

When Bigger Is Not Better: Angiographic Appearance of Iatrogenic Dissection

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Citation

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Abstract

Interventionalists require a myriad of techniques at their disposal in order to successfully stent chronically occluded coronary arteries. One fundamental step for the performance of “safe” coronary angioplasty in this setting is to confirm that the coronary guidewire is truly intraluminal prior to balloon inflation and stent deployment, by injecting dilute contrast through the lumen of an over-the-wire balloon catheter or microcatheter placed distally in the vessel (1,2). However, the appearance of vessel dissection may sometimes be subtle using this technique and overt angiographic “alarm-bells” such as contrast staining/layering and poor distal flow may be absent. We provide an example of an additional angiographic feature of vessel dissection that may be noted when injecting contrast through over-the-wire balloon catheters.

CASE REPORT

A 59 year old male underwent PCI to a chronic occlusion of the left anterior descending artery (LAD). At angiography the LAD was occluded beyond the first diagonal vessel and retrograde filling of the second diagonal from the circumflex was seen (Fig. 1). Initial attempts to cross the occlusion with a soft wire (0.014' Traverse wire (Abbott Vascular, Santa Clara, CA)) and a 2.5x15mm over-the-wire balloon were unsuccessful. After some difficulty a Pilot 150 guidewire (Abbott Vascular, Santa Clara, CA) was passed into the second diagonal artery, the balloon advanced distally and the guidewire removed. Dilute contrast injection through the lumen of the over-the-wire balloon did not show any contrast staining (Fig 2). However, in comparison to the diagnostic images the caliber of the diagonal was subtly larger than expected and there was an absence of small sidebranches (Fig. 2). Suspecting the wire had passed subintimally, the balloon catheter was withdrawn proximally until further contrast injections confirmed an intraluminal position. The diagonal was subsequently rewired and repeat injections of dilute contrast now showed both the presence of the normal expected sidebranches and a vessel caliber comparable to that of the diagnostic images suggesting the balloon catheter was in the true lumen (Fig 3). The LAD was then wired and further injections through the over-the-wire balloon again confirmed an intraluminal location. Multiple balloon inflations were then performed and subsequently a 2.75x24mm Driver stent and a 3.0x30mm Driver stent

(Medtronic, Santa Rosa, CA) were deployed in the distal and mid LAD in an overlapping fashion. High pressure post dilatation was performed with a 3.25x12mm Quantum balloon to 18atm in the proximal stent. Final angiography revealed TIMI III flow in the LAD and residual dissection of the diagonal artery (Fig 4). As there was no ongoing ischaemia we elected not to stent the diagonal artery.

Injecting dilute contrast through the lumen of an over-the-wire balloon catheter to exclude subintimal passage is an important technique in chronic occlusion stenting. In order to achieve successful outcomes, it is imperative that the interventionalist is able to detect one or more subtle angiographic clues of vessel dissection and subintimal passage.

Figure 1

Figure 1: RAO cranial view showing a mid LAD occlusion and collateral filling of the second diagonal artery.

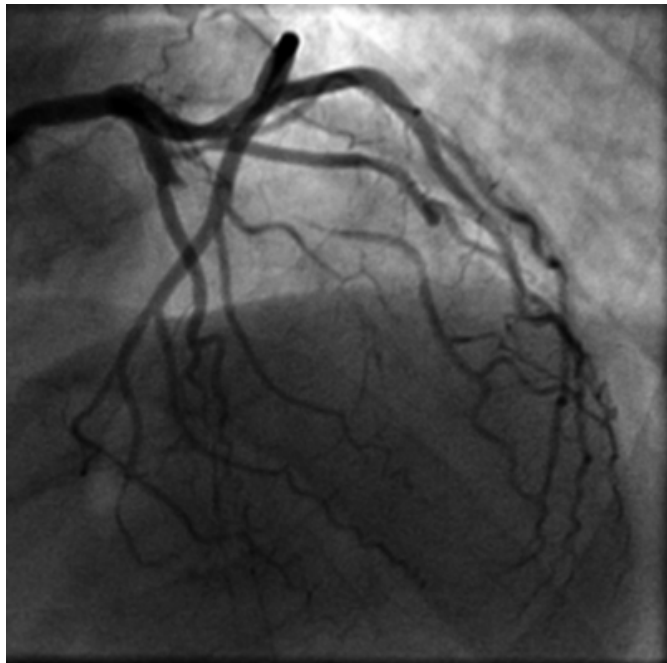


Figure 2

Figure 2: Dilute contrast injections into the second diagonal through an over-the-wire balloon. Vessel dissection is suggested by the abnormally large caliber and absence of small side branches compared to Fig 1.

