



Disc Biacuplasty: A New Treatment for Discogenic Back Pain

Elizabeth F. Yurth, MD
Mapleton Hill Orthopedics



Back pain is the number one reason for health care expenditures, and costs for treating back pain are now three times greater than cardiac service costs each year. Disc biacuplasty is a new solution for managing discogenic back pain in patients with a history of back pain lasting at least six months who have shown minimal improvement from a conservative treatment program.

For some people, back pain subsides over several months with conservative treatment including physical therapy, medications and spinal injections. Unfortunately, for other people, the pain becomes chronic, lasting greater than six months, and encroaching on every aspect of their life. Even simple pleasures like sitting through a dinner with friends can become an arduous task. These people often turn to more invasive treatments, including spinal surgery, which can have unpredictable outcomes. Disc biacuplasty is an alternative approach to managing discogenic back pain and, for many people, it may be an alternative to invasive spinal surgery.

The intervertebral disc is a fluid-filled shock absorber that sits between each of the vertebrae of the spine. The disc has a tough fibrous outer shell called the annulus fibrosus. Inside the annulus is a

gel-like center termed the nucleus. The nucleus is made primarily of water, but also contains some chemicals such as PLA2 which can act as irritants to neural tissue. The back wall or posterior annulus of the disc has many small nerve endings, which act as pain nociceptors to warn us when we are putting undo stress on our spines.

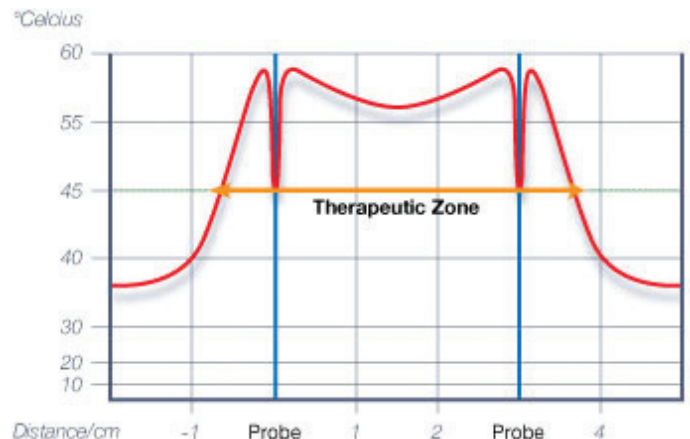
With injuries and age, small peripheral tears in the annulus fibrosus lead to an acceleration in dehydration of the intervertebral disc. As the disc loses fluid, there is a loss of hydrostatic pressure. This leads to tears and fissuring of the collagen fibrils in the annulus. These annular changes cause sensitization and overgrowth of the pain nociceptors in the annulus and this results in persistent, progressive back pain.

Disc biacuplasty was developed by Baylis Medical to

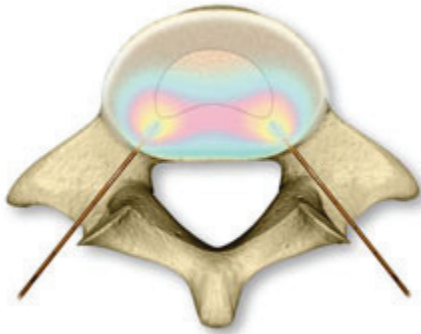
address this exact cause of low back pain. Radiofrequency waves to heat tissue have been applied in many aspects of health care, both safely and effectively. For disc biacuplasty, two radiofrequency probes are placed into the disc, one on each side of the back of the annulus where the painful nerve endings lie. A radiofrequency current is then passed between the two probes, which allows gentle warming of the annulus by the radiofrequency waves. The electrodes are internally cooled so deep even heating can occur without damage to any of the important spinal nerves. Temperature sensors allow monitoring around the disc to ensure safety.

