Another Complication of Carotid Artery Shunting during Carotid Endarterectomy

To the Editor—The estimated frequency of shunting of the carotid artery to avoid serious cerebral ischemia during carotid endarterectomy ranges from 15–35% of patients. The decision to shunt is often based on data from cerebral blood flow measurements and/or electroencephalography.

The use of the carotid shunt is associated with the following complications: plaque embolization, air embolization, dissection of the artery, shunt occlusion, and lengthened procedure. Special double-balloon intraluminal shunts that may minimize many of the above complications have been developed. The Pruitt-Inahara T shunt is supplied with balloons on the proximal and distal ends that are designed to be placed into the common carotid and internal carotid arteries, respectively. Recently, we cared for a 69-year-old patient who underwent a right carotid endarterectomy under general anesthesia. Upon placement of the carotid shunt (Pruitt-Inahara Internal T-shunt-out-lying, Model 400-40), the pulse oximeter alarmed signaling loss of pulse to the right hand. The right radial arterial pressure wave contour disappeared and the mean arterial pressure decreased from 105 to 40 mmHg. A quick check revealed blood return and proper functioning of the radial arterial catheter and a blood pressure of 140/80 mmHg by the automated blood pressure device on the left arm. Inadvertent placement of the proximal balloon of the shunt into the innominate artery and loss of subclavian arterial flow was suspected (fig. 1). The surgeon repositioned the proximal balloon into the common carotid artery with immediate return of the arterial pressure waveform and pulse oximeter function. The electroencephalogram showed no evidence of cerebral ischemia in this interval. The patient awoke without a neurologic deficit after a successful endarterectomy.

While inadvertent balloon occlusion of the innominate artery caused no morbidity in our patient, prolonged disruption of flow may result in upper extremity or cerebral ischemic damage. If this complication occurred in a patient with severe left carotid and vertebral artery stenosis, the loss of collateral right vertebral artery flow may result in ischemic electroencephalographic changes falsely attributed to an embolic event secondary to shunt placement. Therefore, we suggest placement of an ipsilateral radial arterial catheter or pulse oximeter probe for rapid diagnosis of innominate artery occlusion in patients undergoing carotid endarterectomy with double-balloon intraluminal shunts.

 Interruption of innominate arterial flow represents a rare complication of carotid shunting that can be readily detected by routine anesthesia monitoring.

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REFERENCES


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