

JOURNAL *of the*

MASSACHUSETTS DENTAL SOCIETY

Winter 2006



2005 Volunteer Heroes

Dedicated to Organized Dentistry

OPPORTUNITIES FOR ALL

EACH BUDGET CYCLE, THE FEDERAL GOVERNMENT HAS ATTEMPTED TO CUT FUNDING FOR access to dental and medical care for the elderly, children, and the poor. Every year, additional programs are cut, and those programs that do survive have their funding reduced. Basic care, including training grants for general practice residencies (which provide primary care access), has been targeted repeatedly.

The American Dental Association is constantly fighting these reductions in programs while simultaneously searching for and designing new approaches and programs for access to care. Some of these programs are well publicized, while others are instituted without any fanfare. The National Foundation of Dentistry for the Handicapped, which provides dental care for the elderly, the medically compromised, and the disabled, has a waiting list of more than 12,000 patients. Care is provided on a volunteer basis in private dental offices, and the providers can choose to whom, when, and how treatment is given. The providers bear no responsibility for administration or paperwork. The problem is that there are not nearly enough volunteers to provide needed care.

The *Give Kids a Smile* campaign is, frankly, largely successful as a public relations project. It accomplishes the goals of publicizing the need for access to dental care for disadvantaged children while providing diagnostic and some simple therapeutic services. It also alerts elected officials and healthcare policymakers about the great difficulty that low-income children have in accessing basic dental care. However, the provision of follow-up care is difficult and encumbering. Children living below 125 percent of the federal poverty level are half as likely to visit a dentist as children in families living at greater than 200 percent of the federal poverty level, according to the Agency for Healthcare Research and Quality.

What is needed is accessible, ongoing, hands-on care for the underserved. We feel that the government is dropping the ball regarding the provision of care for those in need. Those who are not able to afford care absolutely should receive it. It's that simple.

The Massachusetts Dental Society is addressing these issues directly. Dentists are volunteering their time and money to make sure that those who need it have access to care. The *MassDentists CARE* (Combining Access with Reduced Expense) program is designed to provide reduced-fee oral healthcare to children from income-eligible families who don't have either dental insurance or MassHealth. The MDS staff screens the applicant families and, if found eligible, provides them with the names of volunteer dentists in their area. This is an easy way for dentists to improve access to dental care throughout Massachusetts. We urge all members to call the MDS and volunteer to provide this assistance.

Another new and exciting program is in its final planning stages. With support from Procter & Gamble, the Society is planning to launch the Massachusetts Dental Society Mobile Access to Care Project. The Society will own and manage a mobile dental van, which will travel to each of the 13 districts in the state for prearranged blocks of time. This will be another opportunity for individual members to voluntarily provide care to those most in need in their communities. A formal announcement of this project is expected to be made at the upcoming Yankee Dental Congress 31. You will receive more details as the Society and local districts finalize plans for this exciting endeavor.

Keep this in mind as an opportunity for all of us to provide services to those most in need. ■

David B. Becker

Arthur I. Schwartz



JOURNAL OF THE MASSACHUSETTS DENTAL SOCIETY

EDITOR

Dr. David B. Becker

ASSISTANT EDITOR

Dr. Arthur I. Schwartz

EDITOR EMERITUS

Dr. Norman Becker

MANAGING EDITOR OF PUBLICATIONS AND WEB SITE

Melissa Carman

MANAGER, GRAPHIC DESIGN

Jeanne M. Burdette

GRAPHIC DESIGNER

Katherine A.J. Kane

EDITORIAL BOARD

Bruce Donoff, DMD, MD

Russell Giordano, DMD

Shepard Goldstein, DMD

Stephen McKenna, DMD

John McManama, DDS

Noshir Mehta, DMD

Charles Millstein, DMD

Philip Millstein, DMD

Maria Papageorge, DMD

Michael Sheff, DMD

Steven Tonelli, DMD

Copyright © 2006 Massachusetts Dental Society ISSN: 0025-4800

The JOURNAL OF THE MASSACHUSETTS DENTAL SOCIETY [USPS 284-680] is owned and published quarterly by the Massachusetts Dental Society, Two Willow Street, Suite 200, Southborough, MA 01745-1027. Subscription for nonmembers is \$12 a year in the United States. Periodicals postage paid at Southborough, MA, and additional mailing offices.

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

Contributions: Please see page 60, contact the Communications Department, or visit www.massdental.org for author's guidelines.

Display ad closing dates: February 1, May 1, August 1, November 1. For more information, contact Lauren Marks, Exhibits Coordinator, at (508) 480-9797, extension 259, or email lmmarks@massdental.org.

Member Publication
American Association
of Dental Editors





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

GEARING UP FOR THE ROTH 401(K)

DO YOU WANT TO PAY TAXES NOW OR PUT THEM OFF? Beginning on January 1, 2006, the Roth 401(k) will be permitted under the Internal Revenue Code. The idea behind this is to give Americans the ability to save more for retirement and to have more control over their savings. The Roth 401(k) option combines features of Roth IRAs with features of traditional 401(k) plans.

According to ING Investment Companies, a Roth 401(k) is

an addition to your traditional 401(k) plan, providing a new opportunity to save for retirement. It allows you to make after-tax contributions to a Roth 401(k) option under a traditional 401(k), and it permits participants to take qualified tax-free distributions versus taxable distributions provided by a traditional 401(k).

Now the bigger question is, Which is better: a traditional 401(k) or a Roth 401(k)? That depends on your needs. Here is a sample comparison:

| Scenario | Tax Rate | Roth 401(k) Total | Traditional 401(k) Total | Advantage |
|--|----------|-------------------|--------------------------|-------------|
| Initial investment (pretax of \$15,000) <i>Explanation:</i> It takes a greater portion of your pretax income to equal the same investments as with a traditional 401(k), because you're contributing to a Roth 401(k) after you pay income taxes. | 25% | \$20,000 | \$15,000 | Traditional |
| Investment growth and the withdrawal* <i>Explanation:</i> Because you paid taxes when you made the contribution to the Roth 401(k), you're not taxed when you withdraw. So, in effect, you can save more with the Roth 401(k). | 25% | \$30,000 | \$22,500 | Roth |
| What happens if tax rates increase? <i>Explanation:</i> Ending up at a higher tax bracket in retirement can affect your \$30,000 savings in a traditional 401(k). In this situation, it resulted in a 30 percent net gain for the traditional 401(k) and 50 percent net gain for the Roth 401(k). | 35% | \$30,000 | \$19,500 | Roth |
| What happens if tax rates decrease? <i>Explanation:</i> If you retire in a lower tax bracket, the traditional 401(k) may be better because you didn't pay taxes on your contributions. Although you still receive more money with the Roth 401(k), the difference between it and a traditional 401(k) is less than the additional amount needed for an equal initial investment. | 10% | \$30,000 | \$27,000 | Traditional |

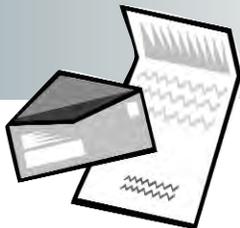
*If your investment of \$15,000 doubles to \$30,000
 SOURCES: THE BOSTON GLOBE AND EDFs.
 (This material is not intended to replace the advice of a qualified tax professional. Before making any financial commitment, consult with your tax advisor.)

The financial professionals at Eastern Dental Financial Services (EDFS) provide independent, objective financial advice. Utilizing advanced planning techniques, they can help you analyze and evaluate your current retirement investment plans to determine which one is best for you, and either confirm or redefine your retirement time horizons. If you would like more information

on the Roth 401(k) or other EDFs services, please contact Maren Kenney at (800) 898-3342, extension 401, or email mkenney@easterndentalfinancial.com. Be sure to visit our new Web site at www.easterndentalfinancial.com. ■

Securities offered through NEXT Financial Group, Inc. Member NASD/SIPC. EDFs is not an affiliate of NEXT Financial Group, Inc.

Letters to the Editor



Regarding the recent article by Bernard Friedland, BCHD, MSC, JD, and Eric Katzman, DMD (Vol. 54/No. 3 Fall 2005, pages 22–25), I have met Dr. Friedland and am not surprised at the quality and care that went into his study. Have you tested calling our three dental schools “after hours”? I have. No comment.

I read along, enjoying the sleuthing telephone calls until I came to the conclusion. There I hit a barrier with “This undermines the profession’s assertion that dentists are full-fledged health professionals and its rightful demand that dentists be treated as such.” Based on this study, we don’t deserve to be treated as such? Dentists should emulate the “after hours”—or even within hours—of our medical colleagues: “Call 911 or go to the closest emergency room.” What constitutes a dental emergency? A loose crown? A piece of tooth fractured on a spare rib? If, in fact, there were a true emergency, it would most likely be a traumatic injury, which should go to the ER.

I was one, in the past, who felt Dr. Friedland’s ethical responsibility. I listed my home phone, and made many trips from the suburbs to downtown to help a patient “after hours.” That is, until one time, responding to a 12:30 a.m. call for help from a regular patient, I went to the office and was held up at knifepoint, and never saw or heard from that patient again.

We don’t ever demand respect; we earn it time and time again, and deservedly so.

Justin Lee Altshuler, DMD, FICD
Boston University School of Dental Medicine
Boston

The articles concerning Toothprints® bite impressions that were published in the Summer 2005 issue (Vol. 54/No. 2 Summer 2005, pages 13–22) are of great interest to the dental community. However, there appears to be a conflict between the American Board of Forensic Odontology (ABFO) and the inventor and promoter of this technique.

Recently, there was an article in the *Boston Globe* (September 5, 2005) that indicated that the Supreme Judicial Court would hear arguments regarding banning fingerprint evidence. The reason being that the technique has never been scientifically validated. Fingerprints, in general, are made of an individual by a police officer; Toothprints are made by an individual. These are two different procedures. In the making of an occlusal recording, there is great opportunity to take an improper impression. The reasons may extend from recording the bite of a three-year-old to placing a thermoplastic material intraorally and having it harden prior to making a deep occlusal reproduction. It’s not that the material doesn’t work, but in how many cases does a clinician make an ideal type of recording?

A recent article by Samet et al. in the *Journal of Prosthetic Dentistry* (Vol. 94, August 2005, pages 112–117)—“A Clinical Evaluation of Fixed Partial Denture Impressions”—showed that the frequency of errors found in impressions sent to dental laboratories was an ongoing problem for the dental profession. Taking impressions for prosthetic replacements and taking thermoplastic impressions for identification is not the same; however, technique and timing are very important in both procedures. The question of whether this system has been tested and evaluated in the scientific sense remains to be seen. I believe that is the reason there is such a telling difference in the article concerning the ABFO. Until this system can be verified by whatever scientific means possible, it will remain a questionable method for identification—even though well over 100,000 recordings have been made. The use of computerized technology to digitally map the impressions is really secondary to the impression-making technique. Using an accurate computer mapping system will not validate the procedure. The procedure must be tested clinically and scientifically in order to determine its validity.

Again, thank you for presenting such an important subject.

Philip Millstein, DMD
Cambridge

ARUBA

Post-Convention Trip

March 4-11, 2006

- Round-trip airfare between Boston and Aruba . . . other originating cities available
- Round-trip transfers between the airport and hotel in Aruba
- Seven nights deluxe hotel accommodations at the Wyndham Aruba Beach Resort
- Welcome cocktail party

Ask about our
**DINE-AROUND
OPTION**

**KARAS
TOURS**

508-480-8300 • FAX 508-624-9566 • 800-840-3441
e-mail: karastours@aol.com

Only \$1,749
per person based on
double occupancy plus
15% tax and service
for this incredible
travel package!



Special Scientific Program
Today’s Concepts for A Better Practice:
What’s Changed and What Hasn’t

\$145 20 CEUs

Kevin McNeil, DDS, is a national lecturer who
maintains a private practice in Wakefield, MA.



Holland America Alaska Cruise

July 2-9, 2006 • Packages Start at \$2,197

Call Marcia Bethea at Classic Travel (800) 643-3449, ext. 25,
for reservations and information.

- Seven nights accommodations/meals on Holland America’s Veendam
- Transfers from Anchorage ship/ship to Vancouver airport
- Taxes and government fees
- Airfare from Boston to Anchorage/Vancouver to Boston (other cities available)

Scientific Program: Topics in Oral Pathology Denis Lynch, DDS

\$499 12 CEUs

A deposit of \$350 per person is required at time of booking. CE
Tuition/Insurance/Gratuities/Excursions/Alcoholic Beverages not included.
Final payment and CE class registration deadline is March 4, 2006.



GEORGE GONSER, MBA

Mr. Gonser is managing director of MDSIS.

WHAT DO THE MEDICARE CHANGES MEAN TO YOU?

The Medicare system is changing dramatically in 2006. The following is a brief outline of the program and what you need to know about some of the changes.

Eligibility

If you or your spouse is age 65 or older, you are eligible for Medicare. If you are approaching age 65, you have some work to do to prepare for selecting Medicare: 45–90 days prior to turning 65, you need to go to your local Social Security office and apply for Social Security along with Part A and/or Part B of the Medicare program.

Medicare Program Components Overview

- Part A:** Medicare Part A is also known as Hospital Insurance. This insurance covers 80 percent of inpatient hospital care, skilled nursing facilities, and some hospice and home healthcare expenses. For most people, who qualify based on hours worked in their lifetime and are residents of the United States, Part A is provided at no cost. Those who do not qualify due to lack of hours worked can opt into the program for a monthly fee.
- Part B:** Medicare Part B is also known as Medical Insurance, and it covers 80 percent of doctors' services and outpatient care. Medicare Part B has a \$110 annual deductible before benefits are paid. The cost of Part B will be \$88.50 a month starting in 2006, and will be deducted from the Social Security payment. One important note: If you do not sign up for Medicare Part B when you are first eligible, you will be subject to a 10 percent penalty for each full 12-month period of the time you were eligible to do so. Therefore, you must plan accordingly as you approach your 65th birthday. Prescription drug coverage is not included in Part B. You must sign up for Part B at your local Social Security office, online at www.socialsecurity.gov, or by calling (800) MEDICARE.
- Supplement Plans:** Senior Supplement or Medicare Supplement plans basically fill the gaps by paying the 20 percent for services not covered by Parts A and B. These plans come in many shapes and sizes from HMO supplement plans to indemnity plans, such as the MDS Senior Supplement Plan, and vary in price. Supplement plans, which are not offered through the U.S. government, require enrollment in Medicare Part A and B plans.
- Medicare Part D:** Starting January 1, 2006, new Medicare Prescription Drug coverage is available to everyone with Medicare. There are a variety of Part D plans to fit your needs. MDSIS is offering three products through PacifiCare. These plans are considered "credible" Part D programs. The sign-up period for Medicare Part D begins November 15, 2005, and ends May 15, 2006. Note: You will have to

make a selection by May 15 or you will have to pay a higher premium each month after the deadline. To enroll in the MDS PacifiCare Plan, contact us at (800) 821-6033. MDSIS will send you the materials to enroll in the plan of your choice.

Comparison of PacifiCare Prescription Drug Plans

(In-Network Preferred, 30-Day Supply)

| | Saver | Select | Comprehensive |
|--|--|--|--|
| Monthly premium | \$22.04 | \$34.95 | \$39.11 |
| Deductible | None | None | None |
| When total costs are \$0–2,250 | Tier 1: \$7.50 Tier 2: \$22.00 Tier 3: \$52.25 | Tier 1: \$7.50 Tier 2: \$22.00 Tier 3: \$64.50 | Tier 1: \$7.50 Tier 2: \$22.00 Tier 3: \$52.60 |
| When total costs are \$2,250–3,600 | You pay 100% | You pay 100% | Tier 1: \$7.50 Tier 2: You pay 100% Tier 3: \$52.60—generic, or you pay 100%—brand |
| When total costs are \$3,600+, you pay the greater of: | \$2 for generic or preferred Rx and \$5 for all other Rx or 5% coinsurance | \$2 for generic or preferred Rx and \$5 for all other Rx or 5% coinsurance | \$2 for generic or preferred Rx and \$5 for all other Rx or 5% coinsurance |

The information above is an outline only. Please contact PacifiCare Prescription Solutions for specific benefit questions at (800) 797-9794.

If you are ready to enroll in a plan, please call MDS Insurance Services at (800) 821-6033.

How MDS Insurance Services Can Help

These various Medicare plan selections are vital decisions for dentists and/or spouses ages 65 and over. Coverage, deadlines, and penalties have to be weighed and analyzed. MDS Insurance Services, Inc. (MDSIS) offers a supplement product to MDS dentists and spouses statewide. The costs are less than those of comparable plans, and the program allows complete freedom of choice of providers and hospitals without referrals or gatekeeping requirements.

To find out more about the Medicare happenings and options available to you and your spouse, contact MDSIS at (800) 821-6033. ■

The above information is a basic outline only. For all updated information on Medicare, please visit www.medicare.gov or call (800) MEDICARE.

MDS INSURANCE SERVICES, INC.

2005 Volunteer Heroes

*Together,
We Can
Make a Difference*



History has taught us that change only happens when people get involved. The United States was founded in 1776 because common needs and goals brought the citizens of the original 13 colonies together to make a change, to better their lives and the lives of those around them. The Revolutionary War was won entirely through the efforts of volunteers, from the militia to Betsy Ross to the creators of the Declaration of Independence. They were people who wanted to work together to make a brighter future.

While not on as grand a scale as the founding of our great country, the concept of volunteerism as it applies to organized dentistry shares the same basis: It is the coming together of a group of people with a common desire to make something better—in this case, the dental profession and, as a result, the oral health of the public.

As a nonprofit association, the Massachusetts Dental Society relies on its members to play an active role so that we can all achieve the goal of making the profession as strong as it can be. This is why, every year, the MDS honors those members who have given so tirelessly of themselves to better both organized dentistry and the Society. They are our "Volunteer Heroes," and they are shining examples of why it is so important to be involved in the profession and the Society. Their boundless energy, selflessness, and generosity of both time and expertise have made the Massachusetts Dental Society and all that it represents that much stronger. And for that, we thank them.



Sandra F. Cove, DMD



Residence: Wellesley

Office Location: Ashland

Specialty: General Dentistry

Education: Forsyth School for Dental Hygienists,
Tufts University School of Dental Medicine

Number of Years in Practice: 13

Number of Years of MDS Membership: 12



Why did you choose to join the MDS?

