

IMAGES IN CARDIOLOGY

## Aortocoronary dissection complicating percutaneous angioplasty

### Angioplastia percutânea complicada por uma dissecção aortocoronária

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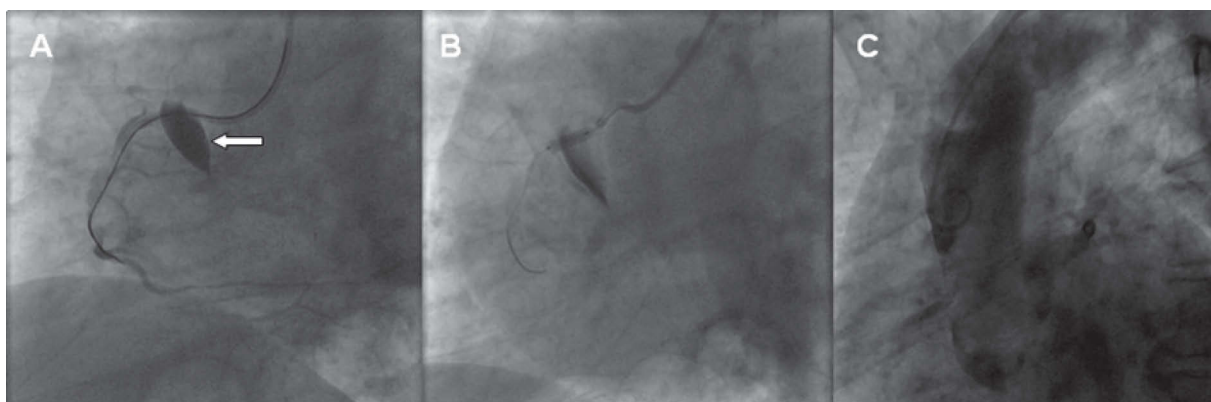
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#### Introduction

A 56-year-old man was admitted to our hospital for elective coronary angioplasty of a chronic total occlusion (CTO) of the right coronary artery (RCA). After insertion of a right femoral sheath, the RCA was engaged with a 6 French Amplatz AL-2 (Cordis, Miami, FL, USA) guiding catheter. Recanalization

was begun using a 0.014-inch Miracle 3 guidewire (Asahi Intecc, Japan). At this stage, an ostial dissection flap of the RCA with immediate retrograde extension to the ascending aorta was noticed (Figure 1). Stenting of the RCA ostium with a Xience Prime 3.0 × 15 mm stent (Abbott Vascular, Santa Clara, California, USA) was performed, followed by a PTFE-covered 3.0 × 19 mm Jostent graft

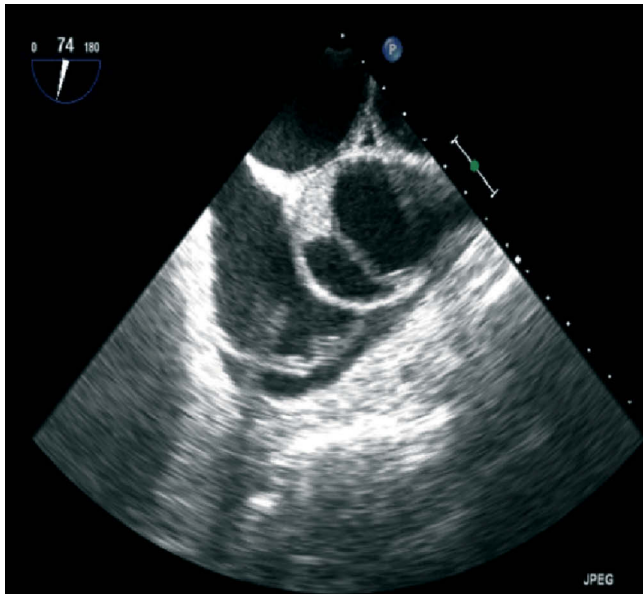


**Figure 1** Coronary angiogram in left anterior oblique view clearly demonstrating contrast filling the false lumen of the aortic wall (A); stenting the RCA ostium (B); aortography showing contrast inside the aortic wall (C).

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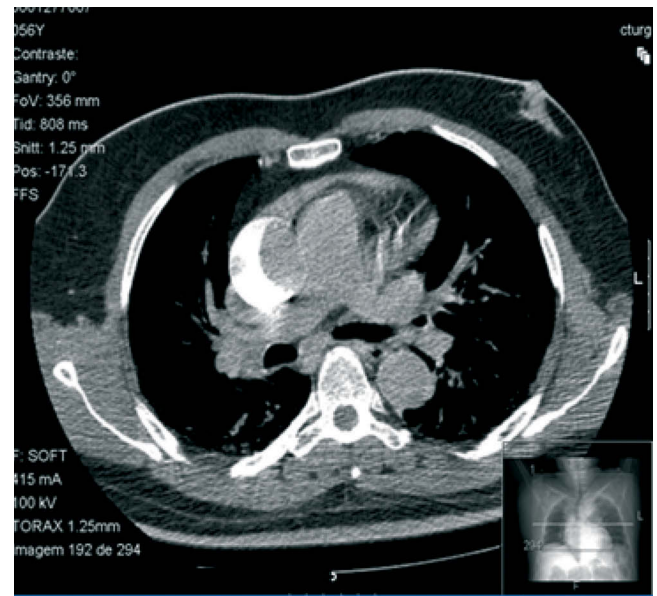
(Jomed, Rangendingen, Germany), with apparent success. Transesophageal echocardiography showed a flap in the ascending aorta, extending up to the beginning of the aortic arch, with a partially thrombosed false lumen. No signs of pericardial effusion or aortic insufficiency were noted (Figure 2). A chest computed tomogram (CT) confirmed an ascending thoracic aorta dissection with a thrombosed false lumen 18 mm in diameter, sparing the aortic arch (Figures 3 and 4A). The patient was admitted to the coronary care unit with mild chest pain but hemodynamically stable. He was



