Ablation of atrial fibrillation (AF) through electrical isolation of the pulmonary veins (PVs) is usually performed using circular multipolar catheters. We describe our initial experience with the PentaRay® catheter (Biosense Webster, Inc.), which has five highly flexible branches and a total of 20 poles (Figure 1). This was used for ablation of persistent AF in a 36-year-old female patient, in conjunction with the CARTO® navigation system (Biosense Webster, Inc.), to
Figure 2  Voltage map in sinus rhythm, visualized from the left atrial posterior wall using the CARTO® system. VPID: right inferior pulmonary vein; VPIE: left inferior pulmonary vein; VPSD: right superior pulmonary vein; VPSE: left superior pulmonary vein; purple area: normal voltage; red area: low voltage.

Figure 3  Fluoroscopy with PentaRay® catheter positioned in the left superior pulmonary vein (A); image from the CARTO® system showing the PentaRay® catheter in the left inferior pulmonary vein (B). VPIE: left inferior pulmonary vein; VPSE: left superior pulmonary vein; yellow arrow: PentaRay® catheter; white arrow: ablation catheter; black arrow: decapolar catheter in the coronary sinus.

Figure 4  Pre-ablation electrogram (A) showing potentials in the right superior pulmonary vein (arrows); voltage maps before (B) and after (C) ablation visualized from the left atrial roof, showing the sites of radiofrequency application (red and white circles). VPID: right inferior pulmonary vein; VPIE: left inferior pulmonary vein; VPSD: right superior pulmonary vein; VPSE: left superior pulmonary vein.
create a three-dimensional reconstruction of the left atrium (volume 142 ml) and the PVs, which was then integrated with images obtained by computed tomography angiography (Figure 2). The PentaRay® catheter enabled rapid acquisition of a large number of points to obtain a voltage map with high signal resolution. The five-branched design, with highly flexible arms, fits easily inside the PV ostia (Figure 3). The PentaRay® is also much less likely to become wedged in the mitral valve apparatus.

In the case presented, no low-voltage areas were identified in the atrium during pre-ablation mapping and potentials were seen in all PVs (Figure 4). Antral ablation lines were created in all four PVs. At the end of the procedure, remapping with the PentaRay® catheter showed low voltage (<0.15 mV) in the PVs with the antral ablation lines (Figure 4), which was confirmed by pacing maneuvers inside and outside the PVs.

**Ethical disclosures**

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that no patient data appear in this article.

**Right to privacy and informed consent.** The authors declare that no patient data appear in this article.

**Conflicts of interest**

The authors have no conflicts of interest to declare.