Surgical Treatment of Localized Dissection of the Internal Carotid Artery

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Dissection of the internal carotid artery is very rare; however, it is diagnosed more frequently with increasing radiographic diagnostic tools. Patients may be completely asymptomatic or may present with symptoms ranging between localized pain to severe cerebral ischemic events. Treatment is usually medical or with interventional radiographic tools. In this report, we present surgical management of internal carotid artery dissection in a 61-year-old female patient.

Dissection of the internal carotid artery (ICA) is a very rare pathology with an incidence of 2.5−3 per 100,000 in different series.[1] It is an important etiology of stroke in young adults and has been found with increasing frequency in recent years. It can occur either spontaneously or secondary to trauma and patients may present with different symptoms as being completely asymptomatic or with serious hemiplegia.[2] Mortality rate of intracranial carotid dissection is 75% and it is 10% when there is extracranial presentation.[3] It may also result in neurological morbidity. The disease is responsible for 2% of all ischemic strokes. It is an important factor especially in the young population, and accounts for approximately 20% of strokes in patients less than 45 years of age.[4] Extracranial ICA dissections are more common than intracranial dissections. It is because intracranial arteries have thinner media and adventitial layers; however, intracranial ICA dissections have higher risk of subarachnoid hemorrhage, hence higher mortality and morbidity rates.[5] Neurological outcome is worse in traumatic cervical artery dissections and it is thought to be related to dissection-induced ischemic stroke or associated traumatic lesions.[6] More than half of the patients with spontaneous carotid artery dissection develop a stroke, so as till 58% of patients with dissection after a trauma have lasting neurological problems. They have a higher mortality rate compared with patients who have spontaneous carotid artery dissection. Also, the difference between mortality for intracranial carotid dissection and extracranial carotid dissection is relevant.[7]

In this case report, we present a 61-year-old woman with isolated left ICA dissection together with the management strategy of the disorder.

The patient consented to publication.

CASE REPORT

A 61-year-old female patient presented to the clinic with acute onset of severe head and neck pain. She was an active smoker and hypertensive. Doppler ultrasonography of the neck revealed atherosclerotic plaques in the left common carotid and internal carotid arteries as well as dissection at the left ICA. Pathology was further confirmed with computerized tomography angiography, which revealed dissection of the ICA confining to the proximal segment at the carotid bulb (Fig. 1). The patient did not define history of trauma, infection, or any vasculitis syndrome affecting the arterial system. Immediate surgical treatment was planned because of the symptoms of the patient and to prevent neurologic events following the consent of the patient.

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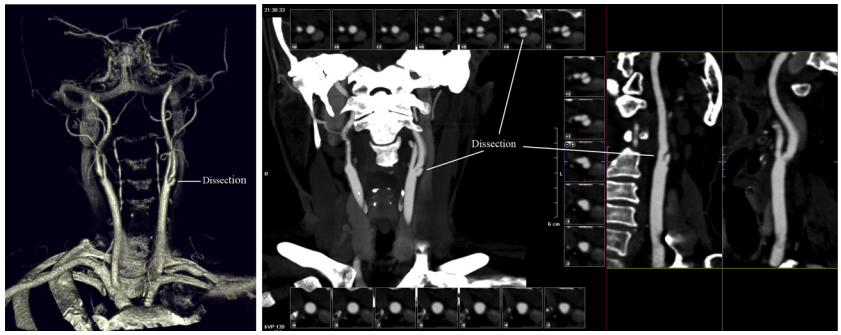

Fig. 1. Computerized tomography angiography showing dissection of the internal carotid artery confined to the proximal segment at the carotid bulb.

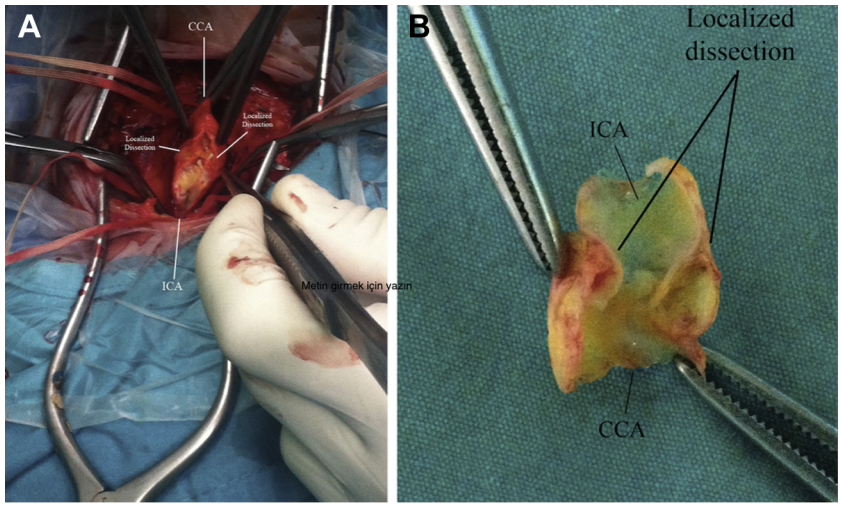

Fig. 2. (**A**) The localized dissection inside the internal carotid artery and atherosclerotic plaques in the internal and common carotid arteries are seen perioperatively. CCA, common carotid artery; ICA, internal carotid artery. (**B**) Excised atherosclerotic endarterectomy material comprising the internal carotid artery dissection. CCA, common carotid artery; ICA, internal carotid artery.

The operation was performed with regional anesthesia, and infiltration anesthesia with 50% mixture of prilocaine hydrochloride and bupivacaine hydrochloride was injected if the patient complained of pain or discomfort. A standard incision parallel to the sternocleidomastoid muscle was performed. The left common, internal, and external carotid arteries were dissected. A saphenous vein segment was harvested from the right leg with local anesthesia. Neurological status of the patient did not alter when the arteries were clamped for 3 min and a longitudinal arteriotomy was performed from the common carotid artery to ICA. The localized dissection inside the ICA was observed (Fig. 2). Endarterectomy from ICA extending to the common carotid artery was performed. Arterial reconstruction was performed with autologous saphenous vein graft patch (Fig. 3).

The postoperative course was uneventful and the patient was discharged symptom free from the hospital on the second postoperative day. She has been doing well for 6 months and receives acetylsalicylic acid, atorvastatin, pentoxifylline, clopidogrel, and beta-blockers.

DISCUSSION AND CONCLUSION

Carotid artery dissections are very rare. The extracranial segment of the ICA is the most commonly involved and the intracranial part is very seldom for the origin of the dissection. ICA dissections are seen in young- to middle-aged population mostly. There is no sex predominance.[8] Patients may be asymptomatic or present to the clinic with various symptoms associated with expansion of mural hematoma, which compresses nearby structures,[9] such as headache, tinnitus, Horner's syndrome, facial/neck pain, contralateral limb weakness, retinal ischemic events, or cerebral ischemic symptoms. Doppler ultrasonography, computed tomography angiography, magnetic resonance angiography, and conventional angiography can be used for the diagnosis of the pathology. Treatment modalities involve medical therapy, endovascular treatment,