

CASE IMAGE

Multimodality imaging in a patient with lead perforation

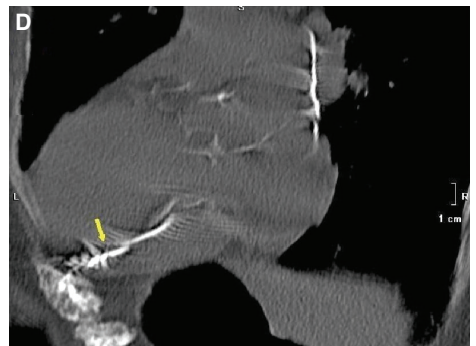
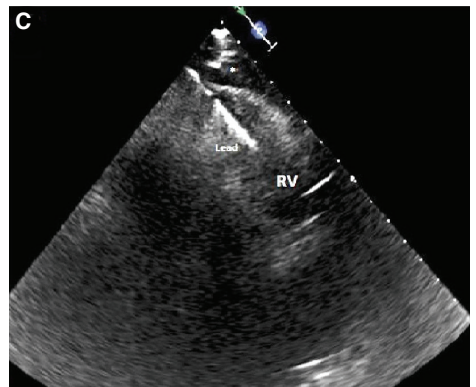
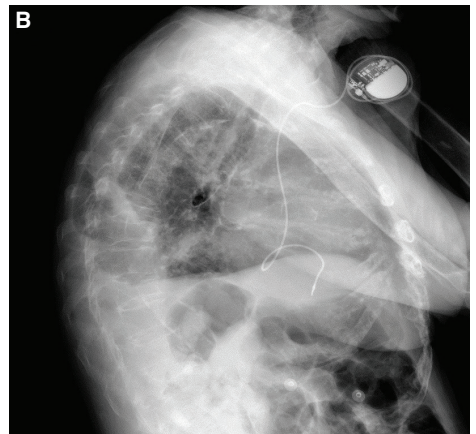
Lead perforasyonu olan hastada multimodal görüntüleme

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The present case illustrates the complementary role of different imaging modalities in the assessment of permanent pacemaker lead perforation. A 92-year-old woman had undergone VVIR pacemaker implantation with active fixation via right subclavian vein at another hospital due to several syncopal attacks associated with atrial fibrillation and complete atrioventricular conduction block. Fifteen days after implantation, chest X-ray was performed at another hospital because of productive cough and suspicion of pneumonia. Image disclosed penetration of ventricular pacing lead through the right ventricle (RV) and reaching the left hemidiaphragm (Figure A, B). The patient was referred



to our hospital and pacemaker check revealed sudden rise of pacing threshold to >2.5 V with normal pacing impedance (650 ohms). Electrocardiography (ECG) was interpreted as paced rhythm. Two-dimensional and real-time 3-dimensional transthoracic echocardiograms (TTE) revealed ventricular lead perforating the RV apex with minimal pericardial effusion in area of apex (Figure C, Video 1*). Left ventricular ejection fraction and estimated pulmonary artery pressure were 40% and 40 mm Hg, respectively. A 3-dimensional, ECG-gated, 64-slice computed tomography reconstruction revealed ventricular lead perforating the RV apex and pericardium with penetrated left hemidiaphragm (Figure D). Active fixation mechanism could not be retracted due to apparent technical problem. Notwithstanding this difficulty, the lead was carefully pulled back to the right atrium under fluoroscopic and echocardiographic guidance with surgical back-up (Video 2*). Pericardial effusion was not observed and the patient was hemodynamically stable. New passive fixation lead was implanted in a more proximal position. Serial TTEs did not reveal subsequent pericardial effusion. Impedance was normal and correct device function was confirmed. The patient remained stable and was discharged 2 days later. Two months after implantation, routine check of pacemaker indicated normal threshold and pacing impedance values.



Figures– (A) Anteroposterior and (B) lateral chest X-rays revealing distal end of the lead below the right ventricle; (C) Two-dimensional transthoracic echocardiographic image in modified parasternal long axis view illustrates ventricular lead perforating the RV apex. *Pericardial space; RV: Right ventricle. (D) Multi-slice computed tomography image of distal end of the ventricular lead (yellow arrow) perforating the RV apex. *Supplementary video files associated with this presentation can be found in the online version of the journal.