

## **CASE REPORT**

## **OLGU SUNUMU**

### **CONTRALATERAL STENT-ASSISTED THROMBECTOMY VIA FENESTRATED ANTERIOR COMMUNICATING ARTERY IN ACUTE TANDEM MIDDLE CEREBRAL ARTERY OCCLUSION: A CASE REPORT**

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#### **ABSTRACT**

We report a unique case with acute tandem left internal carotid and middle cerebral artery occlusion in whom the catheterisation of the left common carotid was not possible so the patient underwent stent-assisted thrombus fragmentation after applying intraarterial t-PA via the fenestrated anterior communicating artery. The procedure was resulted with successful recanalization (TICI 2b) and a modified Rankin Scale (mRS) 3 outcome.

**Keywords:** Tandem occlusion, contralateral thrombectomy, fenestrated anterior communicating artery.

### **AKUT ORTA SEREBRAL ARTER OKLÜZYONUNDA KONTRALATERAL (FENESTRE ANTERİÖR KOMUNİKAN ARTER ÜZERİNDEN) STENT ARACILI TROMBEKTOMİ: OLGU SUNUMU**

#### **ÖZ**

Sunulan olgu akut tandem sol internal karotis ve orta serebral arter oklüzyonu saptanan bir hastadır. Sol komon karotis kateterizasyonu mümkün olamayan hastaya sağ internal karotis kateterize edilerek intraarteriyel tPA sonrası fenestre Anterior Komünikan Arter (ACoMA) üzerinden kontralateral stent aracılı trombus fragmantasyonu işlemi yapıldı ve sonrasında başarılı rekanalizasyon (TICI 2b) ve modifiye rankin skoru (mrS 3) elde edilmiştir.

**Anahtar Sözcükler:** Tandem oklüzyon, kontralateral trombektomi, fenestre anterior komunikan arter.

#### **INTRODUCTION**

Tandem occlusions of the extracranial carotid and middle cerebral artery have poor functional outcomes and high mortality rates unless treated with endovascular intervention (1). The aetiology of tandem occlusion strokes might be either embolic or as a result of the stenotic internal carotid artery (ICA) resulting in distal plaque migration in the elderly, whereas in younger patients, dissection could be the cause. During the endovascular treatment of tandem occlusions, rapid revascularization is crucial and first step is to revascularize the proximal occlusion first, which

can be either by balloon angioplasty or stenting, followed by a thrombectomy to the distal occlusion site. The main difficulty is when the occlusion of the ICA cannot be accessed and the ipsilateral middle cerebral artery (MCA) occlusion cannot be reached to perform stent-assisted thrombectomy (SAT). There are few reports about the contralateral internal carotid approach in acute internal carotid artery occlusions and reports using the trans-anterior communicating artery approach for acute tandem occlusions are equally rare (2,3). We hereby discuss this unique

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case who underwent stent-assisted thrombus fragmentation after applying intraarterial t-PA via the fenestrated anterior communicating artery in acute tandem MCA occlusion and this resulted with successful recanalization and a modified Rankin Scale (mRS) 3 outcome.

