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IMAGE

Stenting for an internal mammary artery graft kink

Stenting d'un pontage artériel mammaire interne

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Received 23 June 2010; received in revised form 29 June 2010; accepted 5 July 2010
 Available online 22 February 2011

KEYWORDS

Internal mammary
artery graft;
Coronary graft kink

MOTS CLÉS

Pontage mammaire
interne ;
Greffon coronaire

A 60-year-old male cigarette smoker with hypertension and hyperlipidaemia underwent coronary artery bypass surgery after hospitalization for unstable angina. An in situ, pedicled, left internal mammary artery (LIMA) was grafted to the left anterior descending (LAD) artery, and vein grafts were placed to the right posterior descending and obtuse marginal arteries. One month later, the patient underwent repeat angiography for severe angina; this revealed patent vein grafts and a significant LIMA stenosis at the site of a kink (Fig. 1), which was refractory to selective catheter injection of nitroglycerine. Because no other possible culprit lesion was revealed, we intervened directly with deployment of a 3.0 mm × 15 mm everolimus-eluting stent across the kink site. This led to complete resolution of the stenosis; sustained relief of angina was confirmed at 1-year follow-up.

Kinking of an IMA graft is a rare cause of significant stenosis and recurrent ischaemia. It is produced secondary to distortion of the geometry of the graft either due to stretching of the naturally tortuous IMA to facilitate grafting or looping of a redundant graft induced by inadvertent twisting. Kinking may be intermittent and produced secondary to marked bending of a redundant graft induced by lung motion. Both pedicled and skeletonized IMAs develop kinks with similar frequencies; however, the associated stenosis severity is significantly higher in the latter, possibly due to the small amount of connective tissue left around the graft to serve as a cushion that facilitates kink development at a sharper angle. Furthermore, documented cases of spontaneous resolution of such kinks have implicated local wall oedema and haematoma produced during harvest as possible causes of IMA graft kinking. Perioperative IMA spasm may simulate a kink and although it may be intractable, its resolution after intraconduit administration of vasodilators facilitates their differentiation.

Abbreviations: IMA, internal mammary artery; LAD, left anterior descending; LIMA, left internal mammary artery.

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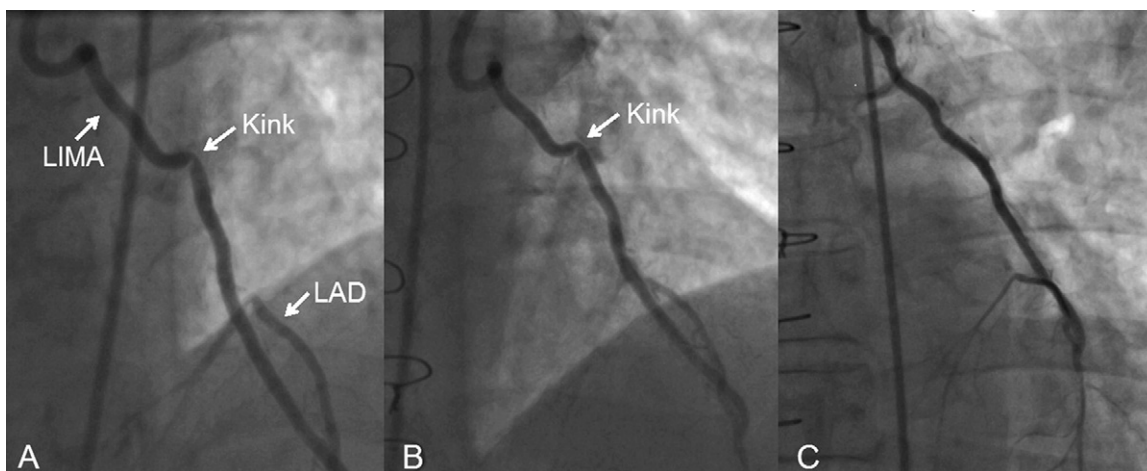


Figure 1. (A) Posteroanterior and (B) right anterior oblique view of the kinked left internal mammary artery (LIMA) graft to the left anterior descending (LAD) artery. Note the significant stenosis produced at the kink site. (C) Post-stenting LIMA angiogram displaying complete resolution of the stenosis without secondary kink development.

Kink-site stenosis usually resolves completely and only rarely progresses to a more severe lesion. Thus, treatment is justified only in the presence of ischaemic sequelae. Thoracotomy to uncoil and fix a redundant IMA graft along the anterior surface of the right ventricle may be undertaken. In other cases, stenting of the kink site may be employed, with an anticipated high procedural success and good outcome. Unlike older-generation, stiff stents, the flexible stents used

today can accommodate the normal contour of the vessel and prevent secondary kink development; however, relatively long stents may be required for such a purpose.

Conflicts of interest statement

None.