TMD, Orofacial Pain, Oral Medicine, and Dental Sleep Medicine Clinic

Dear Colleagues:

Jim Fricton, who devoted his career to the development of the field of TMD and Orofacial Pain, retired from the University this year. In our newsletter, we thought we should share some stories about this remarkable person. As his first resident, colleague, and friend for the past 30 years, I have had the pleasure of working with him. Although you may know his work, few people know of the stories that go along with the impact that he has had in nearly every area of our field: patient care, teaching, research, and service. Here are some stories that Jim has related to me. If you’ve met him, you know that he has a perpetually positive personality, an inexhaustible amount of energy, and is often seen smiling as he explains how the seemingly impossible is not only possible but also probable. Jim has a unique ability to not only think outside the box but to bring those creative impulses into reality. Our field benefitted considerably from this. He is not only a visionary but also a pragmatist who was born on April Fools’ Day, that explains a lot.

(continued on next page)

James Fricton DDS, MS
University of Minnesota
Professor

Eric Schiffman, DDS, MS
Director
Division of TMD and Orofacial Pain

For information go to: www.dentalce.umn.edu or call: 612-625-1418
Jim is one of few people to have both computer science and Dental School graduate training. Yet, when Jim graduated from the University of Iowa School of Dentistry in 1978, this was not the last of his conventional training. He went on to postgraduate training at the Medical School at UCLA in one of the first pain clinics in the country. He convinced the Anesthesiology Chair, Dr. Ron Katz, to admit him as the first resident in the Pain Clinic despite his credentials as a newly graduated Dentist. This unconventional pain clinic was the first University-based clinic to focus on complementary and alternative approaches to complex pain patients. They used acupuncture, hypnosis, yoga, biofeedback, meditation, moxibustion, and other treatments that were a radical departure from mainstream medication and surgery. Despite being fresh out of Dental School, Jim plunged into the heart of academic medicine at UCLA, and worked with an esteemed multi-disciplinary team of innovative clinicians including Richard Kroening in acupuncture and pain, Joseph Barber in hypnotherapy, John Reeves in biofeedback and behavioral management, David Simons and Janet Travell on myofascial pain, and William Solberg and Glenn Clark in TMD and orofacial pain. When he completed the program, he weighed his options and chose an academic career. To our benefit, he was recruited to the UMN School of Dentistry by Dean Richard Oliver and Oral Surgery Chair Daniel Waite in 1981.

Only 3 years out of Dental School in 1981, he founded the first multi-disciplinary TMD and Orofacial Pain Clinic in the country at the University of Minnesota. At the time, care for TMD treatment was focused on changing occlusion or TMJ surgery, which in some cases, failed to improve the pain. Always thinking outside the box, he proposed the use of the biopsychosocial model to achieve better outcomes as described by Engel and others. His team approach, composed of a dentist, physical therapist and health psychologist, was revolutionary yet practical. In addition to addressing the patient’s physical conditions, he promoted the concept that the target for interventions should be on addressing the contributing factors - hence the need for a team approach. He used human systems theory and cybernetics to explain the inter-relationships between contributing factors...a far reach for a wet finger dentist to conceptualize. His patients and referring doctors recognized the success of this model and our clinic has been full ever since.
Dr. Fricton’s Retirement (Continued from page 2)

He had a particular gentle way with patients and made each patient feel ‘special’ adding to his success and reputation. He went to extraordinary lengths to improve care for these neglected patients. For example, in 1996, he proposed the first legislation in the country that required these conditions be covered under medical insurance regardless of who provided the care. Always looking for educational experiences, he took his 2 young sons for a day at the Capitol to convince the Insurance Commissioner, Mike Hatch, and the Minnesota Legislature that this needed to be done. He and his patients were quite convincing with successful passage a few months later. The health insurance plans, complaining that this mandate would skyrocket costs, demanded that the Minnesota Dental Association (MDA) clarify coverage, expecting a free for all. In response, Jim was asked to author the first clinical guidelines in the field to define what should and should not be covered in Minnesota. A subsequent health plan study after the legislation was enacted, showed that costs actually went down by 13.8% while access to quality care went up by 338%. This law was an acknowledged success that was followed by many other states, Medicare, and Medicaid. The guidelines, then, became the basis for TMD and orofacial pain practice guidelines nationally.

