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IMAGES IN CARDIOLOGY

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Covering your mistakes: PTFE covered stents in iatrogenic coronary dissection

A 46 year old man with type 2 diabetes mellitus and hypercholesterolaemia presented with an acute inferior ST elevation myocardial infarction, treated with streptokinase. He had persistent ST elevation and was transferred for emergency angiography which documented two severe right coronary artery (RCA) stenoses (panel A). Using a 6 French JR4 guide catheter, the proximal lesion was treated with a 3.5×32 mm BSC Liberte stent, post-dilated with a 4.0×20 mm balloon (panel B). Positioning of the second 2.75×12 mm stent at the crux required deep guide catheter engagement. Angiography following deployment demonstrated extensive retrograde dissection into the coronary sinus of Valsalva (CSV) and extravasation into the pericardial space (panel C). A 3.5×12 mm polytetrafluoroethylene (PTFE) covered stent (Abbott Vascular) was expeditiously deployed (18 atmospheres) at the ostium of the RCA, immediately arresting the flow of contrast. Another 3.5×12 mm PTFE covered stent was then deployed distal to the first, with overlap, sealing off the dissection (panels D and E). The patient remained haemodynamically stable throughout.

An echocardiogram during the procedure showed only a rind of fluid adjacent to the posterolateral aspect of the left

ventricle. A subsequent computed tomographic (CT) scan of the chest showed no evidence of aortic dissection or significant pericardial effusion (panel G). Angiography at three months showed a satisfactory result (panel F).

Extensive coronary artery dissections with or without rupture occasionally occur during percutaneous interventions, but retrograde extension into the CSV is rare. It occurs more commonly with RCA than left coronary dissections, possibly because of differences in the histology of the proximal coronary arteries. Dissection is often guide catheter, guidewire or balloon inflation induced, and further propagated by contrast injection and/or coronary flow. Conservative treatment may be adequate for limited dissections. Extensive dissections with pericardial extravasation require immediate treatment; the use of covered stents obviates the need for high risk emergency surgery.

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(A) Baseline angiography of the right coronary artery (RCA). Stenotic lesions were identified in the mid RCA and at the crux (arrows). (B) A stent has been successfully deployed in the proximal lesion and another positioned across the distal lesion (arrows). (C) Proximal dissection extending into the coronary sinus of Valsalva (CSV) (thin arrow) with contrast extravasation into the pericardium (bold arrow). (D, E) PTFE covered stents have been deployed in the proximal vessel, sealing off the dissection. Contrast hold up remains in the aortic wall (thin arrow) and pericardium (bold arrow) but no active flow is observed. (F) Follow up angiography in three months showing patent stents and no evidence of dissection. (G) CT scan of the chest after initial percutaneous coronary intervention showing the PTFE covered stents in the proximal right coronary artery with no evidence of aortic dissection or significant pericardial effusion. LAO and lateral: left anterior oblique and lateral (LAO 90°) angiographic views.