous margins of normal tissue was performed. To obtain these margins, a left hemimaxillectomy was performed with placement of a surgical obturator. The patient tolerated the procedure well and has had an uneventful postoperative course.



Figure 2a. Soft- and hard-tissue CT, respectively. A coronal view shows the local aggressive destruction to the left maxilla caused by the tumor.

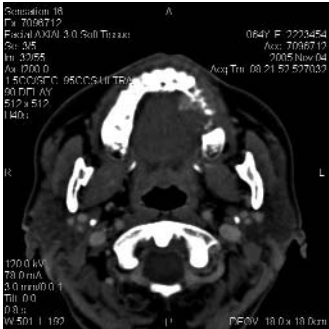


Figure 2b. Soft- and hard-tissue CT, respectively, of same lesion with an axial view.

Discussion

The peripheral ossifying fibroma is a gingival mass in which calcified islands, presumed to be bone, are present. The bone is found within a nonencapsulated proliferation of plump benign fibroblasts. Chronic inflammatory cells tend to be seen around the periphery of the lesion. The surface is often ulcerated.¹ Treatment for this type of lesion consists of local excision, which should include the periodontal ligament if involved. If an identifiable etiologic agent is present, such as calculus or another foreign material, it should be removed. Recurrence may occur, but is not a significant problem.¹

The patient had been treated over a course of nine years for the lesion and its subsequent recurrences. Although a diagnosis of peripheral ossifying fibroma had been made in the past and confirmed with the present biopsy, a component of the specimen also revealed the presence of aggressive fibromatosis. This tumor is a rare lesion that has also been referred to as desmoplastic fibroma, desmoma, and desmoid tumor.²

Aggressive fibromatosis of the head and neck is more prevalent in children and young adults, and females are affected more than males.³⁻⁵ The lesions usually present as a painless, firm mass with the ability to infiltrate the surrounding soft tissues or erode into bone.²⁻⁴ Microscopic characteristics of the lesion include markedly cellular lesions of mature proliferative fibroblastic tissue, with infrequent mitoses and occasional atypia. Due to the invasive nature of the characteristics, this may lead to the incorrect diagnosis of fibrosarcoma.^{3,6}

These lesions are nonencapsulated and take their origin from fascia, musculoaponeuroses, or periosteum, and are locally aggressive with a tendency for recurrence. Fowler et al. reported a recurrence rate of 23.8 percent, and the average interval from

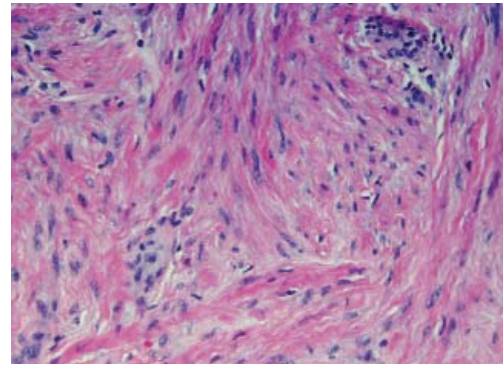


Figure 3. Medium-power photo shows an overall storiform-pattern architecture with increased cellularity of plump fibroblasts lacking atypical features (H&E stain).

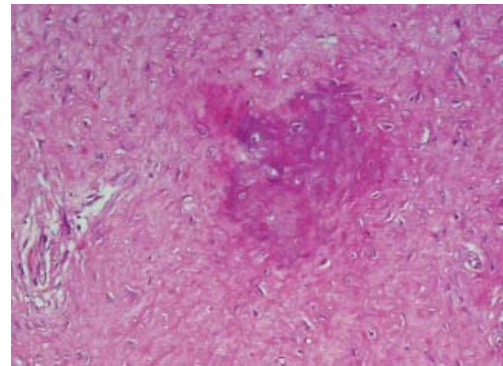


Figure 4. Medium-power photomicrograph demonstrating early osteoid formation within the cellular fibroblastic stroma (H&E stain).