In 1983, 2 years after arriving at the UMN, he founded the Graduate Program in TMD and Orofacial Pain. I was honored to be the first resident in this program. He said that he really had no choice since I was quite convincing and would not take ‘no’ for an answer. In my first year, I was amazed at the impact this care model had on improving patients’ pain complaints, functional status, and quality of life. During the past 25 years Jim has been Graduate Director and he has advised and mentored over 50 graduate students. Nearly everyone enjoyed the opportunity to work with this charismatic and insightful teacher. He wrote 3 textbooks and contributed over 30 chapters in other books. Nationally, his leadership led to the first Guidelines for Advanced Education in the field of TMD and Orofacial Pain and approval by the ADA Commission on Dental Accreditation. He also has lectured to dental and medical groups in nearly every state, in over 30 countries, and in nearly every continent of the world juggling many responsibilities and overcoming obstacles to do so. In one lecture to the American Association for the Study of Headache in Miami, he told me that he mistakenly flew to Tampa, arriving at midnight the night before his lecture. Not to be stymied, he rented a car and drove all night, nearly 300 miles, to arrive an hour before his lecture. Despite his lack of sleep, his talk went smoothly, and he was well received by the audience. His most recent course, sponsored by the UM, was Ski and Learn in Breckenridge Colorado last year.
Being a great clinician and teacher was not enough for Jim. Always a visionary, he also focused on research. His pioneering work on establishing reliable and valid methods for establishing a diagnosis and measuring severity of TMD laid the foundation for patient-centered clinical research in the field. His first NIH/NIDCR funded research project was a longitudinal study of risk factors for chronic TMD pain. This study was one of the first to determine that behavioral and psychosocial factors were significant etiologic factors to chronic pain reinforcing the importance of the team approach to address contributing factors. Since this project, he has had over $10 million dollars of NIH funding, published nearly 200 peer reviewed publications and abstracts including several systematic reviews of TMD treatment. He has also contributed as a regular reviewer for NIH grants and most journals in the field. He produced a core of independent research including studying the prevalence, progression, and risk factors for TMD, clinical trials evaluating different treatments for TMD and TMJ implants. In 2002, he established NIDCR’s TMJ Implant Registry and Repository (TIRR) and to this day, researchers can get clinical data as well as tissue samples to support research on TMJ disorders and TMJ implants.

In addition to his research and teaching contributions, Jim strongly believes in service to support state, national, and international organizations. He was a founding member and President of the International Myofascial Pain Society, American Board of Orofacial Pain, and the Association of University TMD and Orofacial Pain Programs. He was Chair of several national and international meetings including the 1st International Congress of Myofascial Pain and Fibromyalgia and the first American Academy of Orofacial Pain and American Academy of Oral Medicine joint meeting. With over 30 years of service, he was chair of most committees in these organizations. He was also the primary author of ADA Application for Specialty Status of Orofacial Pain and the Application to the Commission on Dental Accreditation for Advanced Education in Orofacial Pain. CODA recognition is now a reality for our graduate programs. As in European countries and other countries around the world, “specialty” status may be on its way in the U.S.
In 1985, on a challenge from colleagues that the team approach would not work in private practice, Jim gave up his University practice to co-found the Minnesota Head and Neck Pain Clinic. I have the honor of being one of his partners. This interdisciplinary pain clinic expanded the treatment team to include neurology and physical medicine and rehabilitation specialists. The clinic, now at 4 locations in Minnesota, provides the same successful model of care as the University and demonstrates that this type of clinic in the private sector is sustainable, despite the current accountable care environment. It also demonstrates the adaptability of the model to integrate other types of clinicians and expands treatment to a wider and more diverse pain population. This is important since many chronic TMD and orofacial pain patients have co-morbid conditions that need to be comprehensively addressed in order to manage the patient’s pain and improve their quality of life.

When Jim requested his phase retirement 5 years ago, we were all shocked and disappointed. I heard many times, “What? He is too young to retire!” Well, if you know Jim, his mind is too active to ever truly retire, and every end is just another beginning for him. These words ring true when he added an entirely new career in Health Informatics to his repertoire of accomplishments. His research renaissance came full circle to his early training in computer science, and he helped develop the UMN Institute for Health Informatics, a think tank in integrating computers and health care. With the federal government making electronic health record adoption a national priority, Jim is once again on the cutting edge. He has been successful in receiving four federal and state grants totaling $6 million to develop decision support applications to develop research networks and improve quality patient care through computers and the internet. His systems are the first in the world to integrate data from electronic medical, dental, and personal health records, and he is the only dentist funded by the Agency for Health Care Research and Quality (AHRQ). Furthermore, Jim still finds time to maintain his involvement in our TMD and Orofacial Pain program by writing our CODA application for the UMN and collaborating with faculty in grant proposals to the NIH.

