CASE STUDY

Qualitative Improvement in Liver Tumor Enhancement during Angiography Using the Surefire Infusion System vs. a Power-Injectable Microcatheter

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Clinical Diagnosis: 63 year-old male with synchronous metastatic colon cancer to the liver who presented 6 years after resection of the primary tumor with slow progression in the liver in spite of multiple cycles of chemotherapy.

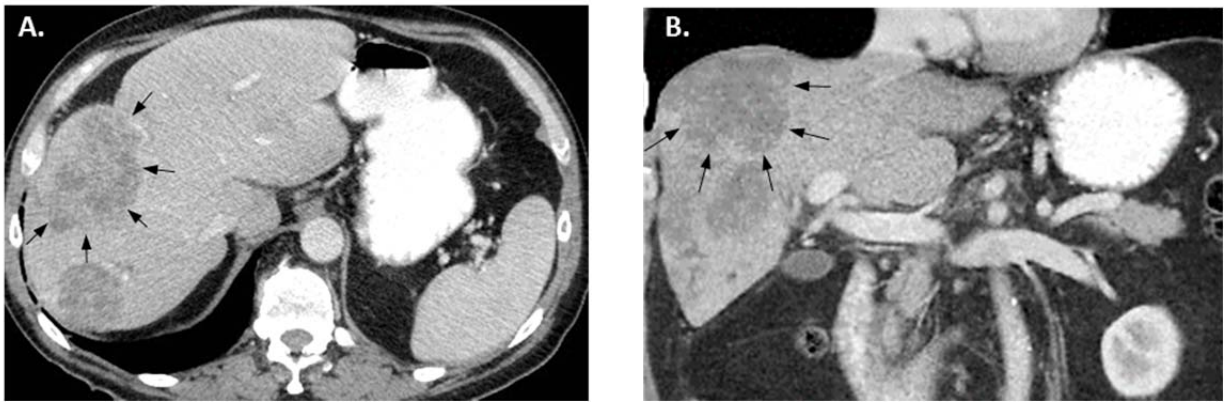

Figure 1. A large conglomerated tumor mass with multiple feeder vessels was targeted. A. Segment 4 aspect of the tumor mass, fed from the LHA. B. Segment 5/8 aspect of the tumor, fed by the RHA.

Anatomy: Preoperatively, there were multiple lesions located in segments 2, 3, 4, 5, 6, 7, and 8, the largest of which was a confluence of tumors in segments 4/5/8. The segment 4 region was supplied by the LHA and the segment 5/8 region was supplied by the RHA. The target arteries for infusion were the LHA (4 mm diameter), and RHA (6 mm diameter).

Infusion System Comparison: During angiographic planning, a traditional microcatheter was compared to a Surefire Infusion System prior to the radioembolization administration to determine tumor enhancement.

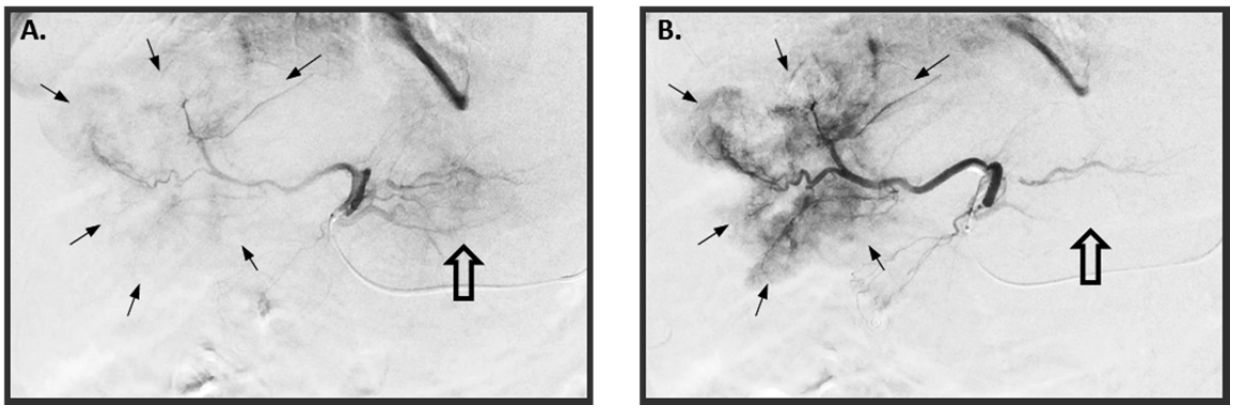

Figure 2. Angiographic comparison of a microcatheter vs. a Surefire Infusion System in Segment 4 region of large tumor. A. Left hepatic angiogram with standard end hole microcatheter B. Left hepatic angiogram with Surefire Infusion System mT shows greater tumor enhancement (small arrows) and reduced non-target delivery (large arrow).

