Mount Sinai

CASE REPORT

Balloon occlusion microcatheter use with microwave ablation to treat HCC with complete response outcome

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Hepatocellular carcinoma (HCC) is the most common primary malignancy of the liver. For early-stage A HCC patients who are not candidates for either liver resection or transplant, BCLC staging recommends ablation as the therapy of choice. Balloon-occlusion conventional transarterial chemoembolization (BC-TACE) may be advantageous in the treatment of HCC and can be used as a method to increase complete response when used with microwave ablation and as a method of defining ablation margins.

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Abbreviations: HCC = Hepatocellular Carcinoma, BC-TACE = Balloon Occlusion Conventional Transarterial Chemoembolization, DSA = Digital Subtraction Angiography, BCLC = Barcelona Clinic Liver Cancer staging system

CASE PRESENTATION

The patient is a 59-year-old male with history of Hepatitis C and newly diagnosed HCC at BCLC stage A. MRI imaging demonstrated hepatomegaly and mild liver cirrhosis without portal hypertension. A 2.7 cm in diameter lesion was located in liver segment 5/8 with enhancement characteristics diagnostic for HCC.

PROCEDURE DESCRIPTION

BC-TACE was performed from a single vessel supplying liver segments 5 and 8. The balloon occlusion microcatheter (Sniper, Embolx, Sunnyvale, California) was used to preferentially direct flow to the tumor. When the balloon was inflated to the point of arterial occlusion, arterial pressure in the downstream vascular compartment was decreased, thereby reversing the blood flow of collateral arteries towards the tumor. Reversal of flow and minimization of reflux was achieved [Figures 1 & 2].

Embolization was performed with 60 mg doxorubicin mixed with 5 mL of Lipiodol followed by one vial of 100 µm microsphere particles (Embozene, Boston Scientific, Natick, Massachusetts) until stasis was achieved. There were no adverse reactions. Patient underwent microwave ablation of the same lesion 3-weeks post embolization for complete response.

FOLLOW-UP AND DISCUSSION

The patient underwent microwave ablation of the tumor three weeks post BC-TACE procedure with complete response and no tumor recurrence at one-year follow-up.

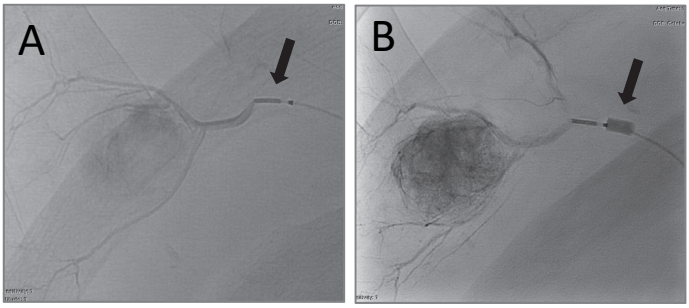

Figure 1: DSA demonstrating increased tumor enhancement with Sniper Balloon inflated **(image B at black arrow)** versus deflated **(image A at black arrow)**.

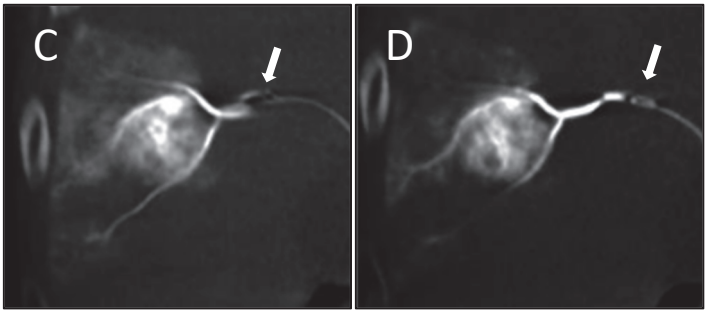

Figure 2: Cone Beam CT demonstrating the Sniper Balloon Catheter advanced over a 0.016" guidewire (Fathom, Boston Scientific, Natick, Massachusetts) and deployed in the right hepatic artery. **Image C** shows the Sniper Balloon deflated **(white arrow)** while **image D** shows the Sniper Balloon inflated **(white arrow)**, resulting in increased specificity of tumor blush and decreased surrounding parenchymal enhancement.