Care of the cardiac patient after noncardiac surgery

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The importance of avoiding cardiac "asphyxial strain" during the operative period has been recognized from the early twentieth century. Perhaps because these patients have a wide range of problems, few studies have been directed to the immediate postoperative care of the cardiac patient who has been given anesthesia for general surgery.

The care of the patient must be individualized to the extent of the disease and condition, and postoperative management should be an extension of careful preoperative studies for definition of extent of myocardial compromise and compensation measures, and intraoperative care. An example of this would be two patients with symptomatic coronary artery disease, the first whose anginal symptoms have not changed in frequency or duration for years and the second who has experienced increasing angina after a recent infarction and symptoms of congestive heart failure. The second patient would require extensive preoperative studies, if time permits, possibly including angiography, and extensive intraoperative and postoperative monitoring with increased need for pharmacologic intervention. The first patient would require attention primarily to the basic hemodynamics resulting in decreased myocardial oxygen demand, without extensive intraoperative or postoperative invasive monitoring.

A recent study showed a correlation between preoperative heart failure and increased postoperative heart failure or pulmonary edema.[1] Cardiac patients entering the operating room with a history of heart failure, functional New York Heart Association Class IV with jugular venous distention and S_3 gallop, a history of pulmonary edema, and left-sided heart failure confirmed by examination or roentgenography are almost certain to require intense cardiac management after noncardiac surgery.

Intraoperative problems may necessarily direct postoperative management. Awareness of these problems reflects clinician acumen and extent of technical monitoring. For example, from a study of several years ago, a selected group of 365 patients with abnormal preoperative electrocardiograms met one or more of the following criteria: (1) previous myocardial infarction, (2) bundle branch block, (3) left ventricular strain or hypertrophy, or (4) ST-segment signs of subendocardial injury.[2] One third of the 365 patients had a sustained 30% decrease of systolic blood pressure for 10 minutes or more. Of this subset more than 50% had electrocardiographic evidence of ischemia or infarction postoperatively. Thus one intraoperative event may increase the necessity for intense postoperative management to obtain cardiovascular stability.

Patients with coronary disease who have undergone a coronary bypass procedure are presumed to be at less risk of subsequent perioperative infarction,[3] but that is related to the previous postoperative ventricular impairment and adequacy of revascularization; therefore, it is no panacea for future intraoperative or postoperative cardiovascular management.[4]

Once in the postoperative unit, everything relating to cardiac status is important: physical signs of perfusion adequacy or the measured "numbers" as gathered, such as preload, afterload, heart rate, rhythm, cardiac output, and systemic vascular resistance, or the appropriate drugs for adequate antibiotic and anticoagulation coverage in the patient with valvular disease or with a prosthetic valve.[5]

The pharmacologic treatment that might be required for optimal postoperative hemodynamics has been discussed by others for intraoperative use.

Thus, for best results, a high index of suspicion should be maintained with little hesitation to intensify management. This may have no relation to the nature of the surgical procedure.

References

1. Goldman L, Caldera DL, Southwick FS, et al. Cardiac risk factors and complications in noncardiac surgery. Medicine 1978; **57:** 357–70.
2. Mauney FM Jr, Ebert PA, Sabiston DC Jr. Postoperative myocardial infarction; a study of predisposing factors, diagnosis and mortality in a high risk group of surgical patients. Ann Surg 1970; **172:** 497–503.
3. Mahar LJ, Steen PA, Tinker JH, Vlietstra RE, Smith HC, Pluth JR. Perioperative myocardial infarction in patients with coronary artery disease with and without aorta-coronary artery bypass grafts. J Thorac Cardiovasc Surg 1978; **76:** 533–7.
4. Manley JC. Postoperative assessment of left ventricular function. Cleve Clin Q 1978; **45:** 116–20.
5. Robiscek R, Harbold NB Jr. Management of the patient with a prosthetic heart valve. Ann Thorac Surg 1976; **22:** 389–99.