Dissecting lesions of common carotid artery after carotid surgery: a case report

Hrvoje Budinčević 1,2, Ante Ivkošić 3,4, Vinko Vidjak 4,5, Predrag Pavić 4,6

1 Sveti Duh University Hospital, Department of Neurology, Zagreb, Croatia
2 University J. J. Strossmayer, Faculty of Medicine, Department of Neurology and Neurosurgery, Osijek, Croatia
3 Sveti Duh University Hospital, Department of Surgery, Zagreb, Croatia
4 University of Zagreb, School of Medicine, Zagreb, Croatia
5 Clinical Hospital Merkur, Clinical Department of Diagnostic and Interventional Radiology, Zagreb, Croatia
6 University Hospital Center Zagreb, Department of Surgery, Zagreb, Croatia

ABSTRACT
This case report represents rare complication of carotid surgery, iatrogenic dissection of the common carotid artery and its successful endovascular treatment. We herein report a case of 55 year-old female patient in whom carotid surgery was performed due to constant tinnitus caused by kinking of right internal carotid artery. On day 7th carotid control ultrasound was performed, according to hospital’s protocol. The carotid ultrasound showed dissecting lesion of right common carotid artery in a length of three centimeters that was confirmed with computed tomography angiography of neck vessels, and dual antithrombotic therapy was initiated. One month later percutaneous angioplasty was performed with stent implantation.

KEYWORDS: carotid kinking, carotid dissection, endovascular treatment, carotid surgery.

Sažetak:
Ovaj prikaz slučaja predstavlja rijetku komplikaciju karotidnog kirurškog zahvata, jatrogenu disekciju zajedničke karotidne arterije i njene uspješno endovaskularno liječenje. Prikazujemo slučaj 55-godišnje pacijentice kod koje je učinjena karotidna operacija zbog stalnog tinitusa uzrokovanog uvijanjem desne unutarnje karotidne arterije. Sedmog dana učinjen je kontrolni ultrazvuk karotide, prema bolničkom protokolu. Ultrazvuk karotide pokazao je disecirajuću lesiju desne zajedničke karotidne arterije u dužini od tri centimetara što je potvrđeno kompjutoriziranom tomografskom angiografijom žila vrata, a dvojna antitrombotika terapija pokrenut. Mjesec dana kasnije učinjena je percutana angioplastika s implantacijom stenta.

Kljucne riječi: karotidno presavinuto, karotidna disekcija, endovaskularno liječenje, karotidna kirurgija
INTRODUCTION
Carotid artery dissections include two types, spontaneous, which occurs without cause and others usually caused as a result of blunt or penetrating trauma (1). Carotid surgery is commonly performed in patients with symptomatic high grade carotid stenosis, while rarely in uncommon disorders affecting carotid arteries such as kinking and coiling of internal carotid artery which produce ischemic symptoms, carotid body tumor and dissection of the carotid artery (2-5).
This case report represents a potentially dangerous and rare complication of carotid surgery and the role of ultrasound in early detection of the dissecting lesion.

CASE REPORT
We herein report a case of 55 year-old female patient in whom carotid surgery was performed due to kinking of right internal carotid artery which caused constant tinnitus. The kinking of the right internal carotid artery was confirmed with computed tomography angiography (Figure 1.) and digital subtraction angiography of the neck. The patient complained of pain and palpable pulsating tumorous mass on right side of the neck, with symptoms of constant tinnitus. Her prior medical history included low back pain and gastritis, whilst six months prior to surgery the patient underwent a microdiscectomy for cervical radiculopathy (C5-C6). Carotid surgery was performed in the patient and included segmental resection of right internal carotid artery with re-anastomosis with common carotid artery. The patient did not complain of symptoms after the surgery, while previous symptoms disappeared. On day 7th carotid control ultrasound was performed, according to hospital’s protocol. The carotid ultrasound showed dissecting lesion of right common carotid artery in a length of three centimeters ending at the carotid bifurcation that formed double flaps at the beginning and at the end of dissection and produced moderate hemodynamic stenosis (60%) (Figure 2.), that was confirmed with computed tomography angiography of neck vessels (Figure 3. and Figure 4.). The neurological and physical status was normal, except for the pain experienced in the neck again. For stroke prevention dual antiplatelet and antihypertensive therapy were introduced. Due to presence of symptoms, one month later percutaneous angioplasty was performed with stent implantation. The control carotid ultrasound showed stent implantation with normal hemodynamics, without any sign of dissection (Figure 5. and Figure 6.).

DISCUSSION
Our case demonstrated a potentially dangerous and rare complication of carotid surgery and the role of ultrasound in early detection of the lesion. The proposed mechanism of the lesion was the tight clamping with Rumel tourniquet of the right common carotid artery during surgery that produced intimal tear of the common carotid artery and led to dissection. The other re-
ported mechanism of dissecting lesion is shunt placement during surgery, the surgical technique and clamping time (6). Intimal lesions such as dissections are rarely described but they might be important factor for the development of thromboembolic incident (6). Although the carotid irregularities are common after carotid surgery, they rarely cause re-stenosis (7). These irregularities are intimal flaps, intimal steps and dissecting lesions (8). Previous reports using ultrasound showed that in patients with carotid surgery for symptomatic high grade stenosis asymptomatic dissecting lesions of carotid arteries are 5% (6). Endovascular treatment might be indicated and it is a safe procedure (9, 10).

Carotid artery abnormalities such as tortuosity, kinking and coiling are common, and it might be present in one fourth of patients referred to carotid ultrasound (11). Mumoli et al. showed that carotid kinking and coiling are prevalent in female patients (female to male ratio 4:1), and it is associated with smoking, hyperlipidemia, and ischemic heart disease (12). These findings might be acquired or congenital (2). Kinkings are usually associated with mild atherosclerotic plaques that cause different degrees of carotid stenosis (11). Symptoms which are related to tortuosity of carotid artery are neck pain, vertigo, tinnitus, and in rare cases transient ischemic attack or even stroke (11). Surgery of carotid artery is advocated in symptomatic kinking or coiling with high grade stenosis (4). Carotid surgery might be performed in other but selected symptomatic patients (3). There are reported cases with pulsatile tinnitus in which carotid surgery of kinking produced good clinical outcome (13, 14). Ballotta et al. showed that carotid surgery for symptomatic (causing cerebral ischemic symptoms) carotid kinking is superior in preventing stroke in comparison to the best medical therapy (15). Asymptomatic patients should be treated with conservative approach (3).

**Conclusion**

Generally surgery of carotid abnormalities (such as kinkings) without ischemic symptoms should be avoided, except in carefully selected cases. The carotid surgery complications such as dissecting lesion might be successfully treated with percutaneous angioplasty with stent implantation. Carotid ultrasound has its place as a screening method for demonstrating these undisclosed lesions.
References:


