Jack W. Love, MD, DPhil
 CardioMend LLC
 Santa Barbara, Calif

References

1. Lapeyre D, Siegel R, Scotten L, de Mol B, Dembitsky W. Prosthetic heart valves: difficult to make something simple. *J Thorac Cardiovasc Surg.* 2010;139:1371-3.
2. Love JW, Calvin JH, Phelan RF, Love CS. Rapid intraoperative fabrication of an autogenous tissue heart valve: a new technique. In: Bodnar E, Magdi Y, eds. *Proceedings of the Third International Symposium on Biologic & Bioprosthetic Valves.* New York: Yorke Medical Books; 1986:691-8.
3. Hanlon JG, Suggitt RW, Gibbs E, McMeeking RM, Love JW. Geometric optimization of a tissue pattern for semilunar valve reconstruction. *J Heart Valve Dis.* 1999;8:609-13.
4. Chan KMJ, Rahman-Haley S, Mittal TK, Gavino JA, Dreyfus GD. Truly stentless autologous pericardial aortic valve replacement: an alternative to standard aortic valve replacement. *J Thorac Cardiovasc Surg.* 2011;141:276-83.
5. Senning A. Alterations in valvular surgery: biologic valves. In: Cohn LH, Gallucci V, eds. *Proceedings of the Second International Symposium on Cardiac Bioprostheses.* New York: Yorke Medical Books; 1984:140-53.
6. Björk VO, Hultquist G. Teflon and pericardial aortic valve prostheses. *J Thorac Cardiovasc Surg.* 1964;47:693-701.
7. Edwards WS. Late results with autologous tissue heart valves. *Ann Thorac Surg.* 1971;12:385-90.
8. Love JW. Early experience with autologous tissue heart valves. In: *Autologous Tissue Heart Valves.* Austin, TX: RG Landes Co; 1993:1-22.

doi:10.1016/j.jtcvs.2010.07.099

PSEUDOANEURYSM OF ASCENDING AORTA COMBINED WITH AORTIC VALVE INFECTIVE ENDOCARDITIS AFTER CARDIAC OPERATIONS FOR CONGENITAL VENTRICULAR SEPTAL DEFECT

To the Editor:

We read with great interest the article of Emaminia and colleagues¹ and congratulate them for their successful repair of an iatrogenic pseudoaneurysm of the ascending aorta. Their strategy to safely reopen the sternum is to drain the blood into the oxygenator reservoir for 1 to 2 minutes to have an empty, relatively collapsed heart and aorta without establishment of femoro-femoral bypass. We want to know how

FIGURE 1. Preoperative and postoperative computed tomography scans of patients. Defect of anterior wall of ascending aorta (dotted line); pseudoaneurysm arising from the right anterior wall of ascending aorta (single arrow); repaired aorta with aortic valvular prosthetic replacement (double arrow).

much blood should be drained and how to maintain hemodynamics during the procedures. Fortunately, the pseudoaneurysm was located at the back of ascending aorta. Otherwise, how would the hemodynamics problem be dealt with if the reentry of the sternum was not uneventful?

Ascending aortic pseudoaneurysms are found on rare occasions, and direct surgical repair is the only choice, but this carries a high risk of fatal hemorrhage resulting from rupture of pseudoaneurysm at the time of sternal reentry. From the limited case reports in the literature,²⁻⁵ the authors concluded that median sternotomy with the use of femorofemoral bypass and hypothermic circulatory arrest is the strategy of choice.

We recently surgically managed a case of ascending aortic pseudoaneurysm combined with aortic valve infective endocarditis after congenital ventricular septal defect. An 11-year-old boy was admitted to our hospital 2 months later with intermittently high fever accompanying stridor and dizziness experienced for approximately 1 month. Echocardiography showed masses in the prolapsed right coronary cusp with severe aortic regurgitation. *Staphylococcus aureus* was cultured from the blood. A contrast computed tomography scan showed a defect in the right anterior

wall of the ascending aorta 1.5 cm above the aortic valve, from which a pseudoaneurysm was arising (Figure 1). Intravenous antibiotics according to in vitro susceptibility testing were continued for 2 more weeks, bacteremia was controlled, and operation was performed. The chest was opened through the previous scar. After institution of femorofemoral bypass, the patient was cooled to 32°C and the heart was relatively emptied. A sternotomy was then performed. Adhesions over the ascending aortic pseudoaneurysm and right ventricle were released uneventfully. The aorta was clamped at 28°C and opened through the pseudoaneurysm, which was approximately 8 × 7 × 5 cm. The 2.5 × 2.5-cm defect was at the previous aortotomy site. Cardioplegic solution was administered directly, and the aortic native valve was replaced by a 21-mm St Jude mechanical prosthesis (St Jude Medical Inc, St Paul, Minn). The aortic defect was closed using a 5 × 3-cm polytetrafluoroethylene patch with 4-0 Prolene suture. The patient was weaned uneventfully from cardiopulmonary bypass. The postoperative course was uncomplicated. No special treatment was given except for continuing intravenous antibiotics for another 4 weeks and oral warfarin. The cause of the pseudoaneurysm appeared to

be a blowout at the previous aortotomy site, because there was no evidence of aortic wall infection intraoperatively, and histologic examination and cultures taken from the pseudoaneurysm remained sterile.

