institution, and the response to steroids. Not every case will be diagnosed antemortem, and not every pathology will respond favorably to steroids. Thus, treatment must take into consideration the possibility that bridge to recovery or bridge to transplant is conceivable. VAD support, therefore, is an excellent tool to accomplish the goal—particularly with a VAD that has features such as short- or long-term support, bridge to recovery or transplant, ambulation with possibility for home discharge, and so forth. In addition, a VAD that has left ventricular (LV) apical cannulation allows for optimal unloading of the LV while on support, antegrade flow pattern, and pulsatile flow. Although extracorporeal life support (ECLS) has been used extensively for acute circulatory decompensation, the femoral–femoral circulation is suboptimal in terms of resting the LV and counterproductive when the LV recovers and weaning is attempted—there is conflicting flow from the heart antegrade and femoral flow retrograde. Furthermore, extracorporeal membrane oxygenation introduces an oxygenator, which is appropriate when lung injury is associated with the heart condition but potentially detrimental when it is not. In addition, femoral cannulation is associated with the potential for vascular complications (both venous and arterial), prevents movement of the patient in the bed or at the bedside, and limits flow by the relatively small size of the cannulae. These views were shared by other surgeons in a discussion of acute heart failure with various types of mechanical circulatory assist technologies.⁴

We congratulate Dr Khabbaz and his team for their wonderful success and encourage others to think about mechanical circulatory support when confronted with a severe case of acute necrotizing eosinophilic myocarditis. The use of ECLS is not an unreasonable method to rapidly restore circulatory stability. However, in the event that ECLS is insufficient, then a more advanced form of mechanical circulatory support, such as a VAD, is appropriate.

Louis Samuels, MD, FACS
Surgical Director Cardiac Transplantation
Director Artificial Heart and VAD Program
Lankenau Hospital
Wynnewood, Pa

References

1. Kohout J, Ferdinand FD, Imaizumi S, Holmes EC, Samuels LE. A rare case of acute necrotizing eosinophilic myocarditis: bridge to recovery with ventricular assist device support. *J Thorac Cardiovasc Surg.* 2006;132:965-6.
2. Watanabe N, Nakagawa S, Fukunaga T, et al. Acute necrotizing eosinophilic myocarditis successfully treated by high dose methylprednisolone. *Jpn Circ J.* 2001;65:923-6.
3. Touze JE, Debonne JM, Scheiner C, et al. Acute necrotizing eosinophilic myocarditis. Favorable clinical course after heart transplantation. (In French.) *Presse Med.* 1992;21:565-8.
4. Discussion of acute heart failure. Moderator: D. Glenn Pennington. Panelists: Michael A. Acker, Jack J. Curtis, Francis D. Pagani, et al. *Ann Thorac Surg.* 2001;71:S82-5.
doi:10.1016/j.jtcvs.2006.11.017

Modern drainage techniques include not only smaller drains for pain reduction

To the Editor:

In a prospective, randomized, controlled trial, Roberts and colleagues¹ recently demonstrated that the performance of small-bore Blake drains (19F) (Ethicon Inc, Somerville, NJ) is not inferior to that of standard Portex drains (28F) (Portex, Inc, Hythe, Kent, UK) after cardiac surgery. The study provides important evidence on the efficacy of modern drainage techniques. However, we have some comments.

The authors compared 199 patients undergoing first-time cardiac procedures; 90 patients received Blake drains, and 109 patients received standard Portex drains. We are not convinced that the influence of complex valve procedures, which are more frequent in the Blake group, is not statistically relevant. Furthermore, we believe that a homogenous patient group might demonstrate the advantage of silastic Blake drains and allow extrapolation to other patient groups.

Akokuwah and colleagues² demonstrated less pain with Blake drains, but, as mentioned by Roberts and colleagues,¹ with only a small patient group (70 patients with 35 in each group). Therefore, it is a pity that the authors did not assess pain with a visual analog scale score, which is easy to perform.

