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Deep sedation protocol for ablation using a lattice-tip catheter: procedural outcomes from a single center

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Introduction: The lattice-tip catheter (Sphere-9, Affera, Medtronic) toggles between monopolar pulsed field (PF) and radiofrequency (RF) energy with integrated high-density mapping[1,2]. Most published data come from procedures under general anesthesia (GA), while data on electrophysiologist-led deep sedation are limited.

Patients and Methods: Consecutive patients ablated with the lattice-tip catheter at a single centre (December 2025–September 2026) were retrospectively analyzed. Sedation was administered by EP staff without GA or neuromuscular blockade. Both protocols included paracetamol 1 g iv, midazolam 1+1 mg and fentanyl 50+50 µg. The first protocol used a weight-based propofol infusion (3 mg/kg/h), with propofol (0.3 mg/kg) and lidocaine (1 mg/kg) boluses after transseptal puncture (TSP), before the first PF application; pain or movement was managed by increasing the infusion rate by 10% or by additional boluses. After the first [100] cases, a second protocol was introduced: propofol (3 mg/kg/h) and dexmedetomidine (1 µg/kg over 10 min, then 0.5 µg/kg/h) infusions were started at the beginning of the procedure, and lidocaine (1 mg/kg iv) was given after TSP, without additional boluses unless required. The primary efficacy endpoint was the incidence of map shifts during ablation, and the primary safety endpoint was a composite of endotracheal intubation or conversion to GA.

Results: A total of 175 patients were included ([100] with the first and [75] with the second protocol). Patients were 65.5 ± 9.5 years old, 16% were ≥75 years and 15% had a cardiac implantable device. AF or cavotricuspid isthmus (CTI) ablation was performed in 161 patients (92.0%), ventricular tachycardia (VT) ablation in 9 (5.1%), premature ventricular contraction (PVC) ablation in 3 (1.7%) and accessory pathway ablation in 2 (1.1%). Median total doses were midazolam 1 mg (IQR 1–2), fentanyl 150 µg (100–250) and propofol 410 mg (300–515). Acute success was 100%. There were no complications, intubations, conversions to GA or vasopressor use. Transient desaturation (SpO_2 <90%) occurred in approximately 40 patients ([~23%]), all with BMI >30 kg/m², and resolved with an airway adjunct. Map shifts occurred in 4/[100] (4%) procedures with the first protocol and in 1/[75] (1.3%) with the second protocol, the latter during severe coughing.

Conclusion: Electrophysiologist-led deep sedation is safe and feasible for lattice-tip PF/RF ablation. No patient required intubation or conversion to GA, and desaturation, confined to obese patients, was easily managed with airway support. Map shifts were less frequent with the combined propofol–dexmedetomidine protocol than with propofol alone (1.3% vs. 4%).

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LITERATURE

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