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PREVIOUS USE OF ASCENDING-DESCENDING POSTERIOR PERICARDIAL BYPASS WITH VALVE-SPARING AORTIC ROOT REPLACEMENT To the Editor:

We recently read the interesting case report by Anderson and colleagues¹ discussing the surgical treatment of a patient with a coarctation of the aorta and aortic root aneurysm. They successfully performed a valve-sparing root replacement, along with an ascending-descending posterior pericardial bypass. We commend Anderson and colleagues¹ on their excellent result.

We agree that ascending-descending posterior pericardial bypass should be considered in adult patients with coarctation of the aorta and concomitant cardiac pathology requiring surgical attention through a median sternotomy.^{2,3} The combination of valve-sparing root replacement and ascending-descending posterior pericardial bypass was first reported in 2008, when we used this surgical approach in the successful treatment of a 20-year-old man with an aortic root aneurysm and severe coarctation of the aorta.⁴ Since that time, we have performed this operation on 2 more patients, and we find it to be a reproducible solution to a potentially difficult problem. We are disappointed that Anderson and colleagues¹ failed to acknowledge our original contribution 4 years ago.

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Reply to the Editor:

We read with interest the letter by Burkhardt and Connolly from Mayo Clinic regarding our recent article describing ascending-descending aortic bypass with concomitant valve-sparing root replacement.¹ In 2007, the Mayo group published the largest series of aortic bypass operations in the literature (n = 50) and elegantly described the general technique of posterior pericardial aortic bypass that we used in our case.² This seminal 2007 article was appropriately referenced in our report. A follow-up review article from Burkhardt and colleagues in 2011 reiterated the aortic bypass technique as well as the outcomes of the original 50 patients described in 2007.³ Of note, neither the 2007 nor 2011 articles described the performance of any concomitant aortic root operations. Burkhardt and Connolly now claim to have first reported an aortic bypass with valve-sparing root replacement operation in 2008 and are disappointed that we did not acknowledge this contribution in our report. Unfortunately, the case report from 2008 that describes this operation fails to make use of appropriate aortic nomenclature.⁴ The phrase “valve-sparing” does not appear anywhere within the article, and the

abstract states only that the ascending aorta was replaced and makes no reference to an aortic root operation. Thus the 2008 case report was not identified by routine searches of the indexed medical literature for valve-sparing operations. The abstract incorrectly described ascending aortic replacement as opposed to aortic root replacement, and the authors of the 2011 review article from Mayo failed to update their case series and did not describe the performance of any additional concomitant root procedures. We regret that we were unable to identify the 2008 case report and are happy to acknowledge the Mayo group's claim to primacy in performing aortic bypass with valve-sparing root replacement operation at this time. Nonetheless, we recommend appropriate use of aortic nomenclature and careful review of surgical manuscripts by a surgeon to avoid confusion in the future.

Since the time of our previous report, we have combined ascending-descending aortic bypass with conventional button Bentall root replacement and proximal arch (hemiarch) replacement, as well as supracoronary ascending aortic and hemiarch replacement. Both cases were patients with the bicuspid aortic valve syndrome,⁵ including proximal aneurysmal pathology extending to the level of the proximal arch. We take this opportunity to claim primacy for the performance of concomitant arch replacement with ascending-descending bypass, because this is not mentioned in any of the previous Mayo reports or elsewhere in the literature.

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TO BE AWAKE, OR NOT TO BE AWAKE, THAT IS THE QUESTION

To the Editor:

Our group read with interest the study of Noda and coworkers.¹ Indeed the question as to whether there is any benefit of using awake anesthesia in thoracic surgery is still a matter of discussion, despite increasingly encouraging results.^{2,3}

Our awake surgical management of secondary pneumothorax differs somewhat from that advocated by Noda and coworkers.¹ In patients with pneumothorax secondary to giant bullous emphysema, we routinely

perform a bullaplasty with staple plication of the bulla.⁴ In more complex situations, such as occult pneumothoraces discovered after lung volume reduction, our method entails access with 2-flexible trocars, identification of the leaking site aided by lung irrigation, and simple staple suturing or cyanoacrylate glue instillation, plus coverage with bovine pericardium patch. Among 23 patients who underwent operation, operative time ranged from 35 to 90 minutes. Mean hospital stay was 3 days. Follow-up ranged from 12 to 108 months, and no recurrent pneumothorax developed during the follow-up.

We agree that awake anesthesia avoids general anesthesia-related adverse effects, although hypoventilation as a result of between-lungs pendular ventilation and creation of an intrapleural atmospheric pressure environment (Figure 1, A) can result in both hypoxia and permissive hypercapnia. Nonetheless, one intriguing feature of the results of Noda and coworkers¹ is that in the awake group, which had on average the worst respiratory function, there were no deaths, and the rate of respiratory complications was also significantly lower than that of general anesthesia group. These data agree widely with our own results, and we have even noticed that the condition of the underlying lung tissue can

affect oxygenation in a paradoxical fashion. In particular, during awake procedures, the intraoperative drop in the ratio of arterial oxygen tension to fraction of inspired oxygen was 77 mm Hg in patients with relatively normal underlying lung and 34 mm Hg in patients with severe chronic obstructive pulmonary disease (Figure 1, B). Explanations for this feature remain conjectural. We hypothesize that severe gas trapping attenuates the effect of atmospheric intrapleural pressure on ventilation as a result of prolonged exhalation times and existence of positive end-expiratory pressures in peripheral alveolar regions, which may counteract detrimental effects of pendular ventilation.

Finally, we raise some concern regarding the preference for the supine position in subjects undergoing awake thoracic procedures. We prefer lateral positioning, not only because it facilitates visualization of all dorsal lung regions but also because it reduces the shunt fraction by decreasing perfusion of the nondependent lung as a result of gravity, a beneficial effect that is lost in supine position. On the other hand, the supine position minimizes the compression exerted by the mediastinum against the dependent lung, which increases the inspiratory load and may negatively affect oxygenation. We have found, however, that in laterally

FIGURE 1. A, Mechanism of pendular ventilation during awake surgery. During expiration, air escapes from the dependent lung because alveolar pressure (P_{alv}) becomes higher than atmospheric pressure (P_{atm}). Part of the exhaled gases inflates the nondependent lung, in which alveolar pressure equalizes at atmospheric pressure. Instead, during inspiration, atmospheric air inflates the dependent lung, in which alveolar pressure becomes subatmospheric, whereas the nondependent lung deflates, contributing to ventilation of the dependent lung. B, Perioperative changes in the ratio of P_{aO_2} to fraction of inspired oxygen (F_{iO_2}) at baseline (T1), at the end of the procedure (T2), and 3 hours after the operation (T3). COPD, Chronic obstructive pulmonary disease.