The patient was discharged 4 weeks later. Heart and prosthetic valve function were normal, and computed tomography scan showed no abnormality (Figure 1). We think operation for ascending aortic pseudoaneurysms can be safely performed on femorofemoral bypass without hypothermic cardiac arrest.

Jiang Sheng-li, MD
Li Bo-jun, MD
Gao Chang-qing, MD
Department of Cardiovascular
Surgery of Chinese PLA General
Hospital
Chinese PLA Cardiac Surgery
Institute
Beijing, PR China

References

1. Emaminia A, Amirghofran AA, Shafa M, Moaref A, Javan R. Ascending aortic pseudoaneurysm after aortic valve replacement: watch the tip of the cardioplegia cannula! *J Thorac Cardiovasc Surg.* 2009;137:1285-6.
2. Sabri MN, Henry D, Wechsler AS, DiSciascio G, Vetrovec GW. Late complications involving the ascending aorta after cardiac surgery: recognition and management. *Am Heart J.* 1991;121:1779-83.
3. Sullivan KL, Steiner RM, Smullens SN, Griska L, Meister SG. Pseudoaneurysm of the ascending aorta following cardiac surgery. *Chest.* 1998;93:138-43.
4. Katsumata T, Moorjani N, Vaccari G, Westaby S. Mediastinal false aneurysm after thoracic aortic surgery. *Ann Thorac Surg.* 2000;70:547-52.
5. Apaydin AZ, Posacioglu H, Islamoglu F, Telli A. A practical tool to control bleeding during sternal reentry for pseudoaneurysm of the ascending aorta. *Ann Thorac Surg.* 2003;75:1037-8.

doi:10.1016/j.jtcvs.2010.07.100

ACUTE KIDNEY INJURY AFTER CORONARY ARTERY BYPASS GRAFTING: DOES RHABDOMYOLYSIS PLAY A ROLE?

To the Editor:

In the August 2010 edition of this *Journal*, Perioperative Management section, the following article was published: "Acute kidney injury after cor-

onary artery bypass grafting: Does rhabdomyolysis play a role?" by Benedetto et al.

The study has hypothesized that rhabdomyolysis may play a role in the development of acute kidney injury after coronary artery bypass grafting. However some important considerations have been ignored in the study. (1) The use of depolarizing muscle relaxant suxamethonium is not mentioned. Suxamethonium has been previously shown in literature as a potential cause of muscle injury and rhabdomyolysis. This is even more important when given to obese patients. (2) The use of antifibrinolytic medications aminocaproic acid (Aminocap) and tranexamic acid (Cyclokapron) is also not mentioned. Several case reports have associated rhabdomyolysis with their concurrent use in cardiac surgery. (3) The use of the antiarrhythmic drug amiodarone has not been addressed. Amiodarone has also been associated with acute renal injury, especially when used along with statins. (4) All statins carry a risk of rhabdomyolysis. However, the Food and Drug Administration authority has said that the risk of rhabdomyolysis developing is more pronounced when simvastatin is combined with amiodarone than it is with other statin medications. The study has not provided the different statin medications the patients were receiving. (5) The study failed to mention whether the statin therapy was optimized before the operation. (6) The anesthetic technique used is totally ignored. Use of several inhalational agents could potentially increase the likelihood of renal injury developing, especially in combination with aforementioned drugs. Was total intravenous anesthesia technique used in any of the patients in the study? (7) No information was given about concurrent use of mannitol (especially during cardiopulmonary bypass).

It is very important to consider all possible causes of rhabdomyolysis that can occur during coronary artery

bypass grafting. I wish to know from Benedetto and associates the information regarding these questions.

Srikanth Ramarapu
Oklahoma University
Department of Anesthesiology
Oklahoma City, Okla

doi:10.1016/j.jtcvs.2010.09.060

Reply to the Editor:

We appreciate the interest in our work¹ and are pleased to address the aroused considerations.

First, we use cisatracurium, and not suxamethonium, as a muscle relaxant. We do not use aminocaproic acid or tranexamic acid, which is why these drugs are not mentioned in our article.¹ Amiodarone, which is known to play a role in rhabdomyolysis development,² was entered in the multivariable correction, but no statistically significant correlation was found ($P = .75$). Unfortunately, we could not retrieve information on the different types of statins that patients were taking because there were several and it was a retrospective study; however, we do know that atorvastatin, simvastatin, rosuvastatin, fluvastatin, and pravastatin were used. Nevertheless, consistent with the latest guidelines,³ statin therapy was optimized before surgery to achieve a low-density lipoprotein cholesterol level less than 100 mg/dL, and this was achieved in 85% of patients. Anesthetic induction was obtained by means of sevoflurane, and propofol was used as maintenance. We believe these agents do not increase the hazard of renal impairment. Finally, mannitol is routinely administered during cardiopulmonary bypass at a small dose of 200 to 250 mg.

Emiliano Angeloni, MD
Umberto Benedetto, MD
Riccardo Sinatra, MD
Department of Cardiac Surgery
University of Rome "La Sapienza"
Policlinico S. Andrea
Rome, Italy