Massive Aortic Pseudoaneursym and Hemoptysis Following Delayed Migration of Methylmethacrylate for Chest Wall Reconstruction

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INTRODUCTION: Chest wall defects greater than five centimeters generally require skeletal reconstruction to prevent flail physiology.[1, 2] Autologous bone and fascia lata have been replaced with rigid prosthetics such as the methylmethacrylate mesh "sandwich." This permanent, rigid framework can be contoured to any defect and avoids donor site morbidity. It is more malleable than metal hardware and obviates need of metal fixation that can erode into tissues or fracture ribs. Furthermore, it is radiolucent and easily seen on imaging. We report the first case of delayed methylmethacrylate migration causing significant cardiopulmonary injury and discuss post-operative management considerations.

MATERIALS AND METHODS: A 58-year-old woman with a 15-centimeter left posterior chest wall mass underwent posteriolateral thoracotomy with elevation of a latissimus dorsi flap. The underlying mass was resected en bloc with ribs 5-9 and scapula tip. A sandwich of outer Vicryl mesh and inner methylmethacrylate was contoured to the chest wall and affixed with bilayer mesh to the thoracic wall. The muscle flap and overlying tissues were inset over the defect.

RESULTS: Pathology revealed a benign spindle cell tumor. The patient had an uncomplicated recovery until fourteen months post-operatively, when she developed new chest pain following back massage. CT scan revealed minor plate migration, which was stable on four serial follow-up images. Two years later, she presented with sudden hemoptysis. Computed tomography revealed further plate migration, a massive descending aortic pseudoaneurysm, and aortic branch fistulization with pulmonary vasculature (Figures 1, 2). An endovascular aortic stent was placed emergently, and her hemoptysis resolved. She later underwent elective methylmethacrylate removal. She is doing well greater than 3 months postoperatively.

CONCLUSION: Published complications with methylmethacrylate reconstruction relate to possible increased infection rate compared with autologous grafts or mesh alone.[3] Only one series reported plate migration in two patients, which occurred immediately post-operatively.[4] This first reported case of delayed migration highlights the consideration of permanent mesh fixation and long-term patient follow-up. If migration is noted, early operative repair may prevent erosion into vital intra-thoracic structures. Endovascular intervention when indicated averts the need for emergent chest wall reconstruction.

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FIGURE LEGEND:

Figure 1. Three dimensional sagittal view showing large bony defect including resected scapula (thin arrow). The methymethacrylate plate in yellow and surrounding hematoma (not shown) displace aorta anteriorly, while plate erosion caudally result in pseudoaneurysm (thick arrow) posterior to plate.

Figure 2. Axial image showing pseudoaneursym (thick arrow) posterior to plate and contrast blush of aorto-pulmonic branch fistulization (thin arrow).