In dentistry, our daily practice is confined, and being a member of the Massachusetts Dental Society brings us, as dentists, together as a profession. It is wonderful to collaborate with my peers at local events. I also use the MDS as a resource for information in my daily practice for my patients and myself.

Why is involvement in organized dentistry important to you?

Giving back to dentistry as a profession is very important to me personally. As dentists, we can only make an impact on the direction of dentistry if we pull together as a profession, and that is done through our organization.

Please describe the extent of your volunteer experience in dentistry.

Over the past six years, I have been helping with the Hands-On Committee for the Allied Scientific Program with the Yankee Dental Congress. In the past, I was active in the Worcester District Dental Society, serving on both the Outreach Committee for the auxiliary schools and the Social Committee. Presently, with the Tufts University School of Dental Medicine, I am a co-chair for the alumni association. At the school, I have also been a part-time instructor in the clinic, served on panels for graduating students, and also volunteered in the oncology department where I helped screen patients, made fluoride trays, and helped patients through their treatment. In all my years in dentistry, I have always done some level of volunteer work; I find it extremely rewarding.

How has your volunteer experience impacted you professionally and personally?

The teamwork displayed by the MDS staff has made me feel humbled and proud to be a part of the volunteer network within the Society. Even just being a small part of the larger picture of all of the volunteers in the MDS brings great honor to me. And it has a domino effect: My patients express that they feel the same about me when they see my involvement in organized dentistry.

What do you feel are the most important issues facing organized dentistry today?

Insurance. It is troubling how medicine has lost its luster as a profession; and I would hate to see dentistry follow the same pathway. Insurance has taken the autonomy out of medicine. For that reason, being a doctor is not as attractive as it once was. Today, insurance companies dictate fees and push their influence on the patients, who as a result may make poor decisions. Much of my daily work is educating patients that they are responsible for their health, not their insurance companies.

How has the practice of dentistry changed since you began your career?

Since hygiene school, I have seen the evolution of gloves, masks, and OSHA. The largest change has been the world of esthetics and the public awareness for overall dental health, which has made dentistry more appealing to the general public. But the most fascinating change to me has been the world of computerized dentistry and its rapid improvement.

What would you say to a fellow dentist to convince him/her to get more involved in organized dentistry?

Just do it! Volunteering will bring you fulfillment that the daily practice of dentistry cannot. It is a wonderful profession and the camaraderie that is felt both on and off the playing field will bring you a surmounted feeling of honor. ■



Timothy J. Hempton, DDS



Residence: Walpole

Office Location: Dedham

Specialty: Periodontology

Education: Dental school—SUNY at Stony Brook;
Specialty training—Marquette University

Number of Years in Practice: 21

Number of Years of MDS Membership: 18



Why did you choose to join the MDS?

Most career paths include professional organizations that provide information, camaraderie, and guidance. After arriving in Massachusetts in July 1987, I learned that the Massachusetts Dental Society is an outstanding example of an organization that fulfills these goals. A professional organization such as the MDS facilitates communication with colleagues and provides opportunities to volunteer for various responsibilities in the cooperative management of the Society.

When I was a kid, my mother always told me that when you help others, you also help yourself. These words ring true still. I joined the MDS to help, and as a result of my membership, I have met many members who have helped me. I am convinced that involvement with the MDS has had a very positive impact on my own professional and personal growth.

Why is involvement in organized dentistry important to you?

When dentists join together in a professional organization, they are able to amplify their efforts in advancing their own careers when they help others in their careers. Organized dentistry allows us to have a positive influence on our profession's interactions with the public, our interactions with the government and legislation, and the development of useful continuing education programs.

Please describe the extent of your volunteer experience in dentistry.

My first experience with the MDS was in 1987. Dr. Nicholas Dello Russo contacted me, suggesting that I volunteer as a room coordinator for the Yankee Dental Congress in January 1988. I went to preparation meetings before YDC and had the opportunity to meet with other dental professionals who conveyed the excitement associated with New England's regional meeting. At that point, I was hooked on the concept of dentists volunteering their time to manage and develop not only continuing education programs but also a venue where professionals and their guests could socialize in an engaging and comfortable atmosphere.

Not long after my first YDC, I met Drs. June and Bill Lee, who also encouraged me to continue as a volunteer with

Yankee. On a number of occasions, I served as a room coordinator or as presiding chairperson for various courses. Eventually, I was asked to serve on the Allied Program Committee and, subsequently, the Scientific Committee. Over the years, I have also been fortunate to be included on the YDC program as a speaker, providing Minuteman sessions, Lunch and Learn programs, lectures for the RDH, and hands-on workshops.

In addition to my involvement with YDC, I interacted on a more local level in the Metropolitan District, serving as secretary, treasurer, vice president, and president for the Parkway Study Club, and I subsequently held the same offices for the Norfolk Study Club. During my tenure with these organizations, I met Dr. Mike Swartz, who played an important role in mentoring me on the importance of organized dentistry and encouraged my participation on the executive committee of the Metropolitan District.

How has your volunteer experience impacted you professionally and personally?

I have found my experience of being involved with the MDS professionally energizing and, on a personal level, a lot of fun. It has been an uplifting experience meeting and working with fellow dental professionals, as well the hardworking MDS staff. Over the years, I have had a great experience working with Michelle Curtin, Marlene Petro, and Dorrey Prevost. They are all very patient and are truly committed to our success.

What do you feel are the most important issues facing organized dentistry today?

The greatest challenge organized dentistry faces today is the same challenge it faced from day one. That challenge is developing the next generation and future generations of ethical dentists who are committed to excellent patient care and who recognize the moral importance of concern for the welfare of their colleagues. It is critical that organized dentistry and the dental educational institutions interact very closely in the process of developing responsible scholar-clinicians.

Continued on page 23

Mary H. Kreitzer, DMD



Residence: East Longmeadow

Office Location: Longmeadow

Specialty: Oral and Maxillofacial Surgery

Education: Harvard School of Dental Medicine; residency, Medical College of Virginia

Number of Years in Practice: 25

Number of Years of MDS Membership: 25



Why did you choose to join the MDS?

When I first started practicing, right after graduation, I felt a need to get involved and not be isolated. In particular, networking with colleagues at the local level was appealing to me, as well as the phenomenal access to resources that the MDS provides, such as continuing education and information regarding OSHA, HIPAA, and much more.

Why is involvement in organized dentistry important to you?

There are many reasons why involvement in organized dentistry is important to me. Among them: The need to get involved in decision making at the local level, which might impact my practice. The ability to share ideas with colleagues. The awareness of what is going on politically with regard to the practice of dentistry and how these political issues might impact day-to-day practice. The support that organized dentistry has given to the fight for fluoridation, use of amalgam, access to care, and other initiatives.

Please describe the extent of your volunteer experience in dentistry.

I have been on the Valley District Dental Society (VDDS) executive committee for about 24 years, including serving as a past president and present secretary for the district group. I am a member of the local ethics committee, and I also sat on the local health council. I have been a volunteer at Yankee Dental Congress off and on for several years. I have served as social/entertainment co-chair, been a room coordinator several times, and taught CPR with members of my district society. I am also a CPR instructor for VDDS.

How has your volunteer experience impacted you professionally and personally?

As a result of volunteering, I have gotten to know many of my colleagues and had the opportunity to work more closely with them. This interaction with colleagues is in and of itself beneficial, as is the exchange of fresh ideas. Volunteering has afforded me the ability to meet and talk with colleagues from other towns, colleagues who I normally would have little or no contact with. I have partici-

pated in decision making in the Valley District, which has been interesting and mostly satisfying—although contentious at times. And the networking aspect has been a great experience for me in that I get to interact with different people and personalities and have learned to be more diplomatic—especially when I served as president of the VDDS—which has been important, as I can sometimes be too direct and even abrasive.

What do you feel are the most important issues facing organized dentistry today?

Increased government control and access to dental care for people who cannot afford it. And as more companies decrease dental benefits, there will probably be a larger number of these families who won't be able to afford proper oral healthcare.

How has the practice of dentistry changed since you began your career?

Certainly, there are more women in practice. There is also more government intrusion: some beneficial, most not so beneficial, and some downright ludicrous. The great strides in dental procedures and materials in the past 25 years has been fantastic—composites, implants, bone grafting, cosmetic procedures, microscope use, invisible braces, just to name a few. How many of us remember GV Black and line angles? ■



Joan Viantha Qureshi, DMD, Dip. Bact., MSc



Residence: South Natick

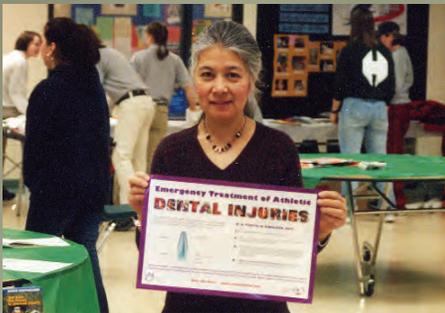
Office Location: Sherborn

Specialty: General Dentistry

Education: Tufts University School of Dental Medicine

Number of Years in Practice: 20

Number of Years of MDS Membership: 21



Why did you choose to join the MDS?

I think the Massachusetts Dental Society joined me while I was a senior at Tufts University School of Dental Medicine in 1984. Because of the tripartite structure of the American Dental Association, I benefited from the student membership. After graduation, it was natural to remain a member in the largest national professional dental organization, and I chose to also become involved at the state level.

I had decided to be a solo practitioner in a small town close to home, so I sought guidance from the ADA. Since most of my professors were in academics and only part-time clinicians, the dental school curriculum fell short on practice management issues. Within a few months, I was ready for business as a solo practitioner. But there were still problems: how to build an efficient office and a clientele base, make appropriate referrals, obtain laboratory expertise, and deliver optimal patient care. I knew that the growth of a practice starts slowly.

As a result, I embraced the MDS and joined the Young Dentist Committee and the district study club. The close proximity of MDS headquarters to my home and practice allowed me to volunteer whenever called upon. Belonging to an organization to enhance my learning and to meet professional colleagues was not new to me. As a researcher at Forsyth Dental Center, I belonged to the American and International Associations for Dental Research and the American Society of Microbiology. And I continued to take advantage of all the benefits that belonging to the MDS afforded me, such as continuing education available through my district and the Yankee Dental Congress.

Why is involvement in organized dentistry important to you?

The MDS has evolved into an organization that embraces its members and non-members, as well as societal issues. This can be attributed to the MDS encouraging its members to express their needs, but it can also be attributed to good leadership. The MDS has quality members and is diversified; it represents generalists, specialists, young professionals, seasoned practitioners, and retired and life members, and more importantly, it draws the students. I hope we can all look back and

feel satisfied that we achieved a job well done for all concerned. After all, serving people is part of the reason we do our work.

The successful growth of the MDS depends on its most valuable asset: its varied membership. As MDS members, we must make every effort to improve the road for those who will come behind us. As professionals, we have been given the chance; let's ensure this for others in the future. We all need to become part of what happens in our profession. Only then will all members achieve equity.

Please describe the extent of your volunteer experience in dentistry.

My first MDS volunteer experience was with the Young Dentist Committee, which is now known as the Standing Committee on the New Dentist. After serving for several years, I was promoted to the Membership Committee. At both committees' meetings, I voiced my views that if women, especially parents, were expected to fully participate as members in dental society meetings and education programs, then the MDS and the ADA needed to direct attention to the needs of women dentists. By this time, I was already serving on the Scientific Committee for YDC, and so I was asked to find speakers and subjects appropriate to women dentists and their specific needs. As a result of my strong beliefs that women need to be better represented and reach equality in professional dentistry, I have been involved with the Women's Dental Society of Massachusetts, having served as president and treasurer.

And of course, I have been involved in the Yankee Dental Congress and proud to serve on the YDC Planning Committee. One can't volunteer for YDC without being involved in all aspects, from presiding chair to general arrangements and even social activities.

In recent years, I have also been involved in other MDS councils, serving as special consultant and now chair of the Abuse and Neglect Subcommittee and as the Metropolitan District representative for the Council on Access, Prevention, and Interprofessional Relations (CAPIR). I have been an alternate and a delegate for the MDS House of Delegates

Continued on page 23

Jeanne Velde, DMD



Residence: North Andover

Office Location: Haverhill

Specialty: General Dentistry

Education: Fairleigh Dickinson University School of Dentistry

Number of Years in Practice: 24

Number of Years of MDS Membership: 22



Why is involvement in organized dentistry important to you?

I love the camaraderie I receive from my fellow dentists. I enjoy being involved in our organization and working on common issues. The MDS provides many vital services and opportunities for members that require the input and involvement of its members in order to be effective, such as continuing education, promotion of the profession, development and education of auxiliaries, insurance, and business affairs. It is important to me to be involved in the process so that the ideas and programs developed by the MDS represent dentists like me.

Please describe the extent of your volunteer experience in dentistry.

I have enjoyed being involved in the Merrimack Valley District Society by acting as a liaison to the Middlesex Community College dental hygiene and dental assistant programs and the Northern Essex Community College dental assisting program. I also represent the MDS on the advisory board for Middlesex Community College, Health Professions division, as well as for Northern Essex. I try to make our local members aware of the particular needs of our local auxiliary education programs. I have also served on our district executive committee.

In addition, I have held various positions at Yankee Dental Congress, including room coordinator, presiding chair, and general arrangements.

On the state level, I served for several years on the Council on Dental Education and continue to serve on the Council on Dental Practice, which was given the task of finding ways to increase the number of dental hygienists. This work has been exciting because the results of our work directly affect working dentists. We surveyed practicing dentists and hygienists, contracted consultants, and worked with focus groups to assess needs.

We brought our compiled results to the MDS House of Delegates and were delighted by the response to our request for a special dues assessment to use directly for this effort. We have been able to grant funds, specifically earmarked for increasing class size, to a number of

excellent schools. Recently, funds were granted to Middlesex Community College, in my home district, to increase its dental hygiene class. This is one clear example of how the work of the MDS councils directly improves our practices on the local level.

I am also involved as a volunteer dentist at a local free clinic at Lazarus House in Lawrence, MA. Lawrence is one of the poorest cities in New England, with a large percentage of families living below the poverty level. Lazarus House is an organization that provides services such as emergency housing and clothing, hot nutritious meals, and job training and counseling to the homeless and nearly homeless in the greater Merrimack Valley. It also opened a small dental clinic in order to provide very basic dental services to the homeless and working poor, with the mission being to alleviate pain and provide solutions to dental problems that keep people from getting back into the job market.

I have been involved with Lazarus House for about seven years now, volunteering once a month in the clinic, helping to recruit other dentists, and finding sources of donated equipment and supplies. It is very rewarding work. Recently, for example, I treated a beautiful 4-year-old Kenyan boy who was in the United States for cardiac surgery, and a 15-year-old boy who had been sent home from school repeatedly because of toothaches. It is a joy to be able to use my training to alleviate pain for people who truly have no other options.

How has your volunteer experience impacted you professionally and personally?

Being a volunteer provides a sense of connection with others in my profession on a local, state, and national level.

What do you feel are the most important issues facing organized dentistry today?

One of the most important issues is affordable healthcare insurance for our employees. Both the MDS and the American Dental Association provide critical services in regulatory compliance

Continued on page 23



How has the practice of dentistry changed since you began your career?

When I started my career as a dentist in 1984, implant therapy was just beginning to enter into the mainstream of dental practice. Today, it is very much a part of conventional dental therapy. In addition, regeneration of hard and soft tissues around the dentition, as well as site preparation for dental implants, has dramatically improved.

During my 21 years as a dentist, I have also been involved in academics, serving as an instructor for three years at Harvard School of Dental Medicine and on the faculty at Tufts University School of Dental Medicine for the last 15 years. Through these experiences, I have been introduced to many members of the dental profession who are committed to furthering our abilities to provide improved dental health for the public. Having met these people, I am convinced that, for our profession, the future is bright.

What would you say to a fellow dentist to convince him/her to get more involved in organized dentistry?

There are dentists who will tell you that the cost of an implant workshop is \$1,500, the fee for a course on occlusion is \$800, and viewing a live Webcam esthetics presentation is \$300. But the wonderful experience of working with your colleagues, sharing ideas, and making friends who share the same problems and concerns you do is truly priceless. ■

QURESHI continued from page 21



as well as the Academy of General Dentistry (AGD) House of Delegates. I also currently serve as editor of the Massachusetts AGD publication *Yankee Dentist*.

At the district level, I am currently serving a second three-year term as treasurer and a second term as chair of the Community Health Committee. In the past, I also served on the ADA Special Task Force on Membership at the district level.

How has your volunteer experience impacted you professionally and personally?

I believe my involvement in the MDS has created situations that help to define me. Participation allows me to share a common bond with my peers because we can all share our experiences. When we share problems, we can come up with solutions together. The MDS did this when malpractice insurance first hit our profession and has continued to do so with subsequent issues relating to fluoride, amalgam, and infection control, among many others.

On a personal level, few lives remain untouched by tragedy, and the biggest tragedy I have faced was the sudden deaths of my husband and 4-year-old daughter, Sarah, in the fall of 1994 while I was in Vancouver, BC, attending the Federation Dentaire Internationale. I can't fully describe the feeling at the time, except to say that I felt quite alone with my grief. I returned to work immediately only because of the support from my patients. Whatever satisfaction I had received from my practice and professional associations helped pull me through those dark hours.

What do you feel are the most important issues facing organized dentistry today?

I think the biggest issue is the role of technology in our organizations, in our practices, and in education. I am very concerned that dental schools and our own practices will not be able to keep up with the scope of technical achievements. We have gone from a tactile society to a digital society. This has affected learning and even delivery of dental care to our patients. Technology will impact everyone, whether setting up a new office, modifying an existing practice, or improving for efficiency in production.

I am also concerned about the falling volunteerism in our profession. It can be reasoned that the higher costs of a dental education and practices for recent graduates are largely responsible. I would argue that similar economic stressors and time constraints affect all generations of dentists. Volunteerism comes from within a person; it can't be created or bought. It is also a part of the need to belong and the need to be charitable. If you don't need these two things, then maybe volunteerism is not important to you.

What would you say to a fellow dentist to convince him/her to get more involved in organized dentistry?

No one can afford *not* to get involved with his or her profession. I would suggest you get involved at whatever level you are able. Remember, there are few who can or choose to be leaders; most of us are happy being followers. Also, get all the education your time allows: practice, practice, and practice some more. But never forget the well-being of yourself, your family, and your patients, who easily become your extended family.

