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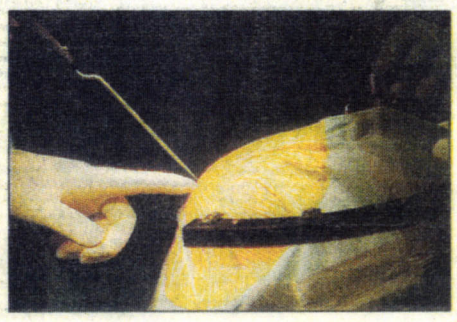
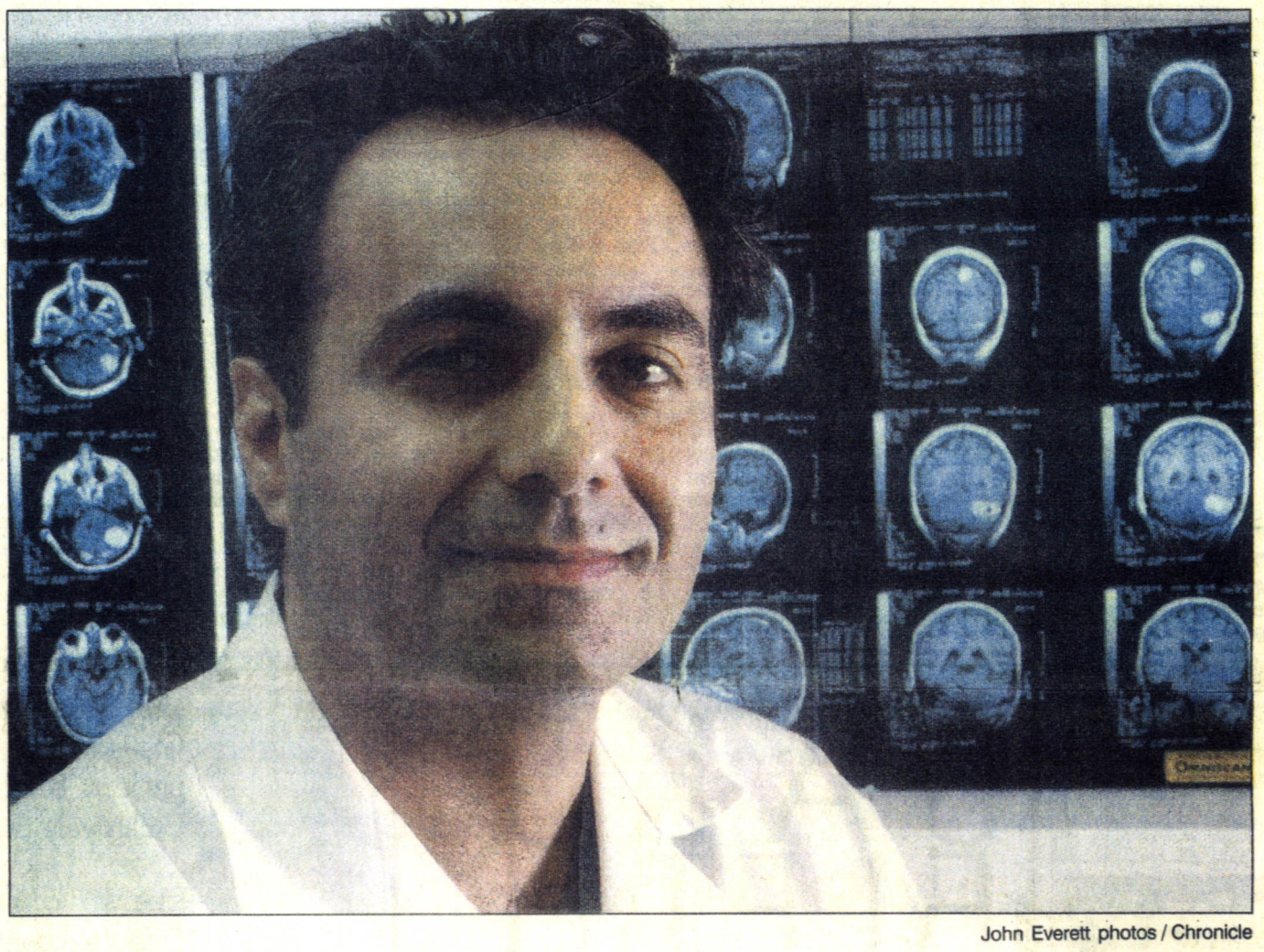


Life on the cutting edge

Young surgeon operates in high-tech arenas

In elaborate headgear, Dr. Peyman Pakzaban (above) performs brain surgery on a patient, whose lesion was earlier demarcated with an advanced, computer-guided probe (photo at top).



