LETTERS TO THE EDITOR

Right ventricular rupture after mediastinitis

To the Editor:

Cartier and associates,¹ in a recent publication, reported seven cases of right ventricular (RV) rupture among 48 patients (14.6%) with mediastinitis after cardiac operations, with a predominance in obese patients. They speculated that during coughing, the free wall of the RV, adherent to the mobile sternum, is overstretched and may rupture. Patients with mediastinitis were managed by débridement followed by delayed closure. Because this rate of RV rupture seemed alarmingly high, my colleagues and I decided to evaluate our experience.

From January 1986 to April 1994, we managed 124 patients with acute mediastinal and sternal infections after cardiac operations. Most of them occurred after coronary artery bypass grafting but a minority after other operations, including one cardiac transplantation. Our initial management, like that of Cartier and associates, consisted of drainage, but in contrast to their approach, this included only wound opening and removal of all wire. In all but 10 patients this was performed as a bedside procedure with intravenous narcotics and sedation. No sternal or mediastinal débridement was done at that time. The patients were thereafter treated with a local tap water shower three times a day and dressings with povidone-iodine, triclosene sodium solution, or honey. Our intention was to close the wound 3 to 7 days later, depending on the patient's general condition and the appearance of the wound. In the early period of the study, 30 patients were managed without an additional operation. It took an average of 65 days of irrigation and dressings to achieve healing.

Three patients died of septic or cardiac reasons while awaiting closure. Ninety-one patients were reoperated on at a mean interval of 7 days after wound opening. The operation consisted of sternal, chondral, and mediastinal débridement as required, followed by reconstruction with pectoralis unilateral or bilateral flaps or omental transposition and complete closure of the wound. Iatrogenic rupture of the RV occurred during two operations. Both patients required cardiopulmonary bypass to repair the lacerations; one patient died within 24 hours of uncontrollable arrhythmia related to obstruction of the graft to the left anterior descending coronary artery.

Spontaneous rupture of the RV did not occur in our experience, although many patients had an open wound for prolonged periods and were exposed to the same mechanisms proposed by the authors. We agree that in patients in whom infection, and consequently initial operation, is delayed, the free wall of the RV tends to adhere to the undersurface of the left hemisternum, a fact partially underlying the two cases of iatrogenic RV laceration in our series. The finding relating to the abnormal fatty infiltration of the RV in the two fatalities is interesting but may have occurred also in patients who did not

have RV rupture. We were usually impressed by the friability of the free wall of the RV and therefore always had a pump on standby.

The only difference in management we can point out is that Cartier and his colleagues perform surgical débridement as the initial step. This means that parts of the sternum are resected, with the danger of occasionally leaving sharp edges. This, rather than the mechanism proposed by the authors, may have been responsible for the rupture of the RV in their study. We believe that the two-step management that we use is much safer.

Addendum: September 25, 1994. In the manuscript we declared that spontaneous rupture of the RV has not occurred in patients managed by us. This fact has to be corrected, because this week late mediastinitis developed in a 71-year-old man who had undergone rereplacement of the aortic valve and coronary revascularization. He was treated by complete reopening of the wound, without sternal débridement. Two days later, spontaneous rupture of the RV occurred, and the patient died in the operating room. He was obese and diabetic. This is the first case of spontaneous RV rupture in 129 patients managed by us for deep sternal infection. Although very alarming, this complication is certainly much less frequent (0.8%) in our series than in the report by Cartier and associates (14.6%).

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REFERENCE

1. Cartier R, Diaz OS, Carrier M, Leclerc Y, Castonguay Y, Leung TK. Right ventricular rupture: a complication of postoperative mediastinitis. *J THORAC CARDIOVASC SURG* 1993;106:1036-9.

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Reply to the Editor:

Dr. Yellin's excellent report about his experience with postoperative mediastinitis management is interesting and contributes to our search for the best way to deal with this worrisome complication. In our report about the "open treatment" of postoperative mediastinitis, we reported a 15% incidence of right ventricular (RV) rupture that we attributed to overstretching of the RV adherent to a mobile sternum during patient coughing. Obviously, Yellin and his group did not encounter this problem, because they managed 124 cases of mediastinitis with no spontaneous rupture. They have to be congratulated for