

SURGICAL REPAIR OF CIRCUMFLEX CORONARY ARTERY FISTULA DRAINING IN TO THE CORONARY SINUS

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All the authors contributed significantly to the research that resulted in the submitted manuscript.

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ABSTRACT

we report a 62 year old female patient who was admitted with grade 3 mitral regurgitation, grade 3 aortic regurgitation and grade 3 tricuspid regurgitation, coronary angiography revealed huge circumflex coronary artery fistula draining to the coronary sinus ,we ligated the fistula after doing bypass graft to the major branch of the circumflex artery using segment of great saphenous vein, concomitant with repair of mitral and tricuspid valve and replacement of the aortic valve. The patient went uneventfully after the operation and she was discharged from the hospital ,post discharge follow up was uneventfully.

Key Words: Fistula, Coronary Sinus, Circumflex Artery, Coronary Artery Aneurysm, CABG

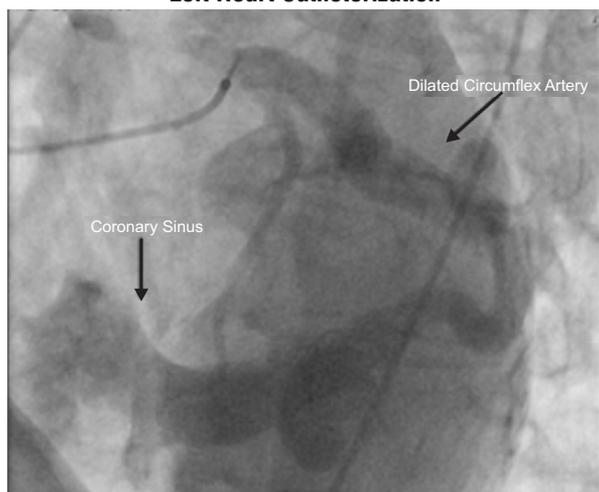
INTRODUCTION

Coronary artery fistula is a direct communication between a coronary artery and the lumen of one of the four cardiac chambers, coronary sinus or its tributary veins, or the superior vena cava, pulmonary artery, or pulmonary vein close to the heart. It's very rare congenital anomalies which constitute 0.2–0.4% of all congenital heart diseases, with rare cases previously reported in the literature.¹⁻⁵ More than 90% of fistulae open into right heart chambers or their connecting vessels. True AV fistulae to the veins themselves (coronary sinus or its major branches or vena cave) are uncommon. Thus, about 40% connect to right ventricle, 25% to right atrium, 15% to pulmonary artery, 7% to coronary sinus, and only 1% to superior vena cava. Fistulae entering the right side of the circulation cause rapid systolic and diastolic run off from the aorta and left to right shunt. A fistulous connection into a cardiac chamber or major vessel often causes a marked dilation of the donor coronary artery leading to aneurysm formation.⁶ The fistulae arise frequently from right coronary and left anterior descending arteries. The fistulous connection of the aneurismal circumflex coronary artery to the coronary sinus has been previously reported as an extremely uncommon form.

CASE REPORT

We report a 62-year-old women presented with chronic palpitation, chest pain and congestive symptom. On echocardiogram found to have grade 3 aortic regurgitation, grade 3 mitral regurgitation, grade 4 tricuspid regurgitation, and huge right atrium. Coronary angiography revealed normal right coronary and left anterior descending arteries. Huge coronary fistula arising at the origin of the circumflex coronary artery draining into the coronary sinus markedly dilated and tortuous LCX, which was aneurismal and connected to the coronary sinus through a fistula. (Figure 1-4).

