



# Yttrium-90 Radioembolization as a Palliative Treatment for Liver Tumors: A Case Study

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The best chance of cure for patients with liver cancer is surgical removal, but many tumors are too large or invasive. In addition, chemotherapy is frequently unsuccessful in this patient population. A case study is featured involving a patient determined to be a candidate for Yttrium-90 radioembolization, a minimally invasive liver-directed treatment used to target primary and metastatic liver tumors by delivering radioactive microspheres directly to the tumor. This article provides an introduction to the procedure, as well as practical information for nurses caring for patients with liver cancer following Yttrium-90 radioembolization.

## At a Glance

- Yttrium-90 radioembolization allows larger radiation doses to be used without affecting healthy tissues.
- An outpatient procedure, Yttrium-90 radioembolization results in fewer side effects than standard treatment.
- Although Yttrium-90 radioembolization can extend and improve quality of life, its intent is palliative, not curative.

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About 140,000 people in the United States are diagnosed with colon cancer each year, with more than half developing liver tumors during their lifetime (Society of Interventional Radiology, 2015). Blood supply from the colon feeds the liver through the portal vein, allowing cancer cells to easily migrate (Memorial Sloan Kettering Cancer Center, 2015). In cases of liver cancer, the best chance of cure is surgical removal; however, many tumors are too large or invasive. Ninety percent of patients with liver cancer are not candidates for surgery, and chemotherapy is often unsuccessful in curing liver metastases. Although many noninvasive tests can be

used to diagnose liver cancer, a biopsy must be performed to confirm malignancy (Kooby et al., 2010). The purpose of this case study is to provide an introduction to Yttrium-90 radioembolization, a relatively new treatment for liver cancer, and to offer practical information necessary for nurses to supply family-centered care to those patients undergoing Yttrium-90 radioembolization.

## Case Study

A 52-year-old man named C.F. presented with abdominal pain, hematochezia, and a weight loss of about 20 pounds. A colonoscopy was performed, revealing a

5 mm lesion in the colon. Biopsy results were consistent with invasive adenocarcinoma. C.F. underwent a computed tomography (CT) scan that showed a 3.6 cm rectosigmoid mass with multiple liver lesions suspicious for metastatic disease. His treatment included 12 cycles of chemotherapy. CT and positron-emission tomography (PET) scans performed throughout C.F.'s treatment showed decreasing size of the liver lesions but residual uptake at the primary tumor. C.F. then underwent resection of the primary tumor and continued with postoperative radiation therapy and chemotherapy. A PET scan performed one month after radiation therapy and chemotherapy showed a good response, and, at two months postprocedure, a magnetic resonance imaging (MRI) scan showed characteristics of treated liver metastases. At that time, follow-up with interval imaging studies was scheduled. An MRI scan done six months postprocedure showed an increase in the size of the two liver lesions. The interventional radiology team was consulted regarding liver-directed radioembolization therapy.

At the time of the consultation, C.F. had no complaints and continued to work. He was not undergoing chemotherapy, and he denied skin color changes, chest pain, shortness of breath, nausea, vomiting, abdominal pain, and changes in urine or stool characteristics. His most recent MRI scan showed that two of the four liver lesions had increased in size. The size of the other two lesions remained unchanged. His physical examination was normal.

After a review of his history, his physical examination, and results of the imaging studies, C.F. was determined to be a candidate for liver-directed therapy with Yttrium-90 radioembolization. To