Finally, the authors somehow misquoted our correspondence on the article by Barnard and colleagues.³ We do not believe that “. . . the only way to reduce patient discomfort is to use smaller and softer drains.” In fact, we stated that a modern drainage technique is a

fundamental part in pain reduction while removing drains after thoracic and cardiac surgery. Of course, analgesia, special removal maneuvers, and so forth have value, as demonstrated in various studies.⁴ In our unit, 10F to 19F Blake drains are used in all patients (1800 patients/year). Our observations are consistent with the literature: The Blake drain system is as effective as conventional drains with no increased risk of retained blood in the chest or tamponade and significantly less pain for the patient. We therefore advocate the use of Blake drains in patients undergoing thoracic or cardiac surgery as well.

Helmut Mair, MD
Ingo Kaczmarek, MD
Sabine Daebritz, MD
Cardiac Surgery
University of Munich
Munich, Germany

References

1. Roberts N, Boehm M, Bates M, Braidley PC, Cooper GJ, Spt TJ. Two-center prospective randomized controlled trial of Blake versus Portex drains after cardiac surgery. *J Thorac Cardiovasc Surg.* 2006;132:1042-6.
2. Akokuwah E, Ho E, George R, Brennan K, Tennant S, Braidley P, et al. Less pain with flexible fluted silicone chest drains than with conventional rigid chest tubes after cardiac surgery. *J Thorac Cardiovasc Surg.* 2002;124:1027-8.
3. Barnard J, Thompson J, Dunning J. Can any intervention effectively reduce the pain associated with chest drain removal? *Interact CardioVasc Thorac Surg.* 2004;3:229-232.
4. Singh M, Gopinath R. Topical analgesia for chest tube removal in cardiac patients. *J Cardiothorac Vasc Anesth.* 2005;19:719-22.
doi:10.1016/j.jtcvs.2006.11.039

Reply to the Editor

We thank Dr Mair and colleagues for their interest in our study¹ and for their comments to which we would like to reply.

First, we agree that homogenous patient groups avoid confounding variables; the influence of complex valve procedures is one that was mentioned. However, we do not agree that it was the heterogeneity of the patient groups that prevented us from demonstrating an advantage of the Blake system (Ethicon Inc, Somerville, NJ). Our study was powered on the statistical basis of testing noninferiority, which allows statistical comparison with a predefined level of difference between groups. Had the study hypothesis been that Blake drains

were superior to Portex drains (Portex, Inc, Keene, NH), the power calculation of the study would have been entirely different and the patient number much higher. This would have effectively made the study impossible to perform because of the logistic difficulty of arranging postoperative echocardiography in a defined time period after drain removal.

Second, we agree that Akowuah and colleagues² clearly demonstrated less pain associated with Blake drains when compared with Portex drains. In fact, the differences between the groups were dramatic; thus, their conclusions about the benefit of Blake drains on postoperative pain were valid even with the small patient numbers. Before initiating our study we performed an assessment of pain scores between the 2 drain systems in patients with patient-controlled analgesia postoperatively to avoid the bias of unequal analgesic regimens. By using a 0 to 100 visual analogue pain score, we documented a similar baseline in 20 patients (21 ± 25 Blake vs 34 ± 26 Portex, $P = .28$) but a lower drain removal score (40 ± 21 Blake vs 69 ± 21 Portex, $P = .006$) in favor of Blake drains. We believed the benefit of Blake drains in terms of pain reduction to be undoubted and performed our study because it could be argued that Akowuah and colleagues' conclusions of equivalence of drainage efficacy were based on an underpowered sample.

Finally, we apologize if we misquoted Mair and colleagues' correspondence by summarizing "the only way to reduce patient discomfort is to use smaller and softer drains." The exact quote in relation to Barnard and colleagues' article³ was "the authors focus on analgesia for chest drain removal. But in our opinion it is more important to use modern drainage techniques for pain reduction while removing drains after thoracic and cardiac surgery." In this aspect we agree with Mair and colleagues that modern drainage techniques are most important for pain reduction after cardiothoracic surgery. We are pleased that our randomized control trial data confirm their clinical observations that Blake drains

are as effective as conventional drains, and we also advocate their use.