A native of Iran, Pakzaban (photo at right) is Harvard-trained and among a pioneering band of high-tech neurosurgeons.

John Everett photos / Chronicle

Pakzaban (photo at bottom) studies data, already fed into the computer, that will guide him in his task: delicately removing a congenital lesion buried deep within the patient's brain.

By MELISSA FLETCHER STOELTJE
Houston Chronicle

The operating room looks like something out of a techie's fantasy.

A huge, portable microscope encased in sterile plastic stands at the ready. On a light box, angiograms illuminate the wicked topography of an arteriovenous malformation, or AVM, a rare kind of brain aneurysm. As the technological *pièce de résistance*, a computer screen shimmers with 3-D images of a woman's head along with the coordinates of her AVM, transmitted by infrared sensors hovering above the operating table.

Dr. Peyman Pakzaban, looking like a high-tech spelunker in his magnifying loupes and complex headgear, is linked to the computer via a long tube trailing from under his surgical gown. He touches what appears to be an oversized tuning fork to the patient's shaved head. The computer's loud *bloop-bloop!* echoes through the room.

"A little higher," advises Dr. Richard Westmark, Pakzaban's colleague and partner in surgery. Another touch. *Bloop-bloop!* "There, you got it."

Guided by a newfangled computer contraption called the StealthStation, Pakzaban has just staked out the perimeters of the lesion. Now he's ready to slice into the scalp of Shirlene Bralkowski, which presently resembles a big, saran-wrapped orange. With Westmark, he carefully peels her scalp back and over her face. Drills, saws and removes the bone flap. Delicately cuts away the brain's covering, or dura. (All of this takes hours.) Reveals the pearly, pulsing, red-swirled brain.

Tuning fork in hand, Pakzaban again stakes out the AVM, a congenital, cauliflowerlike mass that is stealing blood from Bralkowski's left eye, causing partial blindness. If not removed, it will kill her. With his foot, he touches a pedal on the floor (*bloop-bloop!*) and then, positioning the microscope, he begins the painstaking process of exorcizing the mass from deep within her left frontal cortex.

The surgery lasts 10 hours and, says Pakzaban, "is as tricky as it gets."

But Bralkowski, 34, will be up and drinking juice the next morning. In six days she'll be home, the ticking time bomb in her head a fading memory.

"Without the Stealth, this is the part where we'd have to guess," Westmark remarked earlier as Pakzaban tracked the unseen outlines of the lesion before ever putting knife to flesh. As he worked, the computer guided Pakzaban's tiny instruments, telling him exactly where he was in relation to the AVM. And when you're negotiating your way through someone's brain, you want to know where you are.

The computer gives Pakzaban a sort of second sight. Called "image-guided" neurosurgery, this is cutting-edge stuff. And Pakzaban, a 34-year-old, Harvard-educated whiz kid, is among its pioneers. He's one in a handful of super-trained surgeons who are taking intricate central-nervous-system surgery to a new level, using technology that seems equal parts medicine and science fiction.

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Bralkowski's surgery took place several weeks ago at Clear Lake Regional Medical Center, which, like other hospitals in outlying communities around the nation, is benefiting from a trend in which promising young doctors set up shop far from urban medical cores. Wrought by managed care and other factors, this development allows patients to stay in their communities instead of driving downtown for complex, medical-center-level care.

It's also luring some of the best and the brightest to the 'burbs — doctors such as Pakzaban, who graduated first in his class at Baylor College of Medicine and did his residency in neurosurgery at prestigious Massachusetts General Hospital at Harvard Medical School in Boston.

A native of Iran who left his homeland at age 13 as the Shah's regime collapsed, Pakzaban holds two undergraduate degrees from the Massachusetts Institute of Technology. The walls of his office in Pasadena (he has another office in Webster) are lined with credentials and awards, including the coveted DeBakey Scholar award he earned while at Baylor.

Pakzaban performs most of his surgeries at Columbia Bayshore Medical Center in Pasadena. Sitting in his Pasadena office, he talks about how image-guided technology is revolutionizing brain and spinal-cord surgery.

