

# Heart monitoring procedure linked to cardiac complications

A recent study has shown that an invasive procedure commonly used to monitor the heart functioning of patients has no real benefit for patients undergoing elective surgery, and may actually increase their risk of heart attacks and other cardiac complications.

The procedure -- right heart catheterization (RHC) -- does not reduce either cardiac or noncardiac postoperative complications, according to a recent article in the *Journal of the American Medical Association (JAMA)*.

Carisi A. Polanczyk, M.D., Sc.D., of Brigham and Women's Hospital and Harvard Medical School, Boston, and colleagues evaluated the relationship between the use of the procedures before, during, and immediately after surgery.

RHC involves inserting a catheter (a thin flexible tube) into the right side of the heart to obtain diagnostic information, and for continuous monitoring of heart function.

RHC is commonly used to monitor patients before, during, and after high-risk noncardiac surgery, with the goal of reducing complications. But the benefit of this strategy is unproven.

The authors analyzed data on 4,059 patients. 221 had RHC, and 3,838 did not. The patients were all 50 years of age and older, and underwent major noncardiac surgical procedures.

The authors looked at major postoperative cardiac events including myocardial infarction (heart attack), unstable angina (chest pain caused by inadequate delivery of oxygen to the heart muscle), cardiogenic pulmonary edema (a condition in which fluid accumulates in the lungs), ventricular fibrillation (cardiac arrest occurring when the heart's ventricles quiver and stop pumping), ventricular tachycardia (rapid, usually ineffective, heartbeat) or primary cardiac arrest, and sustained complete heart block (delay or inability of the electrical impulses generated in the heart's atria to reach the ventricles).

"In this observational study from a large cohort of patients undergoing elective major surgical procedures, perioperative RHC was not associated with improved postoperative outcomes and was associated with prolonged hospitalization," the authors noted. In fact, the procedures may increase a patient's risk, according to the research.

"Patients who underwent perioperative RHC were more likely to have postoperative myocardial infarction (2.3% vs 0.8%) and congestive heart failure (13.6% vs 25.4%) than patients who did not undergo RHC," the authors reported. "In addition, patients who underwent RHC had a 3-fold increase in the prevalence of the combined end point of postoperative major cardiac events (15.4% vs 3.6%). Major noncardiac complications were also more common in patients who underwent perioperative RHC (10.0% vs 2.7%)."

The authors performed analyses allowing for a wide variety of potentially confounding variables, and for the type of surgical procedure and propensity to use RHC.

"Indeed, after such adjustments, patients who underwent RHC remained more likely to develop major postoperative cardiac complications compared with patients who did not undergo RHC," they explained.

Patients who underwent RHC were about twice as likely to develop postoperative major cardiac and noncardiac events.

In an analysis of 215 matched pairs of patients, those who underwent RHC had a nearly three-fold increased risk of postoperative congestive heart failure, and about a two-fold increased risk of major noncardiac events, compared with patients who did not have RHC.

"Because of the morbidity and the high costs associated with RHC, the impact of this intervention in perioperative care should be carefully reevaluated. We believe that the results from this observational study should foster new attempts to address this important question in randomized clinical trials," the authors concluded.

**SOURCE:** *Journal of the American Medical Association (JAMA)*, July 18, 2001.)