Figure 1: Coronary Sinus Fistula Seen in Left Heart Catheterization



Surgical intervention was performed through median sternotomy, cannulation of the ascending aorta, bicaval cannulation. Heart arrested using antegrade crystalloid cardioplegia with local mild hypothermia. The aneurismal circumflex artery was ligated at its origin and then opened over its entire course. And the fistulous connections into the coronary sinus were obliterated with a running 4-0 suture. The major obtuse marginal artery after the communication

Figure 2: Coronary Sinus Fistula Seen in Levocardiography

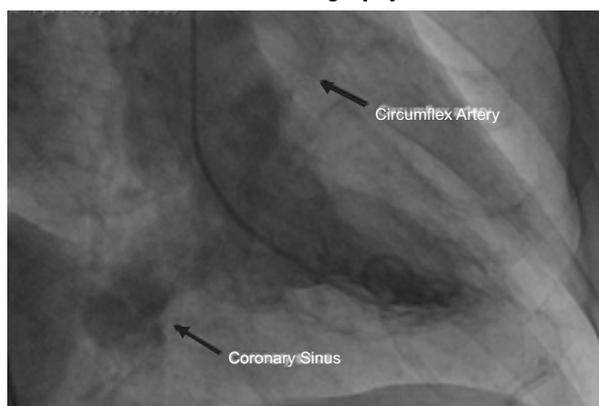


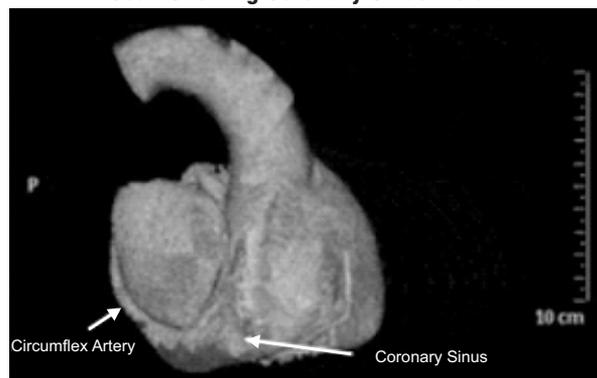
Figure 3: Computed Tomographic Scan Showing an Aneurysmatic Circumflex Artery & Coronary Sinus Fistula



was bypassed using reversed segment of great saphenous vein (Figure 5). De Vega tricuspid annuloplasty, aortic valve replacement and mitral valve repair were performed concomitantly, cross clamp was removed after full deairing of the heart, and the patient was weaned from the cardiopulmonary bypass smoothly.

Patient transferred to the ICU, kept on ventilator for 6 hours the we started weaning her, she was extubated after 8 hours of the surgery, without significant bleeding, no rhythm

Figure 4: 3 D Reconstructed Computed Tomographic Scan Showing Coronary Sinus Fistula



disturbances, no need for inotropes, and she was transferred to the ward in the second day of operation ,discharged from the hospital in day 7 of operation, 2Decho revealed good biventricular function and all the valves functioning well ,we kept her on antiplatlet therapy and warfarine to keep INR between 3 and 3.5. She was followed as an outpatient in the clinic by physical examination, ECG, and 2D Echo, all were well and her functional class after 3 months of operation was not impaired.

DISCUSSION

The arteriovenous coronary artery fistula were first described by Krause in 1865.⁵ The first operation was done by Biörck and Crafoord. It is a rare entity ,mostly diagnosed

Figure 5: Three Dimensional Reconstructed Computed Tomographic Scan Showing Coronary Sinus Fistula



and corrected in early childhood. Most repairs of coronary AV fistulas in childhood are in conjunction with other congenital problems. Some are asymptomatic in childhood and the manifestation started to appear in adults. Percutaneous closure of coronary fistulas has been reported, but these techniques do not eliminate the risk for rupture of the aneurysmal circumflex artery, the literatures show a low rate of complications and well tolerated in adults and recommend conservative treatment. However, in cases of symptomatic patients and high-flow arteriovenous shunts closure is recommended to prevent complications such as rupture, heart failure, myocardial ischemia, and endocarditis.

When symptoms of congestive heart failure caused by longstanding volume overload appears. The onset of atrial fibrillation, ventricular arrhythmia, acute myocardial infarction, or ischemia can precipitate the appearance of these symptoms. Antegrade microcoil embolization of the fistulous connection by catheterization is indicated to prevent progressive congestive heart failure, endocarditis, and coronary aneurysm formation with rupture or embolization.^{3,5} Surgical closure is especially indicated in cases of coronary artery aneurysm or in cases in which a

concomitant operation is required for an associated lesion.

CONCLUSION

Coronary artery fistula although it is rare cardiac anomaly but it is the most common coronary arterial malformation and can be corrected with almost no morbidity and mortality.

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