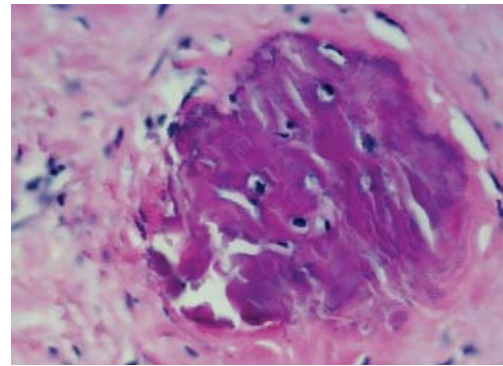


Figure 5. High-power photomicrograph demonstrating a focus of osteoid formation within the lesion (H&E stain).

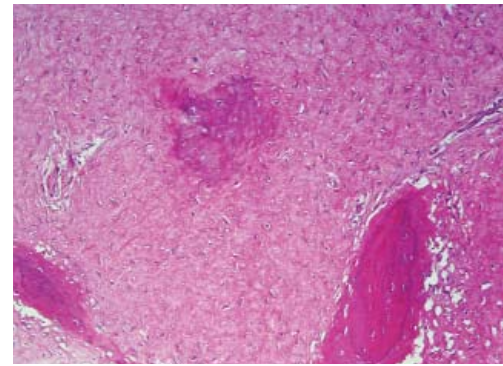


Figure 6. Low-power photomicrograph of the surgical resection demonstrating the lesion's aggressive biological tendency of infiltrating through spicules of vital bone (lower left and right).

initial treatment to recurrence was noted to be 7.6 months. The lesions do not metastasize.⁶ They make up roughly 10 percent to 12 percent of reported cases of extra-abdominal fibromatosis in which the oral structures are not often the site of origin.⁶

The recommended treatment for aggressive fibromatosis is surgical removal via an en bloc resection of the tumor and surrounding normal tissues.^{2,4,6} Others have recommended function-sparing surgery in patients with desmoid tumors of the head-and-neck region due to treatment-associated morbidity in this region.^{5,7} However, due to its aggressive behavior, complete removal may not be possible. Other treatments that have been attempted include radiation therapy, chemotherapy, steroids, anti-estrogens, theophylline, nonsteroidal anti-inflammatory drugs, vitamin C, and castration. All of these modalities have shown sporadic or transient effects.²

Conclusion

Aggressive fibromatosis is a benign entity, but it is of concern in the head-and-neck region due to the local aggressiveness, a high rate of recurrence, and limited anatomical access for resection due to the proximity to vital structures, particularly in the maxilla.

The patient here demonstrates a case in which a benign entity such as peripheral ossifying fibroma, even though treated in an appropriate manner, recurred over a nine-year period. The most recent biopsy revealed an aggressive fibromatosis component along with peripheral ossifying fibroma. Due to the aggressive nature of this lesion, the patient underwent a left hemimaxillectomy to resect the lesion back to disease-free margins (see Figures 7 and 8). At the present time, the lesion has not recurred. The patient will require periodic evaluation for recurrence. Most recurrences will occur within two years after the initial treatment.² ■



Figure 7. Intraoperative view of left hemimaxillectomy.



Figure 8. Specimen removed during surgery.

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PATHOLOGY SNAPSHOT

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HEMATOPOIETIC BONE MARROW DEFECT

TYPICALLY DISCOVERED ON ROUTINE RADIOGRAPHIC EXAMINATION, the hematopoietic bone marrow defect (focal osteoporotic bone marrow defect) represents a localized accumulation of red and/or fatty marrow within the bone. Although the etiology is uncertain, common theories on the origin of this lesion include the idea that it may arise secondary to focal bone marrow hyperplasia as a consequence of trauma or abnormal healing following extraction, or simply that the lesion may represent persistence of embryologic marrow elements.