So we are not saying goodbye to Jim. We are, as always, watching his rising star and benefitting from the path he leads us down. I consider myself privileged to have taken this journey with him, and I look forward to our future endeavors.

Sincerely,

Eric Schiffman
Thank you for making a gift to the University of Minnesota School of Dentistry. The University of Minnesota Foundation will acknowledge and direct your tax-deductible gift to the purpose you designate.

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Diagnostic Accuracy of Panoramic Radiograph and MRI for Detecting TMJ Degenerative Joint Disease: A Cross-Sectional Study

Kaimal S, Schiffman EL, John MT, Kang W and Ahmad M.

Abstract

**Aim:** To determine the diagnostic accuracy of panoramic radiograph and MRI for the detection of temporomandibular joint (TMJ) degenerative joint disease (DJD).

**Methods:** Panoramic x-rays as well as bilateral TMJ magnetic resonance imaging (MRI) and computerized tomography (CT) were performed on 705 subjects (614 cases, 91 controls). All images were interpreted by calibrated board-certified radiologists. Inter-examiner reliability was $\kappa=0.16$ for panoramic radiographs, $\kappa=0.46$ for MRI and $\kappa=0.71$ for CT. Diagnostic accuracy of the MRI and panoramic x-rays for detecting DJD was compared to the reference-standard diagnoses derived from the CTs. DJD was defined by the presence of subcortical cyst, surface erosion, osteophyte or generalized sclerosis. Sensitivity and specificity for panoramic x-rays and MRI were calculated based on the presence of any of the above signs of DJD.

**Results:**

**Conclusion:** Panoramic radiograph and MRI have inadequate sensitivity but excellent specificity in detecting CT-depicted DJD. Our findings suggest that panoramic radiographs and MRI have limited value in diagnosing TMJ DJD, and CT is needed for accurate diagnosis.

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**TABLE A:** Diagnostic Accuracy of Panoramic Radiography for DJD compared to CT

<table>
<thead>
<tr>
<th>Signs of DJD</th>
<th>Sensitivity (%)</th>
<th>95% Confidence Interval (%)</th>
<th>Specificity (%)</th>
<th>95% Confidence Interval (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcortical Cysts</td>
<td>14.3</td>
<td>5.5-32.4</td>
<td>99.7</td>
<td>98.6-99.9</td>
</tr>
<tr>
<td>Surface Erosion</td>
<td>19.5</td>
<td>13.6-27.3</td>
<td>99.7</td>
<td>98.6-99.9</td>
</tr>
<tr>
<td>Osteophyte Formation</td>
<td>12.1</td>
<td>6.8-2.5</td>
<td>99.8</td>
<td>98.6-100</td>
</tr>
<tr>
<td>Generalized Sclerosis</td>
<td>33.3</td>
<td>13.1-62.4</td>
<td>100</td>
<td>-</td>
</tr>
</tbody>
</table>

**TABLE B:** Diagnostic Accuracy of MRI for DJD compared to CT

<table>
<thead>
<tr>
<th>Signs of DJD</th>
<th>Sensitivity (%)</th>
<th>95% Confidence Interval (%)</th>
<th>Specificity (%)</th>
<th>95% Confidence Interval (%)</th>
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</thead>
<tbody>
<tr>
<td>Subcortical Cysts</td>
<td>32.1</td>
<td>17.6-51.1</td>
<td>99.9</td>
<td>99.0-100</td>
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<tr>
<td>Surface Erosion</td>
<td>34.6</td>
<td>26.9-43.3</td>
<td>99.0</td>
<td>97.7-99.5</td>
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<tr>
<td>Osteophyte Formation</td>
<td>70.7</td>
<td>60.6-79.0</td>
<td>97.9</td>
<td>96.4-98.8</td>
</tr>
<tr>
<td>Generalized Sclerosis</td>
<td>50.0</td>
<td>24.4-75.6</td>
<td>99.7</td>
<td>98.9-99.9</td>
</tr>
</tbody>
</table>

