

## Authors' Reply: Letter to the Editor Regarding "Yttrium-90 Radioembolization for Unresectable Combined Hepatocellular-Cholangiocarcinoma"

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We thank the authors for their thoughtful comments on our article "Yttrium-90 Radioembolization for Unresectable Combined Hepatocellular-Cholangiocarcinoma" [1] and appreciate the opportunity to address their concerns.

We agree with the authors that other therapies received before and after radioembolization are a limitation of this study, as acknowledged and reviewed in the Discussion section of our paper. Moreover, many clinical studies, including prospective randomized controlled trials, are subject to these confounders. Since there are no management guidelines for unresectable combined hepatocellular-cholangiocarcinoma (cHCC-CC), it is to be expected that cHCC-CC patients undergo a variety of therapies of unknown efficacy. We detailed all other therapies for each individual patient to provide readers the context necessary to interpret the reported outcomes data. Furthermore, in our assessment of response to radioembolization, we minimized the confounding effects of prior treatments, when applicable, by using the cross-sectional imaging study which showed disease progression after prior treatments as the "baseline" imaging study. We also minimized the effects of subsequent treatments after radioembolization by reporting *best* hepatic imaging response, since patients who underwent additional therapies mostly did so after disease progression occurred after stable disease or partial response

was achieved with radioembolization. Since there is no known cure and no standard of care for unresectable cHCC-CC, it is likely that future research, even prospective work, will also be subject to these limitations.

Lastly, we thank the authors for identifying the discrepancy between Table 1 and Figure 2B. In our cohort, three patients demonstrated macrovascular invasion. The correct version of Figure 2B is updated in an erratum linked to the original article (doi:[10.1007/s00270-017-1701-6](https://doi.org/10.1007/s00270-017-1701-6)).

### Compliance with Ethical Standards

**Conflict of interest** D. Sze is on the medical or scientific advisory boards for Boston Scientific, Inc., Koli Medical, Inc., RadiAction Medical, Inc.; is a consultant for Amgen, Inc., BTG International, Inc., EmbolX, Inc., W.L. Gore & Associates, Inc., and Viralytics, Inc.; receives institutional research support from Merit Medical, Inc., and W. L. Gore, Inc.; and owns equity interest in Confluent Medical, Inc., and Proteus Digital Health, Inc.

### Reference

1. Chan LS, Sze DY, Poultsides GA, Louie JD, Mohammed MAA, Wang DS. Yttrium-90 radioembolization for unresectable combined hepatocellular-cholangiocarcinoma. *Cardiovasc Intervent Radiol*. 2017. doi:[10.1007/s00270-017-1648-7](https://doi.org/10.1007/s00270-017-1648-7).

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