The lesion presents in the posterior mandible in the premolar-molar region approximately 70 percent of the time, and approximately 70 percent of these lesions are found in females. Clinically often found in edentulous areas, the hematopoietic bone marrow defect presents as a unilocular radiolucency with well- to ill-defined borders and fine internal trabeculations, a feature generally considered a reliable radiographic finding. Bona fide space-occupying lesions such as an odontogenic cyst or tumor will generally tend to displace the trabeculae or resorb bone in the area to create a “complete” radiolucency.

In the absence of symptoms, radiographic follow-up in two

to three months is adequate. If the findings remain unchanged, then no further investigation may be indicated. However, if there is an element of doubt, it may be prudent to perform a biopsy of the area for histopathologic interpretation. Once the diagnosis has been established, no further treatment is indicated. ■

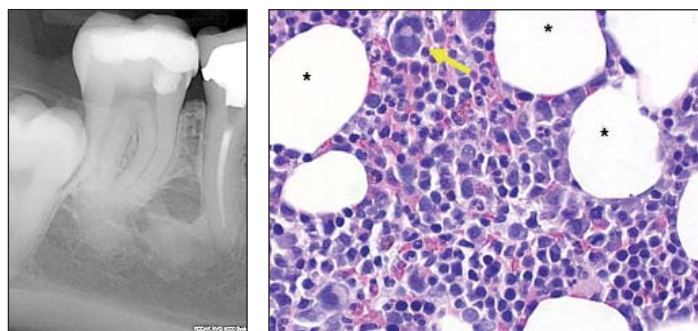


Figure at left is a radiographic image of a hematopoietic bone marrow defect (courtesy of Dr. Richard Konys). The biopsy specimen (right) shows trilinear hematopoietic blood cell precursors, including megakaryocytes (indicated by arrow). Mature adipose tissue (indicated by asterisks) is also seen.

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CLINICAL CASE STUDY

PHILIP MILLSTEIN, DMD

Dr. Millstein is a prosthodontist based in Cambridge. He recently completed two 3-year terms as an MDS Trustee.

OSTEOTOME SINUS ELEVATION

THE CASE PRESENTED HERE IS OF A 50-YEAR-OLD FEMALE IN A periodontally compromised situation wherein the ultimate mobility of the upper-right second premolar required the removal of the tooth. The answer to the question of whether to restore this space by a bridge or with an implant became self-evident when the remaining bone of the adjacent teeth was examined: A diagnosis was made not to use conventional bridgework.

However, the patient's dental reimbursement plan would not pay for the restoration, whereas a bridge would have been reimbursed. The clinician advised the patient that an implant

restoration would provide a long-lasting means for restoration, and the patient agreed to the treatment.

An osteotome sinus elevation was performed concurrent to implant placement, and a Nobel Biocare Replace Select implant—5.0 diameter, 10 mm in length—was placed. Excellent fixation and positioning were achieved, and healing was uneventful. Four months later, impressions were made and an implant crown was fabricated by Freedom Dental Arts and cemented to place.

One year later, the patient is symptom-free. Longevity of treatment is expected, but as with all treatment modalities, there is always the element of surprise. ■



Figure 1. Pretreatment radiograph shows upper-right second premolar.



Figure 2. The extraction site is shown during treatment.

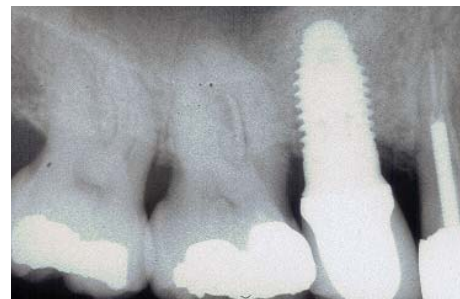
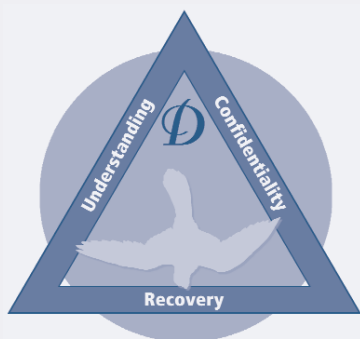


Figure 3. Implant restoration is complete.