**Figure** 1 and 2: TMJ CT (“gold standard”) sagittal and coronal views showing osteophyte surface erosion & sclerosis. Figures 3 and 4, MRI and panoramic x-rays, respectively, of degenerative joint disease.
**Dr. Ksenija Rener Sitar** is currently involved in a one year research fellowship within the Division of TMD and Orofacial Pain. Dr. Rener Sitar is from Slovenia and works at the University of Ljubljana, as a docent and researcher at the Faculty of Medicine, Dental division, Dept for Prosthodontics. She also has the appointment with the University Medical Center of Ljubljana, where she works as a prosthodontist. In 2009 she earned a PhD in the field of oral health-related quality of life in TMD patients and patients with bruxism. She developed a passion for helping patients with TMD and attended numerous educational courses in Europe. When she completed her thesis and continued her work, she concluded that she wanted to find a clinical center for TMD where the RDC/TMD protocol is utilized and where the treatment approach includes a multidisciplinary team addressing the various contributing factors of TMD. She selected the University of Minnesota fellowship program.

Dr. Rener Sitar worked with the faculty analyzing data collected from the RDC/TMD Validation Project. She co-authored and presented 2 posters at the annual IADR meeting in San Diego that addressed dimensionality of Pittsburgh Sleep Quality Index for TMD cases and the prevalence of the sleep disturbances in TMD cases. The first study showed that sleep quality in the TMD cases is a one-dimensional construct that can be represented by a single summary score. Internal consistency was satisfactory, demonstrating sufficient reliability for cross-sectional assessment of sleep quality in TMD cases. The second study showed that RDC/TMD Axis I cases with pain-related diagnoses had a significant reduction of sleep quality as compared to TMD pain-free cases. More recently, Dr. Rener Sitar presented, at the annual AAOP meeting, the results of a study on the relevancy of the existing oral health-related quality of life questionnaires for the assessment of TMD patients. Besides her contributions in research, Dr. Rener Sitar is participating in the weekly TMD courses and seminars and observing the clinical activities of the TMD residents and faculty. Her professional goal is to establish a multidisciplinary TMD center at the University Medical Center of Ljubljana. Dr. Rener Sitar is a professional whose dedication and zest for learning more about TMD are equal to her ambition and desire to achieve her goals. The faculty and staff are honored to work with her.

**Dr. Justin Durham**, NIHR (Walport) Academic Clinical Lecturer in Oral Surgery at Newcastle University U.K., is the TMD and Orofacial Pain Division’s most recent Lasby Visiting Fellow. Dr. Durham is working with Dr. Nixdorf on a qualitative research project that seeks to understand the impact persistent dentoalveolar pain, Atypical Odontalgia (AO), has on patients. This patient-centered approach to gathering information is essential in deriving measures that relate directly to the burden the patient is experiencing. The aim of the overall program of work is to: a) construct and validate a screening instrument for AO, and b) understand the impact of AO on everyday patient life. With the analysis of this new data, our goal is to establish patient-centered outcomes in the management of persistent dentoalveolar pain. Dr. Durham was in Minneapolis in February to initiate his research, and he will return in August to complete the data collection. It is a pleasure to have him as a research fellow.
Drs. Mike John and Gary Anderson, TMD and Orofacial Pain Division faculty members, designed and taught the new Evidence-based Dentistry (EBD) course for D2 students. The American Dental Association defines EBD as "an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient’s oral and medical condition and history, with the dentist’s clinical expertise and the patient’s treatment needs and preferences."

The elements of Evidence-based medicine/dentistry (from http://ebd.ada.org/)

The proliferation of scientific knowledge, both in quality and quantity, has led to the need for dental practitioners to identify the relevant information and appraise it critically in order to differentiate "what works and what doesn’t" for patients. Besides developing the skills to identify and analyze scientific literature, current dental students learn the principles of EBD and how to integrate the newly gained knowledge into clinical practice. Experienced speakers are School of Dentistry faculty and dental practitioners from the community. One of the first guest lecturers this year was the Director of the ADA Center for Evidence-Based Dentistry, Dr. Julie Frantsve-Hawley. She presented an overview about systematic reviews and meta-analyses and directed students to EBD resources available from the American Dental Association. This course will be a regular part of the dental curriculum and will provide a basis for integration of EBD into clinical decision making. Leading this effort is Dr. Gary Anderson, Director of EBD for the University of Minnesota School of Dentistry.