Neil Roberts, MRCS^a

Tom J. Splyt, FRCS^b

Department of Cardiac Surgery

Northern General Hospital^a

Sheffield, United Kingdom

Department of Cardiac Surgery

Glenfield Hospital^b

Leicester, United Kingdom

References

1. Roberts N, Boehm M, Bates M, Braidley PC, Cooper GJ, Splyt TJ. Two-center prospective randomized controlled trial of Blake versus Portex drains after cardiac surgery. *J Thorac Cardiovasc Surg.* 2006;132:1042-6.
2. Akowuah E, Ho E, George R, Brennan K, Tennant S, Braidley P, et al. Less pain with flexible fluted silicone chest drains than with conventional rigid chest tubes after cardiac surgery. *J Thorac Cardiovasc Surg.* 2002;124:1027-8.
3. Barnard J, Thompson J, Dunning J. Can any intervention effectively reduce the pain associated with chest drain removal? *Interact CardioVasc Thorac Surg.* 2004;3:229-32. doi:10.1016/j.jtcvs.2006.12.015

Endovascular repair of postoperative aortobronchopulmonary fistulas To the Editor:

We read with great interest the brief communication by Quintana and colleagues,¹ and we congratulate their successful endovascular treatment of an aortobronchial fistula. Management of such fistulas is not easy. Diagnosis is difficult due to the rarity of this entity and because even modern preoperative investigations sometimes fail to directly visualize the fistula. Surgical treatment represents a real challenge due to coexistence of emergency conditions and difficulties of redo operations. In a collective review of the literature (to our knowledge the unique reporting specifically of postoperative aortic fistulas into the airways), which included all published cases from 1947 to October 2002, one of us (M.P.) found this complication in 76 patients, for a total of 79 fistulas (3 patients were affected by 2 fistulas).² The review disclosed

that 50 fistulas involving the descending thoracic aorta were treated by heterogeneous surgical procedures (primary, patch, or subclavian flap repair, graft replacement, homograft implant, extra-anatomic bypass graft), with a mortality rate of 16% and with most patients dying intraoperatively. Instead, there were no deaths related to procedure type, respectively, in 15 patients treated by stent grafts, in 1 patient managed by transcatheter embolization, and in 5 surgically treated cases involving the ascending aorta. Although in selected patients endovascular repair has been used as an emergency or palliative alternative to treat even primary fistulas due to atherosclerotic aneurysms³ or pulmonary infectious disease,⁴ we believe that its best indication lies in the late postoperative setting. Despite the potential infectious complications of stent grafts, we believe that the endovascular option to treat postoperative aortobronchial and aortopulmonary fistulas represents the appropriate solution because it avoids high morbidity and mortality rates of urgent redo operations.

Marco Picichè, MD

Roland G. Demaria, MD, PhD

Bernard Albat, MD

Service de Chirurgie Cardio-Vasculaire

Chu Arnaud de Villeneuve

Montpellier, France

References

1. Quintana AL, Aguilar EM, Heredero AF, Riambau V, Paul L, Acin F, et al. Aortobronchial fistula after aortic coarctation. *J Thorac Cardiovasc Surg.* 2006;131:240-3.
2. Picichè M, De Paulis R, Fabbri A, Chiariello L. Postoperative aortic fistulas into the airways: etiology, pathogenesis, presentation, diagnosis and management. *Ann Thorac Surg.* 2003;75:1998-2006.
3. Léobon B, Roux D, Mugniot A, Rousseau H, Cérene A, Glock Y, et al. Endovascular treatment of thoracic aortic fistulas. *Ann Thorac Surg.* 2002;74:247-9.
4. Yoo JH, Lee CT, Shim YS, Chung JW, Ahn H, Kim KW. Aortobronchial fistula presenting as recurrent hemoptysis and successfully treated with an endovascular stent graft. *Respiration.* 2001;68:537-9.

doi:10.1016/j.jtcvs.2006.10.077