About Clinical Case Study

A clinical case study is defined as a written and visual assessment of a clinical case wherein the author presents before-and-after radiographs and/or photographs as a means to discuss the diagnosis, treatment plan, and actual treatment of a particular situation. The purpose of this study is to encourage JOURNAL readers to contribute a clinical response to the cases presented. This is the first in a series for

which we hope many practitioners will contribute their ideas and treatment approaches, with the end result being a means for communication and learning. Please address your correspondence to Clinical Case Study, JOURNAL OF THE MASSACHUSETTS DENTAL SOCIETY, Two Willow Street, Suite 200, Southborough, MA 01745. Responses may be published in a future issue of the JOURNAL.



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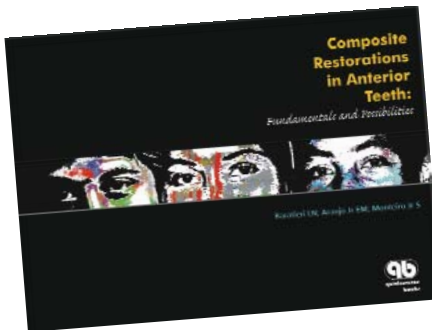


NORMAN BECKER, DDS, EDITOR EMERITUS

Composite Restorations in Anterior Teeth: Fundamentals and Possibilities

L. N. BARATIERI, E. M. ARAUJO JR., S. MONTEIRO JR.

Quintessence Publishing



“The information in this book is essential for any practitioner of modern general dentistry, as well as for students wishing to see how anterior restorative dentistry should be practiced. The information is practical and conservative. It is the way

modern dentistry should be practiced for the benefit of the patient.” This paragraph in the preface by Dr. Richard Simonsen offers a challenge to this reviewer, for I have heard that song before. However, with simple text and larger-than-life photographs, the editors prove Dr. Simonsen right.

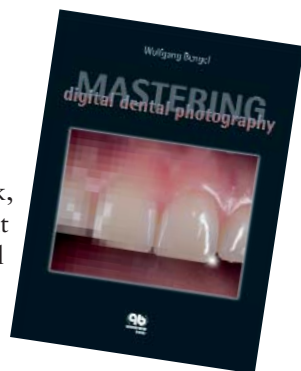
The editors’ goal was to help both students and professionals overcome some of their limitations in this area of restorative dentistry. To accomplish this, the book is divided into five segments. The first segment deals with a general view of different types of direct adhesive restorations; the second segment contains presentations of clinical cases; the third segment is about polymerization of the composites; the fourth segment is about the use of nonmetallic posts in restorations; and the fifth segment is about noncarious lesions. Additional photographs showing cross sections of natural teeth highlight the relationship between enamel, dentin, and pulp.

The editors caution that “the hands are only capable of reproducing that which the eyes and mind are or have been capable of seeing,” and they use clear text and illustrative photographs to teach how to visualize the desired results.

Mastering Digital Dental Photography

WOLFGANG BENDEL

Quintessence Publishing



In his foreword to this book, Professor Michael Peres points out that the actual photomechanical process has become so easy that it might actually be difficult to achieve the quality results one might expect. “Practitioners have become a bit spoiled and rarely think about the role and goal of the pictures, and are more enamored with the technology and how cool it is,” he says.

Author Wolfgang Bengel, who has been teaching dental photography for 20 years, has created a textbook that illustrates that while the principles of photography have not changed, in many cases, digital photography *has* changed the approach to photography. For dental practitioners, the challenge lies in achieving the high quality more closely associated with conventional photography while taking advantage of the convenience of digital technology. Bengel discusses the problems and pitfalls of both software and hardware when starting with digital photography, but more importantly, he shows how to recognize and correct those problems.

