Prospective Evaluation of Patency and Early Experience
Utilizing an Automated Distal Anastomosis Device (C-Port)

Tung H. Cai, MD,* Tea E. Acuff, MD,* J. W. Randolph Bolton, MD,*
Lauren R. Dizney, PA,* and Michael Poon, MD†

Abstract:

Background: In November 2005, a new automated distal anastomotic device (C-Port) for coronary artery bypass grafting (CABG) was cleared by the FDA for use in the United States. This study represents a prospective evaluation of our early experience using the device with graft patency assessment determined by 64 slice multidetector row computed tomography angiography (64CT).

Materials and Methods: Patients undergoing coronary artery bypass were evaluated preoperatively by cine angiography for possible use of the C-Port system. A final decision for its use was made clinically at operation based on target vessel and vein graft specifications. Patency of the grafts was evaluated at 1 to 7 months (average 91 days) by 64CT with IRB approval and signed informed consent.

Results: The C-Port device was used to form 69 distal anastomoses in 50 patients (46 CABG were performed off pump). There were eight misfires with no adverse effects for an immediate success rate of 88.4%. Thirty-five of 41 patients were available postoperatively for evaluation by 64CT (85.4% follow-up). There was one postoperative death. Seventeen sequential anastomoses were excluded because of inability to reliably evaluate patency by 64CT. Four 64CT scans were uninterpretable. For the remaining 31 patients, 64CT scans were used to evaluate for graft patency. The overall patency rate for all anastomoses was 94.5% (86/91) with selected patency for internal mammary artery of 100% (28/28), for C-Port connectors of 93.3% (42/45), and for hand-sewn venous end-to-side anastomosis of 88.9% (16/18). The difference in patency between C-Port anastomoses and hand sewn was not statistically significant ($P = 0.62$).

Conclusions: The C-Port system provides reliable and reproducible compliant automated distal venous anastomoses, which results in acceptable patency at intermediate follow-up. With proper training, the learning curve for using this connector system is relatively short