

Endoscopically visible steam pop during high-energy laser pulmonary vein ablation

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Abstract A 58-year-old woman with atrial fibrillation underwent laser balloon ablation at our centre. During 12 W ablation in the left superior pulmonary vein, a sudden steam pop was witnessed with displacement of the balloon catheter. Visualisation of the pulmonary vein antrum showed a red discolouration at the last ablation site.

The endoscopically assisted laser balloon ablation system (EAS) is a relatively novel technique that is being used to perform pulmonary vein isolation (PVI) in the treatment of atrial fibrillation [1]. The EAS consists of a flexible, compliant balloon for sustained wall contact and a power adjustable laser beam for ablation independent of tissue contact.

A 58-year-old woman underwent PVI with the EAS due to drug-refractory, symptomatic and paroxysmal atrial fibrillation. During 12 W ablation at the antrum of the left superior pulmonary vein (LSPV), a sudden steam pop was witnessed, with displacement of the EAS catheter (Fig. 1). Visualisation of the LSPV antrum showed a red discolouration, most likely a haematoma in the antral wall of the LSPV, at the last ablation site. A successful PVI was performed; the red discolouration was still present after 1 h. The patient did not develop symptoms related to the steam pop and echocardiography did not reveal any abnormalities.

Steam pops are caused by overheating of myocardial tissue, exceeding 100°C, and are preceded by a shift in impedance levels, which cannot be measured with the EAS.

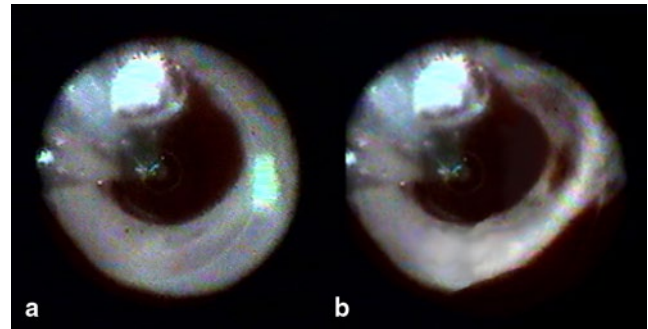


Fig. 1 Witnessed steam pop during endoscopically assisted ablation. Panel **a** displays the fifth ablation site in the left superior pulmonary vein (LSPV) where the steam pop occurred. The *white* ring of exposed tissue is a sign of optimal catheter-wall contact. Panel **b** displays the LSPV antrum directly after the steam pop. Note the *red* discolouration which was not present in panel **a**

Higher energy settings and higher contact force are known to increase the risk of steam pops. Steam pops can lead to tissue disruption and cardiac perforation [2]. However, steam pops appear to be a rare complication with reduced EAS energy settings, which we mostly used in 50 EAS patients, in whom no steam pops were observed [3].

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Conflict of interest None declared.

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