Topics covered in the text are technical background and elemental techniques; practical procedures of periapical and intraoral photography, as well as portrait and profile photography; dental casts; copy work; and the transfer of radiographs and slides to digital files. The workflow shift that simplifies digital use is described in detail. The author uses his vast experience in the medium as well as many great photographs as teaching tools to make the reader a more well-rounded and expert photographer. ■

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DENTAL EDUCATION

MELISSA CARMAN, MANAGING EDITOR

Highlighting key events taking place in dental education in Massachusetts.

Tufts University School of Dental Medicine

DELTA DENTAL OF MASSACHUSETTS HAS ENDOWED \$5 MILLION to the Tufts University School of Dental Medicine (TUSDM) to help improve access to dental care for underserved populations and persons with special needs. The funds will be used to create a named academic endowed chair in public health and community service, who will develop programs to increase early diagnosis, provide risk assessment, and improve overall oral health services for underserved and special needs populations, including people with disabilities, those with HIV/AIDS, and survivors of violence. A specialized database will enable practitioners to unify electronic dental records and practice management systems at the eight Tufts Dental Facilities for Persons with Special Needs clinics located across the state.



Left to right: Lawrence Bacow, Tufts University president; Dr. Kathleen O'Loughlin, president and CEO of Delta Dental; and Dr. Lonnie Norris, dean of TUSDM, at the May ceremony announcing the Delta endowment.

Low-income and minority populations, including individuals with disabilities, victims of violence, and those who are elderly or homeless, are less likely to have access to adequate dental care and are at high risk for oral diseases that can lead to additional health problems. The Tufts Dental Facilities for Persons with Special Needs, which were established in 1976 and run through a contract with the Commonwealth of Massachusetts, provide care to more than 15,000 patients with mild to severe disabilities each year.

"The Delta Dental endowment will enable Tufts Dental School to increase community outreach and service to underserved populations and advance evidence-based programs to diagnose and intercept oral disease in these populations," says Dr. Lonnie Norris, dean of the Tufts University School of Dental Medicine. "Community service and public health are at the heart of the mission of Tufts School of Dental Medicine and are integrated into the teaching curriculum. Historically, there have been limited funds to address access to dental care, and [we] are grateful to Delta Dental for its support of our shared vision to address these disparities."

THE MASSACHUSETTS DENTAL SOCIETY (MDS) AND THE AMERICAN Student Dental Association (ASDA) presented the Tufts Bates-Andrew Public Health Award to Ryan J. Smart, Tufts University School of Dental Medicine Class of 2007, for his research on the topic of "Methamphetamine Abuse: Medical and Dental Considerations" at the Tufts Bates-Andrews Research Day held in March 2006. Mr. Smart's article was published in the Summer 2005 JOURNAL OF THE MASSACHUSETTS DENTAL SOCIETY (Vol. 54/No. 2, page 44). Research opportunities give dental students the ability to expand their base of knowledge and in turn become better dentists.

THE AMERICAN ACADEMY OF PERIODONTOLOGY FOUNDATION has named Tufts School of Dental Medicine's Dr. Daniel Engler-Hamm the 2006 recipient of the \$50,000 Richard J. Lazzara Fellowship in Advanced Implant Surgery. Dr. Engler-Hamm is in his third year of periodontal postdoctoral training at the TUSDM department of periodontology. The one-year Lazzara Fellowship, which was created to provide educational and clinical experiences reflecting the latest techniques in implant dentistry, was named for Dr. Richard J. Lazzara, one of the specialty's leaders.

Boston University School of Dental Medicine

TWO BOSTON UNIVERSITY SCHOOL OF DENTAL MEDICINE seniors are the recipients of the Massachusetts Dental Society Foundation/HPSC Louis J. P. Calisti Scholarship. Christopher Kelson, who is pursuing postdoctoral studies in orthodontics and dentofacial orthopedics, and Carolyn Massa, who is pursuing a postdoctoral program in advanced education in general dentistry, were each awarded \$2,000. Both students graduated summa cum laude in May. The scholarship is given in memory of Dr. Calisti, who served as dean of the Tufts School of Dental Medicine from 1963 to 1971. ■



Scholarship recipients Carolyn Massa and Christopher Kelson, center, are shown with Dr. Jeffrey Hutter, BUSDM associate dean for academic affairs, left, and Dr. Spencer Frankl, BUSDM dean, right.



