

Anesthesia for Light Amplification by Stimulated Emission of Radiation Dacryocystorhinostomy in a Patient with Automated Implantable Cardioverter Defibrillator

Sir,

A 76-year-old male was posted for transcanalicular light amplification by stimulated emission of radiation (LASER) dacryocystorhinostomy (DCR) under monitored anesthesia care. He was a known case of coronary artery disease and had undergone a coronary artery bypass graft with Dorr's procedure (ventricular aneurysm repair) 13 years earlier. An automated implantable cardioverter defibrillator (AICD) (VVI-St Jude Medical) was implanted after radiofrequency ablation 6 years earlier due to incessant ventricular tachycardia (VT). There were no episodes of angina, syncope, or congestive cardiac failure since then. His effort tolerance was fair, and echocardiogram showed an ejection fraction of 40%. His electrocardiogram (ECG) revealed a normal sinus rhythm with a heart rate of 52/min and features suggestive of old anterior wall myocardial infarction. Interrogation of the pacemaker revealed no episode of ventricular or supraventricular tachycardia in the past one year. In the operation room, standard monitors including ECG, pulse oximeter, and NIBP were attached, and an intravenous line was secured. A defibrillator was kept ready, but the pacemaker was not set to asynchronous mode as no unipolar cautery was to be used during the procedure. The nasal mucosa was anesthetized with 4% lidocaine-soaked nasal pack. The punctum was dilated after topical anesthesia with 4% lidocaine. Pulsed diode LASER was delivered through the canalicular probe, to relieve the obstruction under nasal endoscopic visualization. The surgery lasted 20 min and was uneventful. There were no arrhythmias and no interference with pacemaker functioning. The maximum heart rate was 57/min with a ventricular paced rhythm at heart rates below 40 beats/min [Figure 1]. There was no hemodynamic instability. The saturation was 98%, and the patient was allowed to breathe room air. No supplementary O₂ was given during the procedure as oxygen is a supporter of combustion.

LASER is light energy but differs from white light in being monochromatic (single wavelength), coherent (constant phase difference), and collimated (parallel, with little divergence from point of origin). It requires an energy source, a lasing medium, and an optic resonator.^[1] LASERs used in medicine act by photocoagulation or photodisruption. Their depth of penetration depends on their wavelength. Diode LASER that was used in the DCR uses electrical energy to produce LASER of wavelength 980 nm (near infrared spectrum) using a solid (semiconductor) lasing

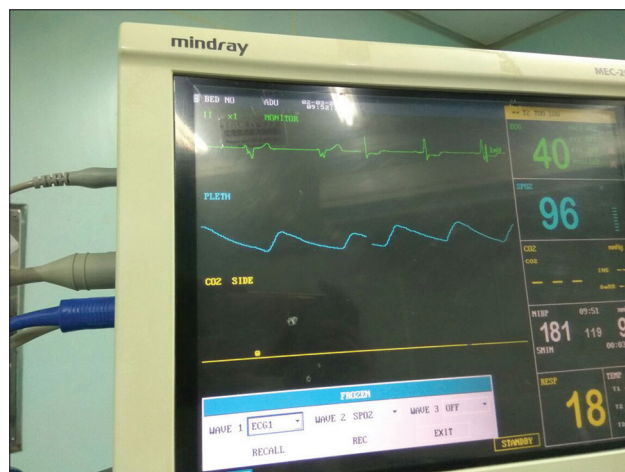


Figure 1: Paced rhythm at heart rate <40/min

medium. Unlike cautery, there is no electromagnetic interference (EMI) in this case, only light and heat energy. One may also note that external DCR may require the use of electrosurgical or radiofrequency cautery. Both these types of cautery may be used without reprogramming the cardiac implantable electronic device (CIED) if they are used only in the bipolar mode. If monopolar cautery is used, the pacemaker/AICD will have to be set to asynchronous mode (AOO, VOO, DOO) during the surgery. Drugs and appropriate equipment required for external pacing or defibrillation should be kept ready. The CIED will have to be reprogrammed at the end of surgery.^[2] Here, we would like to emphasize the absence of EMI from LASER in patients with CIED.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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