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Dopamine-Induced Resolution of Left Atrial Appendage Sludge Formation Prior to Left Atrial Appendage Closure: First Report

An 85-year-old male patient was admitted to the catheterization laboratory for percutaneous left atrial appendage closure (LAAC) due to recurrent ischemic stroke despite optimal anticoagulant therapy. The procedure was initiated under general anesthesia with transoesophageal echocardiographic (TEE) guidance. Shortly after anesthesia induction, hypotension was observed (65/40 mm Hg). Electrocardiographic monitoring revealed atrial fibrillation (AF) with a ventricular rate of 110 bpm. Transoesophageal echocardiography revealed sludge formation in the LAA and left atrium (LA) (Figure 1A, Video 1). Intravenous administration of dopamine was initiated at 10 mcg/kg/min. A decrease in sludge density was observed by the fifth minute of infusion (Figure 1B, Video 2). At the sixth minute, blood pressure improved to 110/65 mm Hg, and nearly complete resolution of the sludge was noted (Figure 1C, Video 3). The LAAC procedure was continued, and a 31-mm Amulet device was successfully implanted. Immediately following the implantation, synchronized cardioversion (DCCV) was performed, with successful restoration of sinus rhythm (Video 4). No systemic embolic complications were observed during follow-up.

In patients with AF, spontaneous echo contrast (SEC) or sludge may be observed within the LAA due to reduced contractile function of the LAA. Isoproterenol, a positive inotropic and chronotropic agent, has been reported to be used in the presence of SEC and sludge. Isoproterenol has been demonstrated to increase LAA emptying velocity and enhance LAA clearance when sludge or SEC is present due to slow flow. In this case, for the first time in the literature, sludge formation was almost completely cleared using dopamine immediately before LAAC; the procedure was successfully continued, and DCCV was also performed during the same session, without complications.

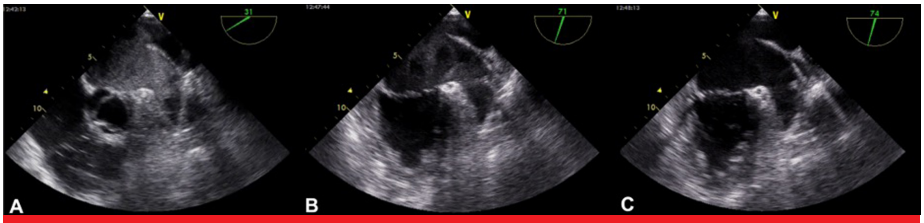

Figure 1. A. Dense sludge formation in the LA and LAA at baseline. B. Partial clearance at the fifth minute of dopamine infusion. C. Complete resolution at the sixth minute.

E-PAGE ORIGINAL IMAGE

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Video 1: Dense sludge formation in the LA and LAA at baseline.

Video 2: Partial clearance at the fifth minute of dopamine infusion.

Video 3: Complete resolution at the sixth minute.

Video 4: Sinus rhythm restored after DCCV, following successful LAAC.