"This is all new stuff," he says. "It's going to become the standard of practice in neurosurgery, because it allows us to do (such surgery) much more safely and effectively."

Without computer technology, he explains, a neurosurgeon removing a brain tumor or other malady has less information to work with.

"In the past, he would study the X-rays before the operation and imagine in his mind exactly where the tumor was," he says, "then try to find the shortest path there, and the one using a part that wouldn't be considered eloquent."

"Eloquent," meaning a part of the brain less involved with critical functions such as speech or movement. Doctors try to use less crucial areas of the brain as well as "crevices" between the brain's sections to reach tumors growing deep inside.

But educated guesses go only so far in brain surgery, Pakzaban says. Without the help of computer-guided navigation,

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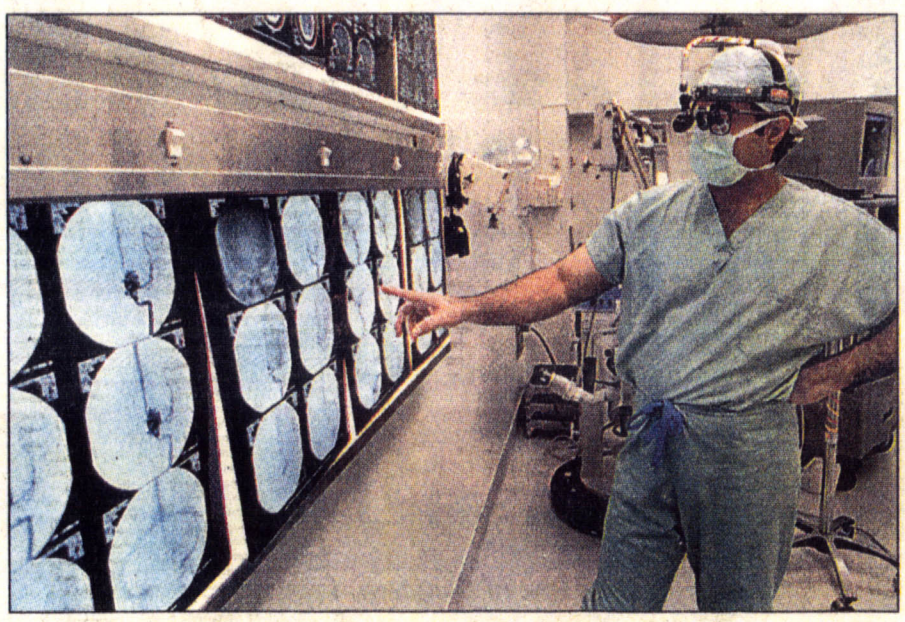

"He looked at my scans and said, 'Well, I can see why you're in pain, but there's nothing I can do about it.' "

By the time a colleague with similar back problems referred him to Pakzaban (who turned out to be on his health-insurance plan), Moore was in the hospital on a morphine drip.

After looking at his X-rays, Pakzaban recommended a lumbar "cage." In traditional surgery when discs (small, round sacs that cushion the spine) have degenerated, Pakzaban says, surgeons implant screws, rods and other medieval-sounding objects to fuse the spine. They are problematic and painful. With this innovative technology, small metal containers filled with the patient's crunched-up bone are screwed into the disc. The bone grows out of the cage, fusing the spine in an easier, less traumatic way.

Before the surgery, Moore and his wife, Susie, spent more than an hour in Pakzaban's office, just talking and looking at his magnetic resonance imaging results.

"He . . . explained the operation in layman's terms," Moore says. "He listened to our concerns and was very calming. And he was careful not to oversell the result."

Still undergoing physical therapy after his surgery in July, Moore says the cage has already made a big difference. "It's just been such a relief."

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As a boy growing up in Iran, Pakzaban dreamed of being a scientist, a plausible career in a country that at the time, he says, was "much like any other European country, or even America."

Pakzaban jokes that when his wife, a former stockbroker whose picture rests framed on his desk, reminisces about shows from her American childhood, such as *I Love Lucy*, he can reminisce right along with her.

"I was in high school when the chaos really began," he says quietly.

One Saturday morning, he and some friends were riding bikes to a nearby tennis court. Suddenly, several tanks appeared. It was the first day of martial law in Iran's Islamic revolution. The soldiers commanded the group to go home. Things changed rapidly after that, and it became "very unsafe to be (in Iran)," he says.

