

External implantable defibrillator as a bridge to reimplant after implantable cardioverter-defibrillator explant

Gabriele Dell'Era*, Andrea Magnani, and Eraldo Occhetta

Clinica Cardiologica, AOU Maggiore Della Carità, Novara, Italy

*Corresponding author. Tel: +39 03213733294; fax +39 03213733407. E-mail address: gdellera@gmail.com

When an infection induces the complete removal of an implantable cardioverter-defibrillator (ICD), the subsequent reimplant may be safely bridged by an external ICD, connected to a transvenous dual-coil right ventricular defibrillating lead inserted through the site of extraction.

We present a patient with ventricular arrhythmias resolved by antitachycardia pacing and shock from the external temporary ICD.

Cardiac implantable devices-related infections are increasing; recommended treatment comprises transvenous leads extraction and generator removal, antimicrobial drugs and reimplant of a new system after infection eradication. In pacemaker-dependent patients, 'bridge' pacing can be provided by an external implantable generator connected to an active fixation lead, inserted through the site of explant.

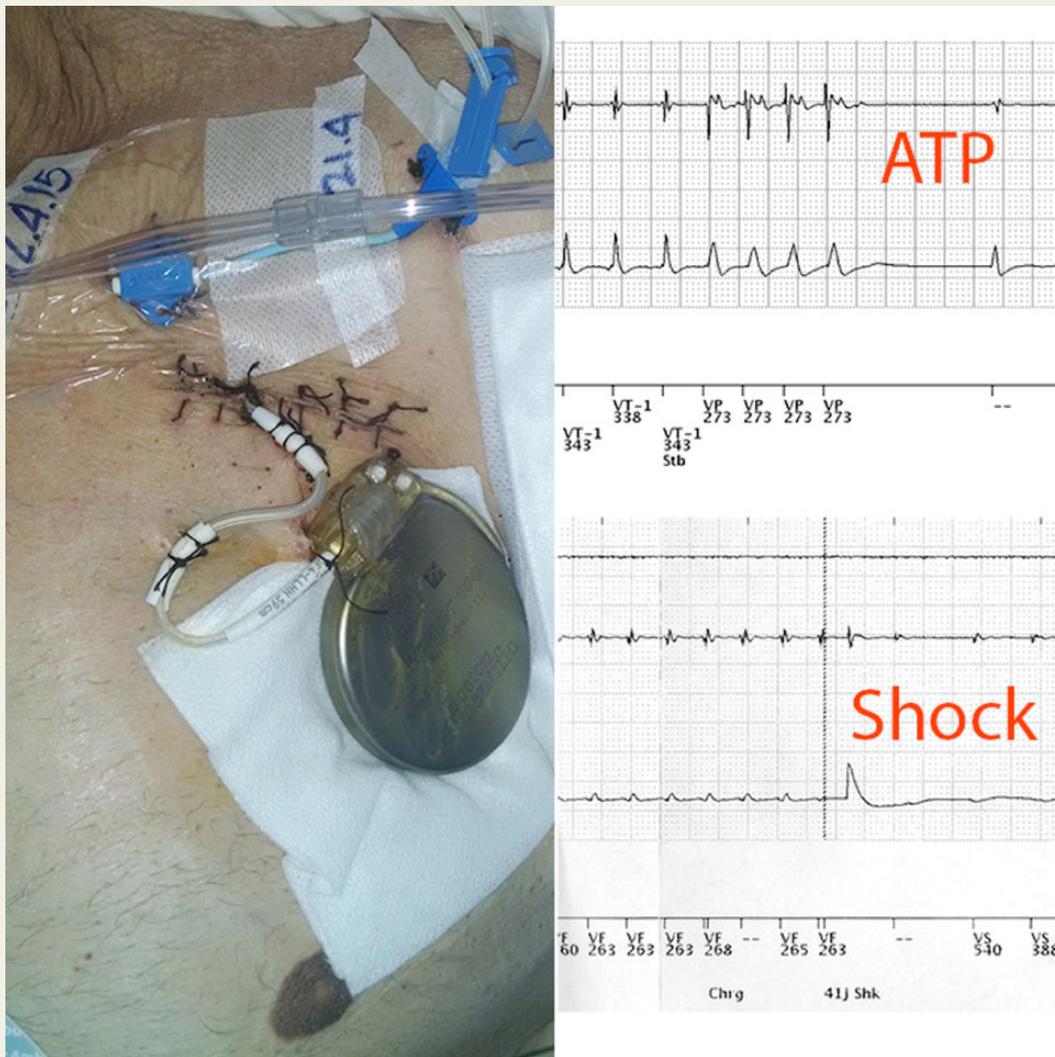


Figure 1

This became common practice, after publication of large case series,¹ for patients needing prolonged antibiotic therapy. Some concerns arise when an implantable cardioverter-defibrillator (ICD) is explanted in patients at risk of sudden cardiac death: external devices as the life vest [even if costly and not capable of providing antitachycardia pacing (ATP)] were proposed as a bridge to reimplant, but transvenous tachy lead insertion and connection to an externalized ICD seems feasible, too, especially in patients needing pacing.^{2,3} We discuss a 67-year-old male with VVI-ICD who was referred for endocarditis on the lead. Infection could not be controlled despite antimicrobial therapy. We performed a total extraction using transvenous mechanical extractors; a guidewire in the last extractor kept vascular access, allowing the insertion of a sheath and placement of a dual-coil active fixation DF4 lead in the apex of right ventricle. Lead was secured to the skin (Figure 1, left) and connected to a resterilized single-chamber ICD, programmed with VVI 50/min anti-brady pacing, two ventricular tachycardia (VT) zones (170–190/min: ATP only, 190–210/min: single ATP, six 41J shocks) and one ventricular fibrillation (VF) zone (pre-charge ATP, eight 41J shocks), same as explanted device. Generator can was excluded by the shock circuit. Two days later, the patient experienced an electrical storm with six VTs treated by ATP and one resolved by ICD shock (Figure 1, right); intravenous amiodarone and lidocaine prevented further sustained arrhythmias.

Unfortunately, the patient died of multiorgan failure 10 days after explant of the infected device; no malfunctions and no local infection of the external ICD were reported for the whole hospitalization.

Our case demonstrates that external 'temporary' ICD is safe, feasible, and cost-effective: both ATP and shock could be provided. This kind of bridge therapy, although 'off label', can be useful after ICD explant for infection: prolonged hospitalization and immobilization in intensive care units during antimicrobial therapy (even if wireless monitoring is advisable) may be avoided this way. Attention must be paid to the choice of the external device (shock configuration with passive can is mandatory) and of the lead (dual coil is needed and we suggest active fixation); aseptic dressing is recommended (as for central venous catheters). Testing the device with VF induction can reassure about safety of the system and may guide shock circuit configuration for the subsequent reimplant on contralateral side.

Conflict of interest: none declared.

References

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