Augmentation of Coronary Blood Flow With Intra-Aortic Balloon Pump Counter-Pulsation

Elizabeth W. Ryan, MBBS; Elyse Foster, MD

A 78-year-old woman with reduced left ventricular contractile function underwent coronary artery bypass graft surgery (3 saphenous vein grafts and an internal mammary artery graft) and mitral valve repair. Inotropic support and intra-aortic balloon pump (IABP) counterpulsation were required for weaning from cardiopulmonary bypass. The intra-aortic pressure and ECG tracings (Figure 1) on day 2 after surgery are shown. During continuous atrioventricular sequential pacing and 2:1 IABP counterpulsation, enhanced early diastolic aortic pressure (arrows) and reduced aortic end-diastolic pressure during every second cardiac cycle are demonstrated.

Figure 2 is a transesophageal echocardiographic image and schematic diagram demonstrating a postoperative pericardial collection and diastolic flow in an epicardial vessel (arrow), representing the saphenous vein graft anastomosed to an obtuse marginal artery. A Doppler signal of this vessel demonstrates increased flow velocity with alternative cardiac cycles (Figure 3). This phenomenon is absent without IABP inflations. Similar Doppler findings of augmented flow velocity with IABP counterpulsation were also noted proximally in the native left anterior descending coronary artery (not shown).
Figure 3. Spectral Doppler recordings of epicardial vessel shown in Figure 2. Augmented diastolic velocity is noted with alternate cardiac cycles (top) during 2:1 IABP counterpulsation. This phenomenon is absent without IABP inflations (bottom).
Augmentation of Coronary Blood Flow With Intra-Aortic Balloon Pump Counter-Pulsation

Elizabeth W. Ryan and Elyse Foster

_Circulation_. 2000;102:364-365
doi: 10.1161/01.CIR.102.3.364

_Circulation_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2000 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circ.ahajournals.org/content/102/3/364

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in _Circulation_ can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to _Circulation_ is online at:
http://circ.ahajournals.org/subscriptions/