There is a saying that if you can't find it in yourself, where will you go for it? Life is a matter of choices. Be the best you can for as long as you can. As I once wrote in the *Yankee Dentist*: "Sometimes words can speak louder than actions. Dentists are diverse but united by an intense commitment to quality education and patient care. Transferring information . . . increases awareness and understanding from one person's expertise to the next, allowing every dentist to be involved in organized dentistry." That's how I see my involvement in the Massachusetts Dental Society. ■

VELDE continued from page 22



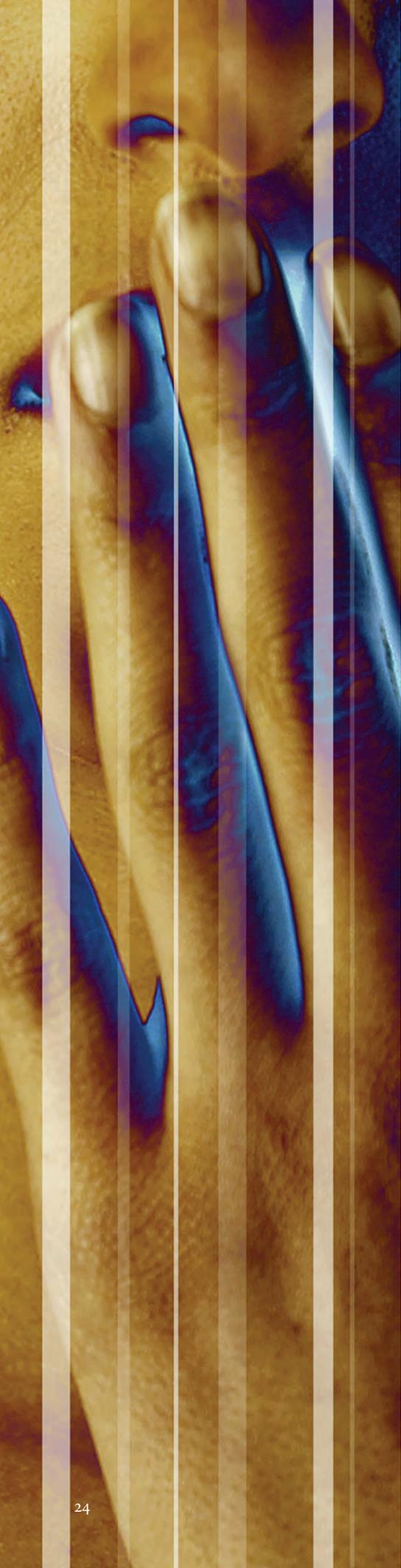
and represent our interests with grassroots efforts at state and national levels that we could never do as individuals.

How has the practice of dentistry changed since you began your career?

The practice of dentistry has become far more technical. Esthetic dentistry, micro-dentistry, and implant dentistry have really come of age since I graduated in 1981. It is a wonderful time to be a dentist.

What would you say to a fellow dentist to convince him/her to get more involved in organized dentistry?

Being involved in our organization gives you a chance to make a difference in the direction our organization grows. It is a great opportunity to develop a network of wonderful friends in dentistry who are working to make our practices better. ■



Screening for Oral Cancer—A Matter of Life or Death

MICHAEL A. KAHN, DDS

Dr. Kahn is professor in the department of oral and maxillofacial pathology and director of the ITS division of Professional Services at Tufts University School of Dental Medicine.

During dental school admission interviews, applicants often mention that one of the appeals of choosing dentistry over medicine is the avoidance of life-or-death situations. Paradoxically, if a dentist is a vigilant clinician, and an astute and knowledgeable diagnostician, he or she may be involved in the early detection of one of the approximately 29,370 new cases of oral cavity/oropharyngeal cancer estimated by the American Cancer Society to have occurred in the United States last year.¹ This incidence is nearly three times the amount of estimated cervical carcinoma cases during the same time period and nearly 5,000 more than the estimated new cases of thyroid cancer. Although the American Cancer Society estimates that both this past year's cases of leukemia and cutaneous melanoma occurred more often—34,810 and 59,580, respectively—oral cancer continues to represent a significant unknown, initially silent, and subsequently painful morbid disease and often relentless killer of the American public.¹

Therefore, it is imperative that each licensed dentist and the remainder of the dental healthcare delivery team be regularly reminded about the importance of oral cancer screening as well as refreshed in the proper head and neck soft-tissue examination technique. The purpose of this article is to update the dental clinician regarding the importance and proper technique of oral cancer screening, as well as to review some important information about premalignant oral lesions.

Overwhelmingly, the most frequent type of oral cancer reported in the United States is squamous cell carcinoma, arising from the stratified squamous epithelial mucosal lining of the oral cavity.²⁻⁵ Epidemiologic studies have shown that approximately 95 percent of oral cancer is of this type, with the remaining 5 percent distributed among soft- and hard-tissue sarcomas, primary or metastatic melanoma, and salivary gland tumors.^{2,4-6} For this reason, unless specifically noted, the remainder of this article will deal with squamous cell carcinoma of the oral cavity proper and the adjacent skin and vermilion border of the lips.

Every hour, another three oral cancer cases are diagnosed, and during that same hour, another American dies of oral cancer. Both of these sobering facts have held constant for nearly the past 30 years. The male-female incidence ratio of oral cancer in the United States is currently 2:1, an increase from the 3:1 ratio of a generation ago, primarily due to the increase of tobacco use by women.^{4,5,7-9} Despite these disturbing statistics, there has been one glimmer of hope during the past year—the American Cancer Society and the

American Dental Association have reported that for the first time in nearly 30 years, the relative five-year overall (i.e., all races combined) survival rate improved to 59 percent, a small but significant positive change from the 50 to 55 percent cited for the past 20 years.¹ This encouraging trend may be due to earlier detection of lesions by the dental healthcare delivery team with subsequent, timely surgical biopsies. However, despite this promising news, there remains a glaring disparity of five-year survival rates when they are stratified by race (e.g., Caucasians vs. African Americans). Caucasians have a 61 percent five-year survival rate whereas for African Americans the five-year survival rate is only 39 percent.¹

Tobacco, whether of the smoke (e.g., cigarettes, cigars, pipe) or smokeless (e.g., chewing tobacco, snuff) variety, continues to be the number-one etiologic factor of oral cancer, while alcohol is considered an important and significant synergistic cofactor (alcohol's aldehyde component is thought to be the primary culprit).^{2,5,7-9} If a person continues to smoke cigarettes, estimates range that he or she is from eight to more than 20 times more likely to develop squamous cell carcinoma. If that same person also overindulges in the use of ethanol (alcohol beverage), then the likelihood of oral cancer can rise to more than 80-fold.⁷

Other known etiologic or influencing factors of oral cancer include therapeutic radiation or, in the case of lip cancer, ultraviolet radiation. Certain viruses, such as herpes simplex type VIII, Epstein-Barr virus, and particularly human papillomavirus, are thought to be, at times, oncogenic.^{10,11} The immune status of the individual is also important because when the immune system is compromised, oral cancer is much more likely.⁴ Diet and nutrition remain significant factors, and recent molecular biological studies show that sensitivity to mutagens, metabolic enzymes, polymorphisms, DNA errors or lack of their repair, and certain cancer proto-oncogenes and tumor suppressor genes may play a significant role.¹²

All dentists should refresh their knowledge about the concept and degree of premalignant oral lesions exhibiting various amounts of dysplasia—the inter-



Figure 1. Sun-damaged left lower lip vermillion with subsequent biopsy demonstrating actinic keratosis with severe dysplasia.



Figure 2. Biopsy-confirmed squamous cell carcinoma of the lower lip and actinic keratosis with in situ carcinoma.



Figures 3A and 3B. An asymptomatic leukoplakia of right lateral tongue (A) and left anterior floor of mouth (B) discovered during routine oral screening.

ruption of the normal maturation pattern of the oral mucosa's epithelium. Subjective amounts of dysplasia are categorized as mild, moderate, severe, or in situ carcinoma, depending on the amount of epithelial thickness that exhibits dysplasia. Mild dysplasia is generally described as involving only the lower one-fourth of the epithelium's thickness, moderate dysplasia involves one-half, severe dysplasia involves three-fourths, and in situ carcinoma has top-to-bottom involvement but without invasion of the underlying lamina propria (i.e., connective tissue) via violation of the basement membrane zone.

It is well known that a woman's cervical epithelium may have similar degrees of dysplasia; however, the process of progression is slower and consistently sequential. Unfortunately, many dentists do not realize that early, mild dysplasia of the oral epithelium does not necessarily progress through the more involved stages of dysplasia but may invade at any time. Therefore, it is essential that dentists continue to screen their patients for early premalignant lesions and have them thoroughly removed, even if only mild dysplasia is present.

Classic Warning Signs

The dental team should always be cognizant of the classic clinical warning signs of oral cancer: difficulty in chewing or speaking; a lump or thickening in the mucosa, glands, or lymph node area; an ulceration that does not heal; abnormal bleeding; and unexplained pain or paresthesia.¹³ Although this article, as previously stated, does not discuss intrabony (i.e., jaw) cancer, the clinician should remember the classic radiographic interpretation signs of suspicious malignancy: asymmetry; irregular borders; focal and symmetrical widening of the periodontal ligament; apical root resorption with a "spike or nail" appearance; and, in young people, superior displacement of erupting teeth.⁵

It is vitally important that the dental provider be familiar with the nature and appearance of surface changes that indicate possible premalignant or malignant change. Head and neck cutaneous surface changes in color, texture, and morphology should always be investigated and the patient informed. Lip cancer of the skin and vermilion border due

to chronic ultraviolet exposure may occur in any geographical area of the United States. The classic visual warning signs are an uneven coloration, splotchiness, development of a scale or crust, or blurring of the usual distinct border between the vermilion and skin or labial mucosa.⁴

Within the oral cavity proper, the most common premalignant clinical changes are leukoplakia or erythroplakia. These terms are solely clinical descriptions of a white or red plaque (slightly elevated above the plane of the mucosa) or patch that does not wipe off and cannot receive an alternative specific diagnosis. It is imperative to remember that there is no correlation between the size, color, or texture of a leukoplakia or erythroplakia lesion and its final histological diagnosis. It is rare, but a combination of the two, erythroleukoplakia (speckled leukoplakia), is also seen. Ideally, these clinical lesions must be biopsied as soon as possible unless a specific etiology (e.g., defective restoration, denture clasp) is suspected, eliminated, and the lesion resolved within two weeks.

Eighty-five percent of oral premalignancies or malignancies are leukoplakias.^{4,6,13,14} They typically occur in a male with an average age of 60. Eighty percent of patients with leukoplakias are cigarette smokers, and those who smoke frequently have more and larger lesions. Waldron and Shafer reported that when leukoplakias are surgically biopsied and subsequently examined microscopically, only 20 percent have hyperkeratosis with some degree of dysplasia.¹⁴ Interestingly, the least common sites for leukoplakia—the tongue and floor of the mouth—are the most likely to be dysplastic, at 25 percent and 50 percent, respectively.¹⁴

Although more rare, erythroplakias are clinically even more significant, as Shafer and Waldron found that 91 percent prove to have severe dysplasia or worse.¹⁵ They, too, are seen most often in elderly males with an average age of 70. The most common intraoral sites for erythroplakia are the lateral tongue, floor of the mouth, soft palate, and alveolar ridge.

Recently, a very disturbing trend has been reported in the dental literature—tongue cancer incidence has doubled in the past 50 years, most notably in

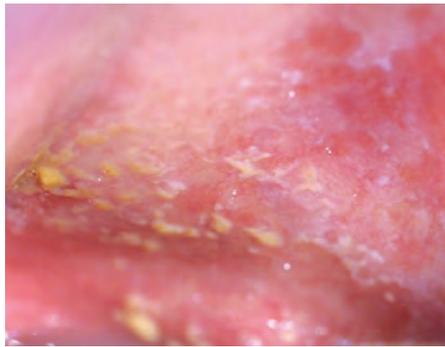


Figure 4. Asymptomatic speckled erythroplakia of the left soft palate complex.



Figure 5. Squamous cell carcinoma of the right posterior lateral tongue. The lesion was initially thought to be a traumatic ulceration due to the adjacent tooth's fractured crown.



Figure 6. Papillary, exophytic, and ulcerative squamous cell carcinoma of the anterior maxillary gingiva.

increasing numbers of patients in the age range of 20 to 40 with no contributory social history (e.g., tobacco use, ethanol abuse, etc.).^{16,17} Equally disturbing is that these young adult patients seem to have a very biologically active, aggressive type of squamous cell carcinoma for which the average age of survival once diagnosed is often less than one year.

Classic oral pathology studies of the 1970s and 1980s found and validated certain oral and paraoral areas as being the highest-risk sites for premalignant

and malignant oral cancer.^{7,14,15} The most common extraoral site is the skin and vermilion of the lower lip. Within the oral cavity proper, the lateral and ventral surfaces of the tongue are the most common, with the floor of the mouth proving to be the second most common. The soft palate complex is also a common site of involvement, specifically the uvula, soft palate proper, anterior tonsillar pillar, and lingual retromolar trigone.

During the past few years, numerous dental journals and publications have emphasized to all dentists the importance of performing a standard, reproducible, and frequent soft-tissue head and neck examination that can be competently performed in 1½ to 3 minutes, once a thorough and complete review of the patient's medical, dental, and social history is accomplished.^{3,13,18-22}

The two basic components of the head and neck examination, visualization and palpation, are performed adhering to a few basic principles. Namely, a properly focused and dispersed incandescent operative light should be available, and with the patient properly positioned, the normally wet mucosal surfaces of the oral cavity proper should be dried, particularly the floor of the mouth and buccal mucosa. Palpation is particularly important to detect oral cancer that is not originating from the surface epithelium and to help the clinician assess the amount of possible induration present in more advanced squamous cell carcinomas.

Suggested Screening Method

There is no specific screening sequence that must be followed as long as the clinician can systematically repeat it in each patient. The following is a suggested screening order of the extraoral and intraoral head and neck soft tissues, with emphasis on detection of lack of symmetry or changes in texture, color, function, and morphology. Bilateral visual and palpation inspection should be applied to the:

1. Pre- and postauricular facial region (lymph node and parotid gland)
2. Anterior and posterior cervical chain of lymph nodes, thyroid gland, and remaining major salivary glands (i.e., submandibular and sublingual)
3. Three anatomical regions of the upper and lower lip (i.e., skin of the lip, vermilion border, and labial mucosa) and their commissures

**Whether the patient is young or old, there is no doubt that
early detection of oral cancer is the key to reduction of morbidity
and a longer span of survival.**

4. Buccal mucosa
5. Maxillary and mandibular attached gingiva, corresponding alveolar mucosa, and vestibules (i.e., mucobuccal fold)
6. Hard palate and soft palate complex (pharyngeal tonsils, anterior and posterior tonsillar pillars, uvula and retromolar pads)
7. Oropharynx, particularly the posterior pharyngeal wall (to accomplish this most proficiently, a tongue depressor blade should be available)
8. Dorsum, lateral border, ventral surface, and base of the tongue (to accomplish this most proficiently, the tongue should be gently grasped with gauze wrapped around the anterior tip and moved toward each commissure, with particular attention directed toward the mid- and posterior lateral borders)
9. Floor of the mouth following thorough drying (palpation should be two-handed: extended finger of one hand with support of the chin and submandibular region with the other hand)

Conclusion

Whether the patient is young or old, there is no doubt that early detection of oral cancer is the key to reduction of morbidity and a longer span of survival. It is absolutely imperative that each dentist develop his or her own standard soft-tissue head and neck examination, and make it a frequent, repeatable part of the dental appointment routine.

Obviously, patients with any of the clinical and/or social factors mentioned above should undergo particular scrutiny. For too long the survivability statistics of oral cancer have languished in the realm of mediocrity. Licensed dentists should accept the responsibility to ensure that patients not only receive the best esthetic and functional restorative procedures and palliative care but also screening and treatment, if necessary, of carcinomatous transformation at its earliest stages. You *can* make a difference; you *must* make a difference. ■

References

1. Cancer statistics, 2005. CA: Cancer J Clin 2005;55(1):10-14.
2. Bouquot JE. Epidemiology. In: Gnepp DR. Pathology of the head and neck. New York: Churchill Livingstone; 1988. p 263-314.
3. National Institutes of Health. Detecting oral cancer: a guide for health professionals. Bethesda (MD): National Institute of Dental and Craniofacial Research; 1995.
4. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial pathology. 2nd ed. Philadelphia: WB Saunders; 2002.
5. Silverman S. Oral cancer. 5th ed. American Cancer Society atlas of clinical oncology. Hamilton, Ontario, Canada: BC Decker; 2003.
6. Kleinman DV, Crossett LS, Gloeckler Ries LA, et al. Cancer of the oral cavity and pharynx: a statistics review monograph, 1973-1987. NIH Monograph. Bethesda (MD): National Institute of Dental Research; 1992.
7. Blot WJ, McLaughlin JK, Winn DM, et al. Smoking and drinking in relation to oral and pharyngeal cancer. Cancer Res 1988;48:3282-7.
8. Choi SY, Kahyo H. Effect of cigarette smoking and alcohol consumption in the aetiology of cancer of the oral cavity, pharynx, and larynx. Int J Epidemiol 1991;20:878-85.
9. Schmidt BL, Dierks EJ, Homer L, et al. Tobacco smoking history and presentation of oral squamous cell carcinoma. J Oral Maxillofac Surg 2004;62:1055-8.
10. Cox MF, Scully C, Maitland N. Viruses in the aetiology of oral carcinoma? Examination of the evidence. Br J Oral Maxillofac Surg 1991;29:381-7.
11. Niv A, Slon-Vardi N, Gatot A, et al. Identification and typing of human papillomavirus (HPV) in squamous cell carcinoma of the oral cavity and oropharynx. J Laryngol Otol 2000;114:41-6.
12. Notani PN, Jayant K. Role of diet in upper aerodigestive tract cancers. Nutr Cancer 1987;10:103-13.
13. Mashberg A, Samit AM. Early diagnosis of asymptomatic oral and oropharyngeal cancer. CA: Cancer J Clin 1995;45:328-51.
14. Waldron CW, Shafer WF. Leukoplakia revisited: a clinicopathologic study of 3256 oral leukoplakias. Cancer 1975;36:1386-92.
15. Shafer WF, Waldron CW. Erythroplakia of the oral cavity. Cancer 1975;36:1021-28.
16. Corcoran TP, Whiston DA. Oral cancer in young adults. JADA 2000;131:726.
17. Gorsky M, Epstein JB, Oakley C, et al. Carcinoma of the tongue: a case series analysis of clinical presentation, risk factors, staging and outcome. Oral Surg Oral Med Oral Pathol Radiol Endod 2004;98:546-52.
18. Glazer HS. Spotting trouble. AGD Impact 2003;18-19.
19. Horowitz AM, Alfano MC. Perform a death-defying act: the 90-second oral cancer examination. JADA 2001;132(Suppl):5S-6S, 36S-40S.
20. Mages M. Missing pieces: why aren't more dentists performing oral cancer exams? AGC Impact 2002;16-18.
21. Opportunistic oral cancer screening: a management strategy for dental practice. Br Dent Assoc 2000;6:1-36.
22. Sciubba JJ. Oral cancer and its detection: history-taking and the diagnostic phase of management. JADA 2001;132(Suppl): 12S-15S.