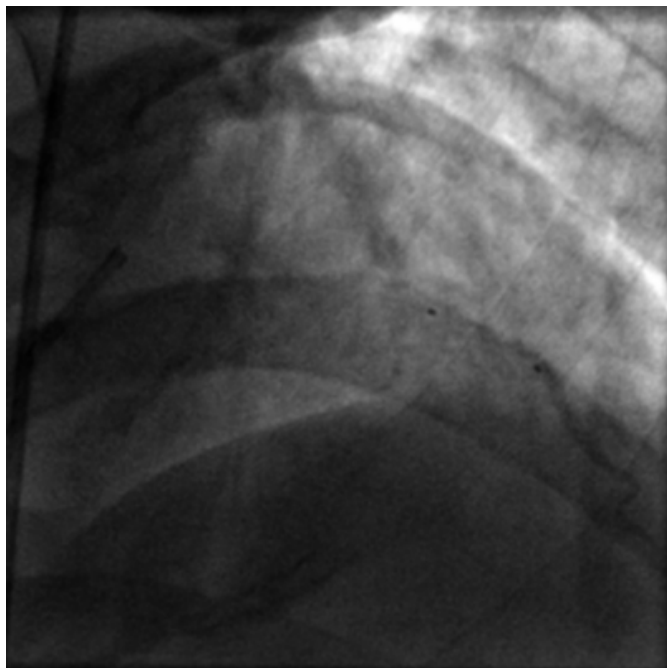


Figure 3

Figure 3: After rewiring the diagonal repeat contrast injections through the over-the-wire balloon are performed. Note the presence now of multiple side branches and the difference in vessel caliber compared to Fig 2 suggesting the balloon catheter is now in the true lumen.

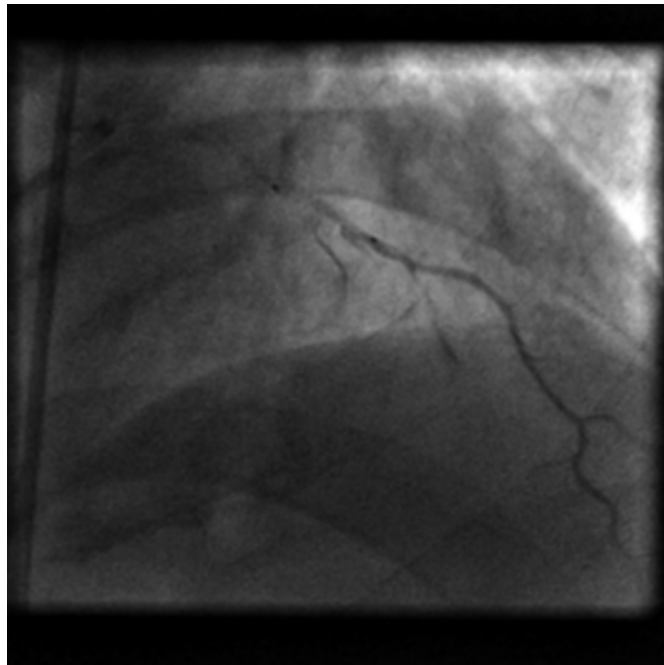
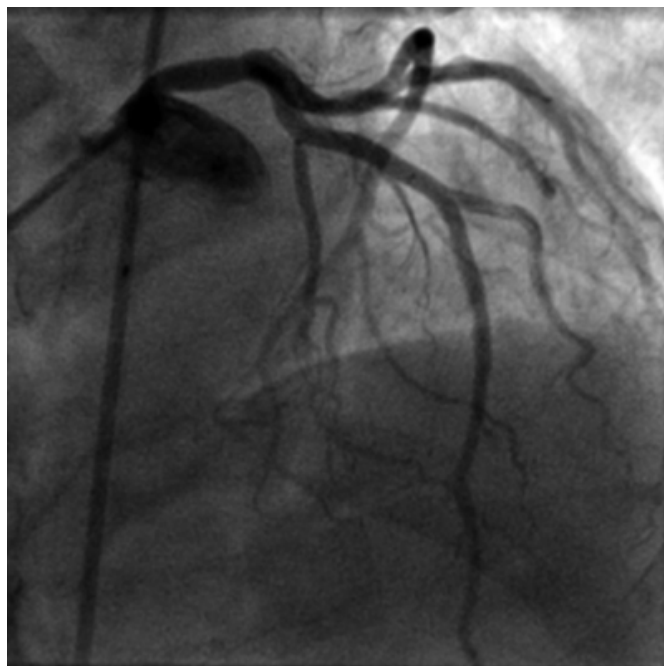


Figure 4

Figure 4: Final angiography after LAD stenting. Residual dissection in the second diagonal artery is noted.



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