

CASE REPORT

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## Transverse shifting of the esophagus according to the patient's position helped achieve a safe and successful pulmonary vein isolation procedure

**Abstract** Although the incidence of causing an atrio-esophageal fistula during pulmonary vein isolation is very low, this type of injury results in a very high mortality rate. To prevent this complication, keeping a safe distance from the esophagus to the ablation lesion is a simple but safe method. We report a case in which we were able to shift the position of the esophagus by positioning the patient in a lateral posture in order to keep the esophagus at a safe distance from the pulmonary vein antrum, resulting in performance of a safe and successful pulmonary vein antrum isolation.

**Key words** Atrio-esophageal fistula · Esophagogram · Catheter ablation · Pulmonary vein isolation

### Introduction

Extensive pulmonary vein (PV) isolation, in which the PVs are isolated together with their surrounding tissue, is superior to PV ostium isolation<sup>1,2</sup> in suppressing the recurrence of atrial fibrillation (AF) and preventing PV stenosis associated with catheter ablation. Another rare but fatal complication that has been attributed to left atrium (LA) ablation is accidental ablation of the esophagus resulting in an atrio-esophageal fistula.<sup>3–5</sup> As a consequence several reports have been published describing how to take precautionary measures to avoid this potentially fatal complication.<sup>6–8</sup> We report a case in which we were able to successfully shift the position of the esophagus by positioning the patient in a lateral posture in order to keep the esophagus at a safe distance from the PV antrum, resulting in a complication-free and successful PV antrum isolation.

### Case report

A 53-year-old man with paroxysmal AF refractory to four anti-arrhythmic drugs was referred for an electrophysiological study and RF catheter ablation. We performed an esophagogram by having the patient swallow 5 ml of water-soluble contrast medium (amidotrizoic acid, Schering, Berlin, Germany) immediately before the preparation for the ablation procedure in the catheter laboratory. The esophagogram revealed that the esophagus was located on the right side of the vertebra with a concave esophageal silhouette in the middle portion of the esophagogram, which appeared to be created by the compression of the posterior wall of the right PV antrum (Fig. 1A). We estimated that the esophagus was positioned posterior to the right PV ostium and antrum and therefore we tried to shift the position of the esophagus by moving the patient into a lateral posture in order to maneuver the esophagus to a safe distance away from the right PVs. After keeping the patient in the lateral position for a duration of 1 min, an additional esophagogram was performed in the supine position showing that the esophagus had been successfully displaced to the left side of the vertebra (Fig. 1B). Preparations for the PV isolation procedure were then continued and immediately before performing the ablation, a pulmonary venogram and esophagogram were performed at the same time. The results showed that the position of the esophagus was kept at a safe distance from each of the four PVs (Fig. 1C). We then successfully performed the PV antrum isolation under deep sedation using propofol and buprenorphine hydrochloride intravenously. At the end of the procedure the sedation was terminated and after the patient had regained complete consciousness, we then performed another esophagogram. The position of the esophagus was confirmed to be in the same position as was seen at the beginning of the ablation procedure (Fig. 1D). During the 3-month follow-up period, he suffered from no complications, including an atrio-esophageal fistula, and was free of AF.

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