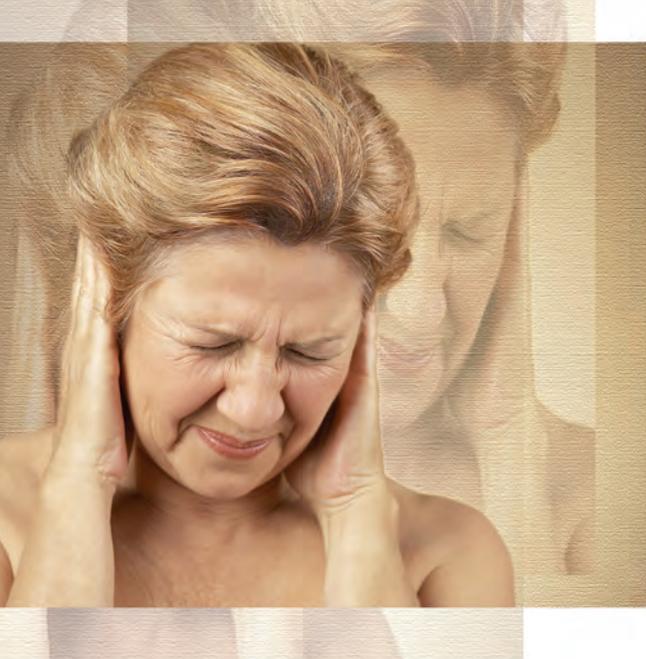
HYPNOSIS IN DENTISTRY

The New England Society of Clinical Hypnosis will offer a comprehensive course in Hypnosis in Clinical Practice in March 2006.

The 51st Annual Workshop trains dentists to use hypnosis to manage pain, anxiety and dental phobia. This is an intensive workshop which is designed to equip dentists with the skills to immediately begin using hypnosis.

The Basic Workshop will be held March 4-5 and March 18-19, 2006 at the Newton-Wellesley Hospital, Newton, MA. Tuition is \$495. Registration materials are available at www.nesch.org.

For further information, email info@nesch.org.



Migraine with Aura and Dental Occlusion: A Case Report

MARCELLO MELIS, DMD, RPHARM
SIMONA SECCI, MD

Dr. Melis is adjunct clinical instructor in the Craniofacial Pain Center at Tufts University School of Dental Medicine. He maintains a private practice in Cagliari, Italy. Dr. Secci is a doctor of radiology with a private practice in Cagliari, Italy.

Abstract

Migraine is defined as a primary headache; however, some reports may suggest a relationship with dental occlusion and dental parafunction (clenching or grinding of the teeth).

A patient diagnosed with migraine with aura, with concomitant temporomandibular joint and masseter muscle pain, was treated by the use of a dental appliance. The treatment succeeded in eliminating headache and visual aura, and significantly reducing the other symptoms.

A headache related to dental occlusion and dental parafunctions seems to be able to mimic a primary migraine headache. Therefore, dental evaluation is always advised for headache diagnosis.

Introduction

The international classification of headache disorders defines migraine as “a common disabling primary headache disorder.”¹ The term *primary* refers to a pathology that is not a symptom produced by another disorder, but is a disorder itself. In fact, *secondary* migraine must be diagnosed and coded according to the causative disorder.¹

Migraine is characterized by headache lasting 4-72 hours, with at least two of the following characteristics: unilateral location, pulsating quality, moderate or severe pain intensity, and aggravation by or causing avoidance of routine physical activity. During headache, at least one of the following must be present: nausea and/or vomiting, photophobia, and phonophobia.¹

Migraine headache can be preceded by the appearance of visual and/or sensory and/or speech symptoms that develop gradually over more than 5 minutes and that last for less than 1 hour. In this case, it is diagnosed as migraine with aura.¹

However, some reports have been found in the literature where patients diagnosed with migraine were successfully treated by correcting dental occlusion and reducing dental parafunctions.²⁻⁶ Such results may suggest that in some cases, headache related to dental occlusion and dental parafunctions is able to mimic a primary migraine headache, and therefore treatment of the causative disorder will resolve the headache.

In this case study, we will try to understand if there is a relationship between migraine headache, dental occlusion, and dental parafunctions. We will analyze the reports that have been published in the literature, and describe a clinical case of a patient affected by migraine with aura with concomitant temporomandibular joint (TMJ) and masseter muscle pain, and successfully treated by the use of a dental occlusal appliance (DOA).

Case Report

A 59-year-old Caucasian female patient came to our dental office for evaluation. Her chief complaint was a severe headache that had been diagnosed as migraine with aura by different neurologists after assessment by two headache clinics in Pisa and Cagliari, Italy.

The headache was described as an intense throbbing pain located in the forehead and temples, bilaterally, associated with photophobia and phonophobia, nausea, and occasional vomiting. The headache usually lasted for days if untreated and tended to start in the morning upon waking.

Initially, the migraine was not preceded by aura, but then attacks started alternating with episodes of migraine preceded by a visual aura that was described as the appearance of small pulsating scintillating flashes starting a few minutes before onset of the headache and persisting during the headache.

Further investigations, including neurological and ophthalmic evaluations, magnetic resonance imaging of the head, and echo-color Doppler of the carotid arteries, revealed the presence of an arachnoid cyst located in the left cerebral hemisphere that was considered unrelated to the symptomatology of the patient.

Several medications were tried for the treatment of headache, including nimesulide, ibuprofen, and indomethacin. The only drug that was found effective was sumatriptan, which succeeded in aborting migraine attacks; however, an almost daily dose of the medicine was needed to control headache.

The presence of dental malocclusion—more precisely, a reduction of the vertical dimension of occlusion (VDO) with evidence of a deep overbite—made a dentist provide the patient with a DOA to use at night during sleep. The device had to be worn on the upper teeth, and it had even contact with all of the lower teeth. The use of this appliance gradually reduced the intensity and frequency of migraine headaches, which ceased in a few weeks; nonetheless, aura attacks continued but were not followed by headaches. The aura episodes started as previously described with the appearance of small pulsating scintillating flashes, but then developed with the progressive expansion of the flashes that proceeded with zigzag movements in a circle, delimiting areas of black spots (scotomas) gradually enlarging, sometimes comprising the entire visual field, producing transient complete blindness of duration up to 40 minutes.

At the time we first saw the patient, she also reported some masseter muscle fatigue and soreness on the right side, especially during mastication, and temporomandibular joint dysfunction pain on the right side, exacerbated by mandibular movements. She also reported nighttime tooth clenching. A reciprocal click was palpated on the right TMJ during opening and closing of the mouth, suggesting anterior displacement of the articular disc.⁷ Panoramic X-ray showed osteoarthritis of both TMJs.

The old DOA that the patient was wearing at night increased the VDO by an amount that was considered excessive. Therefore, a new appliance was prepared that moderately increased the patient's VDO, and the subject was instructed to wear it every night during sleep; the new appliance also eliminated all tooth contacts other than the ones between the upper and lower incisors, to maximally reduce clenching activity.⁶ Additionally, serrapeptase, an anti-edemogenic medication, was prescribed to reduce TMJ pain.

During the following month, the patient was free from headache and the visual aura started improving. In fact, the duration and frequency of aura symptoms began to decrease, and the small scotomas failed to enlarge to the point of covering the entire visual field. TMJ and masticatory muscle pain also subsided. During the second month, no more headache and aura symptoms occurred; however, mild masseter muscle fatigue was occasionally present. At three- and six-month follow-ups, no recurrence of headache and aura symptoms was reported and TMJ pain was resolved, but there was still some masseter muscle fatigue present sporadically. No further treatment was proposed other than continuing the use of the DOA at night during sleep.

Discussion

The case showed how the use of a DOA at night during sleep was effective in relieving both headache and aura symptoms in a period of two months.

The diagnosis of migraine with aura had been made by several neurologists in two different headache clinics in Italy, and the clinical appearance seemed to confirm that diagnosis. In fact, the criteria of the International Headache Society¹ were fulfilled: The headache lasted for days if untreated; it was pulsating, severe, and caused avoidance of routine physical activity; it was associated with nausea and, occasionally, vomiting, photophobia, and phonophobia. A visual aura was also present. To rule out the presence of other disorders that might be responsible for the headache and the aura symptoms, investigations were performed, including neurological and ophthalmic evaluations, magnetic resonance imaging of the head, and echo-color Doppler of the carotid arteries, and the results were negative. Nonetheless, a dental evaluation was not proposed in either of the headache clinics.

The presence of malocclusion made a dentist decide to try a DOA to restore the patient's proper VDO, and nighttime wearing of the device resolved her headache. We had the fortune to evaluate the patient after the headache was resolved, which is why although the diagnosis of migraine might have seemed correct, we decided to make a new DOA. Another reason for the new device was the concomitant presence of TMJ pain,

masseter muscle fatigue and soreness, together with the report of nighttime tooth-clenching activity by the patient. We changed the thickness of the device because, to our judgment, the previous one excessively increased the patient's VDO, and we eliminated all tooth contact other than the ones between the upper and lower incisors, to maximally reduce clenching activity.⁶

The results obtained were very positive. Both headache and aura symptoms resolved, TMJ pain subsided completely, and masseter muscle fatigue decreased and became episodic with no further need of treatment.

In light of the results of this single case, correction of dental occlusion and protection of the structures of the stomatognathic system from the stress of tooth clenching seems to be useful to eliminate migraine headache.

Of course, no conclusions can be drawn from a single case; however, in the literature, similar cases have been reported. In the two studies of Lamey et al., migraine patients were treated by the means of acrylic DOAs.^{3,5} In the first study, 19 patients with migraine with aura (classical migraine) with headache attacks occurring more frequently on waking were selected.³ Therapy consisted of the use of a DOA to wear during sleep that produced a good clinical response with considerable reduction of the intensity and the frequency of the headaches. The second study was carried out with a placebo-controlled design.⁵ Two different appliances were made: an effective DOA with tooth coverage, and a placebo DOA without tooth coverage that only contacted the palatal mucosa. The placebo DOA did not produce any change in the subjects' dental occlusion. Only migraine patients who used the DOA with tooth coverage reported significant reduction of the number of headache attacks to about 40 percent of that previously experienced. Intensity of headache was not evaluated.

In a study by Quayle et al., 57 patients suffering from different types of headaches were selected and treated with a soft DOA to wear at night during sleep.⁴ Among them, the subjects diagnosed with migraine reported marked improvement or complete relief of headache symptoms; on the other hand, subjects diagnosed with tension-type headache did not benefit from the therapy. Unexpectedly,

Forsell et al. describe the opposite outcome.² They treated 35 patients with migraine, 36 patients with tension-type headache associated with pericranial tenderness (muscle contraction headache), and 20 patients with both migraine and tension-type headache (combination headache), performing occlusal adjustments to surfaces of the teeth. The experiment consisted of a placebo-controlled double-blind trial, where effective occlusal adjustment was carried out by adjusting the occlusal surfaces of the teeth to give bilateral simultaneous contacts between the upper and lower teeth; conversely, placebo occlusal adjustment was performed by adjusting the surface of the teeth that do not come in contact with the antagonist teeth, and therefore without changing dental occlusion. Differently from the Quayle study, Forsell et al. found the frequency and intensity of headache was reduced in 79 percent and 53 percent, respectively, of the patients affected by tension-type headache and both migraine and tension-type headache.⁴ No difference was detected between placebo and effective occlusal adjustment for migraine patients.

Interestingly, abnormalities of dental occlusion were not more prevalent in migraine patients, according to Steele et al., but TMJ and masticatory muscle tenderness—together with tooth-clenching and grinding habits—were found more frequently in migraine patients, with two-thirds reporting dental parafunctions.⁸

The hypothesis that dental parafunction, especially tooth clenching, can be a precipitating factor for migraine was proposed by Shankland,^{6,9} who reported 62 percent reduction of migraine episodes using a device fitting in the upper incisors and contacting only the lower incisors, keeping the remaining teeth apart. Such a device had to be worn during sleep and had the intent of reducing muscular activity.⁶ Shankland's hypothesis seems to be confirmed by Lamey et al.'s findings that display how masseter and lateral pterygoid muscles were 70 percent larger in migraine patients compared with a control group.¹⁰ Also, maximal bite force and EMG activity of the masseter and temporalis muscles during maximum voluntary contractions were found to be significantly higher in migraine patients.^{10,11} These findings suggest higher activity of

the masticatory muscles in migraine patients, which might be parafunctional (tooth clenching) rather than functional.

The mechanism through which tooth clenching could precipitate migraine headache has not been demonstrated, but two hypotheses can be made: Tooth clenching might be a trigger for migraine attacks, increasing norepinephrine release into muscle spindles and vasoconstriction.⁶ If we accept the association between tooth clenching and stress,¹²⁻¹⁴ norepinephrine is also released by the adrenal cortex. These changes stimulate the cervical sympathetic ganglia to further produce norepinephrine, as supported by some animal studies.¹⁵⁻¹⁷ Circulating and localized norepinephrine would then generate headache, according to Shankland⁶ and Anthony.¹⁸

A second hypothesis is suggested by the fact that muscle soreness and fatigue can produce not only localized but also referred pain.^{19,20} As thoroughly described by Travell and Simons, such pain can be frequently referred to the head, giving headache, and the clinical picture can mimic migraine headache.¹⁹ If this is true, the hypothesis is that muscle fatigue caused by malocclusion and dental parafunction produced the secondary migraine.

In both cases, use of the DOA corrected the patient's malocclusion, restored the correct VDO, and reduced tooth clenching, with the result of decreasing masseter muscle fatigue and, consequently, headache.

Conclusion

The results reported in the literature and the outcome of the case described show how primary migraine can be confused with migraine secondary to dental malocclusion and parafunction. For this reason, dental evaluation is always advised for headache diagnosis. ■

References

- Oleson J. The international classification of headache disorders. 2nd ed. *Cephalalgia* 2004;24(Suppl 1):1-152.
- Forsell H, Kirveskari P, Kangasniemi P. Changes in headache after treatment of mandibular dysfunction. *Cephalalgia* 1985;5:229-36.
- Lamey PJ, Barclay SC. Clinical effectiveness of occlusal splint therapy in patients with classical migraine. *Scottish Med J* 1987; 32:11-12.
- Quayle AA, Gray RJ, Metcalfe RJ, Guthrie E,

Wastell D. Soft occlusal splint therapy in the treatment of migraine and other headaches. *J Dentistry* 1990;18:123-9.

- Lamey PJ, Steele JG, Aitchinson T. Migraine: the effect of acrylic appliance design on clinical response. *British Dent J* 1996;180:137-40.
- Shankland WE. Migraine and tension-type headache reduction through pericranial muscular suppression: a preliminary report. *J Craniomandib Pract* 2001;19:269-78.
- Okeson JP. Differential diagnosis and management considerations of temporomandibular disorders. In: Okeson JP, editor. *Orofacial pain: guidelines for assessment, diagnosis, and management*. Chicago: Quintessence; 1996. p 113-84.
- Steele JG, Lamey PJ, Sharkey SW, Smith GM. Occlusal abnormalities, pericranial muscle and joint tenderness and tooth wear in a group of migraine patients. *J Oral Rehab* 1991;18:453-8.
- Shankland WE. Nociceptive trigeminal inhibition-tension suppression system: a method of preventing migraine and tension headaches. *Compend Contin Educ Dent* 2002;23:105-8, 110, 112-13.
- Lamey PJ, Burnett CA, Fartash L, Clifford TJ, McGovern JM. Migraine and masticatory muscle volume, bite force, and craniofacial morphology. *Headache* 2001;41:49-56.
- Burnett CA, Fartash L, Murray B, Lamey PJ. Masseter and temporalis muscle EMG levels and bite force in migraineurs. *Headache* 2000;40:813-7.
- Okeson JP. Etiology of functional disturbances in the masticatory system. In: Okeson JP, editor. *Management of temporomandibular disorders and occlusion*. 4th ed. St. Louis: Mosby Year Book; 1998. p 149-79.
- Rugh JD, Solberg WK. Psychological implications in temporomandibular pain and dysfunction. In: Zarb GA, Carlsson GE, editors. *Temporomandibular joint function and dysfunction*. Copenhagen: Munksgaard; 1979. p 255.
- Pingitore G, Chrobak V, Petrie J. The social and psychologic factors of bruxism. *J Prosthet Dent* 1991;65:443-6.
- Modin MU, Pernow JAU, Lundberg JM. Sympathetic regulation of skeletal muscle blood flow in the pig: a non-adrenergic component likely to be mediated by neuropeptide Y. *Acta Physiol Scand* 1993;148:1-11.
- Dornyei G, Monos E, Kaley G, Koller A. Myogenic responses of isolated rat skeletal muscle venule: modulation by norepinephrine and endothelium. *Am J Physiol* 1996;271 (1 Pt 2):H267-H272.
- Grassi C, Filippi GM, Passatore M. Postsynaptic alpha 1 and alpha 2 adrenoceptors mediating the action of the sympathetic system on muscle spindles in the rabbit. *Pharmacol Res Commun* 1986;18:161-70.
- Anthony M. Biochemical indices of sympathetic activity in migraine. *Cephalalgia* 1981;1:83-9.
- Travell JG, Simons DG. Apropos of all muscles. In: Travell JG, Simons DG, editors. *Myofascial pain and dysfunction—the trigger point manual. The upper extremities*. Baltimore: Williams & Wilkins; 1983. p 45-102.
- Okeson JP. Pains of muscular origin. In: Okeson JP, editor. *Bell's orofacial pains*. Carol Stream: Quintessence; 1995. p 259-94.

