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hemofilter, thus reducing the inactivation of transfused platelets. Abciximab does have a high affinity (K_D) for glycoprotein IIb/IIIa; however, as this is a reversible binding, removing the free abciximab will shift the equilibrium, reducing the degree of platelet inhibition. Interpretation of K_D values can be misleading since the degree of binding is not necessarily correlated with physiologic platelet inhibition that results, and the K_D value can overestimate the binding activity caused by methodologic calcium ion artifacts.[3] The binding of abciximab to the $\alpha_v\beta_3$ receptor found on endothelium and smooth muscle cells plays no role with regard to hemostasis. However, the interaction may be very beneficial from an anti-inflammatory, ischemia-reperfusion perspective.

Third, with a half-life of about 30 minutes, free abciximab will still be present at a sufficient concentration to inactivate platelets 90 minutes after bolus administration. Obviously the free concentration will be substantially higher if the abciximab has been administered as a bolus followed by an infusion (10 μg/min).

Fourth, the statement that no unbound molecules of abciximab are available is untrue. This free pool is the source of abciximab that inactivates transfused platelets,[2] since platelet-to-platelet transfer to abciximab is unlikely to occur (this is microaggregation, which abciximab inhibits). In fact, abciximab is administered as an infusion for the sole purpose of maintaining a steady free plasma concentration of abciximab to maintain platelet inhibition.[2-4]

Fifth, the series of Booth, Lincoff, and others[5] provides additional evidence that abciximab is associated with increased bleeding, since a higher rate of blood transfusion was required unless platelets were administered prophylactically. Only with some form of preoperative platelet function testing is it valid to use anecdotal evidence of success or failure of operating on patients who have received abciximab without any excessive bleeding. Unfortunately, because of space limitations, the information in their abstract does not specify the degree of platelet inhibition present in their patients preoperatively, since it is well known that abciximab has a variable clinical effect. Whole blood microaggregation provides a quick, simple test of platelet inhibition caused by abciximab, and it does not involve custom-made equipment or conventional platelet function tests, which are impractical in an emergency.[6]

A trial involving patients is the only answer to the possible use of a hemoconcentrator after abciximab administration. However, preoperative platelet function caused by abciximab administration, time since administration, and patient weight—all known risk factors—should be included, factors not present in any publications so far.

A point of importance not raised by Steinhubl, Moore, and Lincoff, however, is the concomitant administration of other antiplatelet agents. Clopidogrel/ticlopidine and aspirin are frequently combined in various regimens with abciximab. Hemofiltration should have no effect on the outcome of such complete and permanent blockage of platelet function that is almost certainly present with such a combination.

Michael Poullis, MD
Department of Cardiothoracic Surgery
Hammersmith Hospital
Du Cane Rd, East Acton
National Heart and Lung Institute
Imperial College of Science
London W12 0NN, United Kingdom

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12/8/103153

Transcutaneous extracorporeal cannulation for bilateral lung transplantation without splitting the sternum

To the Editor:

Bilateral sequential lung transplantation without sternal division has recently been recommended as a less-invasive approach than sternotomy.[1,2] Two separate bilateral anterolateral thoracotomies in selected patients eliminate post-transplantation sternal complications and improve functional recovery. Actually, this is our routine approach for bilateral lung transplantation.

When cardiopulmonary bypass (CPB) is electively or urgently required during the procedure, we use two different approaches. Cannulation of the aorta and right atrium can be done through a right thoracotomy or transcutaneously in the 3rd and 4th intercostal spaces. We report the case of a patient requiring elective CPB in a bilateral lung transplantation setting.

