Giant Right Coronary Artery Aneurysm (16 × 8 cm) in a 32-Year-Old Woman

Background

Coronary artery aneurysms (CAAs) are rare clinical entities, with giant aneurysms exceeding 5 cm being exceptionally uncommon. The right coronary artery (RCA) is the most frequently affected, yet aneurysms larger than 10 cm are exceedingly rare. These lesions carry substantial risks including rupture, thrombosis, and compression of adjacent structures. We report the case of a giant RCA aneurysm measuring 16 × 8 cm—the largest described in the literature to date.

Methods

A 32-year-old woman presented with progressive compressive symptoms. Multimodal imaging—including coronary computed tomography angiography, conventional coronary angiography, cardiac magnetic resonance imaging (MRI), and transesophageal echocardiography—confirmed a massive RCA aneurysm compressing the right lung and displacing the heart. A concomitant left anterior descending (LAD) artery aneurysm was also identified.

Management strategy was guided by a multidisciplinary heart team in conjunction with patient-shared decision-making. Given the absence of a suitable left internal mammary artery (LIMA) conduit for revascularization and the risks of prolonged cardiopulmonary bypass, the team elected to address only the RCA aneurysm and defer intervention on the LAD aneurysm.

Through midline sternotomy, a large, encapsulated, non-pulsatile RCA aneurysm was identified, extending from the third intercostal space to the diaphragm and causing significant right lung compression. Upon opening, the aneurysm contained organized thrombus. Surgical management consisted of excision and marsupialization. The proximal RCA was ligated. The right posterior descending and posterolateral branches were small in caliber and unsuitable for bypass grafting, but perfusion was maintained through left-to-right collaterals; therefore, no revascularization was performed. The aneurysmal sac was marsupialized and secured.

Results

Weaning from cardiopulmonary bypass was uncomplicated, with preserved ventricular function and no requirement for inotropic support. The patient's postoperative course was uneventful. Histopathology confirmed aneurysmal wall changes with intraluminal thrombus.

Conclusion

This case highlights the successful management of the largest reported RCA aneurysm, emphasizing several key lessons. First, multimodal imaging—including CT, angiography, cardiac MRI, and echocardiography—was essential in defining the anatomy, assessing myocardial perfusion, and guiding operative planning. Second, interprofessional collaboration among cardiology, radiology, anesthesiology, perfusion, and surgery was pivotal in balancing surgical feasibility and long-term strategy. Third, shared decision-making with the patient ensured alignment of management choices with individual values and prognosis.

In summary, giant coronary artery aneurysms present not only technical challenges but also complex decision-making considerations. Optimal outcomes depend on a collaborative, patient-centered

approach that integrates advanced diagnostics, multidisciplinary expertise, and individualized treatment strategies.