Balloon-occluded Arterial Stump Pressure Before Balloon-occluded Transarterial Chemoembolization

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Abstract

The objective of this study is to elucidate optimal conditions to achieve high efficacy in Balloon-TACE (B-TACE) [1]. High efficacy B-TACE is achieved when the pressure distal to the inflated balloon drops to below 64 mmHg. The mechanism of B-TACE as related to patient selection has been widely studied [1, 2, 3, 4, 5, 6]. Balloon TACE on selected patients can result in higher rates of CR and longer survival [7, 8, 9, 10, 11]. *This is a literature review of a paper that used the Occlusafe device.*

Methods

This study investigates pressure reduction upon BO at the segmental level, lobar level, and in the right inferior phrenic artery and reveals optimal tip placement to predict outcome. Pressure measurements were done on 87 arteries in 47 patients. Of 87 arteries measured, 76 (87%) were segmental or subsegmental. There were 8 lobar (9.2%) and 3 phrenic (3.4%) measurements.

Results

In segments 2, 3, 5, 6, and 7, 100% of post BO measurements were <64mmHg. In Segments 1, 4, and 8, pressure was <64mmHg in 58% of cases. At the lobar level <64mmHg was seen 38% of the time. Measurements in the IPA showed 100% being <64mmHg. Results showed p<0.05.

Discussion

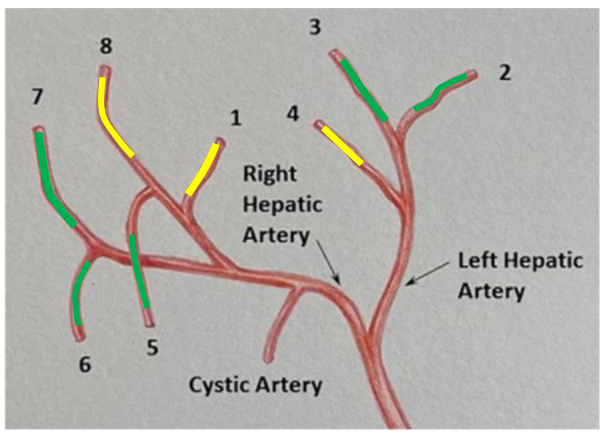
Superior efficacy in B-TACE requires that the occlusion result in a lowering of systemic pressure to <64mmHg. High-pressure collaterals distal to the balloon can prevent pressure reduction, resulting in unpredictable flow patterns that may not be advantageous. Segments in the center of the liver (1, 4, 8) can be challenging because of the large number of high-pressure lobar communicating arteries. Improved efficacy can be achieved in these segments also, when the tip placement is superselective [12].

Patient Selection

Patients with tumors in liver segments 2, 3, 5, 6, and 7 are good candidates for balloon embolization. Segmental tip placement produces the best results. Patients with tumors in the center of the liver, segments 1, 4, and 8, may not be good candidates unless the catheter tip can be placed in a superselective position to ensure that there are no high-pressure collaterals distal to the balloon. For lobar embolization, high efficacy is achieved in about 38% of cases.

Tips and Tricks

1. If a nonproductive flow pattern is observed, advance the balloon microcatheter.
2. To achieve the desired flow pattern, “Flow Diversion” with a two-balloon or one balloon and one standard catheter technique can be used [13,14,15].
3. The balloon microcatheter tracking is much improved when the base catheter is advanced beyond the celiac artery and the guidewire is advanced distally.
4. A Cordis 4 Fr Cobra base catheter is recommended to advance the base catheter into the R or L hepatic arteries.



Tumors in segments 2, 3, 5, 6, 7 are good candidates for B-Embolization. Tip placement should be segmental (green) or closer. Tumors in segments 1, 4, and 8 (yellow) require subsegmental tip placement to achieve desired flow redistribution.

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