motion of the right coronary cusp. A recent report describes rupture of an aneurysm of the right sinus of Valsalva into the right atrium which resulted in premature opening of the pulmonic valve and dense echoes in the right atrium which moved through the tricuspid orifice in diastole. This case demonstrates that in a clinical setting compatible with rupture of a sinus of Valsalva aneurysm, inability to visualize the noncoronary cusp of the aortic valve echocardiographically may be helpful in establishing the diagnosis.

REFERENCES

Coronary Artery Left Ventricular Fistula

Dasika M. Satri, M.D.;* Rohinton K. Balsara, M.D.;† and Faustino N. Niguidula, M.D., F.C.C.P.‡

A patient with left coronary artery fistula (septal branch) to left ventricle with aneurysm formation during its course in the interventricular septum is presented. Surgical management using the right ventricular approach is discussed.

Congenital communication of a coronary artery with a cardiac chamber is rare and interesting for several reasons. It enters into the differential diagnosis of a continuous murmur which is a relatively common physi-
within the interventricular septum with fistulous communication to left ventricle.

**CASE REPORT**

An 11-year-old Negro boy was known to have a heart murmur since birth and was referred to us in November, 1973. He was quite active and participated in sports in keeping with his age. In the last few months, he had experienced occasional vague chest pain, and of late this had increased in frequency and duration. Four other siblings in the family were apparently normal with no evidence of heart disease.

On physical examination, he was a well developed, well nourished, 11-year-old boy in no acute distress. The pulse rate was 68/minute and regular. Blood pressure in the right arm was 110/70 mm Hg. The point of maximal impulse was in the left fifth intercostal space, within the mid-clavicular line. A systolic thrill was palpable over the third left intercostal space, parasternally. A loud pansystolic murmur, grade 4/6, was heard over the left 3rd and 4th intercostal spaces and radiated over the entire precordium. In addition, a grade 2/6 early diastolic murmur was heard over the same area. Chest x-ray film revealed the heart size to be normal and the pulmonary vasculature to be within normal limits. The electrocardiogram showed normal sinus rhythm, with an axis of +40° and suggestion of LVH.

Cardiac catheterization data revealed no evidence of intracardiac shunting or elevation of pressures. The cineangiographic studies, with injection of dye into the root of the aorta, revealed the left main coronary artery to be dilated and from this arose a moderately dilated branch which led into an aneurysmal dilatation, which in turn emptied into the left ventricle. From the limited cineangiographic studies, it was difficult to be sure which branch was involved in the aneurysm formation (Fig 1 and 2). The association of the fistula with a large aneurysmal dilatation and its potential complications prompted surgical intervention.

At surgery, the left main coronary artery measured nearly 6 mm in diameter and the proximal portion of the left anterior descending artery measured 5 mm in diameter. The fistula appeared to be arising from the first septal branch of the left anterior descending artery where it entered the septum. The first septal branch was encircled with a heavy silk tie and was temporarily occluded. This resulted in acute changes in ST segment lead 2 of the ECG, suggesting myocardial ischemia.

In view of this, cardiopulmonary bypass was instituted and under moderate hypothermia, the aneurysmal sac was approached through a right ventriculotomy incision. This revealed an aneurysmal sac measuring 4 × 4 cm situated in the interventricular septum, bulging into the right ventricular outflow tract area. It was incised longitudinally and the aneurysm cavity entered.

Exploration of the cavity revealed that this was being fed by the first septal branch of the left anterior descending artery and was eventually emptying into the left ventricle through an opening of about 1 cm in diameter. The mouth of the feeding vessel was suture-ligated under a brief period of ischemic arrest. The aneurysmal sac itself was obliterated by coapting the opposing surfaces with multiple interrupted sutures bolstered with two strips of felt. By this method, the opening of the fistula into the left ventricle was also obliterated. Postoperation, the patient has done extremely well with disappearance of the murmur, and with no electrocardiographic changes, except for evidence of complete right bundle branch block.

**DISCUSSION**

Coronary artery fistula may drain into any cardiac chamber, in order of frequency: right ventricle, right atrium, left atrium, and left ventricle. It is felt that these fistulae should be repaired surgically when diagnosed, although the surgical treatment of asymptomatic infants with small shunts can probably be postponed until later in childhood.

The preferred surgical approach, which allows optimal exposure of the total coronary vascular tree, is the median sternotomy. The arteries involved in forming the fistula are usually evident as dilated and tortuous vessels, with a thrill palpable over them. Some of these vessels may attain large size and may become aneurysmal. The surgeon then should attempt temporary occlusion of the fistula at its distal end, and make sure that this results in obliteration of thrill without associated ischemic changes. Interlocking horizontal mattress sutures, as described by Cooley and Ellis, may be employed to obliterate the fistula. Alternatively, extracorporeal circulation may be used to achieve closure of the coronary artery fistula either from inside the involved chamber or via an arteriotomy directly over the site of fistula. Most coronary artery fistulas may be closed without bypass, but it is advisable to have a pump oxygenator on standby for use if needed.

**REFERENCES**


Unilateral Pulmonary Edema with Contralateral Thoracic Sympathectomy in the Adult Respiratory Distress Syndrome*

**Michael R. Flick, M.D.**, **Garrick B. Kantzler, M.D.**; **A. Jay Block, M.D., F.C.C.P.**

*From the Department of Medicine, University of Florida College of Medicine and the Veterans Administration Hospital, Gainesville.
**Fellow, Pulmonary Medicine.
†Resident, Department of Medicine.
‡Associate Professor of Medicine and Anesthesiology, and Chief, Pulmonary Division, Department of Medicine.
Reprint requests: Dr. Flick, VA Hospital, Gainesville 32602

736 FLICK, KANTZLER, BLOCK

CHEST, 68: 5, NOVEMBER, 1975