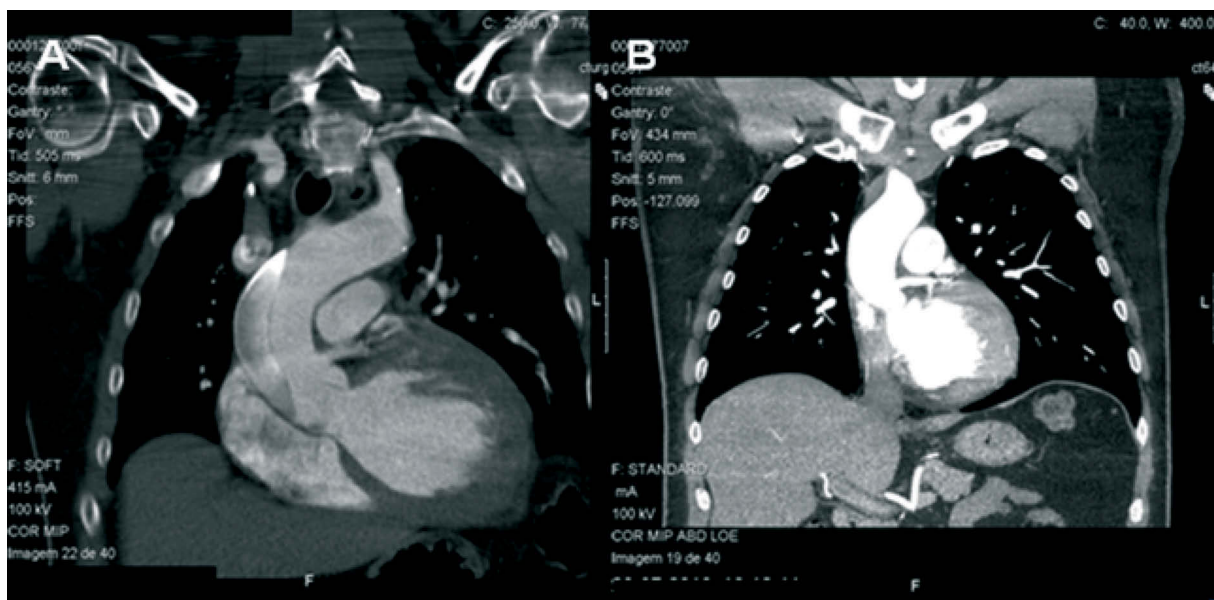
**Figure 2** Transesophageal echocardiography performed immediately after the complication, in modified short-axis view at the level of the aortic root, showing the aortic flap and the partially thrombosed lumen.

managed conservatively. At the three-month follow-up visit, he was asymptomatic and the chest CT revealed complete resolution of the aorta parietal hematoma (Figure 4).

Iatrogenic aortocoronary dissection during percutaneous coronary intervention in patients with CTO is a rare but well-recognized complication<sup>1,2</sup>. In a retrospective study, the overall incidence was 0.02%<sup>3</sup>. It is typically associated with attempts to recanalize the RCA. This artery has a tortuous anatomy and smaller size, which make crossing the lesions more difficult and can predispose to iatrogenic



**Figure 3** Chest CT scan showing the ascending aortic dissection with the contrast inside the false lumen in the posterolateral wall of the aorta.



**Figure 4** Chest CT scan immediately after percutaneous intervention showing the aortic dissection sparing the aortic arch and its main vessels (A); CT scan three months after discharge revealing complete reabsorption of the intramural hematoma (B).

dissection<sup>4</sup>. Furthermore, the RCA seems to be more prone to retrograde dissection than the left coronary artery, since its periostial wall and sinotubular junction are formed of less smooth muscle cells and a looser matrix of type I collagen fibers<sup>5</sup>. Other potential risk factors include calcification of the aortic root and the coronary lesion site. The type of catheter can also be implicated. The choice of an Amplatz catheter, which provides superior backup support, must be weighed against the associated higher incidence of coronary dissection.

Management of coronary dissection extending to the ascending aorta is challenging. Immediate recognition of the retrograde propagation is critical in order to protect the RCA ostium by stenting. The decision whether to proceed with surgery depends on clinical and hemodynamic stability. Several case reports describe a conservative approach, but a significant publication bias cannot be excluded<sup>6</sup>. The decision to proceed surgically is straightforward when there is an unstable clinical condition such as myocardial infarction, aortic regurgitation, hemopericardium or progression of the aortic dissection into the main branches of the aorta. On the other hand, a "watch and wait" strategy is reasonable in the stable patient with expected long-term good results<sup>7</sup>.

Cardiologists must keep in mind dissection into the aortic root which, although rare, is a life-threatening complication of coronary angioplasty. Minimizing the risk by choosing appropriate catheters is critical. When it occurs, initial ostial stenting is crucial and an opportunity for conservative

treatment. If it results in clinical instability, surgery is the only life-saving treatment option.

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