anatomic boundaries. MRI is especially useful for evaluating the brachial plexus and excluding neural foramina extension.

There are several surgical approaches for thoracic outlet pathology. These include supraclavicular, transaxillary, and posterior thoracoplasty for first rib excision in thoracic outlet syndrome. For Pancoast tumors, an anterior (Dartevelle), posterior (Shaw-Paulson), and hemiclamsell or Masaoka approach have been described.¹⁻³ The Masaoka approach involves a transverse cervical collar incision and proximal median sternotomy extended to the third or fourth anterior intercostal space. We used this approach, and it provided excellent exposure. We resected the first rib subperiosteally from inside the chest, as described by Nomori and colleagues.⁴ This improves exposure by facilitating lateral retraction of the anterior chest wall flap and avoids the need to divide or resect the medial third of the clavicle, which can lead to postoperative shoulder girdle dysfunction. Vanakesa and Goldstraw⁵ reported that the anterosuperior approach provides excellent exposure for tumors at the base of the neck. It was associated with low morbidity, a short postoperative stay, and adequate exposure for subclavian vessel resection or reconstruction.

CONCLUSIONS

We present the resection of a large bilobed thoracic outlet mass. We recommend an anterior hemiclamsell surgical approach because it provides excellent exposure for tumor removal, first rib resection, and vascular reconstruction. Bipolar electrocautery is essential to avoid any iatrogenic neuropraxias when dissecting the brachial plexus or should any bleeding be encountered around the neural foramina. Monitored somatosensory evoked potentials and free running electromyogram similarly decrease the risk of neurologic injury.

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Repair of acute postinfarction atrioventricular dehiscence in a patient with posterior left ventricular aneurysm

Igor E. Konstantinov, MD, PhD, Pankaj Saxena, MCh, DNB, Shane Ling, MB, BS, and Trenton Barrett, MB, BS, Perth, Australia

Acute postinfarction atrioventricular (AV) dehiscence is a rare complication. If the dehiscence is contained, it may form a pseudoaneurysm. The pseudoaneurysm has little strength and is prone to rupture. Left ventricular (LV) pseudoaneurysm is most commonly located at the posterior basal segment, where it is likely to be contained. Repair of postinfarction LV pseudoaneurysm is associated with 20% to 35.7% mortality even in the modern era.¹⁻³ We can report the successful management of an acute postin-

farction AV dehiscence in a patient with a true posterior LV aneurysm and severe mitral insufficiency.

CLINICAL SUMMARY

A 57-year-old diabetic woman had a non-ST elevation myocardial infarction and pulmonary edema. Echocardiography demonstrated severe mitral insufficiency resulting from tethering of the posterior leaflet at P2 and P3 segments, LV ejection fraction of 34%, a true posterior LV aneurysm, and severe calcification of the posterior mitral annulus with an AV dehiscence and a pseudoaneurysm. Magnetic resonance imaging confirmed the findings and delineated an AV dehiscence of 5 mm in diameter that formed an entry into a pseudoaneurysm (Figure 1, A) dissecting into the AV groove. The pseudoaneurysm was 22 × 18 mm and was contained by coronary sinus and epicardial fat (Figure 1, A and B). A coronary angiogram demonstrated triple-vessel coronary artery disease. An intra-aortic balloon pump was placed before urgent surgery. After median sternotomy,

From the Department of Cardiothoracic Surgery, Sir Charles Gairdner Hospital, University of Western Australia, Perth, Australia.

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Address for reprints: Igor E. Konstantinov, MD, PhD, Department of Cardiothoracic Surgery, Sir Charles Gairdner Hospital, Perth, WA 6009, Australia (E-mail: konstantinov.igor@alumni.mayo.edu).

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FIGURE 1. Magnetic resonance image demonstrated an AV dehiscence with detachment of the posterior mitral annulus and entry into a pseudoaneurysm (A) and contained in AV groove (A and B).

cardiopulmonary bypass was established with aortic and bi-caval cannulation. Three coronary arteries were bypassed with vein grafts. To expose the entry into the pseudoaneurysm (Figure 2, A), we detached the posterior leaflet of the mitral valve and resected a portion of the severely calcified posterior mitral annulus. A large bovine pericardial patch was sutured to the base of the papillary muscles, posterior LV wall, and left atrium to exclude the area of dehiscence (Figure 2, B). All native chords were preserved and plicated to the mitral annulus. Additional 4–0 polytetrafluoroethylene (PTFE) chords (Gore-Tex; W. L. Gore & Associates, Inc, Flagstaff, Ariz) were placed to relieve tension on the pericardial patch (Figure 2, B and C). The mitral valve was replaced with a 29-mm ATS prosthesis (ATS Medical Inc, Minneapolis, Minn). The PTFE chords were anchored to the sewing ring of the prosthesis (Figure 2, C). Aortic crossclamp time was 150 minutes. Cardiopulmonary bypass time was 254 minutes. The postoperative course was uncomplicated. Postoperative echocardiography demonstrated an LV ejection

fraction of 46%. The patient is doing well at 3 months' follow-up.

