**CASE REPORT**

**An Association of Internal Carotid Artery Kinking and Severe Stenosis**

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**Introduction**

Kinks of the internal carotid artery are uncommon congenital and acquired elongations. This condition can reduce cerebral blood flow, causing transient ischaemia or stroke. In the presence of coexistent atherosclerotic disease, usually at the carotid bifurcation, it may not be possible to determine whether the symptoms are caused by the kink or the disease.1–5 The aim of the present case report is to define the incidence, surgical treatment and clinical pattern of carotid artery kinking associated with severe carotid stenosis.

**Case Report**

The patient – a 74-year-old diabetic and hypertensive woman – presented with dizziness, visual disturbances and an episode of syncope. Carotid duplex analysis demonstrated 95% stenosis at the left carotid bifurcation. Angiographic evaluation of the carotid arteries showed a flow gap in the internal carotid artery and kinking of the internal carotid artery. Preoperative investigations showed no significant cardiac disease.

Under local anaesthesia the common carotid artery and the bifurcation were exposed. The internal carotid artery showed a severe degree of kinking, about 1.5 cm above the carotid bifurcation. After vascular control was obtained, an arteriotomy was performed through the stenotic atherosclerotic segment into the internal carotid artery and endarterectomy was performed in the usual fashion. A 5 cm segment of the internal carotid artery was removed, including the separate segment of distal atherosclerotic disease and re-implantation at a low level on the common carotid artery was done by using a running suture of 6/0 Prolene (Ethicon). No vein or prosthetic vascular graft was used and no shunt was required. Postoperative drainage of the wound for 24 h was performed. No neurological disturbances during the operation and after it were observed. The postoperative course was uneventful.

Histology showed an artheriosclerotic wall with little normal vascular structure.

Postoperative carotid Doppler was repeated several times and no neurological disturbances were observed during 3 years’ follow-up.

**Discussion**

For several reasons, the exact incidence of kinking of the carotid arteries is difficult to determine.1–7 Adding to the confusion is the variety of terms by which the condition is known: arteries have been described as tortuous, coiled, looped, kinked, S-shaped and spiral. Unfortunately, most of these terms describe only the visual impression created by two-dimensional angiographic films. The basic problem is excessive length of the artery.4–7

Kinks of the carotid artery are four times more common in women, and are often associated with advanced age, hypertension, obesity and cervical spondylosis.4–5 Several theories have been proposed to explain the cause of the artery’s excessive length. Some authors have proposed that carotid arteries are crossed by fascial bands, others think that kinking may be due to vascular

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1533–3167/01/000000 + 02 $35.00/0 © 2001 Harcourt Publishers Ltd.
dysplasia, and in older patients the combination of atherosclerotic changes and arterial hypertension may assume a prominent role in aetiology.\textsuperscript{1–3} A kink of the arterial diameter may sufficiently diminish cerebral flow and in the presence of coexistent atherosclerotic disease (usually at the carotid bifurcation), it may be not possible to determine whether the symptoms are caused by the kink or the disease.\textsuperscript{6,7}

A high index of suspicion is a prerequisite in the diagnosis of carotid kinking. In most reports from the literature, carotid kinks were diagnosed when an angiogram was performed for cerebral insufficiency symptoms.\textsuperscript{1–7} The ability of duplex scanning to identify an abnormal carotid configuration is still limited.\textsuperscript{6,7} In any case, angiography is the only definitive test for preoperative diagnosis. The surgeon faces a dilemma when the angiogram shows a kink of the internal carotid artery as well as severe stenosis or an ulcer at the carotid bifurcation. It is impossible to make the distinction which is the causative lesion, but both lesions can be corrected easily at operation.\textsuperscript{3–5} The best surgical procedure is resection and re-implantation of the internal carotid artery with concomitant eversion carotid endarterectomy.\textsuperscript{4,5} We believe that this unusual case demonstrates the most straightforward method to deal with the kink and the atherosclerotic narrowing of the internal carotid artery. In our opinion this procedure may be safely performed under local anaesthesia.

### References