Commentary: Implantable or Wearable Cardioverter Defibrillator after Coronary Artery Bypass Grafting in Patients with Left Ventricular Dysfunction?

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Commentary: Implantable or Wearable Cardioverter Defibrillator after Coronary Artery Bypass Grafting in Patients with Left Ventricular Dysfunction?

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Central Message: Further studies are needed to identify the optimal strategy for prevention of sudden cardiac death after coronary artery bypass grafting in patients with left ventricular dysfunction.

Central Picture Legend: Takashi Murashita, MD

Sudden cardiac death (SCD) is a well-known complication after coronary revascularization in patients with left ventricular dysfunction. Implantable cardioverter-defibrillator (ICD) therapy is associated with a reduction in the rate of death due to life-threatening ventricular arrhythmia (VA). The SCD rate could be highest in the early period of revascularization. However, previous studies failed to show survival benefit of prophylactic implantation of ICD at the time of coronary artery bypass grafting (CABG) (1), or early after acute myocardial infarction (2,3).
Therefore, a final decision on ICD implantation is typically deferred for 3 months after coronary revascularization (4).

In this issue of the Journal, Nakae and colleagues reviewed 498 patients with ejection fraction < 40% who underwent CABG, and investigated the clinical impact of ICD placement on patients’ postoperative survival (5). Ninety-nine patients (20%) developed postoperative VA; 46 symptomatic ventricular tachycardia (VT), 27 asymptomatic sustained VT, and 26 non-sustained VT. Out of 99 patients who had postoperative VA, 55 patients received ICD; 28 received within 3 months of CABG, 27 received after 3 months of CABG, and no patient received concomitant ICD implantation at the time of CABG. Nakae and colleagues reported a survival benefit for patients with VAs who received ICD implantation.

Nakae and colleagues provided interesting and potentially useful information for cardiac surgeons and their coworkers who take care of patients with ischemic cardiomyopathy. However, there are still some unanswered questions regarding ICD implantation after CABG. First, in this paper of Nakae and colleagues, about half of the patients underwent ICD within 3 months of the operation, which was more aggressive than guideline recommendations. Currently, a wearable cardioverter defibrillator (WCD) has been widely utilized to close the gap between coronary revascularization and ICD implantation. WCD could work as a bridge to left ventricular function improvement. Although the survival benefit of WCD after coronary revascularization was reported (6, 7) there is no established evidence regarding the superiority of WCD over early ICD implantation (within 90 days).

Second, although Nakae and colleagues reported the clinical benefit of ICD implantation both in life-threatening VA and hemodynamically stable VA, whether the ICD implantation should be indicated to asymptomatic sustained VT or non-sustained VT is debatable. This study was a
retrospective, multi-center study, therefore, a decision of ICD implantation was at the discretion of the heart team in each institute.

Third, the leading cause of death in this study was heart failure, which was followed by SCD. Neither ICD nor WCD itself would improve the cardiac function. However, one can assume that cardiac resynchronization therapy defibrillator (CRT-D) might provide positive impact on patients’ outcome by both improving cardiac function and preventing SCD. There is no established evidence of early application of CRT-D after coronary revascularization. The randomized controlled trial which investigated the efficacy of prophylactic ICD at the time of CABG was performed in 1997, and it was before the advent of WCD. Another randomized controlled trial comparing the WCD and early ICD implantation would be warranted.

References