2005 Year In

Another year has come and gone, and the *Journal* would like to take this opportunity to highlight some of the key events of the past year for both the Massachusetts Dental Society and the dental profession.



Regional leadership forums held throughout state.



YDC 30 breaks records for attendance.



Voluntary amalgam separator program exceeds expectations with more than 75 percent of eligible dentists participating.



CAPIR sponsors statewide poster contest.



MDS hosts NEDLC in Boston.



Give Dentistry a Try (dental auxiliary recruitment program) launches television campaign on Channel 5 in Boston.



Dr. Robert Faiella (left) becomes MDS president, succeeding Dr. Alan DerKazarian.



Dr. Andrea Richman elected the MDS's first female vice president.



House of Delegates approves 10 resolutions.



MassDentists CARE children's dental access program launched.



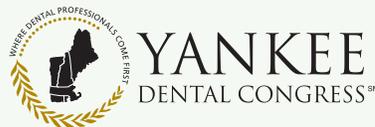
Journal of the Massachusetts Dental Society is redesigned.



MDS members respond to Hurricane Katrina.



Dr. Robert Faiella chairs ADA reference committee on *Dental Access: The Dental Workforce* and makes presentation at the ADA House of Delegates.



MDS develops new Yankee Dental Congress logo.



Five MDS members honored as 2005 Volunteer Heroes.

n Review



Women's leadership and networking panel held.



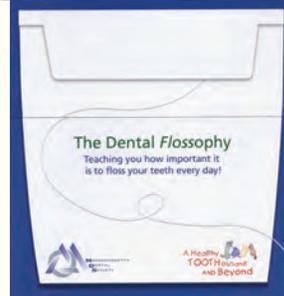
Winter 2005 television public awareness campaign begins on 12 TV stations statewide.



MDS participates in *Give Kids a Smile*.



Grants awarded for MDS programs *Mouths in All Tongues* and *Tips on Spit*.



Dental *FLOSSophy* program launched on MDS Web site and in a brochure.



Third annual Beacon Hill Day held.



Fourth annual MDS Foundation Golf Tournament is a success.



MDS creates new position of district liaison with the hiring of Ellen Factor.



Dr. David Samuels named General Chair of YDC 33, the first Yankee to be held at the new BCEC.



MDS participates in news conference on Small Group Insurance bill.



Delta Task Force continues its work.



Fall 2005 public awareness radio campaign is broadcast on WEEL in Boston highlighting men's dental health.



MDS Foundation announces more grants to dental hygiene schools.



MDS Foundation holds its second annual Wine and Chef event.



MDS announces partnership with Procter & Gamble for the purchase of a mobile dental van as part of the MassDentists CARE program.

Predictors of Dental Implant Survival



THOMAS B. DODSON, DMD, MPH

Dr. Dodson is an associate professor in the oral and maxillofacial surgery department at Harvard University School of Dental Medicine. He is also visiting oral and maxillofacial surgeon and director of the Fellowship in Clinical Investigation program in the department of oral and maxillofacial surgery at Massachusetts General Hospital in Boston.

Abstract

PURPOSE—To summarize dental implant survival rates under a variety of clinical conditions and identify prognostic variables associated with implant survival.

MATERIALS/METHODS—The articles reviewed in this paper were designed as retrospective cohort studies and composed of three subject cohorts having implants placed between 1992 and 2003. The prognostic variables were categorized as demographic/health status, anatomic, implant-specific, prosthetic, and perioperative/operative. The primary outcome variable was duration of implant survival. Kaplan-Meier methods were used to estimate implant survival rates. Multivariate Cox proportional hazards models were used to identify prognostic variables.

RESULTS—During the study interval, 921 subjects had 2,996 implants placed. Implant survival rates at one year ranged from 90.3 percent for immediate-load implants to 96.2 percent for implants inserted into grafted sinuses. The five-year survivals ranged from 87.9 percent (sinus graft cases) to 91.2 percent (all implants). Frequently cited prognostic variables included tobacco use and implant staging. Other prognostic variables identified included implant length, well size, implant coating, and timing of implant placement relative to tooth extraction.

CONCLUSION—Using implants to replace missing teeth is a predictable procedure with five-year survival rates approximating 90 percent. Some of the prognostic variables identified in these studies are under the control, at least to some degree, of the clinician and may be manipulated to enhance implant survival.

Introduction

Since 2000, the author and his colleagues have had the privilege and opportunity to review the clinical records of implant patients treated at the Implant Dentistry Centre in Boston. The clinicians and staff provided free and unfettered access to these records providing the data necessary to perform numerous outcome studies designed to estimate implant survival or complication rates and identify prognostic factors associated with these outcomes. These studies have been published as manuscripts¹⁻⁷ or abstracts with the associated manuscripts currently under publication review⁸⁻¹¹ or in progress.¹² The specific aim of this paper was to review and summarize the key findings from the above-referenced publications as they relate to prognostic factors associated with implant survival.

Materials/Methods

Study Design/Samples. All of the studies referenced in this article were designed as retrospective cohort studies. The investigators enrolled and analyzed three different study cohorts derived from the population of patients presenting to the Implant Dentistry Centre for the placement of one or more dental implants between 1992 and 2003.

The largest cohort was composed of subjects who presented for implant placement between May 1992 and July 2000. This sample was used to estimate one- and five-year implant survival rates in subjects receiving dental implants, and to identify prognostic factors associated with implant survival.⁷ A subsample of this cohort was also used to ascertain the role of dentoalveolar reconstruction procedures (DRPs) and their relationship to implant survival.⁶ Additionally, this cohort was used to understand better the role of maxillary sinus augmentation (MSA) procedures—i.e., external and internal sinus grafts with autogenous and allogeneic grafts—and their association with implant survival.⁸

The second cohort was composed of subjects having ultrashort (6 x 5.7 mm) implants between January 1997 and June 2002.⁹ This cohort was used to compare the one-year survival rates between ultrashort and standard-dimension implants. Prognostic factors, other than implant dimension, associated with survival were identified.

The third cohort was composed of subjects having implants inserted and immediately loaded between July 2001 and July 2003.¹⁰⁻¹² This sample was used to estimate the one-year survival rates of immediately loaded implants and to identify prognostic factors associated with survival.

Study Variables

Prognostic variables were grouped into the following categories:

- **Demographic variables:** These variables included the patient's age in years at the time of implant placement and the patient's sex.
- **Health-status variables:** The investigators recorded current tobacco use status and whether the subject had a medical condition affecting wound healing—e.g., diabetes, chronic steroid use, or radiation therapy to the head and neck.
- **Anatomic variables:** The anatomic variables included implant location (maxilla, mandible, anterior, posterior), dentition status (partially edentulous or edentulous), bone quality (types 1 to 4), and implant relationship to other teeth or implants. Bone quality was determined at the time of implant placement. The amount and appearance of bone in the flutes of the 3.5 mm reamer were evaluated following withdrawal of the reamer from the osteotomy. Type 1 classification was used for cortical bone that was compact and nearly bloodless; type 2 classification was used if the flutes were filled with red bone; type 3 classification was used for intermediate findings; and type 4 was used if there was no bone in the flutes. Implant relationship to other dentoalveolar structures was grouped into the following categories: number of implants, number of root canal-treated teeth, number of teeth with periapical radiolucencies adjacent to the implant, and status of the implant site that was previously root canal treated.
- **Implant fixture-specific variables:** These variables included implant size (width 3.5–6 mm, length 5.7–11 mm), implant coating (uncoated, titanium plasma sprayed [TPS], and hydroxyapatite [HA]), and size of the implant well (2–3 mm). (See Figure 1.)

- **Prosthetic variables:** The main prosthetic variable for all of the cohorts was type of prosthesis (fixed or removable). For cohort of implants immediately loaded, the investigators recorded the total number of units defined as the sum of implants, natural teeth, and pontics making up the temporary prosthesis. This variable was subdivided into three categories: the total number of natural teeth, the total number of pontic units, and the total number of implants.
- **Perioperative or operative variables:** These variables included antibiotic use, methods used to reconstruct the implant recipient site (DRPs—e.g., internal or lateral sinus lifts, barrier membranes, autologous or allogenic bone grafts), timing of implant placement relative to DRP (at the time of or after the DRP), timing of implant placement relative to the tooth extraction (i.e., immediate or delayed), and timing of loading of the implants (i.e., immediate or delayed). Implant staging was recorded as two-stage, a delay between insertion and uncovering and placement of the abutment, or one-stage, simultaneous placement of the implant and abutment.

Figure 1. Components of the Bicon® (Bicon, Inc., Boston, MA) implant



Diagram courtesy of Bicon, Inc., Boston, MA, amended by the author with permission.

Survival Analysis

The investigators recorded the following information from each chart: date of implant placement, dates of follow-up visits, and date of implant removal, if applicable.

Outcome variables. The primary outcome variable was implant survival. The time between implant placement and the date of the last follow-up or implant failure, defined as implant removal, was used to calculate the duration of implant survival.

Analyses. Descriptive statistics were computed for all study variables. Non-parametric Kaplan-Meier survival analyses were used to compute the overall one-year and five-year (if data were available) survival rates with associated 95 percent confidence intervals. Covariates associated with survival were identified using innovative Cox proportional hazards methods adjusted for clustered, correlated observations. Covariates with p-values <0.15 and biologically important variables—i.e., age and sex—were considered candidate variables for inclusion in the multivariate Cox.

Results

The studies cited in this paper include subjects having implants inserted between 1992 and 2003 using a variety of techniques. In the study authored by Chuang et al., the sample was composed of 677 subjects having 2,349 implants between 1992 and 2000 under a variety of clinical parameters, including grafted and ungrafted sites, maxilla and mandible, and immediate insertion after extraction.⁷ Overall, the implant survival rates, adjusted for clustered, correlated observations, at one and five years were 95.4 percent and 91.2 percent, respectively (see Table 1).

In this cohort, four variables were associated with implant survival: tobacco use, implant length, implant well size, and staging of implant and abutment placement (see Table 2). Nonsmokers had a 3.4-fold improvement in implant survival when compared to tobacco users. Longer implants were associated with improved survival, as were implants with larger (3 mm vs. 2 mm) well sizes. Implants that were inserted, allowed to integrate, and then uncovered for abutment placement at a second operation (two-stage) had a fivefold increased chance of survival com-

Table 1. Implant survival rates at 1 and 5 years after implant insertion.

| Reference | Implant Cohort | Sample Size (implants) | 1-Year Survival Estimate ¹ | p-Value (if indicated) | 5-Year Survival Estimate ¹ | p-Value (if indicated) |
|-------------------------------|--|------------------------|---------------------------------------|------------------------|---------------------------------------|------------------------|
| Chuang et al. ⁷ | All implants | 2,349 | 95.4 (94.2–96.6) | N/A | 91.2 (88.8–93.6) | N/A |
| Woo et al. ⁶ | DRP (yes) ² | 242 | 95.4 (92.6–98.2) | 0.9 | 87.5 (76.5–98.5) | 0.9 |
| | DRP (no) | 435 | 95.1 (92.9–97.4) | | 91.1 (86.5–95.5) | |
| McDermott et al. ⁸ | MSA+ (yes) | 473 | 96.2 (94.2–98.1) | 0.04 | 87.9 (81.3–94.5) | 0.08 |
| | MSA- (no) | 289 | 92.6 (89.3–95.2) | | 88.0 (82.8–93.1) | |
| Gentile et al. ⁹ | 6 x 5.7 mm ⁴ | 45 | 92.2 (83.6–100.0) | 0.78 | Not reported | N/A |
| | Non-6 x 5.7 mm | 127 | 95.2 (91.1–99.3) | | Not reported | |
| Chuang et al. ¹² | Immediately loaded implants ⁵ | 477 | 90.3 (86.9–93.7) | 0.002 | Not reported | N/A |
| | Conventional implants | 2,349 | 95.5 (94.6–96.2) | | Not reported | |

Table 2. Summary of the prognostic variables associated with implant survival adjusted for confounders, biologically relevant variables, and clustered, correlated observations.

| Reference | Variable | | Statistics | | |
|-------------------------------|-----------------------|--|--------------|--------------------------------|---------|
| | Category | Specific | Hazard Ratio | 95 Percent Confidence Interval | p-Value |
| Chuang et al. ⁷ | Demographic or health | Tobacco use (none) | 3.4 | 2.0–5.9 | <0.01 |
| | Implant-specific | Implant length (mm) | 1.4 | 1.3–1.7 | <0.01 |
| | | Well size (3 mm vs. 2 mm) | 2.5 | 1.3–5.0 | <0.01 |
| | Operative | Staging (2- vs. 1-stage) | 5.0 | 2.5–10 | <0.01 |
| | | Immediate (delayed implant insertion vs. insertion immediately following extraction) | 2.0 | 1.2–3.5 | 0.01 |
| Woo et al. ⁶ | Demographic or health | Tobacco use (none) | 4.4 | 2.0–9.8 | <0.001 |
| | Operative | Dentoalveolar reconstructive procedure (no) | 1.4 | 0.7–2.9 | 0.32 |
| | | Staging (2- vs. 1-stage) | 3.3 | 1.3–10.0 | 0.009 |
| McDermott et al. ⁸ | Demographic or health | Tobacco use (none) | 3.5 | 1.7–7.2 | <0.001 |
| | Anatomic | Implant location (premolar vs. molar) | 2.5 | 1.7–5.0 | <0.001 |
| | Operative | Maxillary sinus augmentation (no graft vs. graft) | 1.1 | 0.6–1.9 | 0.9 |
| | | Staging (2- vs. 1-stage) | 10 | 3.3–14.3 | <0.001 |
| Gentile et al. ⁹ | Implant-specific | Implant size (non-6 x 5.7 mm vs. 6 x 5.7 mm) | 1.0 | 0.2–3.3 | 0.9 |
| | Operative | Staging (2- vs. 1-stage) | 5.0 | See notes | 0.049 |
| Erakat et al. ¹⁰ | Implant-specific | Coating (coated vs. uncoated) | 22.1 | 6.6–74.6 | <0.001 |
| | Operative | Immediate (immediate implant insertion after tooth extraction vs. delayed implant placement) | 3.7 | 1.6–8.3 | 0.002 |
| | Prosthetic | Number of restorative units | 1.8 | 1.3–2.5 | <0.001 |
| Chuang et al. ¹² | Implant-specific | Implant length (mm) | 1.3 | Not reported in abstract | <0.001 |
| | Anatomic | Implant location (mandible vs. maxilla) | 1.9 | Not reported in abstract | <0.001 |
| | Operative | Loading (delayed vs. immediate) | 2.9 | Not reported in abstract | 0.004 |

pared to implants in which the implants were inserted and abutments placed at one operation (one-stage). Finally, implants inserted at some point after tooth extraction (delayed implants) were two times more likely to survive than implants placed at the time of tooth extraction (immediate implants).

In the second study, the investigators used the same study cohort described above to evaluate the effect of DRPs on implant survival.⁶ To simplify statistical analyses, without violating the assumption of independent observations, one implant was chosen randomly from each subject for analysis. The subject and implant sample sizes were equal—i.e., 677. There were no statistically significant differences in the one- or five-year survival rates between implants placed in reconstructed sites when compared to unreconstructed sites (see Table 1). At one

Table 1 and Table 2 Notes

¹Point estimate of one- or five-year implant survival (95 percent confidence interval) adjusted for clustered, correlated observations.

²DRP stands for dentoalveolar reconstruction procedures used to rehabilitate the implant recipient site—e.g., sinus grafting, barrier membranes. DRP (yes) means that DRP procedures were used.

³MSA stands for maxillary sinus augmentation (external or internal lift). MSA+ (yes) means that MSA was used to rehabilitate the implant recipient site.

⁴Ultrashort implants.

⁵Implants were inserted, restored, and an occlusal load placed on the restoration all on the same day.

Note: One-year survivals ranged from 90.3 percent (immediately loaded implants) to 96.2 percent for implants inserted into grafted sinuses. The five-year survivals ranged from 87.9 percent (MSA+) to 91.2 percent (all implants).

⁶The model was adjusted for age, sex, implant length, and prosthesis (fixed vs. removable).

⁷The model to identify prognostic variables associated with implant survival were adjusted for age, sex, position of implant in relation to other teeth or implants, and subject-specific heterogeneous risk for implant failure.

⁸The model was adjusted for age and sex.

⁹The model was adjusted for age, sex, health status, and use of dentoalveolar reconstructive procedures. A confidence interval was not reported for implant staging because it was too unstable.

¹⁰The model predicted implant survival for immediately loaded implants and was adjusted for age and sex.

¹²The model was adjusted for age, sex, well size, and immediate implant placement.

***Using implants to replace missing teeth is a predictable procedure
with success rates ranging from 85 percent to 96 percent implant survival
with the highest, long-term success rates associated with
implants managed using staged management protocols***

year, the survival rates of the two groups were nearly equal, 95 percent, and at five years, the survival rate was 87.5 percent in the DRP group and 91.1 percent ($p=0.9$) in the non-DRP group.

In this sample, two variables were associated with implant survival: tobacco use and implant staging (see Table 2). Nonsmokers had a 4.4-fold increased likelihood for implant survival when compared to smokers. Subjects having implants and abutments placed in a two-stage manner were two times more likely to have their implants survive when compared to implants and abutments placed simultaneously (one-stage.)

The management of the atrophic maxilla is particularly challenging. In the study by McDermott et al., using the cohort described above, the investigators wanted to assess the effect of grafting of the maxillary sinus on implant survival.⁸ The sample consisted of 318 subjects having a total of 762 implants placed into the posterior maxilla replacing either premolar or molar teeth. The cohort was divided into two groups, subjects with and without maxillary sinus augmentation (MSA), MSA-positive or MSA-negative, respectively. MSA consisted of external (lateral maxillary sinus augmentation with graft, either autogenous, allogenic, or both) or internal sinus lifts. The one-year survival rates, adjusted for clustered observations, for MSA-positive and MSA-negative implants were 96.2 percent and 92.6 percent, respectively. The five-year survival rates, also adjusted for clustered observations, were 87.9 percent and 88.0 percent for MSA-positive and MSA-negative implants, respectively.