The back wall of the disc is slowly heated over a 15-minute period to a temperature of 55-60 degrees centigrade. This is felt to treat the discogenic back pain by denervating or destroying the overgrowth of the painful nerve fibers in the disc. Radiofrequency heat is also felt to change the structure of the collagen fibers in the annulus, causing an increase in stability of the disc.

Disc biacuplasty is done with only mild sedation and does not require an

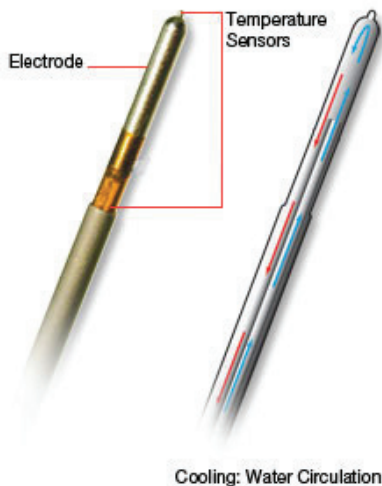


Radiofrequency (RF) energy is delivered between two electrodes in the disc, heating the area between and immediately around the electrodes.



During biacuplasty, two TransDiscal Introducers are placed within the disc in a bilateral approach.

overnight hospital stay. In fact, the typical patient goes home within one hour of the procedure with only a Band-Aid. There is typically some soreness at the procedure site for several days, but pain relief may occur within one to two weeks. A comfortable back brace is worn for six weeks after the procedure to protect the disc. Once this brace is removed, patients can gradually return to regular activity.



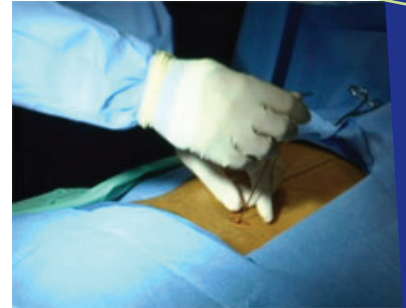
Temperature sensors at the electrode tips allow the RF generator to control the power delivery and the rate of electrode cooling.

The best candidate for disc biacuplasty will have a history of back pain lasting at least six months with minimal improvement from a comprehensive conservative program. People who have had prior back surgery on the symptomatic disc are not candidates. Ideal candidates should also have more back pain than leg pain and no persistent neurological deficits in their legs. MRI should show disc degeneration but not a nerve-compressing lesion. Typically, a discogram will be carried out to better evaluate the painful disc.

The only complications of disc biacuplasty experienced in clinical trials to date have included recurrent pain over a six-month period in a small number of treated patients. Though potential complications such as damage to nerve tissue do exist, no reported cases have yet occurred and the computerized radiofrequency generator system has many safety checks to prevent injury.

In summary, disc biacuplasty is a safe, minimally invasive option for many patients to treat their chronic back pain and avoid surgery. Boulder Surgery Center, along with Boulder Community Hospital, is one of the only medical facilities in the state of Colorado to offer this new technology and welcomes new patients with questions.

Elizabeth Yurth, MD, is a board-certified physiatrist with specialized fellowship training from Stanford University in Interventional Spine Care and Sports Medicine. She is a partner at Mapleton Hill Orthopedics in Boulder, and is the only physician in that area to offer this innovative technology. She is available for consultation 303-440-7941.



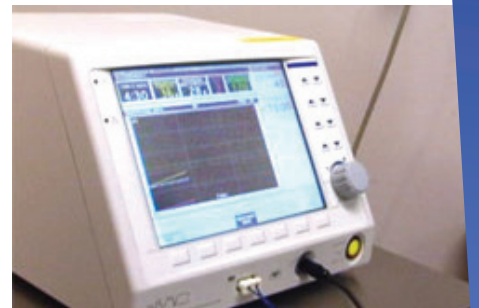
Insertion of the 1st introducer needle



Insertion of the 2nd introducer needle



Placing the TransDiscal™ probes



Baylis RF Generator

All photos are courtesy of www.transdiscal.com