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Case Report

Surgical implications of anomalous right coronary artery from left sinus of valsalva

Jai Bhagwan*, Anubhav Gupta, Sankalp, Sudesh Kumar, Vijay Kumar Gupta

Department of Cardio-thoracic and Vascular Surgery, PGIMER and Dr. RML Hospital, New Delhi, India

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***Correspondence:**
Dr. Jai Bhagwan,
E-mail: dr.jbdhull@gmail.com

ABSTRACT

Anomalous origin of right coronary artery (RCA) from left coronary sinus (LCS) can pose difficult challenge in patients undergoing cardiac surgery. Authors present a 31 years old male patient diagnosed with Rheumatic heart disease, severe mitral stenosis with moderate aortic regurgitation. Patient underwent Double valve replacement and anomalous RCA was diagnosed intraoperatively. Authors recommend that origins of coronary arteries must be echocardiographically evaluated in all patients undergoing valve surgery, especially when coronary angiography is not indicated/planned.

Keywords: Anomalous RCA, Anomalous coronaries, Double valve replacement

INTRODUCTION

Anomalous origin of right coronary artery (RCA) from left coronary sinus (LCS) is a rare anomaly which can be challenging in patients undergoing cardiac surgery, especially with interarterial course.

Authors present such a case of anomalous RCA originating from LCS with interarterial course, who was diagnosed with rheumatic heart disease and underwent double valve replacement (DVR). Authors could safely avoid injury to RCA because of our practice of avoiding interarterial dissection.

CASE REPORT

A 31 years old male patient was diagnosed with Rheumatic heart disease, severe mitral stenosis with moderate aortic regurgitation.

As patient had no history of angina and no features of ischemia on ECG, coronary angiography was not performed. Patient was taken up for double valve replacement. Intraoperatively no dissection was done between main pulmonary artery (MPA) and Aorta as per our routine practice.

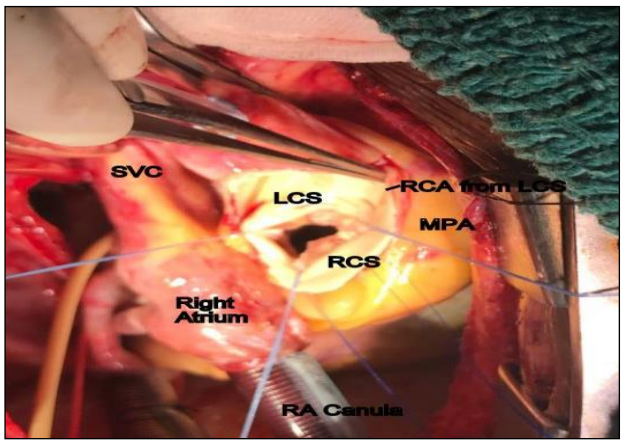

Figure 1: Intraoperative picture of RCA arising from LCS.

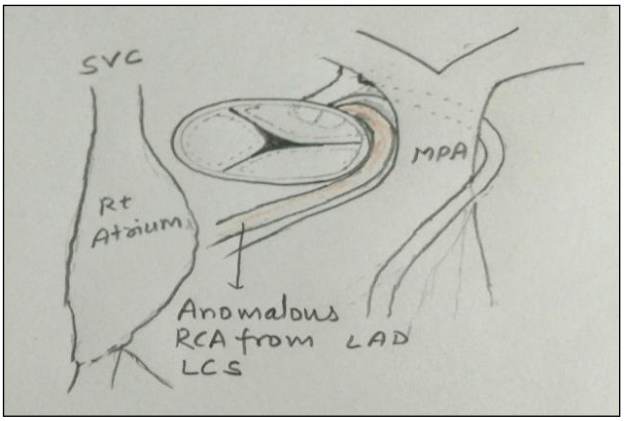

Figure 2: Schematic diagram of per op findings.

After arresting the heart and aortotomy, anomalous origin of RCA was seen from left coronary sinus (Figure 1, 2).

It was to the left and superior to left coronary artery ostium. There was no ostial stenosis. Patient underwent double valve replacement successfully and recovered well in post-operative period.

