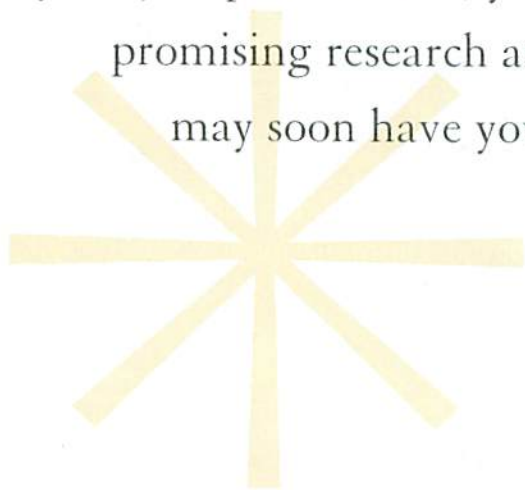


'Til Death do us part?

BY CAROL KRUCOFF

Not anymore. If you thought you'd be married to your jaw pain forever, you'll be glad to know some promising research and a host of new therapies may soon have you living happily ever after.





When the preacher said, "You may kiss the bride," Marion Blackburn felt so afraid a kiss would trigger jaw pain that she offered her groom her cheek. "It hurt too much to kiss," recalls the now 46-year-old writer from Greenville, North Carolina, who married in the summer of 2000. The pain began after she had a simple dental filling in 1997. That may have changed the way her teeth fit together, which cascaded into an ongoing nightmare of problems, characterized by excruciating pain in her jaw. "There were times I couldn't open my mouth to eat or drink or even take a breath without it hurting," says Blackburn, who would tie her jaw in place with a scarf when she went for a jog. "I needed to run to deal with the stress, so I put on a baseball cap and prayed no one would see me."

Blackburn is one of an estimated 10 million Americans—most of them women—who suffer from temporomandibular joint and muscle disorders (TMJD). This complex and poorly understood ailment causes pain in and around the temporomandibular joint, which connects the lower jaw to the skull. Commonly called TMJ or TMD, the condition got a name change about three years ago, courtesy of federal health agencies, because emerging research suggests the ailment encompasses much more than just a problem with the jaw joint.

Scientists now believe TMJD includes a group of conditions that arise from an interrelated web of genetic, biological, psychological, and environ-

mental factors, according to William Maixner, PhD, DDS, director of the Center for Neurosensory Disorders at the University of North Carolina at

TMJD is much more than just a problem with the jaw joint.

Chapel Hill. “We know that people with TMJD are more likely to have other chronic sensory disorders such as fibromyalgia, irritable bowel syndrome,

migraine and tension headaches, and chronic fatigue,” he says. In these conditions, the affected body regions frequently appear normal, but the amount of pain and discomfort the patient reports is in disproportion to what doctors or dentists find on examination. New evidence suggests that pain sensitivity has a genetic component, notes Maixner, who says people with these conditions may have a genetically based “dysregulation” in their body’s pain processing system, which amplifies pain signals and pain perception. The psychological distress caused by enhanced pain perception in these patients—“and sometimes being told they are crazy,” Maixner says—can lead to or aggravate depression and anxiety, which can exacerbate

When it comes to treating temporomandibular joint and muscle disorders (TMJD), you can help yourself, says William Maixner, PhD, DDS, at the University of North Carolina’s Oral and Facial Pain Program and Kimberly Hanson Huggins of the University of Washington’s Department of Oral Medicine. They advise practicing these habits to help prevent and relieve jaw pain.

•• **Monitor symptoms.** Two to four times a day (at least first thing in the morning and last thing at night) rate your pain on a zero to 10 scale. Be a detective, and look for patterns over time. Is your pain always highest in the morning? What kinds of activities are you doing when the pain is highest?

•• **Eat softer foods.** Avoid hard foods, such as French bread or bagels, and chewy foods, such as steak or candy. Steam vegetables, and cut fruits into small pieces.

•• **Break bad oral habits.** Avoid straining your jaw muscles and joints with stressful repetitive behaviors such as teeth clenching or grinding, cradling the telephone with your neck, biting fingernails, or chewing on pens or pencils or your cheeks.

•• **Keep muscles relaxed.** Throughout your day, consciously relax the muscles of your face, neck, and shoulders. (You may want to set your watch or a timer to remind you every hour.) Be sure your facial muscles are smooth and still, your teeth are apart, your lips are barely touching, and your tongue is relaxed.

•• **Listen to a relaxation tape before bed.** This practice and not watching news or action programs before going to sleep can help you avoid grinding your teeth at night.

•• **Avoid sleeping on your stomach or solely on one side.** Sleep on your back to reduce facial pain.