In the adjusted multivariate model, there were no statistically significant differences ($p=0.32$) in implant survival between implants placed into grafted and ungrafted sinuses. Three variables—tobacco use, implant location, and staging—were associated with implant survival. Nonsmokers had a 3.5-fold improved implant survival rate when compared to

smokers ($p<0.001$). Implants placed in the premolar region were 2.5 times more likely to survive than implants placed in the molar region ($p<0.001$). Finally, implants placed in two stages were 10 times more likely to survive than implants placed in the maxilla using a one-stage technique ($p<0.001$).

In the setting of atrophic alveolar bone, inserting ultrashort implants (<7 mm in length) may be an alternative to using DRPs. Gentile et al. compared the survival rates of ultrashort implants (6 x 5.7 mm) to the survival rates of standard implants.⁹ The study was a retrospective cohort study composed of 35 subjects having one or more ultrashort implants. There were a total of 172 implants placed: 45 (26 percent) were ultrashort and the remaining 127 (74 percent) were standard implants. The one-year survival rates for the ultrashort and standard implants, adjusted for clustered observations, were 92.2 percent and 95.2 percent, respectively ($p=0.8$). In the multivariate model, staging was associated with implant survival. Consistent with the other studies, implants placed using two stages were five times more likely to survive than implants inserted using a one-stage technique.

Traditionally, implants are not loaded during the osseointegration phase of healing, necessarily delaying prosthetic restoration of the implant. Needless to say, some patients may object to this prolonged treatment course. To address this patient-initiated demand for shorter treatment, clinicians have initiated innovative treatment protocols, including loading implants zero to three days after placement—i.e., immediate load. Immediate loading of implants not only shortens the treatment time, but also provides patients with an acceptable esthetic appearance during the treatment period. There is concern, however, that loading implants immediately after insertion may decrease implant survival rates.

Erakat et al. estimated the one-year survival rate in a sample composed of subjects receiving immediately loaded implants.¹⁰ The study was a retrospective cohort study composed of 209 subjects having 477 implants inserted and loaded immediately with a functional, temporary prosthesis. The one-year survival rate, adjusted for clustered observations, was 90.3 percent. The investigators identified three variables associated with implant survival: implant coating, timing of implant insertion relative to tooth extraction, and the number of restorative units. Coated implants had a 22.1-fold increased likelihood for survival compared to uncoated implants ($p<0.001$). Implants placed immediately after tooth extraction were 3.7 times more likely to survive than implants placed at some time after tooth extraction ($p=0.002$). The number of restored implants, relative to pontics, in the temporary prosthesis was associated with implant survival at one year ($p<0.001$).

Chuang et al. compared the one-year survival rates between subjects with immediate-loaded implants and those with implants loaded in a delayed manner.¹² Implants loaded in a delayed manner had a statistically significant better one-year survival rate (95.5 percent) when compared to immediate-load implants (90.3 percent). In the multivariate model, implants loaded in a delayed manner were 2.9 times more likely to survive than implants loaded immediately ($p=0.004$). The other variables associated with implant survival were implant length and location. Longer implants were associated with improved survival ($p<0.001$). Mandibular implants were 30 percent more likely to survive than maxillary implants ($p<0.001$).

Discussion

Two significant findings resulted from this set of studies. First, using implants to replace missing teeth is a predictable procedure with success rates ranging from 85 percent to 96 percent implant survival, with the highest, long-term success

rates associated with implants managed using staged management protocols—i.e., a delay between extraction and implant insertion, between DRP and implant placement, between implant placement and uncovering, and between implant placement and loading.

Staged treatment protocols are associated with the longest treatment time between extraction and restoration. In an attempt to meet patient demand for shorter treatment times, several alternative protocols were developed—i.e., immediate implant placement after tooth extraction or grafting, implant placement and abutment insertion completed simultaneously (one-stage), and immediate loading of implants after placement. While still quite successful in terms of survival, each of these alternative protocols was associated with an increased risk for implant failure compared to conventional treatment. When choosing methods associated with shorter treatment times, the clinician should discuss frankly with the patient the increased risk for failure, albeit small.

The second important finding from these studies is that there are a number of variables associated with prognosis that are under the control, at least to some degree, of the clinician. Tobacco use in three studies⁶⁻⁸ and implant staging in four studies⁶⁻⁹ were associated with survival rate. The clinician can encourage smokers to stop smoking before implant placement or defer placing implants at all in tobacco users. Six other variables (implant length, well size, coating, timing of implant insertion relative to tooth extraction, implant location, and number of restorative abutments) were variably associated with implant survival.^{6-10,12}

As another example, the clinician may elect to use DRP to increase the amount of available bone permitting insertion of longer or wider implants. The clinician can choose to use coated or uncoated implants. In the setting of immediate-load implants, for example, coating was an important predictor of implant survival. Also, in the setting of immediate-load implants, the number of pontics in the temporary prosthesis was associated with survival. Specifically, the more restored implants—when compared to the number of pontics—the more likely the implants will survive at

one year. This finding suggests that the best outcome may be associated with a 1:1 ratio of restored implants to missing teeth and one should avoid using pontics to replace teeth whenever possible. Contrary to the other studies, in the setting of immediate-load implants, immediate implant placement following tooth extraction was associated with an increased success rate. This unexpected finding merits further investigation.

The results from these studies should be generalized cautiously. As all of the implants evaluated in this study were from one manufacturer, it is unclear whether the results of these studies are applicable to other implant systems. Demographic variables, such as tobacco use, may be generalized across implant systems. Implant-specific variables, such as coating, length, or well size, may not be generalized to other systems. In addition, the clinicians involved with implant placement and restoration are very experienced, and clinical experience is associated with implant success. ■

Acknowledgments

The preparation of this manuscript was supported by the Department of Oral and Maxillofacial Surgery Research Fund, Massachusetts General Hospital. The author thanks the other research collaborators in preparation of manuscripts and abstracts cited in this paper. He would like to recognize the clinicians and staff of the Implant Dentistry Centre, Boston, MA, for their cooperation and the free and unfettered access to their patient records.

References

1. Chuang SK, Tian L, Wei LJ, Dodson TB. Kaplan-Meier analysis of dental implant survival: a strategy for estimating survival with clustered observations. *J Dent Res* 2001;80:2,016-20.
2. Chuang SK, Wei LJ, Douglass CW, Dodson TB. Risk factors for dental implant failure: a strategy for the analysis of clustered failure-time observations. *J Dent Res* 2002;81:572-7.
3. Chuang SK, Tian L, Wei LJ, Dodson TB. Predicting dental implant survival by use of the marginal approach of the semi-parametric survival methods for clustered observations. *J Dent Res* 2002;81:851-5.
4. Vehemente VA, Chuang SK, Dhaer S, Muftu A, Dodson TB. Risk factors affecting dental implant survival. *J Oral Implantol* 2002;28:74-81.
5. McDermott NE, Chuang SK, Woo VV, Dodson TB. Complications of dental implants: identification, frequency, and associated risk factors. *Int J Oral Maxillofac Implant* 2003;18:848-55.

6. Woo VV, Chuang SK, Daher S, Muftu A, Dodson TB. Dentoalveolar reconstructive procedures as a risk factor for implant failure. *J Oral Maxillofac Surg* 2004;62:773-80.
7. Chuang SK, Cai T, Douglass CW, Wei LJ, Dodson TB. Frailty approach for the analysis of clustered failure time observations in dental research. *J Dent Res* 2005;84:54-8.
8. McDermott NE, Chuang SK, Woo VV, Dodson TB. Maxillary sinus augmentation as a risk factor for implant failure. Abstract presented at the 2003 Academy of Osseointegration, Boston, MA, February 2003. Manuscript submitted for publication is under review.
9. Gentile MA, Chuang SK, Dodson TB. 6x6 mm implants: survival estimates and risk factors for failure. *J Dent Res* 2003; 82(Spec Iss A: Abstr No 0873). Manuscript accepted for publication by the *Int J Oral Maxillofac Implant*.
10. Erakat MS, Chuang SK, Yoo R., Weed M, Dodson TB. Immediate-load implants: survival estimates and risk factors for failure. *J Oral Maxillofac Surg* 2004;62(Suppl 1):38-9. Manuscript submitted for publication is under review.
11. Yoo RH, Chuang SK, Erakat MS, Weed M, Dodson TB. Changes in crestal bone levels for immediately loaded implants. IADR/AADR/CADR 83rd General Session in Baltimore, MD. *J Dent Res* 2005;84(Spec Iss A: Abstract No 1494). Manuscript submitted for publication is under review.
12. Chuang SK, Dodson, TB. Conventional versus immediate loading implants: survival analysis and risk factors for dental implant failure. *J Oral Maxillofac Surg* 2005; 63(Suppl 1):35-6. Abstract accepted for presentation, manuscript in progress.

Focused on You.

Are you HIPAA compliant?

The April 2005 Security deadline has passed, but are you still struggling with HIPAA compliance issues? Help is on the way...the best-selling HIPAA Privacy and Security kits give you the information you need to get the results you want at a member rate.

Contact the ADA Catalog at www.adacatalog.org or 800.947.4746 to order yours today!



American Dental Association
www.ada.org

© 2005 American Dental Association. All rights reserved.

MDS Foundation

Wine Tasting and Celebrity Chef



Wine and Celebrity Chef Event

On November 4, 2005, the State Room in Boston was the setting for a night of glamour, fun, and goodwill. The MDS Foundation hosted a Wine Tasting and Celebrity Chef Event with more than 160 attendees. This affair provided an elegant atmosphere for dentists, corporate executives from dental product and insurance companies, and their spouses to enjoy wines from different regions of Europe and the United States while overlooking the city lights of Boston. David Brown, meteorologist from WCVB-TV Channel 5, was also present to kick-off the Foundation's 2nd Annual Giving Campaign. Dr. Alan K. DerKazarian was honored as being the first major donor in the amount of \$10,000 to the Annual Giving Campaign.

In addition to the wine tasting, guests were able to mingle through the candlelit room to taste food creations from six of Boston's finest restaurants. Celebrity chefs from Ajourd'hui, JER-NE, Turner Fisheries, 29 Newbury, Aura, and Pepper's were available to present some of their favorite recipes. A special thank you goes out to these fine chefs for donating their time and food to make this event possible. A Hilton Head golf getaway, tour and tasting for 10 at Westport Rivers Winery, tickets to *Wicked*, Sullivan-Schein gift certificates, and a Four Seasons Hotel stay were just some of the prizes offered in the silent auction that evening.

All proceeds benefited the MDS Foundation, which is dedicated to improving the oral healthcare of Massachusetts residents. This is just one of many fabulous events that the MDS Foundation will be hosting this year. Look for the MDS Foundation's Casino Night on the Thursday night of YDC 31, immediately following the Opening Ceremony in the Sheraton Hotel.

The following companies showed tremendous support of this event: Gentle Dental Associates, LLC; MDS Insurance Services, Inc.; Blue Cross Blue Shield of MA; LaVigne; EDIC; Dental Career Network; and UBS.



Endoscopic Holography: A Minimally Invasive Oral Biopsy Technique

E. J. NEIBURGER, DDS

Dr. Neiburger is a general practitioner in Waukegan, IL. He is vice president of the American Association of Forensic Dentists and past curator of anthropology at the Lake County Museum.

It is important to see the nature of the cells when diagnosing oral lesions. This is often done microscopically by removing lesions, either scraping individual cells (cytology) or cutting out blocks of tissue (biopsy). The problems encountered with these techniques involve the patient's discomfort, possibility of spreading a tumor (e.g., an incisional biopsy of malignant melanoma), delayed healing, and time required for the lab work (shipping of specimen, sectioning, staining, path review, etc.). Many dentists are hesitant to suggest biopsies of minor lesions because of the trauma, pain, and cost incurred by the patient.

The use of direct tissue examination using light endoscopes, intraoral video, or macrophotography is of limited value because the poor resolution of the images will not identify pathology on a cellular level.¹⁻³

Endoscopic holography (endoholographic biopsy) is a new technique that can overcome many disadvantages of traditional oral biopsy techniques.^{4,5} It utilizes laser holography, a photographic technique that will produce film images of in vivo lesions in any part of the mouth. No tissue is removed or damaged. This holographic image appears in 3D and, because of the monochromatic laser light and ultrahigh resolution film used, will possess sufficient resolution (3 microns) to be viewed microscopically.⁵ This will allow the dentist to examine real-life holographic images under the microscope and see the detail of actual cells photographed. (See Figures 1–3.) It is impossible to do this using standard white-light photography because of the inherent lack of adequate resolution, which is overcome by the laser hologram.

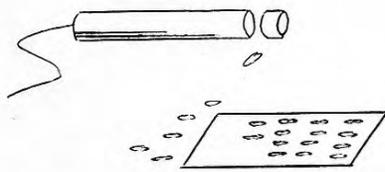
Equipment and Technique

The holoendoscopic camera and film cassette is a small stainless steel tube, which is attached to a laser by an optical fiber and is pressed against the suspect lesion for an exposure, or photo (see Figures 1 and 2). The camera will produce a reflection hologram of the tissue in the single-beam Denisyuk configuration^{1,4,5} (see Figure 3). The camera is withdrawn and the exposed film disk is removed, chemically developed, and examined under a standard white-light microscope.

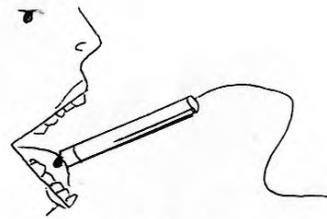
The holoendoscope tube is 86 mm long and 10 mm in diameter. It has four parts (see Figure 2):

1. **Film cartridge.** The film used is standard sheet, holographic film (Agfa Holotest 8E75HD T3 or Geola PFG-03M), which is punched into 8 mm disks. This film has a high resolution of 5,000 lines per millimeter. The disk is inserted into the cassette cartridge with the emulsion side facing away from the tissue. The film disk is the surface that touches the lesion upon laser exposure.¹⁻³ After exposure, the film is removed, developed, washed, fixed, and bleached in a 5-minute developing process, and is then dried and examined.

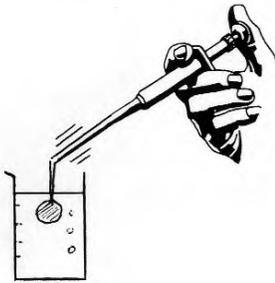
ENDOSCOPIC HOLOGRAPHY TECHNIQUE



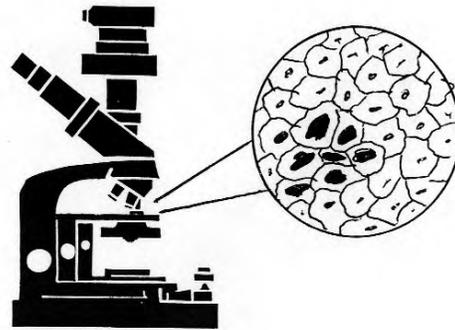
1. HOLOGRAPHIC FILM IS PUNCHED AND INSERTED INTO THE ENDOSCOPE CASSETTE



2. HOLOGRAPH OF LESION TAKEN (1/1000 SECOND)



3. HOLOGRAPHIC FILM IS DEVELOPED (5 MINUTES)



4. HOLOGRAM EXAMINED UNDER MICROSCOPE (400X)

Figure 1. Endoscopic holographic technique: four steps.

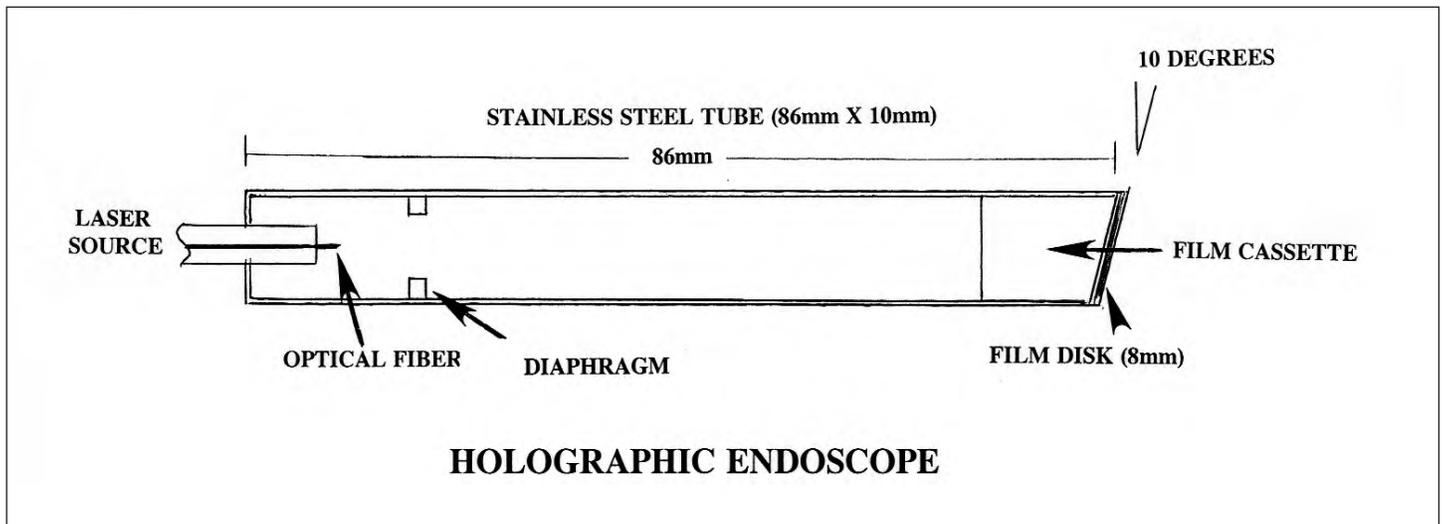


Figure 2. Schematic of a holographic endoscope.

2. **Diaphragm.** The holoendoscope tube has a diaphragm allowing for a wide holoscopic aperture. This allows the formation of an image with low speckle noises (marks) and a high lateral resolution.^{1,4,5}
3. **Optical fiber.** The laser energy that creates the hologram is transmitted to the holoendoscope through an insulated 4 micron Corning optical

fiber.^{1,5} This fiber-containing cable can be of any reasonable length and allows easy movement and placement of the holoendoscope.

4. **Laser.** An Argon or Krypton CW laser with 30 mW of power (Spectra Physics #164, 165) can be used to supply the laser energy (e.g., 514 nm) needed for exposure. An exposure time of 1/400 to

1/1000 second is needed, yielding a fluence of 6 microjoules per square centimeter.^{1,2}

Once exposed and developed, the holographic film can be viewed in white polarized light using a standard compound microscope with a 10X eyepiece and a 40X objective lens. This 400-power magnification will allow the dentist to see

***The microscopic images are sufficiently detailed so that
the clinician can clearly see the lesion's cells
and determine if pathology is present.***

cells imprinted on the hologram at a 3.36-micron resolution^{1,3} (see Figures 1 and 3).

