

Laser shot helps relieve pressure of herniated disc

BY PIPPA WYSONG

HALIFAX – Blasting a tiny hole in a herniated disc with a laser is all it takes to relieve pain in patients who have not had any benefit from conservative treatment.

The technique works because “in an enclosed hydraulic space (like an intact vertebral disc), a minute change in volume is accompanied by a disproportionately large change in pressure,” said Dr. Daniel Choy at the annual meeting of the Canadian Orthopaedics Association held here recently.

In the procedure—which is done on a movable X-ray table—a YAG laser is placed in position by using a small, discogram needle. The laser is used to create a small, balloon-shaped hole in a vertebral disc,

which creates a dramatic drop in intradiscal pressure.

Dr. Choy, assistant professor of the department of medicine at Columbia University in New York, is the pioneer of the procedure. He reported on results from 401 patients who have undergone the treatment over a nine-year period.

The patients ranged in age from 17 to 89 years, had a mean follow-up of 63 months, and 195 were male. All had received conservative treatment for at least three months.

It’s important to provide conservative treatment first, “because 80% to 90% of patients become asymptomatic four to six weeks after the start of symptoms,” he said.

Conservative treatment includes bed rest, use of muscle relaxants, anti-inflammatories, physiotherapy and possibly the use of epidural steroids.

Of the patients who underwent the laser treatment, 75% experienced immediate relief, with 5% getting delayed relief two to eight weeks later.

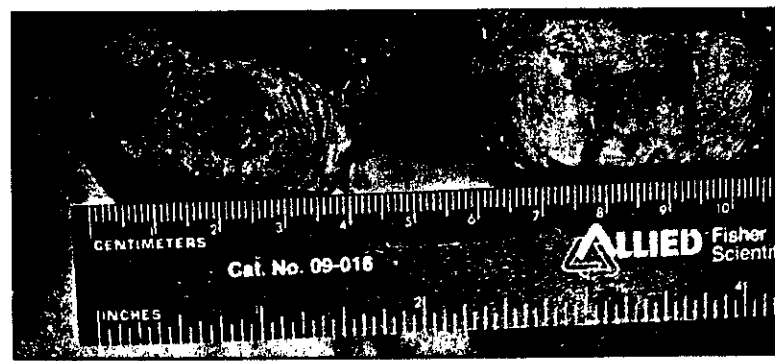
Follow-up studies found some disc shrinkage in the patients. “The denaturation of protein material in the zone adjacent to the laser tract, and the decrease of water content just outside this zone contribute to disc shrinkage up to eight weeks after treatment,” Dr. Choy said.

The amount of material vaporized by the laser amounts to about 0.7 mm³ to 1.0 mm³.

“This small decrease in volume is enough to decompress the disc, allowing the herniation to move away from the nerve root toward the centre of the parent disc.” Pressure inside the disc can drop by close to 50%, or from 300 mm Hg to 154 mm Hg, Dr. Choy said.

Overall there was a 75% success rate, meaning patients had good to excellent results. About one-third of the failures went on to open surgery, where it was found most had free disc fragments that hadn’t been detected earlier.

The entire laser procedure is done in an outpatient setting and takes about 20 to 30 minutes.



Top left: X-ray showing the needle used to direct the YAG laser to L4-5 disc.

Bottom left: Cadaver vertebrae showing holes made by lasers using different wavelengths.