•• **Apply moist heat.** Microwave a wet towel for about a

minute, until very warm, and place it on the painful area for 20 minutes, two to four times a day. You can wrap the towel around a hot water bottle to keep it warm longer.

•• **Try ice.** If moist heat fails to help, wrap ice in a thin washcloth and apply it to the painful area for 10 minutes, two to four times each day. Keep the ice in place only until you feel some numbness.

•• **Don’t rest your chin on your hand.** Doing so can put undue pressure on the jaw.

•• **Chew with your back teeth rather than biting with your front teeth.** Chew your food on both sides at the same time to reduce strain on one side.

•• **Stifle yawns and avoid activities that open the jaw wide.** If you must have dental work, tell your dentist about the TMJD pain and ask for breaks to close your mouth and remember to rest muscles and joints. (But go ahead and open

wide for the masseter maneuver stretch—see page 68—as long as you move slowly and mindfully and avoid opening so wide that you feel pain.)

•• **Try healthy lifestyle practices.** Yoga can help improve posture and release tension. Mindfulness-based stress reduction can enhance awareness and offer stress relief. Cognitive behavioral therapy can help identify and correct negative patterns of thought and emotions.





Hands-on techniques, such as Reiki, can relieve jaw pain.

TMJD symptoms through a mechanism that's not yet understood.

"Right now we know relatively little about what causes TMJD," Maixner notes, "and there are very few accepted methods for treating it that are rigorously grounded in science." We have so little research because "TMJD seems to fall between the cracks," he says. Historically it's been viewed solely as a dental problem, so doctors referred patients to dentists. Only in recent years have modern technological advances enabled scientists to explore potential genetic and biochemical mechanisms involved in the disorder.

Also, in the past, people thought of pain too much as a symptom, Maixner says. "Many scientists have assumed that if they identify the root cause of various diseases and cure them, there won't be any more pain. But what we're learning now is that pain, in fact, is a disease, and it can produce changes in various functions of the body. For instance, we know that tissue injury leads to remarkable changes throughout the

body. It has effects not only on the nervous system, but also on the immune and hormonal systems." Simply put, Maixner believes that TMJD has not been adequately researched or treated because no one has understood the pathophysiology of the disease.

Maixner and his colleagues at the University of North Carolina hope to fill up the knowledge void with the first-

Pain is a disease, and it can produce changes in various body functions.

ever, large-scale clinical trial to identify the risk determinants that predict an individual's susceptibility to TMJD. The \$19 million, seven-year study, launched in January 2006 and funded by the National Institute of Dental and Craniofacial Research (NIDCR), will track about

3,200 healthy participants between 18 and 44 years old over time to monitor the onset and natural course of the disease—hopefully pointing researchers toward genes and other biological and psychological factors that contribute to the condition. In their pilot study, the researchers ran genetic analyses on blood samples from more than 200 participants and found that women with a particular gene sequence linked to a high pain threshold were less likely to develop TMJD. "Ideally, [the findings] will allow us to tailor treatments based on the underlying cause of the problem—because this is not a one-size-fits-all condition," says Maixner.

Disorders of the jaw joint and chewing muscles—and how people respond to them—vary widely. Researchers generally agree that TMJD falls into three main categories: myofascial pain, the most common form of TMJD, which involves the muscles that control jaw function; internal derangement of the joint, which often results from physical trauma and involves a displaced disc, dislocated jaw, or injury to the joint; and arthritis, a group of degenerative, inflammatory joint disorders that can affect the temporomandibular joint.

Pleasure (and pain) center

To feel your jaw joint at work, place your fingers just in front of your ears and open your mouth. Those bumps, called condyles, make up the rounded ends of the lower jaw, which glide along the joint socket of the temporal bone on the side of the head. The body's most highly used joint, the TMJ is essential for many of life's most important and pleasurable functions—from biting, chewing, and swallowing to kissing, yawning, and talking. One of the most complicated joints, the TMJ combines both hinging and sliding motions, so the jaw can move up and down, side to side, and front to back. Add to this the need for both TMJs on either side of the head

to work as a team, and you see why healthy performance can so easily go awry and cause chronic pain with sometimes devastating consequences.

TMJD pain can limit the ability to make normal movements of speech, facial expression, and eating—and it can make tooth brushing painful and dental hygiene appointments excruciating. In some people, the jaw gets “stuck open” or “locked close,” sometimes requiring emergency room treatment to put it back in place. Experts associate this problem with a host of related ailments including headaches, neck and shoulder pain, earaches, teeth grinding, tinnitus, clicking or grating sounds, and facial swelling.

