

# Iatrogenic aortocoronary dissection successfully treated by coronary intervention

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## Abstract

A 77-year old male retired decorator presented with an 18-month history of exertional dyspnea. Coronary angiography was performed via the right femoral artery using 6 French JL4 and JR4 diagnostic catheters. A catheter possibly seated in a plaque caused dissection of the right coronary artery with the injection of the contrast. Timely coronary intervention with stenting resulted in sealing the entry point with complete healing of the aortic root and TIMI-3 patency of the right coronary artery. Major cardiac surgery was, therefore, averted.

## Case Report

A 77-year old male retired decorator presented with an 18-month history of exertional dyspnea, predominantly on walking uphill. His exercise tolerance was two miles on a flat surface. He denied chest pains. He did not complain of paroxysmal nocturnal dyspnea (PND), orthopnea or pedal edema. Past medical history included hypertension, gout and paroxysmal atrial fibrillation. He was a non-smoker and drank 7 units of alcohol a week. Echocardi-

ogram (ECG) showed left bundle branch with QRS duration of 175 ms and severe left ventricular (LV) impairment with ejection fraction of 25% with global hypokinesia. Valves were normal in appearance. Coronary angiogram was programmed to rule out ischemic etiology.

Coronary angiography was performed via the right femoral artery using 6 French JL4 and JR4 diagnostic catheters. Coronary angiography of the left arterial system showed significant stenoses in LAD and LCX. One image of the RCA was obtained and this showed diffuse significant disease proximally and in the mid-course. There was no damping of pressure prior to injection. Unfortunately, a catheter possibly seated in a plaque caused dissection of the RCA with the injection of the contrast. The dissection plane from proximal RCA extended retrograde into the aortic root (Figure 1, Video 1). The patient experienced chest pain with slight ST elevation in inferior leads. There was no drop in blood pressure. We proceeded to coronary intervention with the intention of sealing the entry point of the dissection in proximal RCA. The lesion in the RCA was crossed with BMW (balance middle weight wire), predilated with Ryugin 1.25×15 mm, maverick 2×12 mm and sprinter 2.5×20 mm balloons. Proximal RCA was stented up to ostium with Liberte 2.75×20 mm stent and more distally with Liberte 2.5×18 mm stent. A CT scan was taken post procedure and this showed dissection involving 50 mm of ascending aorta from the right coronary ostium (Figures 2 and 3). Repeat CT performed two days later revealed that the contrast was no longer visible and there was no suggestion of persistent dissection flap (Figure 4). The aortic root appeared to be completely healed with no convincing residual dissection. Furthermore, the stent appeared to be placed in an excellent position just at the ostium of the RCA.

coronary angiography. Retrograde dissection of the RCA extending into the sinus of Valsalva and ascending aorta is a rare and life-threatening complication during coronary angioplasty, with reported incidences ranging from 0.03-0.15%.<sup>1</sup> Dissection of the right coronary artery (87%) occurs more frequently than left coronary artery (13%) and in at least two-thirds of the cases described, dissection occurs when injecting contrast agents.<sup>2</sup> In our

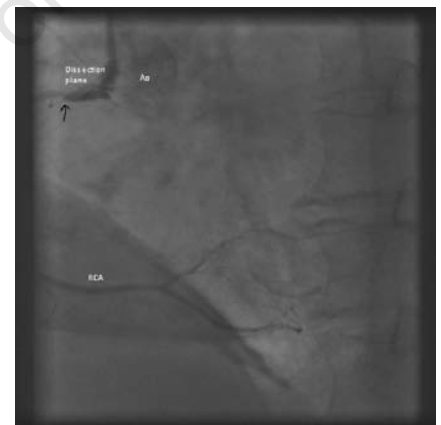


Figure 1. Right coronary artery angiogram. Arrow indicates entry point of dissection plane which extends into aorta.



Figure 2. CT aortogram. White arrow shows stent in proximal RCA. Black arrow points at dissection plane. Asterisks indicate dye in the dissection plane. RA, right atrium; RV, right ventricle; LA, left atrium; LV, left ventricle and aorta.

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## Discussion

Aortocoronary dissection is a rare complication of percutaneous coronary intervention or



Figure 3. CT aortogram. Black arrow indicates dissection plane. Arrow head indicates calcification of aortic valve.



Figure 4. RCA stent in an excellent position and no dye staining in dissection plane. Arrow head indicates calcification of aortic valve.

patient, the catheter tip being seated in a plaque and the forceful prolonged injection of contrast could have contributed to proximal right coronary dissection with the dissection plane extending retrogradely into the aorta.

On reviewing the literature, over 80 case reports of aortocoronary dissections occurring during coronary angiography have been published.

Alfonso *et al.*<sup>3</sup> presented the first case of such a complication managed percutaneously by stenting. Since then, most of the reported cases have been managed successfully by a percutaneous approach. It has been reported that patients with limited aortic involvement were successfully managed with stenting of the entry point of the coronary dissection, whereas aortic dissection extending more than 40 mm up the aorta from the coronary ostium required surgical intervention.<sup>4</sup> In our patient, the dissection plane extended 50 mm up the aorta indicating that percutaneous coronary intervention can be effective in treating cases with more extensive dissection. Timely coronary intervention resulted in sealing the entry point with complete healing of the aortic root and TIMI-3 patency of RCA. Furthermore, major cardiac surgery was averted.

In cases of suspected aortic dissection, computed tomography is the initial diagnostic method of choice.<sup>5</sup> Aortocoronary dissection plane was clearly defined by CT scan in our patient. Transesophageal echocardiogram can be used in these cases.<sup>3</sup> As most of the dissections do not propagate once the entry point is sealed with stenting, conservative watchful

waiting may be sufficient initially and imaging could be considered if chest pain recurs. Also, in this report, a follow-up CT scan at 48 h showed complete healing of the aortic root. We feel that a single CT scan at 48 h following successful PCI could provide reassurance of a successful outcome and help to plan early hospital discharge.

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