Pakzaban's parents (his father is an engineer, his mother a nurse) sent their young son to a prep school in Rhode Island; they and his two sisters soon followed him to the United States.

At Portsmouth Abbey, an all-boys Catholic school, Pakzaban found a cloistered environment that was a good place to be in the late 1970s, while anti-Iranian sentiment was raging as the Tehran hostage crisis dragged on. He quickly learned English from the monks and felt acceptance from his classmates. But he wasn't totally shielded. Occasionally, students took bus rides to nearby towns. On one such trip, a group of people began calling him names and insulting his homeland.

Undeterred, Pakzaban graduated summa cum laude from high school and set his sights on medical school. His father urged him to get an engineering degree.

"He thought if I didn't get into medical school, at least I'd have a solid job," Pakzaban says, grinning. (Both his sisters are engineers; his immediate family lives in Houston now.) As a compromise, he earned two degrees, in engineering and biology, during four years at MIT. Then he entered medical school.

Drawn at first to research – on such topics as the use of pig cells to treat Parkinson's disease – Pakzaban found he didn't much care for the lull between experimentation and the rush of publication. So he decided to focus on patients, not papers.

"A lot of things you do in life don't give you immediate gratification," he says. "Surgery is unique in that, every time you do a case, you feel like you've accomplished something."

In choosing a surgical specialty, Pakzaban wanted to do more than "just take out gallbladders and appendixes and stuff." He figured neurosurgery would be fascinating, and he hasn't been disappointed. No, he says, he doesn't ponder the fact that, during brain surgery, he essentially holds a patient's personality in the palm of his hand.

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>
> **Dr. Peyman Pakzaban**

"Like anything else, you get desensitized to it," says Pakzaban, adding that a major goal of medical training is to teach students to put personal feelings on hold when necessary. That's why cadavers are cut up in one of the earliest courses, he says. Indeed, watching brain surgery, one is struck by the almost mechanical nature of it, with surgeons seeming at times like mechanics working under a hood.

"It doesn't mean we don't care," he says. "On the contrary, we care a great deal. It's so you can deal with medical problems objectively."

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Pakzaban has been a surgeon in private practice for two years. Before that, he was a resident at Massachusetts General Hospital for seven years. He set up practice in Houston in 1996 after getting a call from Westmark, with whom he had done his neurological residency at Harvard. They both had also worked together for a time at Massachusetts General. Westmark, who says the two found in each other the same patient-centered philosophy toward practice, told Pakzaban he could do great medicine in Houston. It didn't take much urging; Pakzaban had attended medical school here and loved it.

Westmark, also a neurosurgeon, had been practicing in Clear Lake for a year and a half before his friend arrived.

"Pakzaban is the single best brain surgeon I've ever known," he says.

The two are close friends, often spending off-hours together rollerblading and drinking coffee at Starbucks – a habit that got started when they were part of a group of neurosurgery residents in Boston.

"Back then, when one of (us) appeared exhausted after a long night on call, we would joke that we needed to take him to Starbucks to make him brilliant again," Pakzaban says.

He and Westmark have formed a partnership in which they refer patients to each other; Pakzaban specializes in complex brain cases, Westmark in complex spine cases.

They're part of a growing cadre of young, highly trained specialists in Clear Lake and Pasadena (some also lured here by Westmark) that includes Blum and Dr. Kim Monday, a neurologist doing work in epilepsy and other disorders. They come to Houston's suburban rim for the same reasons as Pakzaban: hospitals with fat budgets, less bureaucracy and lots of reserved operating-room time. Westmark explains that at sprawling urban medical centers, different medical fiefdoms often have to compete for equipment, OR time and other perks.

"We worried about leaving Harvard, that the toys wouldn't be quite as nice," he says. "It turns out they're so much nicer." Purchases of community hospitals nationwide by deep-pocketed hospital chains have helped fuel this trend, he says.

But most importantly, the suburbs are where the patients are.

Before managed care, doctors at hospitals in outlying communities typically shipped patients downtown to unfamiliar hospitals and offices to receive specialty care. Now, facing pressures from insurers to "stay in the network," medical systems are working to keep patients in their own communities. This turns out to be one aspect of managed care that patients like, says Pakzaban.

This month, Pakzaban, Westmark and a handful of colleagues will host a neuroscience symposium at the Clear Lake and Pasadena hospitals, targeting nurses.