Every so often, procedures touted as treatments can themselves lead to problems. For example, in Marion Black-

No standard, widely accepted test exists to diagnose TMJD.

burn's search for pain relief, she consulted a dentist who told her that her pain stemmed from a poorly aligned jaw. He made her a plastic repositioning

splint, and—after she wore it—“something seemed to snap,” she recalls. “The pain was like fireworks going off in my head. The mouthpiece led to permanent damage in my jaw.”

At present, no widely accepted, standard test exists to diagnose the disorder. In many cases, doctors use a patient's description of symptoms combined with a physical examination of the face and jaw and a detailed medical and dental history. They try to rule out other causes of facial pain, such as sinus or ear infections, which might require different treatments. Although dentists traditionally have treated TMJD, frustrated and sometimes desperate patients often see

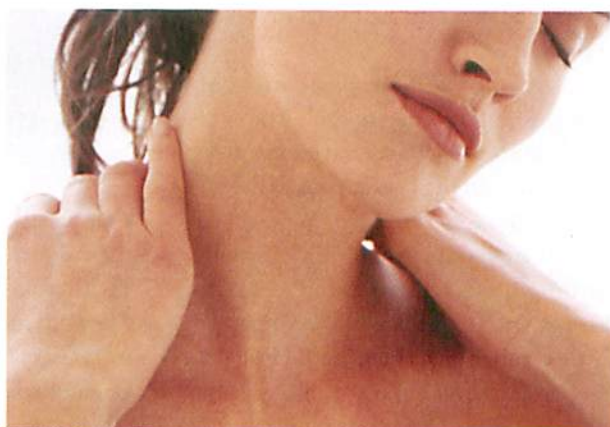
STAY LOOSE STRATEGIES

Stretching muscles in the face and neck can help relieve tension and reduce pain, says William Maixner, PhD, DDS, who recommends the following practices. If these cause an increase in pain, stop and consult your healthcare provider.

✱ **Masseter maneuver.** To relieve tightness in the masseter muscles, which open and close the jaw, open your mouth as wide as you comfortably can and insert two to three fingers or knuckles. Rest them on your upper teeth, but don't let your lower teeth touch them. Hold your mouth open in this position for five to 10 seconds. Then close and relax. Repeat four to five times; try to do this at least four times a day. If over time you can open wider, insert another finger or knuckle. If you also use moist heat on your muscles, do this stretch after applying heat.



✱ **Neck stretch.** Sit up tall, extending the top of your head toward the sky, then gently lean your head to the right—as if trying to touch your right ear to your right shoulder. Keep your face and shoulders relaxed, and hold for about five seconds, inviting the muscles on your left side of your neck to lengthen. Then bring your head back to center and repeat on the other side. Finally, lean your head forward and stretch the muscles in the back of your neck. Support your head with your hand if necessary. Repeat in each direction a few times, and try to do this two to four times per day.



multiple healthcare providers including neurologists, rheumatologists, sleep specialists, and chiropractors in their search for answers, notes Terrie Cowley, a Milwaukee-based TMJD patient and president and cofounder of the TMJ Association (www.tmj.org), a patient support and advocacy group. "We need to get the information out to primary care physicians that for many people this is a complex condition rather than just a dental problem," she says. "Right now it's like TMJ Lotto, because without the science we really don't have an understanding of what all we're calling TMJ. We don't have biomarkers or validated diagnostics, and we don't have the science underlying treatments being recommended to the patients."

Slow and steady shift

After decades of unproven and often irreversible treatments, including silicone and Teflon jaw implants that broke apart causing serious jaw damage and systemic problems, "we are now in a state of transition," Cowley says. "At least we're no longer being told that we're crazy, and we are finally beginning to see 21st century research address this problem." But most health insurance plans don't often cover TMJD treatments—even the commonly prescribed night guards, notes Cowley. "Insurance companies will continue to eliminate TMJ coverage as long as we lack treatments that have been scientifically validated," Cowley says.

Although trauma and arthritis play a role in some TMJD problems, symptoms frequently seem to start without any obvious reason. Since women more often experience the condition, scientists are probing a hormonal link. "The hormonal story is unfolding and complicated," notes Linda LeResche, ScD, a professor of oral medicine at the University of Washington School of Dentistry. "About 80 percent of those who seek treatment are female, and we

know the prevalence increases in women during the childbearing years—from age 18 to 45—then starts to decline." This pattern mirrors that found in research on migraines, "which we know often have a hormonal component," says LeResche. "Estrogen may affect TMJD pain in many possible ways. Estrogen receptors in the joints help them get lax during pregnancy. And we know estrogen has a role in inflammation. Some studies suggest that when you give women a pain stimulus to their facial muscles, they have less effective pain control during the part of their cycle when their estrogen levels are low."

Patients receiving Traditional Chinese Medicine and naturopathy experienced more pain relief.