### CASE REPORT

We present a 62-year-old male patient, who was admitted to the emergency department within 2 hours of aphasia and right sided plegia. The patient signed informed consent for his report. A non-contrast Computed Tomography (CT-Siemens Somatom Sensation 16 detectors) scan was taken immediately after his admittance where dense MCA sign was observed. However, computed tomography angiography (CTA) revealed no contrast staining at the left ICA, which was assumed to be compatible with a tandem MCA occlusion. The patient was taken to the angio suite 30 minutes after his arrival and endovascular intervention was initiated immediately under general anaesthesia. The Left common carotid artery (CCA) was tried to catheterised first and an 8FR guiding catheter (Vista Brit Tip, Cordis) was placed to the distal CCA, but there was no contrast filling of the ICA. All efforts to access the distal were unsuccessful. Moreover, contrast extravasation was noted, which was in favour of chronic occlusion or high grade stenosis at the ICA orifice with subintimal dissection as a result of guidewire manoeuvres. After all these unsuccessful attempts, the right ICA (opposite site) was catheterised in order to identify the AcomA access. During the control runs, the right Anterior Cerebral Artery A1 segment had a normal diameter but fenestration of the AcomA was noticed. The attempt to reach the left distal MCA trans-AcomA was achieved with a microcatheter (Figure 1). Unfortunately, the distal access catheter available was only 115 cm long and the guiding catheter could only be progressed to the proximal ICA due to tortuosity. Resultantly, the decision was made to catheterise the MCA and give intraarterial t-PA of 45 mg first. Rebar 27 Reinforced Microcatheter (Medtronic) was used starting from the distal to the proximal of the occlusion. Regardless of how aggressive we were in our intervention, total recanalization could not



WL: 602 WW: 1007

**Figure 1.** Cross over catheterization via AComA.

be restored. Due to the risk of rupturing the fenestrated AComA and the proximal location of guiding catheter, which may have caused dislodgement of the thrombus to the safe hemisphere, it was decided to open a Solitaire 2 stent (6x30mm, ev3-Covidien) at the occlusion site to disrupt the thrombus. The control runs showed the recanalization of the occlusion with TICI 2b (Figure 2). The follow-up CT scan showed localised infarction of the medial part of left temporal lobe. The patient was discharged after one week with an mRS score of 3.



**Figure 2.** Recanalization of the left distal M1 and M2.

## DISCUSSION AND CONCLUSION

The treatment of tandem occlusions still represents a major challenge in patients with acute ischemic stroke. Nowadays, distal to proximal revascularization (retrograde approach) is the most preferred technique, as it decreases reperfusion time and results in better functional outcomes (4).

Several endovascular treatment strategies have been proposed to date for large vessel occlusions, and interventions with direct aspiration catheters are reported to have similar reperfusion rates and outcomes compared with thrombectomy with stent retrievers.

The Solitaire 2 (ev3-Covidien) retrievable stent devices are self-expandable, easier to navigate in tortuous arteries and have also been shown to decrease recanalization time. Nevertheless, stent retriever failures may occur due to anatomical challenges including a large quantity of clots (high clot burden), tandem occlusion and organized clots, as in the present case. Also, during the pulling back of thrombus with the Solitaire stent, some emboli could migrate to the distal vessels if not supported by proximal distal access catheters (1).

Approaches using collateral pathways of the Willis circle can be beneficial by preventing delay in revascularization time. Padalino et al. reported two cases of acute tandem MCA occlusions treated with the trans-ACoM approach using a 0.026-in Penumbra microcatheter before the treatment of the ipsilateral ICA occlusion. However, in our case, as the DAC was short and the ICA was tortuous, the contralateral approach did not achieve thrombus aspiration. Another issue about tandem occlusions in embolic aetiology in particular is that an acutely occluded ICA generally contains numerous thrombi, which presents a risk of distal embolization during revascularization therapy. Tsuj et al. reported the usefulness of contralateral carotid angiography combined with manual aspiration from a 9-Fr balloon guiding catheter for acute ICA occlusion (1).

Regarding the fenestrated arteries, the media layer is absent at the base of the medial wall, the subendothelium is thin and there is discontinuity of the elastin layer, which may increase the risk of perforation during intervention (5). For this

reason, performing SAT via ACoM could be disastrous.

As conclusion, this case illustrates an alternative access via ACoM and the combination of both mechanical and stent assisted thrombectomy for challenging acute tandem occlusions without delaying the recanalization time, particularly in patients with patent collaterals.

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### Ethics

**Informed Consent:** It was declared that informed consent was signed by the patient.

**Copyright Transfer Form:** Copyright Transfer Form was signed by all authors.

**Peer-review:** Internally peer-reviewed.

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