Westmark tries not to look too pleased when he says he recently got a call from a medical-center doctor asking about frameless stereotactic surgery.

"He wants to come out and watch, see how it's done," he says.

But it's not really about bells and whistles, says Pakzaban – it's about curing patients. Soon, he says, the next generation of high-tech surgery will emerge, a sort of "virtual reality" science in which 3-D images are reflected directly onto the surgeon's goggles, in essence placing the goggles "inside" the brain.

Pakzaban, you can bet, will own a pair. His abiding drive to be the best, he says, is not really complicated or high-tech. It's simple.

"I just always want to go to the next step," he says. "When you enjoy something and feel like it's more than just a job, you dedicate yourself to it. It's just pure enjoyment."

Surgery

Continued from Page 1F.

surgeons often are forced to remove more healthy tissue than necessary as they search for a bad actor, he says.

Techniques became more precise some years ago with the advent of stereotactic surgery, he says. In framed stereotaxy, a metal frame is screwed onto the patient's head, and surgeons use coordinates on the frame (derived from brain scans) to guide their work.

In frameless stereotaxy – the "second generation" of such technology – data from the scans are fed into a computer, which not only gives coordinates for the surgery but also updates the position of the surgeon's instruments as they move through the brain. This is especially important, Pakzaban says, as surgeons work closer and closer to key areas.

"And it shows us how close we are to the tumor or, more important, how much we have removed," he says. "Have we gotten all of it? Three-quarters of it?"

Such frameless technology has become available only in the past couple of years. Its availability so far is "very limited," he says: Park Plaza is the only other Houston area hospital that has StealthStation, and Methodist Hospital and M.D. Anderson Cancer Center use frameless stereotaxy of a different brand, though equal quality.

"The equipment is extremely expensive, for one thing," he says. (The StealthStation costs $350,000, says Westmark.) "Another is you have to understand it to use it, and the older neurosurgeons may not be as computer-savvy. It involves a lot of training and understanding how the system works."

Pakzaban speaks with a soft Persian accent. Tall, with chiseled features, a thick shock of black hair and limpid eyes, he was recently voted one of the 10 sexiest men in Texas by a women's magazine. The nomination was a nefarious plot hatched by his wife, Deborah Bair Pakzaban, with his assistant Mickey Simmons and a clutch of OR nurses.

("Please leave that out," he says, chuckling in embarrassment.) For weeks after the magazine appeared, he was called Dr. Hot in the OR, to his chagrin.

But hunk jokes aside, Pakzaban deals in cases that can be life-and-death matters. About 80 percent of his cases involve "simple stuff" such as spinal-disc herniations; the other 20 percent entail complicated procedures such as the removal of tumors or aneurysms.

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John Bonin was planning to kill himself.

"I had already talked to my sister and brothers, told them how I was going to divide things up," says Bonin, a gravelly-voiced engineer who works at Columbia Bayshore Medical Center. "It's hard for anybody to comprehend that suicide can be seen as a reasonable solution to a problem, but once you've hurt for so long, it becomes that."

Bonin had trigeminal neuralgia, a rare disorder in which a blood vessel compresses a nerve leading to the face. Any stimulation – a breeze, chewing, talking – triggers painful spasms, from forehead to jaw to ear. For three years, Bonin went from doctor to doctor, who invariably prescribed pain pills, which did little good. One doctor put Bonin on a strong anti-seizure medication.

He couldn't talk. He couldn't eat. The pain grew so intense that Bonin could sleep only in 15-minute intervals, between hours of agony.

"I was at the point of insanity, a raving maniac," he says. "I would walk around beating the side of my face, trying to stop the pain." His wife of eight years left him.

About a year ago, a family physician referred him to Dr. Philip Blum, a young neurologist who offices next door to Pakzaban. After realizing the seriousness of the situation, Blum called Pakzaban, who scheduled immediate surgery. Instead of simply burning the nerve and thus permanently numbing Bonin's face – until recently standard procedure – Pakzaban dissected the offending blood vessel, then slid in a piece of Teflon as a cushion.

