Two-incision technique using the new tunneling tool for subcutaneous implantable cardioverter-defibrillator implantation

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Introduction: The conventional technique of subcutaneous implantable cardioverter-defibrillator (S-ICD) implantation requires three incisions. On the other hand, the new two-incision technique (2-IT) omits the superior parasternal incision for lead positioning. In Japan, a new tunneling tool for 2-IT (Electrode Delivery System; EDS) has been approved in March 2019.

Methods: Between February 2016 and April 2019, a total of 73 patients at our institute underwent S-ICD implantation. In 2019, 7 patients (all males, mean age 44 ± 21 years) were implanted with S-ICD by the three-incision technique (3-IT), and 8 (62% males, mean age 57 ± 20 years) by 2-IT using EDS. We analyzed the result of defibrillation test, shock lead impedance and procedure time (operating room entry to exit time) in S-ICD implantations performed in 2019 and compared 3-IT with 2-IT.

Result: Defibrillation test at 65 J was performed successfully in 14 patients (6 by 3-IT, 8 by 2-IT) and was not done in one patient. Shock lead impedance was not different between two groups (3-IT, 56 ± 14Ω; 2-IT, 60 ± 15Ω; not significant). On the other hand, the procedure time for 2-IT was shorter than that for 3-IT (2-IT, 107 ± 7 min; 3-IT, 122 ± 8 min; p=0.0019).

Conclusion: The two-incision technique using EDS has no impact on defibrillation test result and shock lead impedance, and may save procedure time.