

Images in Congenital Cardiac Disease

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Growth and the subcutaneous implantable cardioverter defibrillator in a small child

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Abstract

The effect of growth on the subcutaneous cardioverter defibrillators when implanted in small children is unknown. These two chest X-rays demonstrate that these devices can cope well with growth.

A major consideration with implantable cardioverter defibrillators in children is the effect of growth, particularly on transvenous leads. The effect of growth on subcutaneous defibrillators when implanted in small children is unknown.¹ A 7-year-old girl presented in cardiac arrest secondary to intractable ventricular tachycardia. After resuscitation and extensive investigations, a decision was made to implant a subcutaneous cardioverter defibrillator, because of concerns about the effect of growth on internal leads. A right-sided position was chosen for the subcutaneous electrode because of the need to accommodate redundant lead. A three-incision approach was used, according to practice early in our experience. The generator was positioned in a subcutaneous pocket below the left axilla.

During the next 5.5 years, she remained asymptomatic with no shocks delivered. At generator replacement for battery depletion, comparison of the chest X-ray following implant with that prior to generator change demonstrated that the shock coil and generator remained in positions expected to provide a good shock vector. Analysis of the subcutaneous electrograms during rest and exercise showed adequate sensing with the subcutaneous electrode in its current position. Generator replacement was uncomplicated and the subcutaneous electrode was preserved. The sensing vector selected by the device was unchanged. At initial implant and generator replacement defibrillation thresholds could not be tested, as sustained ventricular arrhythmia was non-inducible.

The chest X-rays following initial implant and after 5.5 years show that the subcutaneous implantable cardioverter defibrillator has potential to cope well with growth even when implanted in small children.

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Conflicts of Interest. None.

Reference

1. Bogush N, Espinosa R, Cannon B, et al. Selecting the right defibrillator in the younger patient: transvenous, epicardial or subcutaneous? *Int J Cardiol* 2018; 250: 133–138.