LeResche's recent study of changes in TMJD pain across the menstrual cycle found that women reported the highest levels of pain at the times of lowest estrogen. Estrogen levels are at their highest during childbirth, she notes, when women need to be able to temper their pain the most. LeResche also suggests that rapid fluctuations in estrogen may cause increased pain. "As estrogen dropped, which occurs right before and during menstruation, pain rose," she says. At ovulation there is a spike in estrogen, and "we found that—for nearly every woman—there was also a spike in pain." In other research, LeResche found that women on hormone replacement therapy were 77

percent more likely to seek treatment for jaw pain than those not taking hormones. In this case and from a pain perspective, having some estrogen may be worse than having none, according to LeResche.

A complex, multi-dimensional experience, pain involves biology, perceptual differences, and social expectations, LeResche says. Facial pain can be particularly intense because the face contains more nerves and is therefore more sensitive than any other area of the body. And although most of the body's pain systems go through the spinal cord to the brain, LeResche explains, facial pain goes through its own parallel system of facial nerves.

The key to letting go

Emerging evidence suggests that some patients benefit from acupuncture and Chinese herbs; naturopathic treatment, which may involve hands-on healing techniques, such as Reiki; and healthy lifestyle strategies, such as proper nutrition and regular exercise. A study of 160 women who sought care at a Portland, Oregon, TMJD specialty clinic found that patients receiving Traditional Chinese Medicine (TCM) and naturopathy experienced more pain relief than those who received standard care, says principal investigator Cheryl Ritenbaugh, PhD, MPH, who now works as a professor of family and community medicine at the University of Arizona at Tucson. "Patients receiving standard care did well, too, since this was a specialty clinic that offered comprehensive care, including education, a bite splint, and massage therapy," says Ritenbaugh, who continues this research with a larger study funded by the National Institute of Complementary and Alternative Medicine. "Different patients may relate better to different kinds of therapy," she notes. "Until we come up with more definitive answers, it may be worth trying some-

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thing out and seeing if it works for you.”

Relaxation training through practices—such as yoga and mindfulness-based stress reduction (MBSR)—can help, too. Yoga helps people correct poor postural habits—such as slumping forward—that can contribute to neck and shoulder pain. In addition to teaching proper alignment, yoga also helps people learn how to let go of chronic tension and helps stretch

of oral medicine at the University of Washington. “It’s also important to learn how to release tension from the places that are painful, like the jaw and face.”

People with chronic pain may benefit from working with a cognitive behavior therapist, Dworkin says, “to identify and correct maladaptive patterns of thinking.” For example, instead of “catastrophizing”—thinking you have the most unbearable pain in the world—shift the focus to recognize that although the pain returned, the feeling is temporary.

Self-care strategies, such as those discussed in “Healthy Habits” on page 66, help relieve, manage, and prevent pain, says Dworkin, one of a team of researchers who found that such personal practices worked as well for relieving TMJD pain as using a night-guard. “All patients improved over time,” Dworkin says.

For Marion Blackburn, using yoga for alignment and muscle strength, ice to calm inflammation, and an easy-on-the-jaw soft-foods diet have been essential—along with support from a family physician and a physical therapist. “They saved my life,” says Blackburn, whose physical therapist first massaged her neck to lengthen the tissue, then put ice bags on her cheeks and heating pads on her neck. Her physician prescribed a short course of antidepressants, which proved helpful, as did medical hypnosis to help release pain. “I lead a pretty normal life,” she says. “I’m never going to chew gum or taffy again, and I’ll always cut my apples into small pieces, but that’s a small price to pay to keep from ever having that kind of pain again.” **AM**

RESOURCES

The TMJ Association, a patient support and advocacy group, provides extensive information at www.tmj.org.

The OPPERA (Orofacial Pain: Prospective Evaluation and Risk Assessment) study, a large-scale research trial of muscle, joint, and jaw function, needs volunteers. To find out more, visit www.OPPERA.org.

National Institute of Dental and Craniofacial Research offers information about TMJD at www.nidcr.nih.gov.

American Academy of Craniofacial Pain provides resources and referrals at www.aacfp.org.

and strengthen muscles supporting the head and neck. The MBSR program teaches people awareness and relaxation techniques so they can respond more effectively to stress, pain, and illness (for more information, visit www.umassmed.edu/cfm/index.aspx).

Because stress can play a major role in TMJD pain, “pursuit of physical treatments alone is often unsatisfactory,” says Samuel F. Dworkin, DDS, PHD, a dentist and psychologist and professor emeritus in the department

Carol Krucoff is coauthor, with her husband Mitchell Krucoff, MD, of *Healing Moves: How to Cure, Relieve and Prevent Common Ailments with Exercise* (Writer’s Collective, 2004).