

# Physicians Stop Liver Cancer with Millions of Glass Beads

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University of Cincinnati (UC) physicians are using a new technique that involves injecting patients with millions of tiny radioactive glass beads to control advanced, inoperable liver cancer.

No wider than a single strand of human hair, the beads kill liver cancer cells from inside the tumor.

Darryl Zuckerman, MD, offers the minimally invasive procedure, known as TheraSphere, at University Hospital and is the only physician in Ohio trained to perform it. UC's Academic Health Center is one of 28 medical centers across the United States offering the treatment.

"The only real cure for liver cancer is an organ transplant," explains Zuckerman, an associate professor and interventional radiologist at UC. "But this procedure allows us to stabilize the patient's condition by controlling cancer growth and shrinking the tumor. Then we can deal with it surgically, or as a stand-alone therapy for patients who aren't good candidates for surgery."

This treatment is intended for patients with a form of cancer known as advanced hepatocellular carcinoma (HCC), which starts in the liver's cells and develops into one or multiple tumors that cannot be removed in surgery.

Primary liver cancer—which grows from within the organ as opposed to spreading there from another area of the body—is rare but is increasing at a very rapid rate in the United States, according to Zuckerman. HCC is the most common type of primary liver cancer in adults and accounts for 80 percent of all primary liver cancers. Colorectal, breast and gastric cancers also commonly spread to the liver.

"By delivering highly targeted radiation from inside the body," says Zuckerman, "we can help minimize damage to surrounding tissue and slow the progression of the liver cancer for patients

awaiting liver transplant. For other patients, this procedure can reduce the size of the tumor to a point where it can be removed surgically, giving patients new hope for survival."

Two weeks before treatment patients undergo an angiogram, which allows an interventional radiologist to identify blood vessels feeding the liver tumor. Depending on the anatomy of the blood vessels, the radiologist may place metal coils in surrounding blood vessels to prevent the beads from traveling to other organs in the body.

On the day of treatment, the patient is given a mild sedative and pain medication. The radiologist makes a tiny incision in the groin—no larger than the tip of a pencil—to gain access to the femoral artery. Using moving X-ray images (fluoroscopy) as a visual guide, the physician directs a thin, flexible tube (catheter) through the artery and into the main blood vessel feeding the liver tumor. The radioactive beads are injected and carried in the bloodstream up to the tumor, where they embed and slowly kill the cancerous cells.

The procedure takes 1 to 1 ½ hours to complete. The patient usually goes home the same day, but undergoes periodic monitoring to ensure the tumor is responding to treatment. Because only one lobe of the liver can be treated at a time, follow-up procedures may be needed three months after the initial treatment.

One of the body's largest organs, the liver helps metabolize food and medicine absorbed from the intestines into the blood supply, produces bile to help digest fats and stores energy-producing glycogen (sugar).

Hepatitis infections, alcoholism, and other causes of cirrhosis can increase the risk of liver cancer, according to Zuckerman.

The American Cancer Society estimates that about

18,000 new cases of primary liver cancer and bile duct cancer will be diagnosed in the United States during 2006. Zuckerman expects to begin offering the same treatment to patients with breast and colon cancer that has spread to the liver this fall.

Source: University of Cincinnati

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