Dr. Pasquantonio is a Concord, MA-based general dentist and a consultant to the Council on Dental Care and Benefits Program.

DENTAL INSURANCE YEARLY MAXIMUMS

WHenever the subject of dental insurance is discussed among dentists, one common concern is the low yearly maximums on most insurance policies. The \$1,000 maximum has remained the same since the 1970s, even though inflation has occurred at staggering rates since that time.¹ As dentists, we complain that this low yearly maximum is not keeping pace with the reality of what proper dental care really costs, but we feel powerless when it comes to putting pressure on employers and insurance companies to increase that amount. In truth, there are some positive actions each of us can take to impact the yearly maximum.

Did you know that only slightly less than 5 percent (4.77 percent) of individuals covered by a dental benefit plan reach their yearly maximum in any given year?² Again: Just under 5 percent of individuals with dental coverage fully utilize their dental benefit, according to the National Association of Dental Plans.

How does this figure get generated? Why do so few insured reach their—some-would-say insignificant—\$1,000 maximum?³ First, and what may be obvious to any practicing dentist, are the plan restrictions that prevent the insured from using their benefits.

A perfect example of this is playing out right now in my office. A beautiful 14-year-old girl presented postorthodontics. She had teeth #7 and 10 congenitally missing. The orthodontist did a perfect job, leaving me just the correct amount of space. A small amount of gingivoplasty and two bonded bridges later: a radiant young 14-year-old smiling with confidence.

The patient's father had dental insurance from his employer (the rarer \$2,000 maximum) and it covered crowns and bridges (he checked on this with the insurance carrier, as did my office). This treatment would have been completed regardless of the insurance benefits. That the treatment was covered by the insurance was a bonus—a bonus the parents had been paying premiums for all year, for \$2,000 of assistance.

We sent in the insurance claim, and included a note with the X-rays stating that this was initial placement of bridges for congenitally missing teeth. Of course, we then received a request for dates of extraction. We called and wrote the insurance provider instructing them to read the doctor's note sent with the original claim and to pay the benefit due. We were assured it would go to the consultant and be paid. We also advised the parents to talk to their employer regarding the runaround we were getting from the insurance company. Today we received the rejection: Congenitally missing teeth are not covered under the plan contract. (The patient's parents and my office are continuing to dispute this claim rejection.) Situations like this make it appear that this insurance plan was written to prevent benefits from being used.

From a statistical point of view, this is a good situation. There is now a record of the rejection for plan restriction. As dentists, there are two things we need to do: first, get these cases recorded

as rejected by the insurance company for plan restrictions, and second, get the National Association of Dental Plans to keep data on the percentage of claims rejected due to plan restrictions.

Another reason that patients do not reach their yearly maximums is because dentists don't submit a claim for payment when the patient's benefits are just about exhausted. I do this, and you probably do it, too. For example, Mr. Smith needs periodontal surgery in four quadrants and an anterior crown. He has a \$1,000 yearly maximum. Let's say \$990 of that maximum is used before you get to the fourth quadrant surgery and the crown. We know that it will cost more than \$10 to collect that last \$10 (perio chart, photos, doctor's notes, full-mouth X-rays, and assistant time—with every claim). What do we do? We "eat" the \$10. It saves us money and time doing that, but every time we do this, we help keep that "less than 5 percent of insured use their benefit maximums statistic" alive.

Granted, it is a huge hassle to submit claims for work done after all benefits have been paid, but until we do, the statistic necessary to get the changes our patients need to increase their yearly maximums will not occur. We generate these statistics by our daily behavior. Let's work together to make the statistics better reflect reality.

