

L. I. @ W O R K

# Harnessing Radio Waves for Dentists and Surgeons

By STEWART AIN

**A**FTER placing a fist-size chunk of raw steak on a table, Jon C. Garito, the president of Ellman International, picked up what looked like a soldering gun with two fine wires on the tip and touched it to the beef.

But this was no soldering gun. It was a surgical instrument that harnesses the energy of high-frequency radio waves and can be used in place of a scalpel, making it possible, for example, to perform spinal surgery on herniated disks without a traditional incision.

Mr. Garito demonstrated the instrument, known as the Trigger Flex, on the steak. "I'm going to make it just glide through the tissue," he said. "This is like an artist's brush."

"See how thin the wire is compared to a scalpel?" he said. "A scalpel is rigid and sharp, and to make an incision you need to apply pressure, so it can't be as precise as you would like. And there will also be bleeding, which will obscure your vision."

As Mr. Garito demonstrated the Trigger Flex in Ellman International's headquarters in Oceanside, Alan G. Ellman, the chief executive, stood beside him.

"We can control the depth of the incision by moving the wires in and out," Mr. Ellman said. And because the wires are malleable, they can be bent for access to hard-to-reach areas.

"The device does not damage surrounding tissue," he said, "and there is no bleeding."

The idea for the Trigger Flex came from experiments that Mr. Ellman's father, Dr. Irving Ellman, performed with high-frequency radio energy in his basement, first in Valley Stream and later in Lawrence.

An electrical engineer who had a dental practice for 36 years in Brighton Beach, Brooklyn, Dr. Ellman designed his experiments with the view to developing better dental instruments. One of his inventions was the Dento-Surg 60, which the company says was the first radio-frequency instrument that allowed dentists to sculpture gums without shrinking surrounding tissue and exposing the root of the tooth.

After Dr. Ellman's death in 1976, his son Alan and Mr. Garito, who had married Dr. Ellman's daughter Ricki in 1973, took over the business. In 1978, they changed the company's name from Ellman Dental to Ellman International and began expanding into other medical fields. Mr. Ellman, 48, and Mr. Garito, 55, began marketing the Trigger Flex in 1999.

Radio-frequency instruments are now used by ear, nose and throat specialists, pain specialists and neurosurgeons, Mr. Garito said. The company, which the two men own jointly, says it sells about 5,000 ra-



Phil Marino for The New York Times

Jon C. Garito, left, the president of Ellman International in Oceanside, and Alan G. Ellman, its chief executive. The spinal surgeons in the background were attending a demonstration of the company's Trigger Flex instrument, which Mr. Garito is holding.

dio-frequency units a year and more than 100,000 accessories. Everything is manufactured at the company's headquarters, where about 100 people work.

Over the years, the company has worked with surgeons in various specialties to develop the tools they need. "They tell us where they want the energy to be, and we devise the solution," Mr. Ellman said, just as the Trigger Flex did for spinal surgeons.

Holding up a picture of a skeleton, Mr. Ellman said that the conventional treatment for relieving the pain from a herniated disk was to "make an incision in the back, cut through the muscle and then remove part of the bone" touching the nerve.

Joan L. Carter, an Ellman vice president, said that researchers found that with the Trigger Flex, surgery to remove the bone could be eliminated by using heat from the instrument's radio waves.

"Heat could be used to shrink the damaged disk that is compressing the nerve and to stabilize the disk to prevent it from further deteriorating," she said. "The big question was how we could get it to where it was needed."

That hurdle was overcome with the help of Dr. Anthony T. Yeung, an orthopedic surgeon in Phoenix who founded the Arizona Institute of Minimally Invasive Spine Care. The Ellman company was able to miniaturize the Trigger Flex so that it could be placed through an endoscope 2.5 millimeters in diameter — a tenth of an inch — and allow the surgeon to properly deliver the

high-frequency energy.

"Doctors lose the sense of touch when they use instruments, but this instrument is almost like their index finger," Mr. Ellman said. "When the instrument is off, the surgeon can use it to move structures and tissue around."

And instead of having to open the patient's back and cut through muscle to reach the herniated disk, the instrument the company created — called the Yeung Endoscopic Spinal System — can be inserted into the patient's side through a tiny incision.

A miniature camera in the endoscope allows the surgeon to guide the instrument to the disk, a much less invasive procedure that shortens recovery time considerably, Mr. Ellman said.

Earlier this month, Dr. Peter Zenetos, a spinal surgeon from Bayside, Queens, attended a meeting at which 20 surgeons were taught how to use the Yeung Endoscopic Spinal System on a cadaver in an operating room that Ellman International set up in its headquarters. Dr. Zenetos said that he had used the Trigger Flex to perform about 50 spinal operations in the past three years.

"It shrinks the disk as well as stops the leak of the disk, which chemically irritates the nerve and causes pain," he said.

"There are other companies that also use bipolar radio technology," he said later, "but there is no other company whose instruments can go through endoscopic instruments."

Dr. Steven P. Leon, a partner in Long Is-

land Neuroscience Specialists in Patchogue, said that the demonstration was the first time he had used the Yeung Endoscopic Spinal System and that he was "extremely excited" about it. He called it another tool to treat degenerative disk disease "in a way that is less invasive than some of the other surgical procedures."

Mr. Garito predicted that the Trigger Flex would change spinal surgery in the same way that knee surgery has changed.

"Thirty years ago when you had to have knee surgery, it was an open surgical procedure," he said. "Today, it is all arthroscopic surgery, making a little hole and using a scope to do the surgery in a minimally invasive way. Just as that is the standard now, 10 years from now this will be the standard."

Dr. Leon noted that clinical trials were pending. Dr. Farhan Siddiqi, the chief resident in orthopedic surgery at North Shore-Long Island Jewish Medical Center in New Hyde Park, said that although research with the Trigger Flex was being done at some spinal centers, "there have been no randomized controlled trials" to compare the benefits of the Yeung Endoscopic Spinal System with traditional surgery.

But Dr. Siddiqi said he was so enthusiastic about the system that he planned to apply for a grant to perform just such a trial.

The system "has advanced minimally invasive spinal surgery quite a bit," he said, adding, "I could see this surgery replacing what we do now, but at this time it is not the gold standard."