In 2007, Francis Corr was facing bad news. He had already been through chemotherapy and a surgery to remove several melanomas on his lungs. Now a new spot had shown up, close to the heart. The retired teacher’s cardiac health was already poor. Operating to remove the melanoma was problematic at best. Fortunately, Mr. Corr was still not out of options. He became the first patient at Yale to receive stereotactic body radiotherapy (SBRT), a highly precise and extremely powerful radiation treatment. Four years later, Mr. Corr, 77, is in “the prime of life,” he says. Years of follow-up scanning have revealed no signs of cancer.

Mr. Corr’s radiation oncologist, Roy Decker, MD, PhD, brought the therapy to Yale Cancer Center. When Mr. Corr first came to Yale, he was treating lung cancer patients with conventional radiation therapy. He started an SBRT program for people like Mr. Corr, who were poor candidates for surgery. Patients who are frail or have already lost sections of their lungs to conventional surgery may fall into that category.

“the results were so much better than any of the alternatives,” explained Dr. Decker. Yale’s program is the oldest in New England. In just four years, Dr. Decker has treated about 300 patients. Establishing the program was no small feat, as it requires advanced technology and collaboration between various medical specialists and physicists.

The procedure, generally repeated for three to five sessions, is completely non-invasive. About half of patients experience no side effects. The most common side effect is mild-to-moderate fatigue.

Stereotactic radiosurgery was introduced in the 1950s, when surgeons used Gamma Knife technology to treat brain tumors, explained Dr. Decker. Because the radiation must be precisely targeted, a frame is screwed into the patient’s skull. But for the patients Dr. Decker treats, targeting is not at all invasive. They are stabilized in a cushion that reminded Mr. Corr of a beanbag chair. A simulator even captures and compensates for the motion of the patient’s breathing.

“The radiation is delivered overhead from ‘what looks like a spaceship,’” Mr. Corr remembers. Actually, the machine is complex in part because it includes a cone beam CT scanning, explained Dr. Decker. That allows for extreme precision.

The largest U.S. trial of SBRT showed it to be 91 percent effective with slow-moving and the less-invasive side effects, the procedure appeals even to patients who may well have other options. “People are starting to ask for this as an alternative to surgery,” said Dr. Decker.

But Dr. Decker cautions that the procedure is so new that it is impossible to compare its long-term results with those of surgery. “We’re not certain that this is as good as surgery or that it will be as good as surgery 10 to 15 years down the line,” he explained. So his approach remains cautious; SBRT is only used for those patients who are poor candidates for surgery.

As evidence about the procedure grows, in part through Dr. Decker’s own research program, SBRT’s use may increase, according to Frank D'Errico, MD, surgical director of the Thoracic Oncology Program. “The reality is that we see a different spectrum in lung cancer today,” he explained. SBRT has proven especially effective against less aggressive lung cancers. These cases are on the increase, Dr. D’Errico said, but identifying cancers that are likely to stay localized is still difficult.

As knowledge about the diseases and potential therapies increases, there is an increasing critical that doctors from various disciplines work together to offer a patient optimal treatment. “It’s a team effort with some depth and some focus on lung cancer,” he said. “It takes team decision making.”

Typically, a patient’s CT scan will show cancers disappearing in nine to 18 months after SBRT. Conventional radiation therapy causes changes over time as well. It is effective because it damages the DNA of cancer cells, causing them to die when they attempt to divide. SBRT may or may not cause the same reaction, said Dr. Decker.

For Mr. Corr, precisely how SBRT eliminated his melanoma is not the point. “It’s worked. They call me The Miracle Man,” he says with a laugh.