DISCUSSION

An unusual feature in our patient was an AV dehiscence as a result of acute basal infarction in a setting of a chronic true posterior LV wall aneurysm and severe ischemic mitral insufficiency. The exact cause of this rare condition is unknown. One may speculate, however, that an acute myocardial infarction at the base of the ventricle further weakened the posterior LV wall, which was already under stress owing to the existing LV aneurysm, and resulted in AV dehiscence. An impending rupture necessitated urgent surgery. We believe that intra-aortic balloon pump placement was beneficial in decreasing LV pressures and minimizing the risk of acute rupture.

The mortality in patients undergoing postinfarction pseudoaneurysm repair is high and long-term survival is poor.^{1–3} Such poor outcome is related mainly to poor postoperative

FIGURE 2. Severely calcified posterior mitral valve annulus formed a bridge above the entry into the pseudoaneurysm (A). The calcified portion of posterior mitral annulus is resected, the atrium is reattached to the ventricle by the bovine pericardial patch, and the attachment is re-enforced by plicated native chords and PTFE neo-chords (B). Mitral valve replacement is performed and PTFE chords are anchored to the sewing ring of the prosthesis (C). Pledgets of autologous pericardium are used to reinforce PTFE chordals attachment to the papillary muscles (B and C).

LV function, rather than to technical difficulties during repair.^{2,3} We believe that achieving a tension-free connection of the left atrium to the LV is crucial for successful repair. Such tension-free connection is best achieved by application of a bovine pericardial patch sutured to the mitral annulus. The patch can be placed either via the posterior LV incision, as previously described by one of us,⁴ or via the mitral valve orifice.⁵ Endocavitary placement of the pericardial patch seals the entry point into the pseudoaneurysm, stabilizes the AV connection, and relieves the tension from the posterior LV wall, preventing postoperative bleeding owing to LV wall rupture. Furthermore, preservation of the chordal apparatus is crucial for LV function. Preservation of all chords combined with papillary muscle resuspension with the PTFE chords and myocardial revascularization resulted in significant improvement of LV function in our patient.

Acute postinfarction AV dehiscence is a challenging problem. Prompt surgical management, however, can achieve a successful outcome.

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Video-assisted thoracoscopic bullectomy for an infectious giant bulla with the concomitant use of the perioperative intracavity fluid suction

Yuji Taniguchi, MD,^{a,b} Shinji Fujioka, MD,^b Yoshin Adachi, MD,^b Ken Miwa, MD,^b and Hiroshige Nakamura, MD,^b Yonago, Japan

Bullectomy by video-assisted thoracoscopic surgery (VATS) is an effective treatment for giant bullae.¹ However, once an infection comorbidly develops in a bulla, a bullectomy is not easy to perform. We completed a VATS bullectomy with excellent vision by perioperatively inserting a balloon catheter into the bullae and aspirating the fluid contents therein.

CLINICAL SUMMARY

A 69-year-old man who had received follow-up for bilateral giant bullae had a temperature of 39.0°C to 40.0°C, and a small amount of fluid was detected in the giant bulla on the right (Figure 1, A). He was admitted to our hospital because of infectious giant bulla on the right side.

An antibacterial agent was administered, but an increase in the content fluid of the right giant bulla was detected in a chest x-ray film (Figure 1, B). Furthermore, inasmuch as the temperature of 38.0°C to 39.0°C continued, it was determined that medical treatment was not effective. We performed VATS.

The operation was performed in the lateral decubitus position with the patient under general anesthesia. We used a double-lumen endobronchial tube with protection of the contralateral lung from infectious fluid. First, a trocar (Thoracoport, Norwalk, Conn) was inserted at the midaxillary line in the sixth intercostal space. Observations with a thoracoscope showed the anterior side of the thoracic cavity to be occupied by a thickened white bulla wall, a large portion of which had adhered to the chest wall. The adhesion was dissected from the chest wall to the fourth rib, and a trocar was inserted at the midaxillary line in the fourth intercostal space. About 5 mm of the bulla wall was resected using a radio knife inserted through the trocar. A 12F balloon catheter (Biocath Foley Catheter; C. R. Bard Inc, Murray Hill, NJ) was immediately inserted into the bulla through this orifice, and the balloon was inflated to aspirate the content fluid of the bulla. After 750 mL of fluid was aspirated, the bulla shrank significantly, providing better vision. The bulla was easily dissected from the chest wall without the fluid

From the Operating Room Division^a and Division of General Thoracic Surgery,^b Tottori University Hospital, Yonago, Japan.

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Address for reprints: Yuji Taniguchi, MD, Division of General Thoracic Surgery, Tottori University Hospital, 36-1 Nishi-Cho, Yonago, Tottori, 683-8504 Japan (E-mail: kuichi@med.tottori-u.ac.jp).

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