Finally, one very important thing we all need to do: We are all tired of being the bad guy who has to break the news to the patient about yearly maximums. It is exhausting. Yet we must share this statistic (that less than 5 percent of insured use their maximum) with our patients whenever discussing yearly maximums. As long as that less than 5 percent statistic stays, there will be no perceived need to increase the yearly maximum.

Treatment should never be based on benefits received. It is reality that for many patients, the financial costs—and amount of insurance coverage—for proper dental care can often be the deciding factor in whether or not they pursue treatment. If patients knowingly put off needed treatment to stay under the maximum, they are unknowingly contributing to their continued low yearly maximum. Our patients need this information to make more informed choices. ■

Footnotes

1. Some examples of cost increases since the 1970s: In 1971, gold was \$41.25 per ounce ("Pages of Time," Millerville, TN); in December 2005, gold was \$516.60 per ounce (www.kitco.com, accessed 2005 Dec 30). In 1971, a new home cost \$25,200 ("Pages of Time," Millerville, TN); in 2006, a new home costs \$283,800 (Federal Housing Finance Board).
2. All insurance statistics used in this article are from the National Association of Dental Plans (NADP).
3. In any given year, only 50 percent of insured become dental patients.

Author's note: I did contact all major Massachusetts insurance companies. Some gave me the NADP statistics quoted as their own. Others refused to share any data.



FINAL THOUGHTS

PHILIP MILLSTEIN, DMD

Dr. Millstein is a prosthodontist based in Cambridge who recently completed two 3-year terms as an MDS Trustee.

WHAT IT MEANS TO BE A TRUSTEE

WHAT DOES IT MEAN TO BE A TRUSTEE? TO TRUST IS TO believe. To work to gain people's trust means that you believe that what you do for them can and will make a difference in their lives, as well as your own. There is an unwritten responsibility that goes along with being in a position of this nature: It is not about the trustee; it is about the position the trustee holds.

When I became a member of the Massachusetts Dental Society Board of Trustees, there was no one waiting in line for the position. My biggest concern was that I would not have the time to accommodate a role of this size. But once I began, I found I had all the time I needed. I served the district and the district was my workplace.

However, I oftentimes was unable to solicit the membership for support. The membership was always busy. So I decided that I, too, would be busy—not too busy to work for them, but too busy to get involved in why they didn't have time for the Society. I became active in the Council on Membership as the liaison, and I learned so much from the members, as well as the students from the various schools who served on the council. The members were oftentimes very forthcoming with their feelings toward the Society.

Membership is integral to the functioning of the organization. If you feel the organization doesn't give you what you need, then you don't participate. But it's a vicious circle; your needs can only be realized if you go beyond your everyday practice and participate in the Society. This means going to district meetings and getting to know your fellow members. District meetings are very important because that's where you start. But if you don't develop a trust with one another at the district meetings, you'll never return.

My term as a trustee ended this past May. I will miss it because I will no longer be privy to the internal structure of organized dentistry. When you have the privilege of participating with the other 400-plus delegates at the annual American Dental Association meeting and sharing in the councils, you begin to understand the meaning that can be derived from using the organization to benefit your district as well as yourself.

And it's not just on a national level. The New England Dental Leadership Conference (NEDLC) meets once a year and enables the leadership from the first district—which comprises

the six New England states—to share ideas, to meet the candidates for president of the ADA, and to best adjust to the current dental needs of the six-state region. There's a lot to learn, a lot of people to meet, a lot to see, and a lot of ways to grow.

The annual Yankee Dental Congress meeting, which continues to amaze as the MDS has continued to grow it, enables younger and older dentists alike to participate in an enterprise that not only involves business but also involves the *business of education*. It's a lofty enterprise because you can participate in the mechanics of a successful venture. This, in itself, is an education by which you can only learn by participation.

Much of being a trustee has required an involvement by me that, frankly, has not been work. It has not been play, but it's been something in between for

which there may not be a description. The only thing I know is that had I not joined in, I would have remained an observer, and I would have missed out on one of the more important professional endeavors of my life. I will always remain attached to this organization. ■

***Your needs [as a member]
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