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Letter to the editor: oesophageal cooling for protection during left atrial ablations

We read the work by Hamed *et al.*¹ reviewing the available randomized controlled trials on oesophageal cooling, and we appreciate the inclusion of the IMPACT study in their meta-analysis. The findings are similar to our earlier meta-analysis of what has been described as 'reactive' oesophageal cooling (using direct liquid instillation into the oesophagus in response to an increase in measured luminal oesophageal temperature), in which even with the low heat extraction capacity available with this method, severe oesophageal injury was found to be significantly reduced.² One challenge inherent in meta-analysis is the inability to account for heterogeneity both within and between studies. The authors address aspects of this, but factors such as imbalance between groups both in baseline patient characteristics and in treatment provided (such as found in the data by Tschabrunn *et al.*³) are more difficult to account for in this type of analysis. Combining different modalities of cooling (direct liquid instillation, low-flow-rate irrigated balloon, and a high-flow-rate dedicated oesophageal cooling device) may also hinder interpretability of the analysis as essentially the methods grouped together are very different practically and therefore must be different in their biophysical effects, although described and analysed here under the same term. Direct liquid instillation in response to an elevation in oesophageal temperature is limited by the need to react to a thermal insult, in contrast to proactive oesophageal cooling, where oesophageal temperature is pre-emptively cooled, reducing the likelihood of reaching the lethal isotherm temperatures required to cause oesophageal injury. In recent studies from a wide range of medical centres, significant reductions in procedure time, fluoroscopy use, and overall costs have been found when using active oesophageal cooling with a dedicated device.^{4–6} Long-term follow-up data from the IMPACT study have now been published, showing that ablation efficacy, efficiency, and safety are not compromised when using active oesophageal cooling via the ensoETM device for oesophageal protection.⁷ Perhaps most importantly, a large multi-centre analysis has now been completed that investigated the difference in atrio-oesophageal fistula (AEF) rates before and after adoption of active oesophageal cooling via the ensoETM across 25 hospital systems. This study included 25 168 patients and avoided the disadvantage of relying on the surrogate of endoscopically identified oesophageal lesions, finding a statistically and clinically significant reduction in AEF rates (from 0.146 to 0% after the adoption of oesophageal cooling).⁸ In our most recent paper on device registries, we found no AEF, and only a single pericardio-oesophageal fistula, reported in well over 20 000 cases to date.⁹ In light of these growing data on active oesophageal

cooling, we believe a meta-analysis that combines different modalities from studies with the limitations as described by Hamed *et al.*¹ may underestimate the true effects seen in current use.

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