

CLINICAL IMAGES

Coronary stent fracture

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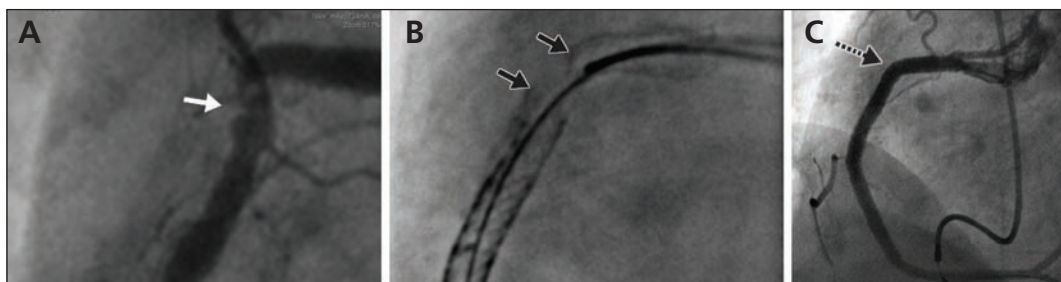


Figure 1: (A) Angiogram of the right coronary artery of an 82-year-old man with complete heart block showing a 95% stenosis (white arrow) in the proximal segment. (B) High magnification view (stent-booster) of the proximal right coronary stent showing complete fracture of the previously implanted bare-metal stent (black arrows). (C) Angiogram taken after percutaneous coronary intervention showing restored coronary flow at the site of previous in-stent restenosis (dashed arrow).

An 82-year-old man presented with fatigue and was diagnosed with bradycardia, associated with third-degree heart block. The patient had required implantation of bare-metal stents in each of the major epicardial vessels nine years previously, but was currently free of angina. Because of a modest rise in his troponin I level to a peak of 0.88 (normal < 0.04) µg/L, coronary angiography was arranged.

Angiography showed severe in-stent restenosis of the proximal right coronary artery stent (Figure 1A, B). Ischemia was not felt to be the cause of the patient's heart block, and he underwent implantation of a single-lead VVIR pacemaker for management of symptomatic bradycardia. Two weeks later, high-resolution stent-booster radiography and intravascular ultrasonography confirmed the suspected stent fracture (Appendix 1, video available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.101078/-/DC1). The patient had elective percutaneous coronary intervention with placement of two bare-metal stents in the proximal right coronary artery at the site of the fracture and two zotarolimus-eluting stents in the mid-right coronary artery, with restoration of coronary flow on follow-up angiography (Figure 1C). The patient

was discharged home and in the one year of follow-up, remained free of symptoms.

Fracture of coronary stents is an underrecognized complication of percutaneous coronary interventions. Initially reported to be found in 1% of follow-up angiograms,¹ more recent studies report incidences of stent fracture between 7.7% and 30%, with a high association between total stent fracture (as was seen in our patient) and in-stent restenosis or stent thrombosis.^{2,3}

Placement in the right coronary artery, lesion angulation, drug-eluting stents, long stents and longer duration of implantation are all associated with increased prevalence of stent fracture.^{2,3} With the exception of drug-eluting stents, our patient had each of these risk factors, which likely contributed to his late in-stent restenosis. Coronary stent fracture continues to be an underrecognized entity with important clinical implications. Improvements in stent design are ongoing and may result in reduced incidence of this complication.

References

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See video online of intravascular ultrasonography showing the coronary stent fracture: www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.101078/-/DC1