

Bleeding from the Lung Surface: A Unique Complication of Off-Pump CABG Operation

(#2000-5559 ... November 30, 2000)

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ABSTRACT

A patient, with post myocardial infarction (MI) thrombolysis, underwent emergency off-pump coronary artery bypass graft. Her post-operative course was complicated by excessive bleeding. At re-exploration, the bleeding was caused by a graze on the lung surface by the needle used during the insertion of the deep pericardial retraction suture.

INTRODUCTION

This is the case of a patient who underwent an emergency off-pump coronary artery bypass graft (CABG) operation for post myocardial infarction (MI) and unstable angina.

A 53-year-old female patient was presented to the cardiology department of the University Hospital of Wales, Cardiff, with an anterior MI. She was thrombolysed (Tissue Plasminogen Activator 100 mgs, intravenous over 90 minutes) but continued to have chest pain with ST changes. A chest X-ray showed increased pulmonary congestion. Emergency coronary catheterization revealed a 90% left main stem lesion with some disease in the left anterior descending and obtuse marginal artery. The right coronary artery was dominant and without any disease.

She continued to have chest pain with ST changes and so an intra-aortic balloon pump (IABP) was inserted in the catheter laboratory. She was taken for immediate surgery and off-pump coronary artery bypass was performed. Heparin (150 units/kg body weight) was given. Two deep pericardial retraction sutures were inserted to lift the heart up. One was placed anterior to the left inferior pulmonary

vein and the other halfway between the inferior pulmonary vein and the inferior vena cava deep in the pericardial well. The left anterior descending artery was grafted with the left internal mammary artery and the obtuse marginal artery was grafted with a saphenous vein graft. Protamine was given at the completion of the top end anastomosis. The Octopus 2+ tissue stabilization system (Medtronic, Grand Rapids, MI) was used for stabilization and intravascular shunts (Medtronic, Grand Rapids, MI) were used during construction of the anastomosis. The patient tolerated the procedure very well. IABP counterpulsation was continued throughout the operation.

Post-operatively, she had excessive bleeding (1000 mls in 3 hours) and was therefore taken to theatre for re-exploration. She was found to be bleeding from a small graze on the surface of the lower lobe of the left lung. There was a steady venous ooze which was controlled by a single deep figure 8, 40 prolene (Ethicon, Somerville, NJ) stitch. She had an uncomplicated post-op recovery with the IABP removed 24 hours post-op.

DISCUSSION

The proportion of CABG procedures being performed off-pump is steadily increasing. In our institution, about 40% of CABG procedures are performed off-pump (including Re-Do and emergency), with one surgeon (VZ), performing more than 90% of his cases off-pump.

Deep pericardial retraction sutures are inserted to lift the heart up. This, combined with the Trendelenburg maneuver, help in adequate exposure of the obtuse marginal artery.

In this case, the lung surface had been grazed with the needle during the insertion of the deep pericardial retraction sutures. Under ordinary circumstances, bleeding would have stopped on its own, but this patient had been thrombolysed with t-PA (tissue Plasminogen Activator) just 4 hours before surgery. The bleeding point was easily controlled with a single figure 8 stitch. Patients

Submitted November 27, 2000; accepted November 30, 2000.

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who undergo off-pump CABG, bleed very little post-operatively [Nader 1999]. If the bleeding is excessive, the threshold for re-exploration should be low, as this is mostly due to a surgical cause. The complication of bleeding from the lung surface will be seen more often as the proportion of off-pump CABG increases. Checking the surface of the left lung adjacent to the deep pericardial retraction sutures should be a routine procedure before closing the chest. Having the anesthetist stop ven-

tilation during the insertion of this stitch may also help prevent this complication.

REFERENCES

1. Nader ND, Khadra WZ, Reich NT, et al. Blood product use in cardiac revascularization: Comparison of on- and off-pump techniques. *Ann Thorac Surg* 68:1640-3, 1999.