

## Liver Tolerance to Repeat <sup>90</sup>Y-Microsphere Radioembolization

**Patrick McNeillie**, MS2 Andrew S. Kennedy, MD, FACRO William Dezar, PhD, DABR Scott L. Sailer, MD Mary England, RN, BSN and Caroll Overton, MD  
*University of North Carolina, Chapel Hill School of Medicine and Wake Radiology Oncology, PLLC*

**Purpose:** Liver tolerance to multiple doses of <sup>90</sup>Y-microspheres is not known. Many patients (pts) are surviving long enough to be considered for a second and third liver treatments with internal radiation. **Materials and Methods:** The experience of a single center treating liver tumors with resin <sup>90</sup>Y-microspheres. Pts that received liver radiation prior to or after resin microsphere therapy were studied. Endpoints were toxicity, tumor response, shunting to lung, and effects on liver volume and function. The delivery activity of microspheres selected was not reduced below BSA dose calculation for patients without prior treatment. All patients

received bilobar single session delivery. **Results:** A total of 38 pts; 14 women, 24 men, treated 6/2003 to 9/2006, with 33 pts receiving 2 courses and 5 pts with 3 courses of liver radiation. Retreatment with resin microspheres 26 pts, prior external beam radiation in 7 pts, prior glass microspheres in 2 pts, prior systemic radiotherapy in 2 pts, and prior stereotactic liver radiation in 1 pt. Liver function was stable and adequate in all patients after additional liver radiation, and no pts developed radiation-induced liver dysfunction (RILD) or veno-occlusive disease (VOD). The percentage of shunting to the lung decreased with retreatment. **Conclusions:** Repeated implantation in the liver with <sup>90</sup>Y-microspheres is safe in patients that have sufficient liver function and reserve based on known and accepted laboratory parameters already used for selection of microsphere therapy. No acute life-threatening, fatal, or late liver damage was observed, RILD or VOD. No specific dose reduction is recommended for retreatment of the liver.