

Eligibility for Subcutaneous Implantable Defibrillator of Patients Undergoing Transvenous Implantable Defibrillator Extraction

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Aim:

The subcutaneous implantable cardioverter defibrillator (S-ICD) (Boston Scientific Inc., Natick, MA, USA) does not require the insertion of any elements into the cardiovascular system and is an effective alternative to the transvenous ICD for patients not requiring pacing. The low systemic infection risk of the S-ICD could allow the early reimplantation in patients requiring transvenous ICD extraction for device infection. Before S-ICD implantation, the adequacy of sensing is required to be verified through surface electrocardiogram (ECG) screening based on a dedicated ECG morphology tool or an automatic screening tool. In patients undergoing S-ICD implantation at the same extraction procedure of the previous ICD, screening should be performed in advance to allow the planning of the intervention. As possible mismatches between the pre-extraction and post-extraction screening could have a potential impact on the selection of patients suitable for S-ICD, and consequently on detection capability of the implanted S-ICD, we compared the results of the screening procedure performed before and after the procedure in a population of consecutive patients undergoing transvenous ICD extraction.

Methods:

Consecutive ICD patients undergoing transvenous extraction at a single center were included. The extraction procedures were performed in accordance with the clinical practice of the center. All patients underwent the automated screening protocol by means of the Model 3120 Programmer (Boston Scientific, Natick, MA). The procedure was performed in both supine and standing

positions. In all patients, the screening procedure was carried out during inhibited ventricular pacing. A patient was judged suitable for S-ICD if at least one sensing vector passed in both supine and standing positions without changes in the R-wave axis. We performed the screening procedure 1 day before and the day after the extraction procedure and we compared the results.

Results:

A total of 55 procedures were performed within the observation period in patients implanted with single- or dual-chamber ICDs (n=33) and with cardiac resynchronization therapy (CRT) ICDs (n=22). In the overall group, at least one suitable vector in both postures was identified in 45 (82%) patients before the procedure and in 41 (75%) patients after the extraction procedure. The Primary vector most frequently passed the test before and after the procedure in the overall group and in non-CRT and CRT patients.

Conclusions:

We showed a high rate of S-ICD eligibility in patients who underwent transvenous ICD extraction, in particular in those with no CRT indications. The results obtained at two screening sessions, before and after the extraction procedure, were largely equivalent. Thus, if the decision was considered to switch from a transvenous to a S-ICD, the S-ICD eligibility could be immediately evaluated and their implantation could be included in the same procedure.