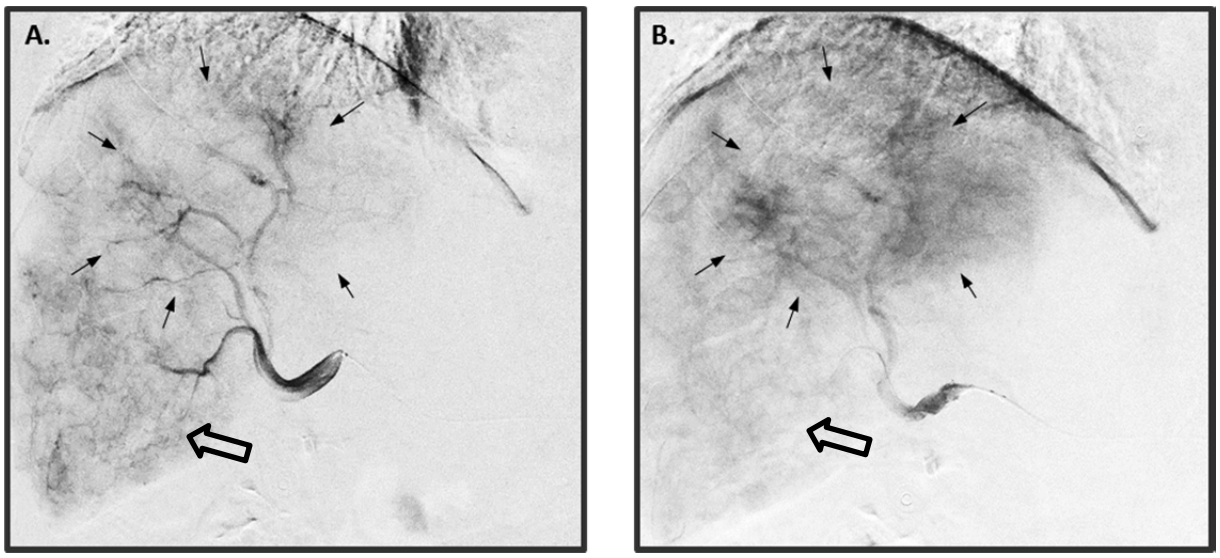

Figure 3. Angiographic comparison of a microcatheter vs. a Surefire Infusion System in Segment 5/8 region of large tumor. A. Right hepatic angiogram via standard end hole microcatheter B. Right hepatic angiogram via Surefire Infusion System LT shows greater tumor enhancement (small arrows) and reduced non-target delivery (large arrow).

Treatment Plan: The treatment plan included Yttrium-90 radioembolization with two infusions of SIR-Spheres® microspheres, one to each lobe, separated by four weeks. During both infusions, a Surefire Sim1 Guiding Catheter was positioned at the origin of the celiac artery. For the left hepatic artery, a Surefire Infusion System mT was used to deliver the entire prescribed dose (1.13 GBq), and for the right hepatic artery, a Surefire Infusion System LT was used to deliver the entire prescribed dose of (0.48 GBq).

Why was the Surefire chosen for this procedure?: The Surefire Infusion System was used in this case primarily to prevent non-target embolization of the gastroduodenal artery and the right gastric artery, which arose from the common hepatic artery and proper hepatic artery, respectively. These vessels had not been prophylactically coil embolized prior to treatment. In addition, the mapping angiograms performed with the Surefire Infusion System demonstrated noticeably improved enhancement of the tumors with decreased enhancement of the normal liver parenchyma compared to an end-hole microcatheter. Although not yet confirmed with Yttrium-90 radioembolization[1], increased tumor enhancement on conventional angiography may be associated with improved imaging response and increased patient survival after either hepatic artery infusion chemotherapy or transarterial chemoembolization[2,3,4,5].

References:

[1] Sato K, Omary R, Takehana C, Ibrahim S, Lewandowski R, Ryu R, Salem R. The role of tumor vascularity in predicting survival after Yttrium-90 radioembolization for liver metastases. J Vasc Interv Radiol. 2009 Dec;20(12):1564-69.

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