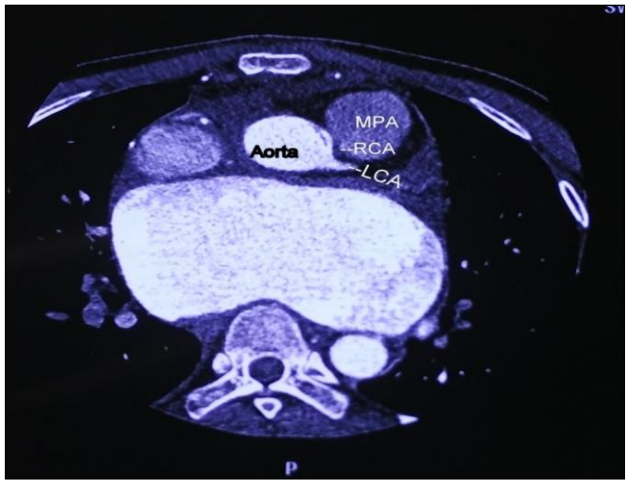

Figure 3: Interarterial course of anomalous.

Figure 4: 3-Dimensional picture of RCA and its course.

On follow up CT angiography was done for documentation and confirmation of our findings and to evaluate rest of RCA course.

CT angiography revealed that RCA was coursing between the MPA and Aorta and then coming to the right atrioventricular groove (Figure 3 and 4). Patient is doing well in follow up.

DISCUSSION

Anomalous origin of the right coronary artery is a rare congenital anomaly that was first described in 1948 by White and Edwards.[1] RCA anomalies can involve the origin or its course or both. Anomalous RCA can originate from LCS, above LCS, left main coronary artery, the pulmonary arteries or even below the aortic valve.

After origin, anomalous RCA can have interarterial (between aorta and pulmonary artery, as in our patient), preaortic, retrocardiac, retroaortic,or prepulmonary artery course. However anomalous RCA usually have benign course.[2] When the RCA arises from the left coronary sinus, it often follows an interarterial course which is hemodynamically important variant, particularly prone to compression. Rarely anomalous RCA with interarterial course can cause symptoms and is potentially dangerous in symptomatic patients.[3] It can present with angina, dyspnea, arrythmia or sudden cardiac death (SCD).[4-6] As it can be diagnosed on routine echocardiography, careful identification of proximal coronaries is important in all patients.[7,8] In cases where routine coronary angiography is not planned/indicated before heart surgery, it becomes vital to look for proximal coronary anatomy on echocardiography. If anomalous origin of coronaries is diagnosed on echocardiography, complete delineation of coronary anatomy should be done with Computed Tomography (CT) in all patients planned for heart surgery. Routine coronary angiography was not done in our case as patients age was less than 35 years of age.[7] American Heart Association guidelines for the management of adults with congenital heart disease in 2008, recommend surgical coronary revascularization for anomalous RCA coursing between aorta and main pulmonary artery when there is evidence of ischemia (class I, level of evidence B).[9] When anomalous RCA follows an interarterial course, dissection between aorta and main pulmonary artery is frought with danger. If not diagnosed preoperatively and found accidentally intraoperatively, it can pose difficulties such as accidental injury during interarterial dissection. However, these variations in coronary artery anatomy are of concern only when there is ostial stenosis or an intramural course.[7] In our case RCA ostium was normal. There is still no clear consensus on whether anomalous origin of RCA from LCS should be addressed or not in asymptomatic patients. New onset clinical events including SCD are extremely rare after third decade of life, so it need not be addressed in older patients.[7] In present case there were no

symptoms and signs suggestive of coronary artery disease and RCA ostium was normal, hence we opted for not surgically addressing anomalous RCA and only performed double valve replacement.

CONCLUSION

Anomalous RCA from LCS with interarterial course can be a surgically challenging with hazardous results if injured accidentally. Authors recommend that origins of coronary arteries must be echocardiographically evaluated in all patients undergoing valve surgery, especially when coronary angiography is not indicated/planned.

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Ethical approval: Not required

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