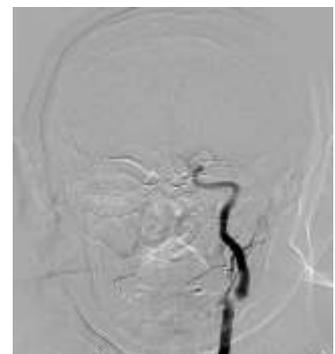


HYBRID CAROTID ARTERY STENT AND COMPLEX CORONARY INTERVENTION FOR ACUTE ISCHEMIC STROKE WITH CONCURRENT ACUTE MYOCARDIAL INFARCTION

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History

A 74-year-old man presented to the hospital with chest pain and was found to have a non-ST-segment elevation myocardial infarction. Coronary angiography showed three vessel coronary artery disease and he was referred for coronary artery bypass graft surgery. He underwent on-pump four vessel coronary artery bypass graft surgery with a left internal mammary artery (LIMA) to left anterior descending artery (LAD) graft and three saphenous vein grafts to a diagonal branch, obtuse marginal, and right posterior descending artery. On the first post-operative day the patient developed dysarthria, word finding difficulty, and right-sided weakness. He was urgently evaluated for concern of stroke and his NIH stroke scale was 3. A computed tomography angiogram of the head/neck showed mixed plaque with a greater than 70% stenosis of the left internal carotid artery. Magnetic resonance imaging showed embolic infarcts in the left cerebellum and watershed infarct in the left cerebral hemisphere, concerning for symptomatic left internal carotid artery stenosis. While being evaluated for his stroke the patient developed hypotension requiring vasopressor support and the electrocardiogram showed 2mm ST-segment elevation in the anterior leads. A transthoracic echocardiogram showed a newly reduced left ventricular ejection fraction with anterior wall and apical hypokinesis. The peripheral vascular interventional cardiology service evaluated the patient and we suspected severe left internal carotid artery stenosis and compromise of the LIMA to LAD bypass graft. We recommended hybrid carotid and complex coronary artery revascularization. Carotid artery angiography showed an estimated 90% left internal carotid artery stenosis (top figure) and we proceeded with bare metal stent placement with distal embolic protection. We then performed bypass graft angiography which showed occlusion of the LIMA to LAD graft at the distal anastomosis. Coronary angiography showed a high grade calcific stenosis of the proximal LAD (bottom figure). We performed rotational atherectomy followed by placement of a drug eluting stent and an intra-aortic balloon pump with an excellent angiographic result. The patient's neurological exam normalized within 24 hours and he was rapidly weaned from mechanical circulatory support. He was discharged from the hospital after one week with an NIH stroke scale of 0. He remains completely asymptomatic from a neurologic and cardiovascular standpoint with six months of follow-up.



Learning Points

- Patients who are referred for coronary artery bypass graft surgery with high grade carotid artery stenosis are at risk for watershed stroke in the setting of hemodynamic instability.
- Carotid artery stenting with distal embolic protection can safely be performed even in the setting of an acute coronary syndrome.
- Despite the development of a post-operative acute coronary syndrome with cardiogenic shock and acute ischemic stroke collaboration between cardiac surgery, peripheral vascular interventional cardiology, and vascular neurology resulted in a good outcome for this patient