

**s-ICD implantation in the young: low BMI as a predictor of surgical complications.**

*Pazzano V., Silvetti M.S., Verticelli L., Battipaglia I., Grifoni G., Saputo F.A., Remoli R., Drago F. Paediatric Cardiology and Arrhythmology Unit, Medical-Surgical Department of Paediatric Cardiology, Bambino Gesù Children Hospital, Rome, Italy*

**INTRODUCTION:**

The use of Implantable Cardiac Defibrillators (ICDs) to prevent sudden cardiac death from malignant ventricular arrhythmias is increasing in children. An entirely subcutaneous system (s-ICD) is an option that offers many advantages. However, larger size of the device can cause complications in small patients.

**METHODS:**

This is an observational study, from a single-centre, on s-ICD implantation in children and in young patients with Congenital Heart Disease (CHD). Data were collected prospectively in an Italian Registry, and analysed retrospectively. Values are reported as median (range).

**RESULTS:**

Between 2013 and 2016, 17 patients were considered for s-ICD implantation. Five (29%) did not pass ECG screening criteria (broad QRS, high T wave), twelve underwent implantation. Nine (75%) were females, age was 15y (10-29) with 8 (67%) <18y; weight was 55kg (38-82), BMI 21.4 (18.2-27.9). Six patients (50%) had a cardiomyopathy (3 ARVC, 3 HCM), five (41.6%) a surgically repaired CHD, and one (8.3%) LQTS. One was implanted in secondary prevention. The first six patients received a s-ICD 1010SQ-RX device, in the following six an Emblem s-ICD was implanted. In the first six cases, three incisions (axillary, xifoid and superior sternal) were performed, in the following six, superior incision was avoided. Shock zone was set at 210-220 bpm, with a conditional zone at 180 bpm.

During 12 (1-32) month follow-up, four patients (41.6%) experienced device-related surgical complications: three upper sternal wound dehiscence (one effectively treated, two with system explantation for infection) and one ICD pocket infection requiring explantation. All patients needing explantation had a BMI <20, which showed 100% sensitivity, 89% specificity in predicting this outcome. All wound dehiscences occurred after procedures performed with three incisions (3/6). One patient had an appropriate shock, and one had inappropriate shock due to T wave oversensing.

**CONCLUSIONS:**

Paediatric patients seem at high risk of S-ICD pocket complications, with a BMI <20 representing an important risk factor. A lower number of incisions seems to reduce the incidence of surgical complications. Of note, a relevant number of candidates do not fulfil ECG screening criteria.

