

Segmental Balloon-Occluded Transarterial Chemoembolization of Hepatocellular Carcinoma

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Purpose: Balloon-occlusion of tumor-feeding artery alters blood flow dynamics to increase the delivery of therapeutics (1-3). In this study, we investigated the outcomes of patients with hepatocellular carcinoma treated with segmental balloon-occluded transarterial chemoembolization (B-TACE).

Materials and Methods: A single-center, retrospective, IRB-approved review was performed of 31 patients with hepatocellular carcinoma who underwent conventional transarterial chemoembolization utilizing a balloon occlusion microcatheter (Sniper; Embolx, Inc.) from March 2017 to July 2019. Sixteen patients were excluded as the B-TACE was not performed using a segmental approach. Fifteen patients [median age 65; range 44–80 years; 84% male; Child-Pugh class A (73%) or B (27%); ECOG 0 (33%) or 1 (67%)] were included. B-TACE was performed at the level of the segmental tumor-feeding artery using lipiodol-doxorubicin emulsion followed by gelfoam or microspheres. Tumor characteristics, technical success, treatment response, laboratory tests and adverse events were recorded. Treatment response was evaluated based on contrast-enhanced CT or MRI utilizing mRECIST. The median imaging follow-up was 9.1 months.

Overall response rate	94.7%
Complete response	73.7%
Partial response	21.1%
Stable response	5.3%

Results: Nineteen tumors (median size 2.5 cm; range 1.0–6.9 cm) were treated with segmental B-TACE. The technical success of segmental B-TACE was 100%. The disease control rate was 100% and the overall response rate was 94.7% with complete response (73.7%), partial response (21.1%) and stable disease (5.3%). Four patients, who underwent subsequent liver transplantation, had explant pathology that showed 90 to 100% necrosis of the treated tumors. There was no significant difference between the pre- and post-treatment hepatic function tests. No intra-procedural adverse events occurred, and there were no major complications.

Conclusion: Our study suggests that segmental B-TACE may be safe and effective in the treatment of hepatocellular carcinoma. Larger, prospective studies are needed to clarify the role of segmental B-TACE within the paradigm of locoregional therapies in the liver.

References:

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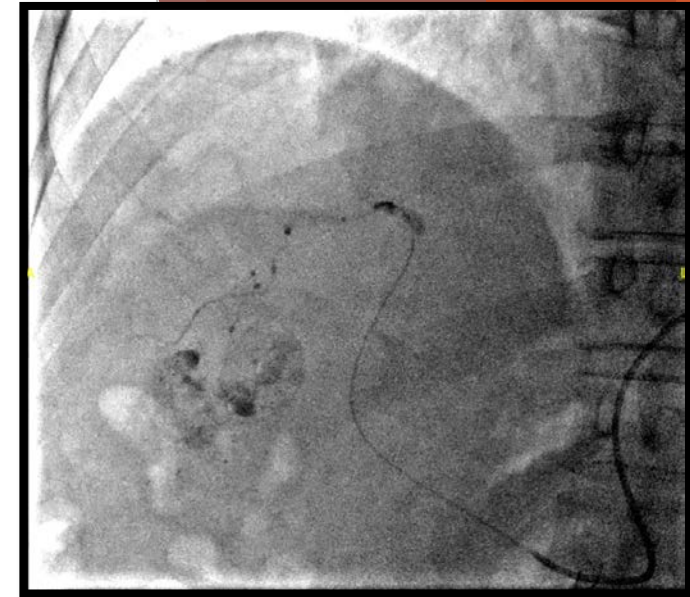


Figure 1. Fluoroscopic image shows infusion of lipiodol-doxorubicin emulsion using a balloon occlusion microcatheter to perform segmental transarterial chemoembolization of hepatocellular carcinoma.



Figure 2. Non-contrast CT image demonstrates dense accumulation of lipiodol within the target hepatic tumor after balloon-occluded transarterial chemoembolization.

