

## CLINICAL IMAGE

# Peri-electrode abscess in lead-dependent infective endocarditis resulting in high peri-interventional risk related to septic embolism

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A 53-year-old man presented to an outpatient clinic with fever of unknown origin and anemia. His past medical history was remarkable for hypertension, diabetes mellitus, ST-segment elevation myocardial infarction 3 years earlier, complicated by severe left ventricular systolic dysfunction (left ventricular ejection fraction, 32%), implantable cardioverter-defibrillator implantation 2 years earlier, and elective percutaneous coronary intervention of the circumflex coronary artery with drug-eluting stent implantation 6 months earlier. He complained of chills, spiking fevers up to 41°C with dizziness, malaise, and weakness for 1 month despite use of broad-spectrum antibiotics. So far, no potential inflammation site has been identified in diagnostic work-up.

On physical examination, the patient was pale and cachectic. No heart murmurs or signs of peripheral microvascular thrombosis – Janeway lesions or Osler nodes – were present. Blood tests revealed elevated inflammatory markers (C-reactive protein, 236 mg/l; procalcitonin, 33 ng/ml; leukocytosis, 11,400/mm<sup>3</sup> with neutrophilia; and normocytic hypochromic anemia with hemoglobin levels of 9.7 g/dl). Transesophageal echocardiography showed multiple large vegetations attached to the ventricular lead (**FIGURE 1A**), the largest of 21 × 13 mm with adjacent multiple echolucent spaces at the base, resembling medusa (**FIGURE 1B**) and suggesting an abscess. No patent foramen ovale (PFO) was observed. Empiric broad-spectrum antibiotics (vancomycin and rifampicin) were administered just after blood cultures were drawn, but the patient remained febrile (up to 41°C) with shaking chills and sweats.

On the fifth day of hospitalization, transvenous lead extraction (TLE) was performed under general anesthesia with cardiopulmonary bypass. An electrode with vegetation was removed using a lead extraction system (Cook Medical Inc., United States) with 2 large-size (white) telescopic polypropylene Byrd's dilators (**FIGURE 1C**), wide enough to pull out the largest, fibrous part of the vegetation through the lumen (**FIGURE 1D**). Lead manipulation resulted in releasing peri-lead abscess content causing transient hypotension (40/0 mmHg) and desaturation suggestive of pulmonary embolization with infective material. The vegetation culture was positive for *Staphylococcus hominis*. There was right-sided pneumonia following TLE. The patient gradually improved and was discharged after 1 month of antibiotic therapy in a good clinical condition.

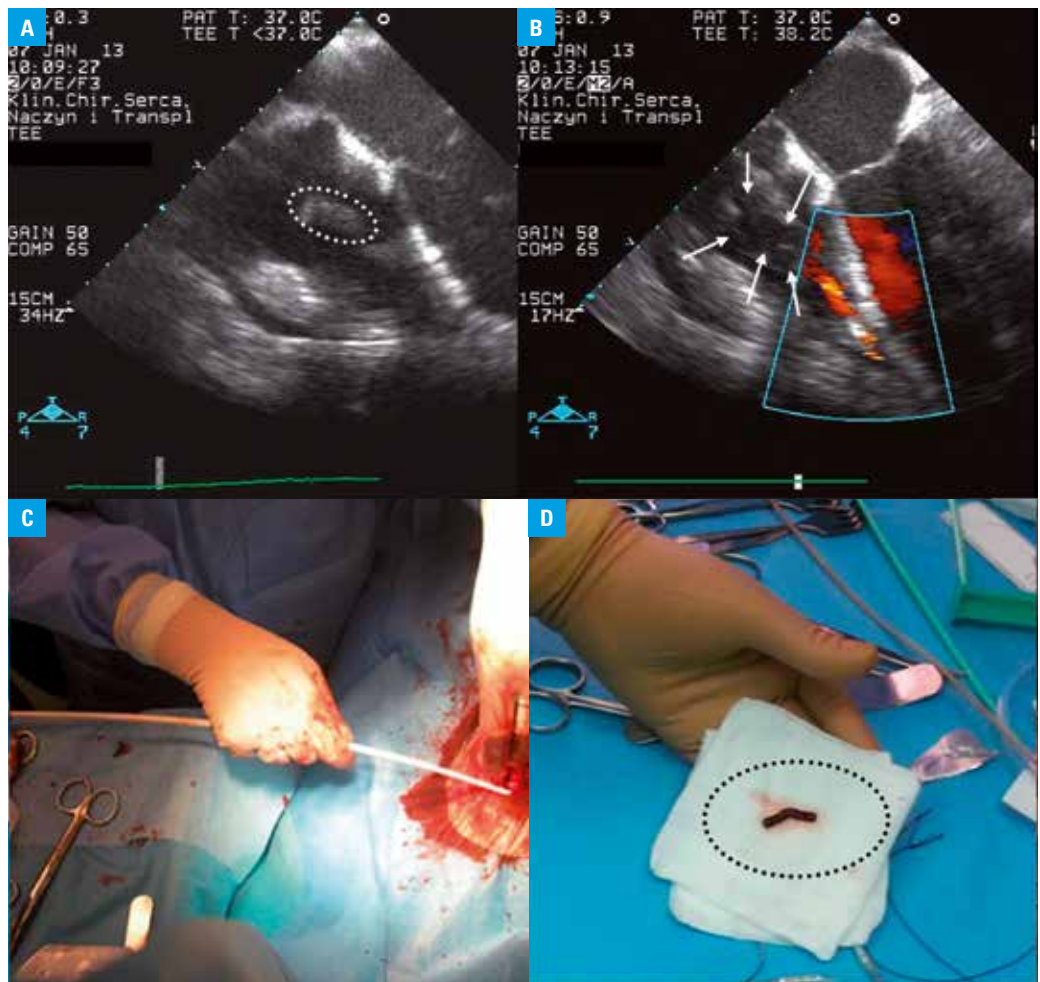
TLE is associated with a significant risk, including pulmonary<sup>1,2</sup> and paradoxical embolism.<sup>3</sup> In contrast to a more detailed approach in left-sided endocarditis, echocardiographic criteria for risk assessment in peri-TLE embolization are less well-defined by the current guidelines.<sup>4</sup>

This is the first report of a peri-lead abscess with subsequent peri-interventional embolization to have demonstrated that, in addition to size, morphological features shown on transesophageal echocardiography (TEE) (in particular, nonuniform vegetation texture with echolucent appearance) indicate higher peri-TLE risk. In this context, preprocedural diagnosis of PFO is mandatory to be aware of potential paradoxical embolism.<sup>5</sup>

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**FIGURE 1** **A** – transesophageal echocardiography: a large vegetation attached to the ventricular lead; **B** – transesophageal echocardiography: adjacent multiple echolucent spaces resembling medusa (arrows) and suggesting an abscess; **C** – large-size (white) telescopic polypropylene Byrd’s dilator; **D** – the largest, fibrous part of the extracted vegetation



Based on our case, we conclude that in selected patients with the suspicion of peri-lead abscess, TLE can be performed under general anesthesia with cardiocirculatory back-up and the awareness of higher risk related to embolization. Preprocedural TEE for risk assessment should include vegetation size, morphology, and mobility as well as the diagnosis of PFO.

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