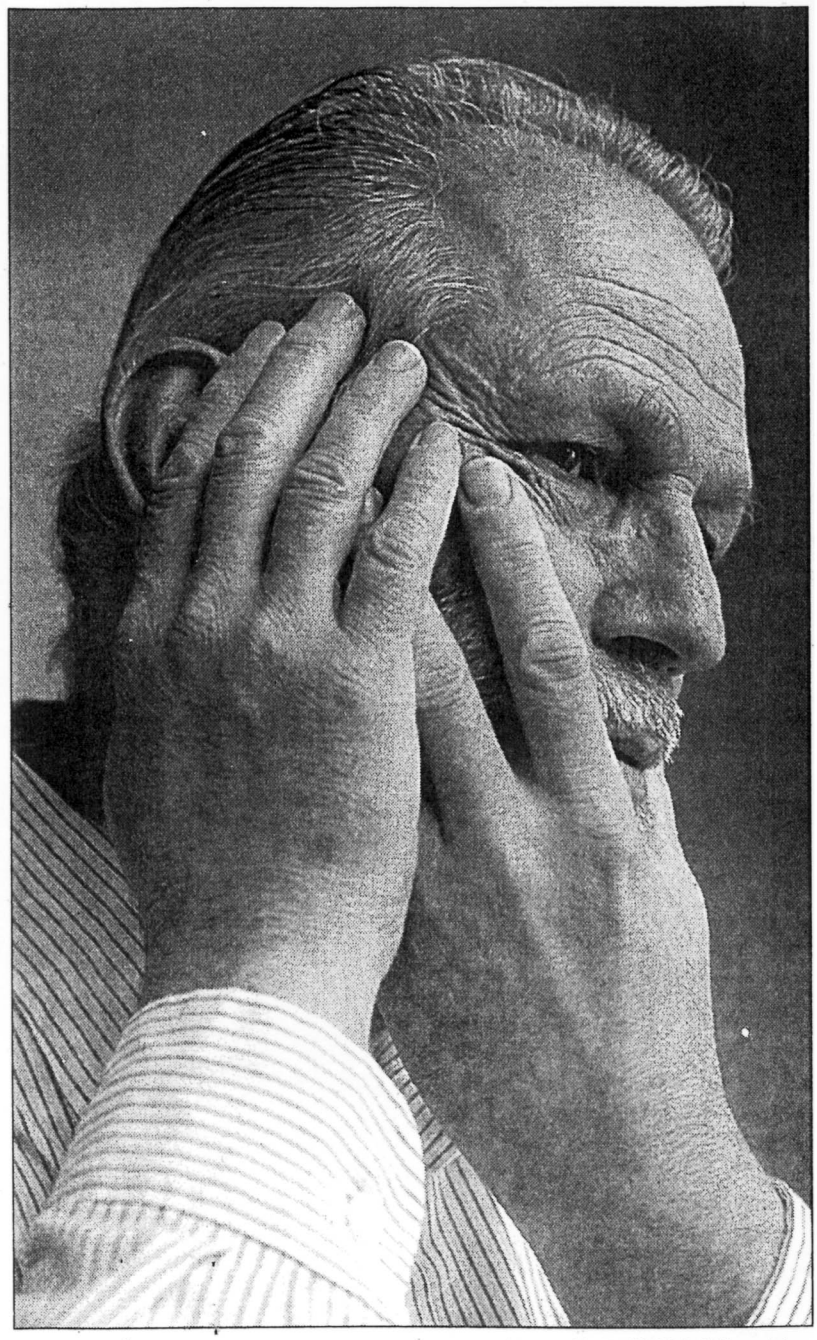
The pain stopped. Bonin got his life back.

"I've never met a doctor like him," he says. "He's the most caring, cordial physician I've ever met in my life. His waiting room isn't filled with people, because he refuses to stack patients. He wants to allow enough time to spend with you, talking to you."

It's a prevailing theme among Pakzaban's patients.

"After seeing so many distracted, churn-'em-out doctors who look at their watches while they talk to you, he was amazing," says Michael Moore, an account representative with Southwestern Bell Yellow Pages who endured sporadic, debilitating back pain for 15 years. "He was the first doctor to really listen to me, to address not the pain I was having but *why* I was in pain."

Like Bonin, Moore had seen a parade of doctors. They had dosed him with painkillers, shot him up with steroids or prescribed physical therapy. His pain had intensified. Become unbearable. An active man who loves to garden, Moore recalls what the last neurologist he saw before Pakzaban told him.



Betty Tichich / Chronicle

For three years John Bonin struggled with agonizing facial pain, almost to the point of suicide, until Dr. Peyman Pakzaban came to the rescue.