

Giant Right Coronary Artery to Coronary Sinus Fistula

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Abstract

Coronary artery fistulas are rare congenital anomalies for which the ideal management strategies remain under study, with surgical repair being the mainstay of treatment in complex, aneurysmal fistulas.

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Running Title: Giant Coronary Artery Fistula

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Disclosures: Ponraj Chinnadurai is a Senior Key Expert at Advanced Therapies Division, Siemens Medical Solutions USA.

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Glossary of Abbreviations:

CS = coronary sinus

PDA = posterior descending artery

RA = right atrium

RCA = right coronary artery

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Text

A 59-year-old woman presented with right heart enlargement. Computed tomography angiography revealed a 22mm right coronary artery (RCA) draining into an enlarged coronary sinus (CS) (**Figures 1-3**). Cardiac catheterization revealed a Qp:Qs of 2.0. We proceeded with surgery¹. Intraoperatively, a thrill was palpable upon the RCA and right atrium (RA) (**Figure 4**). Circumferential control around the RCA origin was achieved as it emerged from the right sinus of Valsalva into the right ventricular fat. The distal ascending aorta and vena cavae were cannulated. Cardiopulmonary bypass was initiated. The aorta was cross-clamped and a bulldog clamp was placed on the proximal RCA. Del Nido cardioplegia was delivered into the ascending aorta and electrical arrest achieved. Tourniquets were secured around the vena cavae. The distal RCA was opened just proximal to its junction with the CS. An opening into the CS was confirmed by passing a probe from the RCA into the CS, and closed with a bovine pericardium patch using continuous 6-0 Prolene. The right coronary arteriotomy was closed with two layers of 6-0 Prolene. An end-to-side anastomosis of a saphenous vein graft to the posterior descending artery (PDA) was performed using continuous 7-0 Prolene. The RA was opened. Cardioplegia was infused through the vein graft into the PDA, and the CS was inspected to confirm no flow into the CS. The RA was closed. A side-to-side anastomosis of the vein graft to the right ventricular marginal artery was performed using a double diamond technique and continuous 7-0 Prolene. The RCA origin was triply ligated using two separate 4-0 Prolene sutures with a 2-0 silk ligature in between. A single proximal anastomosis to the ascending aorta was performed using a 4.0mm aortic punch and continuous 6-0 Prolene. At the procedure's close, mixed venous oxygen saturation was 76%. Six months later the patient was doing well.

References

1. Rowse PG, Said SM. The need for multiple bypass grafts in repair of right coronary artery-to-coronary sinus fistulas. *Ann Thorac Surg*. 2018. 106(6):p.e299-e301.

Figure Legends

Figure 1. RCA-CS Fistula. Three-dimensional reconstruction of computed tomography angiography of giant RCA-CS fistula. *CS = coronary sinus; LAD = left anterior descending; LCX = left circumflex; LM = left main; PDA = posterior descending artery; PLV = posterior left ventricular; RCA = right coronary artery.*

Figure 2. RCA-CS Fistula Origin. *CS = coronary sinus; LAD = left anterior descending; LCX = left circumflex; LM = left main; PDA = posterior descending artery; PLV = posterior left ventricular; RCA = right coronary artery.*

Figure 3. RCA-CS Fistula Drainage. *CS = coronary sinus; LAD = left anterior descending; LCX = left circumflex; LM = left main; PDA = posterior descending artery; PLV = posterior left ventricular; RCA = right coronary artery.*

Figure 4. Intraoperative Image. Giant right coronary artery to coronary sinus fistula with palpable thrill.