Though not entirely necessary, superior holographic images can be made on tissue that has been stained prior to exposure. Good results have been achieved with a 30-second stain application using 0.2% aqueous Trypan Blue, Methylene Blue, Toluidine Blue, Phloxine B, Rose Bengal, or Neutral Red stain.^{1,3,5}

Advantages/Disadvantages

The holographic biopsy technique has many advantages over standard cytology/biopsy practices. The holoendoscope (camera) can be placed anywhere in the oral cavity, especially in the pharynx and the back of the tongue. It can provide a good image of the lesion's cell structure yet requires no anesthesia, painful cutting, or pathology lab operations. It can be done on-site, immediately producing good, permanent holograms of high resolution and in three dimensions. The film process is inexpensive (pennies per expo-

sure) and easily loaded and developed. The exposure process is fast (a fraction of a second), so the patient is not inconvenienced. It is easy to take multisite holograms compared to the natural reluctance clinicians face in doing multi-incisional biopsies on questionable lesions.

As with anything, there are some disadvantages. Though the holograms have a large focal depth, this technique cannot see deep into the tissues. Holograms of a few cells' thickness are all that can be seen. Thus, as with cytology, deeper-lying tumors cannot be detected. The holographic equipment is initially expensive, especially for the lasers, which may cost around \$1,000, and the microscope, which may cost \$500. Also, it is advised that you stain the tissue for 30 seconds before taking the hologram; this is a separate, though quick, process.

Additional disadvantages involve the need for a developing process (e.g., chemicals, tank, dark room), safety glasses, and laser warning systems. At this time, I

know of no commercial company that supplies manufactured holoendoscopes or pre-cut disk film. These items, while easy enough to make, must be created by the practitioner.

Conclusion

A new technique of intraoral biopsy is described in which a small, tubular endoscope holding holographic film and connected to a laser by an optical fiber cable can create holograms of tissue/lesions which possess such high resolution (3 microns) that they can be examined under a microscope. The microscopic images are sufficiently detailed so that the clinician can clearly see the lesion's cells and determine if pathology is present. This is done inexpensively, within minutes, on-site, and without any surgery or discomfort to the patient. In spite of the disadvantages, this technique appears to present a useful alternative to biopsy. ■

Acknowledgments

Special thanks to Andent Inc. and Dr. Hans Bjelkhagen for their assistance and permission to publish the accompanying illustrations.

References

1. Friedman M, Bjelkhagen H, Epstein M. Endoholography in medicine. *J Laser Appl* 1988 Fall;40-4.
2. Friedman M, Bjelkhagen H, Epstein M. A dye-scattering method for holoscopic endoscopy through optical fibers. 1988 Engineering in Medicine and Biology Society; 198. Proceedings of the Annual International Conference of the IEEE; November:120-30.
3. Bjelkhagen H. What is possible with holographic endoscopy? *Proc SPIE* 1992;1647: 66-74.
4. Bains S. CCD captures holograms to image through tissue. *Laser Focus World* 1993;9:20-2.
5. Mehta P. Holographic techniques. 2004 *Hololight Consultancy*;11:1-12.

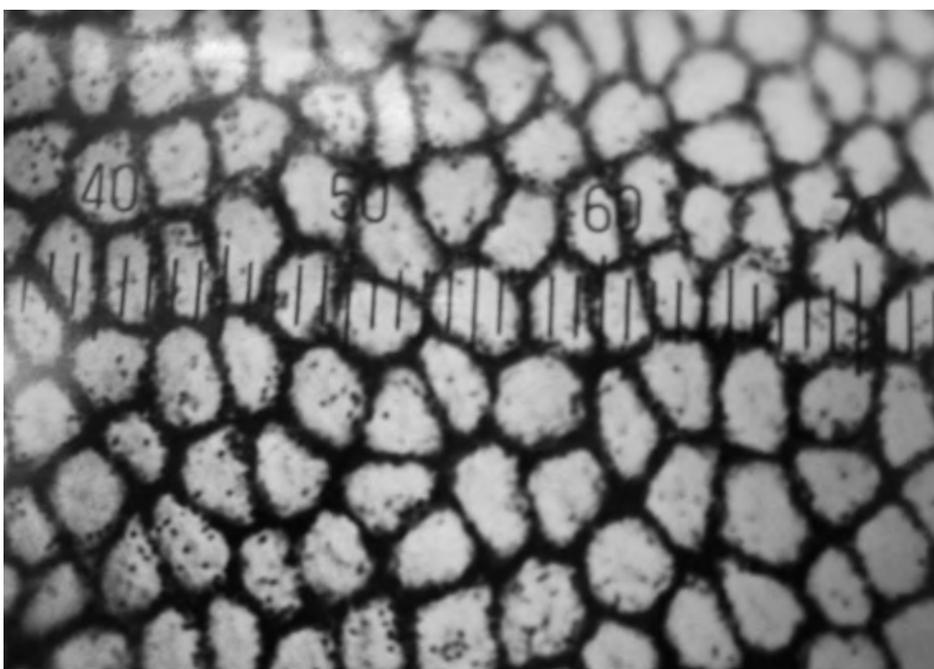


Figure 3. Photomicrograph of cells on a hologram as seen through a microscope (400X).

A Clinico-Pathologic Correlation: Fibrous Dysplasia

MICHAEL A. KAHN, DDS

MARIO LUCCA, DMD

MARIA B. PAPAGEORGE, DMD, MS

Dr. Kahn is associate professor of oral and maxillofacial pathology, Dr. Lucca is clinical instructor of oral and maxillofacial surgery, and Dr. Papageorge is professor and chair of oral and maxillofacial surgery at Tufts University School of Dental Medicine.

History

A 35-year-old white male presented to Tufts University School of Dental Medicine after evaluation at the New England Medical Center Emergency Department. The patient presented with a chief complaint of jaw pain and left-sided facial swelling. He reported the onset of his swelling nine days before his presentation, with symptoms worsening in the 24 hours prior to our examination. The patient's history of present illness included a biopsy positive for a fibro-osseous lesion to the left mandible in 1998. Our patient had been noncompliant with follow-up related to these findings, and had not received treatment other than a biopsy since that time. The patient's past medical history was otherwise nonsignificant. He reported taking no medications; however, his social history was positive for smoking tobacco (one pack per day for 21 years) but included no alcohol or recreational drug use.



Figure 1. Photograph of intraoral clinical presentation illustrating mass in left posterior-lateral vestibule.

Clinical examination revealed our patient's condition to be generally stable and he was afebrile. Extraoral findings included swelling of the left mandible, paresthesia of the left inferior alveolar nerve distribution, and lymphadenopathy of the left submandibular. His intraoral examination revealed vestibular swelling adjacent to teeth numbers 18 and 19, and a significant buccal-to-lingual expansion was appreciated in this area (Figure 1). There were no significant changes in his mucosa. The teeth on the left side were slightly mobile and his occlusion was stable.

A panoramic radiograph revealed a mixed radiopaque and radiolucent lesion apical to the left first and second molars, extending posteriorly to the left ramus and anteriorly

to the left mental region. A large, well-circumscribed radiolucency was also appreciated apical to teeth numbers 18 and 19 (Figure 2). An axial computed tomography view (bony window setting) revealed a significantly expanded left mandible with a central radiolucency (Figure 3).

Biopsy of the left mandible and extraction of teeth numbers 18 and 19 were performed under ambulatory general anesthesia. Purulent material was expressed from this site with apical curettage. Apical tissue from teeth numbers 18 and 19, bone distal to number 18, and periosteum buccal to number 18 were collected and submitted for histological evaluation.

Differential Diagnosis

- Fibrous dysplasia
- Central ossifying fibroma
- Odontogenic infection
- Diffuse sclerosing osteomyelitis
- Cemento-osseous dysplasia
- Paget's disease
- Malignant bone tumor

Histological Findings

Histological examination of the apical tissue collected from teeth numbers 18 and 19 revealed findings typical of a periapical cyst and fibrocellular stroma consistent with a benign fibro-osseous lesion. Periosteum collected from the buccal area of number 18 was nonspecific with chronic soft-tissue inflammation. Sections from bone distal to number 18 revealed vital bone with mature laminations and prominent osteoblastic rimming. The accompanying stroma surrounding the spicules of vital bone was highly cellular and fibro-osseous in character (Figures 4 and 5). The specific shape of the mature lamellar bone, with accompanying fibrocellular stroma, strongly suggests a benign fibro-osseous process such as fibrous dysplasia.

Diagnosis

Fibrous dysplasia with a coincident periapical infection of teeth numbers 18 and 19.

Discussion

Fibrous dysplasia is a localized alteration of normal bone metabolism whereby bony architecture is replaced



Figure 2. Panoramic image of left mandible with well-circumscribed radiolucency apical to teeth numbers 18 and 19. The mixed radiolucent and radiopaque area extends from the left ramus posteriorly to teeth numbers 27 and 28 anteriorly. The condyle can not be appreciated in this view but is not infiltrated by the lesion.



Figure 3. Axial computed tomography (bony window setting) illustrating expansion of the left mandible.

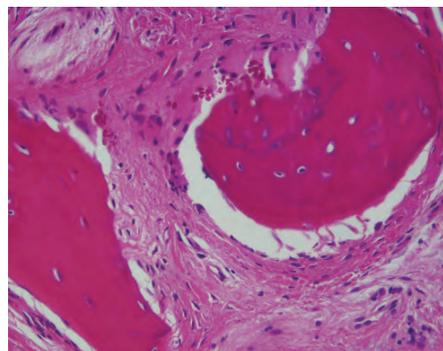


Figure 4. Low-magnification H&E-stained slide showing numerous spicules of bone and osteoblastic rimming. The stroma is cellular and fibro-osseous in character.

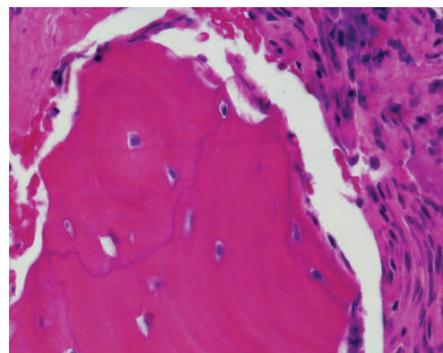


Figure 5. High-magnification H&E-stained slide showing osteoblastic activity and acute and chronic inflammation.

by fibrous tissue and nonfunctional osseous structures.¹ Fibrous dysplasia is a benign entity of unknown etiology. The alteration of bone involves a fibrous transformation of medullary bone, which undergoes a maturation process into dense lamellar bone.¹ This process creates a bony expansion that is responsible for the findings appreciated clinically.

Fibrous dysplasia can affect one or many bones (monostotic or polystotic). The monostotic variant includes juvenile and adult onsets, and the polystotic variant may or may not be associated with endocrine abnormalities and disorders that present syndromically.¹ Hyperparathyroidism and McCune-Albright syndrome are a few systemic examples; however, they did not manifest in our patient.

The monostotic variant of fibrous dysplasia most commonly involves the jaws and accounts for 70 percent of all cases.² Fibrous dysplasia's incidence is twice as common in the maxilla than the mandible, but is traditionally unilateral.² This unilateral localization of the lesion in the patient helps to eliminate cemento-osseous dysplasias such as periapical cemento-osseous dysplasia (PCD) and florid cemento-osseous dysplasia (FCD) from our differential. The radiographic manifestation of PCD is primarily in the anterior mandible, and FCD is most commonly a bilateral process. Paget's disease also presents with a more comprehensive radiographic distribution and is not considered in this case.

The radiographic features of fibrous dysplasia are pronounced. The lesions present with an ill-defined periphery and irregular trabecular patterns. The deposition of abnormal trabeculae is consistent with the mixed radiopaque and radiolucent picture of fibrous dysplasia. Early radiolucent lesions are gradually replaced by later radiopaque lesions as abnormal bone is proliferated.¹ Traditionally, this "abnormal" bone is described radiographically to have a "ground glass" appearance.

With emphasis on the radiographic manifestation, diffuse sclerosing osteomyelitis, malignant bone tumor, and central ossifying fibroma are considered in

the differential diagnosis. But clinically, diffuse sclerosing osteomyelitis rarely exhibits expansion of bone other than that involving the periosteum, and late-stage osteomyelitis often exhibits histological sequestra.³ Although our patient did suffer from an overlying periradicular infection of teeth 18 and 19, his infection did not advance to the level of osteomyelitis. Malignant bone tumor and other bone malignancies can also be suspected radiographically but, again, are distinguished histologically. No malignancy exists in our specimens.

Central ossifying fibroma is radiographically and histologically similar to fibrous dysplasia, but differs in its detailed character. Both are benign neoplasms with particular radiolucent features. However, radiographically, central ossifying fibroma does not present with ill-defined borders. The lesion is typically encapsulated with a well-defined border.³

Clinically, fibrous dysplasia presents in the second decade of life, while central ossifying fibroma is more common in the third and fourth decades.³ Distinguishing between these two lesions is important because treatment of central ossifying fibroma requires complete enucleation, while the treatment for fibrous dysplasia may be more conservative.³

Conclusion

It is when all the histological and radiographic data are observed collectively with the history that the findings in our case corroborate and suggest fibrous dysplasia. But careful

diagnosis and early detection are important in all cases because differing disease processes often present with similar radiographic patterns but very often are treated by critically different methods.³

Lesions of fibrous dysplasia are self-limiting and growth is limited primarily by pubertal and hormonal changes.² Treatment is often provided to address cosmetic concerns and functional disturbances. Surgery can involve continued conservative reduction or complete excision depending on the size of the lesion.¹

In our patient's case, the lesion was locally aggressive, affecting the left inferior alveolar nerve distribution, and the site was secondarily infected. At the time of our patient's presentation, his left condyle was not yet included in the lesion and could be salvaged. Left mandible resection with immediate reconstruction using bone harvested from the posterior iliac crest was the recommended treatment for this patient. His post-operative course has been uneventful, and continued follow-up and evaluation is ongoing. ■

References

1. Sapp J, Eversole LR, Wysocki GP. Contemporary oral and maxillofacial pathology. Philadelphia: Mosby; 1997.
2. White S, Pharoah M. Oral radiology, principles, and interpretation. 4th ed. St. Louis: Mosby; 2000.
3. Singer S, Mupparapu M. Clinical and radiographic features of chronic monostotic fibrous dysplasia of the mandible. J Can Dent Assoc 2004 Sep;70(8):548-52.

ECO II
Amalgam Separator

Green&Clean M2
Suction Line Cleaner

“Install it and forget it”

- Completely maintenance free
- Does not affect suction pressure
- Quick and easy installation
- Customized solutions
- Complete recycling service included!

Quick, simple, clean and hygienic.

1) 2x measured doses 2) Mixing with water 3) Suction

PURE WATER
DEVELOPMENT L.L.C.

Call 1-877-METASYS (638-2797)
or go online to www.ecotwo.com



PATHOLOGY SNAPSHOT

GEORGE GALLAGHER, DMD, DMSC

SADRU KABANI, DMD, MS

VIKKI NOONAN, DMD, DMSC

Dr. Gallagher is professor, Dr. Kabani is professor and director, and Dr. Noonan is assistant professor of oral and maxillofacial pathology at Boston University School of Dental Medicine.

ORAL LYMPHOEPITHELIAL CYST



Oral lymphoepithelial cyst: small, yellow-white nodule shown at the tonsillar fossa (left), the posterior lateral tongue border (center), and the floor of the mouth (right), respectively.

ARISING IN LYMPHOID TISSUE OF THE ORAL AND PHARYNGEAL mucosa, the oral lymphoepithelial cyst typically presents as an asymptomatic yellow-white circumscribed nodular submucosal mass rarely measuring greater than 5 mm in diameter. The oral lymphoepithelial cyst commonly presents in the region of distribution of accessory lymphoid tissue (Waldeyer's ring): the posterior lateral tongue border in the region of the foliate papilla, the palatine tonsil, the anterior floor of the mouth, and occasionally on the soft palate.

The presence of characteristic delicate surface vascularity is help-

ful in the diagnosis of these cystic lesions. In most cases, oral lymphoepithelial cysts tend to rupture spontaneously; however, for those patients complaining of discomfort associated with the lesion or irritation likened to a "tickle in the throat," excisional biopsy may be indicated.

Histologic examination reveals a cystic cavity lined by unremarkable stratified squamous epithelium surrounding a lumen that may contain keratinous debris from desquamating lining epithelial cells. A variable amount of lymphoid tissue is found within the cyst wall. ■



CDAD

Dentist Well-Being Committee

Dentists in recovery helping dentists with chemical dependency

- Confidential support group meetings each month throughout the state
- Private consultations available upon request
- Confidentiality and anonymity guaranteed

Contact:

PO Box 716, Andover, MA 01810

24-hour Hotline: **(800) 468-2004**

Visit: **www.cdad.org**



DENTAL EDUCATION

MELISSA CARMAN, MANAGING EDITOR

Highlighting key events taking place in dental education in Massachusetts.

Massachusetts College of Pharmacy and Health Sciences

ON AUGUST 29, 2005, MASSACHUSETTS COLLEGE OF PHARMACY and Health Sciences formally dedicated the new Esther M. Wilkins Forsyth Dental Clinic, a state-of-the-art facility that will provide both students and faculty with some of the most advanced technology in the country. The new clinic is located at the Palace Road entrance of the school.



Among those taking part in the ribbon cutting of the Esther M. Wilkins Forsyth Dental Hygiene Clinic are Boston Mayor Thomas M. Menino and Dr. Esther M. Wilkins, center.

The clinic was named through a leadership gift made by Dr. Esther M. Wilkins, a Forsyth Dental Hygiene Program alumna and author, whose textbook *Clinical Practice of the Dental Hygienist* is now in preparation for a 10th edition.

“The faculty, staff, and I have worked tirelessly with numerous individuals to get to this point,” says Dr. W. Gail Barnes, program director of the Forsyth Dental Hygiene Program. “We are so appreciative of the MCPHS administration for seeing the vision, and of Dr. Wilkins for her generosity.”