Research Update: NIH Grant Received

Dr. Eric Schiffman and colleagues received $3.3 million (direct) from the National Institute of Dental and Craniofacial Research (NIDCR) for their grant proposal: “TMJ intra-Articular Disorders: Impact on Pain, Functioning and Disability.” The primary aim of this multi-site study is to determine whether progression of TMJ intra-articular disorders (normal discs and disc displacements progressing to degenerative joint disease) is associated with the primary patient-reported outcomes of jaw pain, jaw functional limitation and disability at 9-year follow-up. Subjects will be recalled from our prior research project: Research Diagnostic Criteria: Reliability and Validity (U01 DE013331).
The University of Minnesota TMD, Orofacial Pain, Oral Medicine, and Sleep Medicine Clinic is available to serve you and your patients. We provide the standard of care to patients with jaw, neck, ear and tooth pain. Additional symptoms include headaches, and locking or loss of jaw mobility. We also address patient's concerns related to difficulty eating and occlusal changes. The Oral Medicine clinicians provide diagnosis and management of medically-related disorders and conditions affecting the oral region, including oral lesions, dry mouth and burning mouth. Finally, we provide Dental Sleep Medicine evaluation and treatment for patients with sleep apnea using customized orthotics.

Our comprehensive program includes an interdisciplinary team of dentists, physical therapists and health psychologists to assist patients in reducing pain, improving function and promoting healthy behaviors. During the initial consultation your patients will be carefully evaluated and a comprehensive treatment plan will be designed. You will receive a copy of the evaluation, diagnosis and treatment plan.

All care is provided under medical insurance. We have contracts with most major medical insurance companies to minimize the out-of-pocket expenses for your patients. Our staff has almost 100 years of combined experience working in the field of TMD and orofacial pain and can answer any questions you may have about a referral. We are including a copy of the referral here for your convenience.

The success of our clinic is a direct result of the continuous support and referrals from practicing professionals in the community. These referrals are essential to our clinical training, research endeavors and our professional goals. In turn, we want to assure you that we take our role in the care of your patients very seriously. Thank you for your time.

U of M TMD Clinic Referral Form

Clinic staff: Kathy, Mary and Cindy.

<table>
<thead>
<tr>
<th>Dentists</th>
<th>Patient name:_____________________________________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gary Anderson, DDS, MS</td>
<td>Telephone:_____________________________________________________</td>
</tr>
<tr>
<td>Cory Herman, DDS, M.S</td>
<td>Referring Dr. (first &amp; last name):_______________________________</td>
</tr>
<tr>
<td>Mike John, DDS, PhD</td>
<td>Office Mailing Address/Telephone/E-mail Address:_____________________</td>
</tr>
<tr>
<td>Mariona Mulet, DDS, MS</td>
<td>Primary Concerns:______________________________________________</td>
</tr>
<tr>
<td>Donald Nixdorf, DDS, MS</td>
<td></td>
</tr>
<tr>
<td>Eric Schiffman, DDS, MS</td>
<td></td>
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<tr>
<td>Dental Sleep Medicine</td>
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<tr>
<td>Teledentistry</td>
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<td>Health Psychologist</td>
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<td>Leesa Morrow, PhD, JD, LP</td>
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<td>Physical Therapists</td>
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<tr>
<td>Karen Decker, PT</td>
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<tr>
<td>Patricia Weber, PT</td>
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</tbody>
</table>

Please forward any relevant patient records to us, including x-rays. Thank you.

6-320 Moos Health Science Tower
515 Delaware Street SE
Minneapolis, MN 55455

Telephone: 612-626-0140
FAX: 612-626-0138

E-mail: kieck001@umn.edu
Website: www.tmdclinic.umn.edu


6. Leon-Salazar V, Morrow L, Schiffman E. Pain patients’ perceived need for occlusal therapy: When referral is indicated. JADA. (Accepted for publication).

7. Leon-Salazar V, Mulet M, Anderson GC. Occlusal changes after short-term use of an intraoral appliance for sleep apnea. JADA. (Accepted for publication).


ABSTRACTS


23. Kaimal S, Schiffman EL, John MT, Kang W and Ahmad M. Diagnostic Accuracy of Panoramic Radiograph and MRI for Detecting TMJ Degenerative Joint Disease: A Cross-Sectional Study. 35th Scientific Meeting of the AAOP, Las Vegas, NV; April-May 2011