Clinical summary. A 49-year-old man with α_1-antitrypsin emphysema and secondary pulmonary hypertension (systolic pulmonary artery pressure 80 mm Hg) was accepted for bilateral lung transplantation. When a donor became available, we

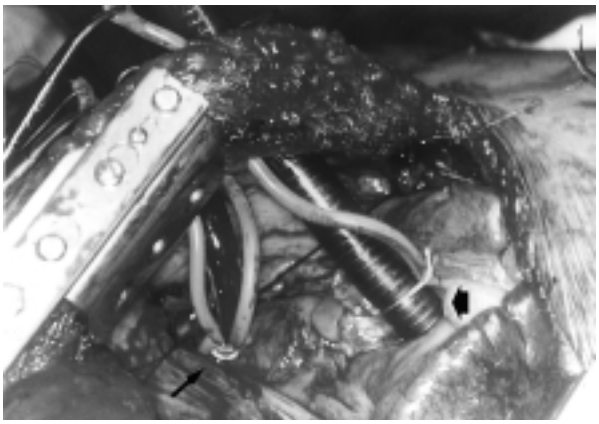

Fig 1. Right anterior thoracotomy showing cannulation of the aorta *(small arrow)* and right atrial appendage *(large arrow).*

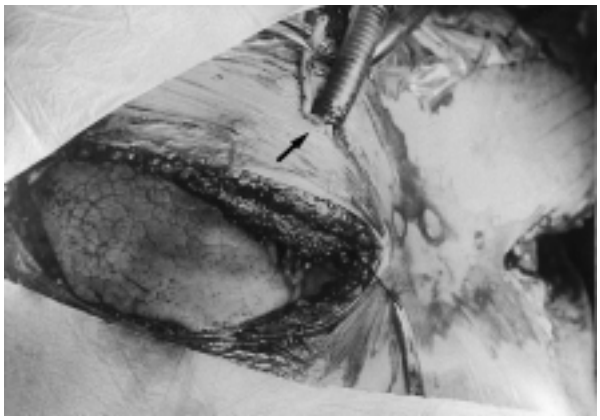

Fig 2. Transcutaneous approach for cannulation in right anterior thoracotomy *(arrow).* No sternal split is necessary.

decided to use two sequential anterolateral thoracotomies and elective CPB.

After dissection of the right hilar structures, the aortic cannula (Stöckert 5.2 mm, Munich, Germany) was introduced through the skin and right 3rd parasternal intercostal space. The cannula was later used for apical chest tube drainage (Fig 1). The single 2-stage venous cannula (Bard 46F-34F, C.R. Bard, Inc, Haverhill, Mass) was introduced through the skin and right 4th parasternal intercostal space, just in front of the right atrial appendage.

This particular case involved a long-distance procurement with an ischemic time of 4 hours 10 minutes on arrival at our institution. When CPB was instituted and right pneumonectomy followed by lung implantation was performed, the ischemic time was 6 hours 15 minutes). The left lung was transplanted sequentially, with an ischemic time of 7 hours 25 minutes. The total CPB time was 3 hours 15 minutes. The first P_{O_2} reading with 100% inspired oxygen fraction was 520 mm Hg. Recovery was uneventful, without ischemia-reperfusion injury.

Discussion. There is no doubt that a smaller incision produces less trauma and less pain, reduces the risk of wound complications, and facilitates recovery. On the other hand, the minimally invasive approaches have the disadvantage of producing a smaller surgical field. The majority of bilateral lung transplantations have been performed through an anterolateral thoracosternotomy known as the "clamshell" incision.[3-5] The introduction of a less invasive incision, the two sequential anterolateral thoracotomies, has the challenge of performing the conventional lung transplantation through a minimally invasive approach.

When CPB is necessary, the surgeon faces the challenge of finding a way to perform cannulation with the same type of cannulas and without increasing the size of the small incision. Femoral cannulation may be an alternative but is associated with important vascular complications.

The transcutaneous extracorporeal cannulation technique herein described is very helpful in these patients. The cannulas are left in place away from the thoracotomy opening and provide adequate drainage of the ventricles without hampering the operation. Furthermore, exposure of the hilar structures is greatly improved, and the course of the procedure may progress smoothly without increasing the skin incision.

Andres Varela, MD
Carlos García Montero, MD
Evaristo Castedo, MD
Jorge Roda, MD
Pablo Gámez, MD
Luis Madrigal, MD
Juan Ugarte, MD
Thoracic & Cardiovascular Surgery
Hospital Puerta de Hierro
c/ San Martin de Porres n4
Madrid 28035, Spain

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Cardiac aspergillosis

To the Editor:

Although nosocomial infection is decreasing in Spanish hospitals,[1] a relative increase in infections caused by fungi is