The facility features an appointed reception area with a multimedia display offering the latest guidelines on oral health and early detection of oral disease; a clinical treatment area featuring 28 operatories equipped with state-of-the-art dental chairs, as well as computers and highly specialized software that facilitate chairside periodontal charting; a 12-station dental materials lab, equipped with a computerized instructor’s station; digital radiologic imaging and private imaging rooms; and private offices for Forsyth faculty and a shared office for clinical instructors and supervising dentists, which enhance opportunities for collaboration among students and faculty.

“The new clinic gives students and faculty the opportunity to familiarize ourselves with the latest dental technology,” says Dr. Barnes. “Once they graduate, it may be years before they are able to work in this type of environment again.” ■

Boston University School of Dental Medicine

JOHN MCMANAMA, DDS, A GENERAL PRACTITIONER IN Cambridge and a professor of general dentistry at Boston University School of Dental Medicine, is the recipient of the 2005 Metcalf Cup and Prize for Excellence in Teaching. The Metcalf Cup is BU’s highest teaching award and is awarded based on the recommendations of alumni, faculty, and students.

Since 1976, Dr. McManama has taught 31 courses to more than 4,300 dental students and



Dr. John McManama receiving the Metcalf Cup and Prize.

Photo credit: Michael Hamilton/BU

dental medicine teachers. In addition to maintaining his private practice, Dr. McManama still directs 17 percent of the predoctoral curriculum, teaches in the BUSDM clinic, mentors students and junior faculty, and lectures to professional organizations around the world.

Dr. Judith Jones, chair of the Department of General Dentistry, nominated Dr. McManama for the Metcalf Cup. In her nomination letter, Dr. Jones noted that Dr. McManama taught 17 percent of the predoctoral curriculum when she arrived at the school in 2001, and that “even with the workload he carried, the quality of his teaching was and continues to be superlative.”

“This is a wonderful honor for both Carl and the School of Dental Medicine,” says Dr. Spencer N. Frankl, dean of BUSDM. “Carl is a perfect example of what a teacher should be: knowledgeable, dedicated, engaging, and compassionate.” ■

Harvard School of Dental Medicine

ON JUNE 10, 2005, HARVARD School of Dental Medicine officially dedicated its newly constructed Research and Education Building, which had been under construction for two years. The six-level, 60,000-square-foot facility, located at 188 Longwood Avenue in Boston, houses HSDM departments, state-of-the-art laboratories, classrooms, an auditorium, and common areas. The entire first level, a majority of the second level, and portions of the remaining levels are devoted to education, technology, and faculty offices. Levels three through five house the Laboratories for Molecular Dental Medicine, comprised of the Center for Research in Craniofacial Development and Behavior; the Bone and Joint Disease Center; the Center for Mucosal Biology; and the Center for Biomaterials Science.



The new Research and Education Building at Harvard School of Dental Medicine.

Photograph courtesy of Rothman Partners Architects. Photograph by Anton Grassl.



HSDM Dean R. Bruce Donoff speaks at the dedication of the new 60,000-square-foot facility.

Photograph by Steve Gilbert

A main impetus for the new building, in addition to the school’s continued growth, was to unite departments, students, and faculty in state-of-the-art classrooms and research facilities capable of supporting the latest in specialized research equipment and technology.

By design, the HSDM Research and Education Building “fosters interdisciplinary and multidisciplinary learning and discovery,” said HSDM Dean R. Bruce Donoff in a speech at the building’s dedication, “and gets us ever closer to creating an aca-

Making A Big Difference By Starting Small

MassDentists



Combining Access with Reduced Expense

What is MassDentists CARE?

MassDentists CARE (Combining Access with Reduced Expense) is a program to help children from income-eligible families receive quality dental care through volunteers of the Massachusetts Dental Society who agree to provide selected services at a reduced fee.

Who is eligible to participate?

Low-income children through the age of 18 who do not have either dental insurance or MassHealth Dental coverage are eligible to participate. Once approved by the MDS, children can participate in the program for two years. After that, their parents/guardians must reapply for the program.

How do I become a MassDentists CARE provider?

Members of the Massachusetts Dental Society can become a provider simply by filling out an enrollment form. For more information on the program and to access the enrollment form, log on to www.massdental.org and click on the Members Section. Or call the Massachusetts Dental Society at (800) 342-8747, extension 271, or email Andrea DeFeo at adefeo@massdental.org.



demical dental center where education, research, and patient care occur simultaneously, and inform and improve one another.”

Additionally, to further integrate research and clinical training in dental medicine, HSDM recruited four top scientists and clinicians for the Department of Oral and Developmental Biology and the Department of Restorative Dentistry and Biomaterials Sciences. ■

Tufts School of Dental Medicine



Dr. Aidee Herman named NHSC ambassador.

DR. AIDEE HERMAN, ASSOCIATE CLINICAL professor of periodontology at Tufts University School of Dental Medicine, has been named an ambassador for the National Health Service Corps (NHSC). The NHSC brings together clinicians to provide primary healthcare to adults and children in the communities of greatest need across the United States. Dr. Herman was selected because, according to the NHSC, she is a “role model for students and a valuable resource with knowledge of the commu-

nity, relationships with students and NHSC scholars, and the reputation as a leader in primary care on campus.”

Also, Fizza Jafry, a student at Tufts University School of Dental Medicine (Class of 2006), has been named a Boston Schweitzer Fellow for 2005–2006. Fellows commit to a year of service with a community agency, and design and implement health-related community outreach projects. Jafry will expand Project CORRECT (Child Oral Rehabilitation Residential Education Counseling and Therapy) at the Franciscan Children’s Hospital to include the Kennedy Hope Academy, a unit for autistic and/or mentally delayed residents. Currently, Project CORRECT serves one unit at the hospital, the Residential Assessment Program. ■



Great Expressions Dental Centers has exciting opportunities for General Dentists, Endodontists, Periodontists, Orthodontists and Oral Surgeons. We are looking for highly motivated practitioners to join our team in Michigan, Ohio, Virginia, Georgia, Florida, Massachusetts and Connecticut. GEDC provides our associates with an excellent practice environment and rewards them with a comprehensive compensation package along with medical insurance, life insurance, malpractice insurance, paid vacations, 401(k) and reimbursement for continuing education and membership dues; relocation assistance available. GEDC has grown into one of the largest private providers of dental care in the United States and has been “Exceeding Patient Expectations” for over 20 years. Contact Vicki Gorlitz @ (248) 203-1118, or email donna.rivard@greatexpressions.com. Please visit our website at www.greatexpressions.com for additional information!

Take Advantage of the MDS Discount!

Based on the combined buying power of the membership, the MDS has secured a variety of business discounts for you to take advantage of. When contacting a vendor for a service, be sure to ask for your “MDS Discount.” A full list of MDS business services is available at www.massdental.org.



PAUL FEUERSTEIN, DMD

Dr. Feuerstein is technology editor of Dental Economics and a general practitioner in North Billerica. He can be contacted by emailing drpaul@toothfairy.com or by visiting www.computersindentistry.com.

EXTREME OFFICE MAKEOVER

THE PROLIFERATION OF DENTAL TECHNOLOGY PRODUCTS HAS introduced a new problem for most practitioners:

Where do you put all this stuff? The initial thrust was to put it all at the front desk, but more and more practitioners are placing an increasing number of items right in the treatment rooms.

The front desk areas have been retrofitted to house computers and monitors. Typically, there is some space under most front counters to fit a computer or two. A private office or consult room appears to be the logical—although not the best—place for the server and hub. One novel place for these components is the old darkroom, if you have gone digital. The room usually has at least one fan and room for a person to move around. If it is used as “computer central,” the fans and/or ventilation system should be upgraded because computers give off a lot of heat and, with multiple fans, noise. Hubs, servers, central stereo, phone system, DSL/cable modems, and more can all coexist nicely in this little room.

It is essential that there be at least one or two dedicated electrical circuits in the room, along with a grouping of battery backups to keep things going in the event of the all-too-common New England power failure. You can actually invest in a commercial uninterruptible power supply, as well as surge protection to the whole room, set up at the service box. Backup disks, drives, and tapes can be used but not stored in this area. Many offices mistakenly set up shelves for the old backups right in this room for the convenience, but those backups should be kept off-site. The exception is if there are “redundant” backups: a copy can stay in the room in the event of a small disaster that just needs to go back to the previous set, just to get up and running.

With the cost of flat screens dropping, there is no reason to take up valuable front desk real estate with an old CRT monitor. High-quality screens are available in computer stores as well as at retailers such as Wal-Mart and Target at prices sometimes below \$200. You do not need high-end graphics at the front desk—only in the areas that will require diagnostic quality. And the staff will love the extra room on the desktop.

The treatment rooms were originally configured to house tubs, trays, and assorted instruments. All of a sudden, you needed a place for the curing light and light source for loupes. When intraoral cameras arrived, if you didn’t have a cart-based system, you had to find counter space for the box and, of course, the TV or computer monitor. Where can you put a computer in the treatment room? Under a sink where it can get ruined with a leak?

Offices have had to remove banks of drawers to get all of this equipment in comfortably and so that it’s easily accessible.

With the advent of new devices with USB connections, the seemingly simple setup can become a nightmare if you are trying to plug into the back of a computer that is tucked away. Luckily, there are inexpensive USB hubs that can be mounted in a more convenient location. They usually can accommodate four devices and have a long connection cord, which can wind its way to the remote computer. If the computers are older, they may still have USB1 inputs, which run the new equipment at a snail’s pace. For the frugal office that does not want to change computers, a USB2 card can be purchased and installed for about \$30.

Digital X-ray sensors pose a new problem.

They have long attached wires and are just begging for a storage place other than a hook on the wall. Some of the newer systems plug right into the X-ray head, which has been retrofitted with cables. A nice solution is to put the sensors in a cabinet drawer with a hole cut in the back panel, which allows the wires to feed out the back. The drawer can be pulled open, the sensor taken out (with an area in that same drawer for barriers) and shut back in after use, out of the way.

Monitors pose a more complex issue, especially if the office has decided to run two monitors in the room—in front of and behind the patient. A variety of mounts are available, allowing fixation to walls, ceilings, and existing light poles. Still, the connecting wires will have to be snaked around to accommodate this design. The ultimate solution is to replace the old cabinets and, in some cases, chairs with new models. Almost all new units have monitor wiring and mounts built in. There is a place for the CPU that is easy to access, is well ventilated, and has conduits to run the cables as well as extra electrical outlets. There are handpiece hangers that accommodate intraoral cameras and will, in fact, activate the monitor and viewing software when the camera is lifted from the unit.

It may be necessary to do a bit of remodeling in order to incorporate all of these technologies. The doctor and staff should spend some time sitting in operator and patient positions, and walk through the workflow of the various pieces of equipment. They can then figure out the best locations and determine if a retrofit is possible, or if it is time to look at the available cabinetry. We all tend to remodel our homes—repaint, repaper, and put in new cabinets—more often than the offices that we spend most of our waking hours in and that have far more traffic flow. Sit back, take a look around, and enjoy the tax credits. ■





BOOK REVIEWS

NORMAN BECKER, DDS, EDITOR EMERITUS

Oral and Maxillofacial Trauma, Third Edition

**RAYMOND J. FONSECA, ROBERT V. WALKER,
NORMAN J. BETTS, H. DEXTER BARBER,
AND MICHAEL P. POWERS**

Elsevier Saunders Publishers

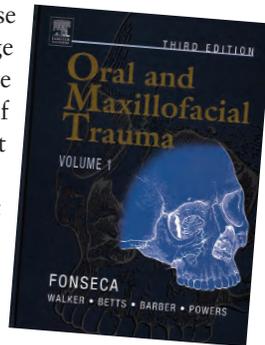
The editors, in order to update those areas where the body of knowledge has changed or where new areas have evolved, have utilized the expertise of chapter contributors to accomplish that goal for this third-edition textbook.

The text maintains the basic format of the first two editions, with four sections covering the various types of trauma. Part One, "Basic Principles in the Management of Trauma Injury," covers metabolic responses, surgical nutrition, and the healing of traumatic wounds. Part Two, "Systemic Evaluation of the Traumatized Patient," includes discussion of emergency and intensive care, airway management, nonpenetrating chest trauma, and shock. Chapters on the evaluation and management of the major organ systems include neurological, abdominal, urologic, and orthopedic injuries, which can be affected by the trauma.

Part Three, "Management of Head and Neck Injuries," features a "state-of-the-art" chapter on applied surgical anatomy and includes essential reading devoted to clinical and radiographic evaluation of traumatic head and neck injuries. Chapters on diagnosis and treatment of all kinds of fractures and the comprehensive management of soft-tissue injuries are also included.

Finally, Part Four, "Special Consideration in the Management of Traumatic Injuries," covers such topics as firearm and burn injuries, specific considerations for the geriatric patient, as well as prosthetics, biomaterials, and reconstructive procedures needed to repair traumatic defects.

The editors present the materials in two volumes, each of which is well illustrated and expertly presented. Although the content is of primary value to maxillofacial surgeons, the material can be appreciated by all practitioners.



to treatment, as well as the new equipment and materials, have resulted in a need to rewrite and update this third edition of *Endodontics*."

The opening chapters outline the biological basis of endodontics as it is understood today, and the remaining chapters describe the techniques and materials currently used. Topics covered in this valuable textbook include biological and clinical rationale for pulp therapy and treatment; patient assessment; radiography; treatment options; pre-endodontic management; root canal morphology; root canal system preparation; intra-canal medication and temporary seal; root canal system obturation; endoperio interface; surgical endodontics; management of acute problems; tooth resorption; root canal retreatment; restoration of the root-treated tooth; endodontic treatment of primary teeth; and ways to reduce the risk of legal action in endodontics.

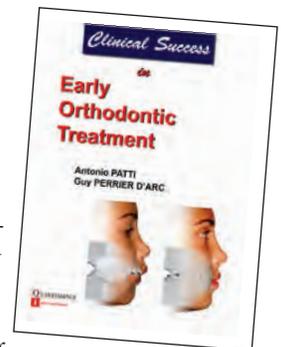
Each of these topics is presented well, with clear photographs and updated information, as well as alternative approaches. An added feature is the individual color-coding of each chapter, which adds to the ease of finding the various topics.

All in all, the contributors have been very thorough in their presentation of new medicaments of the future as well as the comparison of the mechanical approach.

Clinical Success in Early Orthodontic Treatment

**ANTONIO PATTI AND
GUY PERRIER D'ARC**

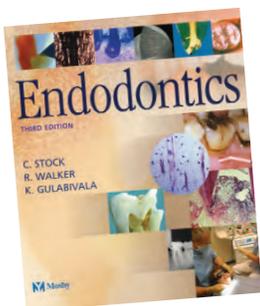
Quintessence Publishing



As a general practitioner who is dependent on referrals to properly guide my patients, I found this an interesting book to review. The fact that Dr. Robert M. Ricketts, the father of "bioprogressive orthodontics," was named as one of the people to whom this book was dedicated alerted me to the fact that the debate between the philosophies of early treatment and the ideology of those practitioners who wait until second molars and all premolars are present was to be presented.

Along with the photographs and drawings, the text was of great value in helping me understand the philosophy promoted by the "early intervention" school. But of greater significance to me, it helped me better understand the construction and fundamentals of the various appliances used in orthodontia.

As a nonorthodontist, I couldn't weigh in on the decision about when to start treatment since our referrals are sent to those practitioners who have previously treated our patients. However, the text did stimulate me to discuss the philosophy and rationale of care with the practitioners to whom we refer. ■



Endodontics, Third Edition

**CHRISTOPHER J. R. STOCK, KISHOR
GULABIVALA, AND RICHARD T.
WALKER**

Elsevier Mosby Publishers

In the preface, the editors state, "The principles of endodontic therapy have not changed greatly. Modern approaches



FINAL THOUGHTS

ROBERT A. FAIELLA, DMD, MMSC

Dr. Faiella is president of the Massachusetts Dental Society. He maintains private periodontics practices in Osterville and Duxbury.

ACCESS TO ORAL HEALTHCARE AS A MORAL IMPERATIVE

THE ISSUE OF ACCESS TO HEALTH SERVICES, AND SPECIFICALLY access to oral healthcare, has been a point of debate in recent years, primarily because of the complexity of defining the problem. The ideology of access would allow for the provision of care to all who need it by a workforce dedicated to the task without the constraints of a business model, and funded by social programs that are fair to both the recipients and the care providers. The solution to the access issue may lie not in what we need to do—because we know what we need to do—but rather in identifying the barriers that prevent us from doing it.

One such barrier exists within the dental workforce itself. Those parties interested in staking a claim within the access issue tend to develop agendas outside traditional delivery systems, to the exclusion of others in the workforce. While it is understandable that the entry point to the access system cannot be at the highest level of education by provider, the coordination of care and interaction within the workforce must be transparent and inclusive, in order to ensure the best outcomes for the patients. The educational and licensure communities must work to develop this coordination by allowing the expansion of the workforce within the context of delivery systems that protect patient interests.



Another barrier is the lack of oral health literacy regarding the utilization of services. Underserved populations may suffer further from the inability to interpret their need for care. Awareness programs must be developed to increase the oral health literacy of those in need and to determine the impact of literacy on utilization of available services.

Ultimately, however, the biggest barrier to the success of any access program is its dependency on funding. Dr. James Mongan, president and CEO of Partners HealthCare, has stated that a frank discussion of funding for access must begin with a discussion about values. Whether in the form of taxes or employer mandates (which are, in effect, another form of taxes), providing access to care costs money. And after 30 years in the battle for broader health insurance, Dr. Mongan is convinced that the debate over access is more about values than it is about specific plans. The theory, he explains, is that as we moved from the social improvements of the postwar era in the 1940s, we evolved into a more affluent, consumer nation with more of a focus on individual needs. The need to cut taxes as political benefit became more important than supporting programs for the greater good. Hence, social justice issues—and the values behind them—have been put aside.

The Massachusetts Dental Society has developed access models to articulate the moral imperative we have as a profession to provide for the public health. Yet we all understand that these charity programs can never substitute for a true solution to the access problem. They are, however, an expression of our values toward society.

In Massachusetts, the debate on healthcare access is about to take center stage on Beacon Hill, with at least three options to be presented to the legislature. Ultimately, the prevailing system would require not only a commitment to participation and funding, but also a commitment to social justice. The members of the legislature must keep their promise to those who elected them by funding programs that are fair to both the underserved and the providers of care. In doing so, dental professionals in Massachusetts will be in a better position to honor our commitment to our values, and to society. ■