Reviewer's report

Title: Right subclavian double steal syndrome

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Reviewer: George Georgiadis

Comments to authors:

General comments:

This is a case report presenting an interesting successful surgical correction of a symptomatic right subclavian-common carotid artery steal syndrome (double steal syndrome?) with the performance of a carotid (R)-carotid (L) PTFE bypass. Simultaneously, a left internal carotid artery (ICA) endarterectomy-angioplasty was performed for treating an asymptomatic ICA stenosis ~75%. However this didactic case is not bringing relevant novel information. Steal syndrome in the aortic arch, is a well known and already described vascular pathology, and this fact is documented by the literature presented by the authors (half of the references appeared before 1980).

Specific comments:

I. I am not sure about the complete occlusion of the innominate artery (IA) since selective catheterization of subclavian artery (Fig 2) reveals documentation of the presence of the angiographic catheter (via brachial approach) in the aortic arch (this catheter extents the pacemaker wire). Thus, an endovascular option would be feasible and more prudent in that pre-occlusive lesion. Even if this is not the case (occlusion rather than pre-occlusive lesion of the IA), then why the authors didn’t negotiate the occlusion (a J-tip guidewire wire of 0.014 to 0.025 or 0.035 in, would rather pass through the IA occlusion) and perform primary stenting of the IA with a balloon expandable stent? The authors must provide a complete aortic arch angiogram to clarify the type of lesion.

II. Certainly the patient’s general condition was rather poor precluding a median sternotomy (aorto-innominate bypass is better than any transcervical bypass). Thus, occlusive lesions of the IA can be treated by a carotid-carotid bypass (as done by the authors) while other alternative methods include left subclavian-to-right carotid bypass, subclavian-subclavian bypass, or axillary-axillary arterial bypass. However, endovascular techniques have even lower morbidity and mortality than extra-anatomic bypasses. Endovascular options for this specific case are purely described by the authors, giving the impression of a failed experiment. In the case of IA pathology, endovascular treatment must precede any surgical reconstruction given the invasive character of the latter method. Did the authors tried to solve the problem with endovascular methods?
The title of the article is somehow peculiar (double steal syndrome?). The authors should think an alternative (Right sided subclavian-common carotid artery steal syndrome? for example).

Conclusion: The conclusion that carotid-carotid bypass is an excellent option for IA occlusive disease can not be based on this single case.

(1) Verify the pressure drop in the “diseased” arm prior to the revascularization.

(2) Additionally one may ask why the authors decided to cannulate the right brachial (or radial?) artery although it was obviously (was there?) no palpable pulse and pressure drop in the ipsilateral arm.

(3) Do the authors know if the right internal mammary artery was used in the previous CABG? Was there any clinical (coronary symptoms) or angiographic evidence (reversed flow via coronary arterial graft) of coronary steal syndrome?

(4) The authors must give much more details of the operative procedure. What was for example, the course of the carotid-carotid PTFE bypass in relation to the esophagus?

(5) Why only the left internal carotid artery (ICA) stenosis was treated since bilateral asymptomatic ICA stenosis (~75% on both sides) was present? In my view, right ICA stenosis seems anomalous. Was there any evidence in the color-duplex scanning for complicated plaque (for example: ulcerative, with intraplaque hemorrhage or thrombus)? What was the type of plaque? Furthermore, if the authors policy is to leave untreated any asymptomatic ICA stenosis of that degree, then why not performing a subclavian (L)-carotid (R) bypass? Note that preliminary insertion of a subclavian (L)-carotid (R) bypass might increase vertebral perfusion and make subsequent left carotid endarterectomy safer without the need for carotid shunting.

(6) What was the rationale for doing the left carotid endarterectomy first?

(7) What the authors have to discuss and propose about the significant coiling of the right ICA?

(8) Provide a complete aortic arch angiography.

(9) Explain why not performing any endovascular techniques.

A brief review of the results of the endovascular and surgical options for treating subclavian-common carotid artery steal syndrome in an era of IA occlusion would be of a value.

Give much more details about all surgical options regarding IA occlusion.
(1) What was the behaviour of the stenotic lesions seen in the subclavian artery (initial and mid portion segment) on follow-up examinations? Where these lesions hemodynamically insignificant? What was the percentage of stenosis of each lesion?