

# Successful Embolectomy of over 10 cm Clot in Acute Internal Carotid Artery

Tariq Janjua<sup>1</sup>, Fotis Souslian<sup>2</sup>, Scott A Meyer<sup>3</sup>, James Goddard<sup>4</sup>, Luis R Moscote-Salazar<sup>5</sup>

## ABSTRACT

Large vessel occlusion with acute embolic stroke (AES) is usually undergo embolectomy attempt within 24 hours on last known normal. Embolectomy leads to clots extraction and improvement of distal flow to minimize or complete reversal of AES. The size of clot extracted is usually in different fragments. One complete extraction of full occlusive clot is rare. The chance of extraction does down with extend of occlusion, duration, type of clot, and location. Here we describe a single pass extraction of over 10 cm clot which improved the distal flow with marked reduction is neurological weakness.

**Keywords:** Neurointervention, Neurology, Stroke.

*Panamerican Journal of Trauma, Critical Care & Emergency Surgery* (2021): 10.5005/jp-journals-10030-1355

## INTRODUCTION

Large vessel occlusion with acute embolic stroke (AES) is usually undergo embolectomy attempt within 24 hours on last known normal. Embolectomy leads to clots extraction and improvement of distal flow to minimize or complete reversal of AES. The size of clot extracted is usually in different fragments. One complete extraction of full occlusive clot is rare. The chance of extraction does down with extend of occlusion, duration, type of clot, and location. Here we describe a single pass extraction of over 10 cm clot which improved the distal flow with marked reduction is neurological weakness.

## CASE DESCRIPTION

A 78-year-old, right-handed male patient with past medical history of interstitial lung disease, diabetes mellitus, head and neck cancer was admitted to small community hospital with worsen lung function. His anticoagulation for peripheral arterial disease was corrected with fresh frozen plasma. He was treated and was planning to go home when he suddenly developed right sided weakness and speech impairment. An emergent CT angiogram of neck and brain showed complete occlusion of left internal carotid artery (LICA) with limited left middle cerebral artery flow from the right side. Patient was airlifted to comprehensive stroke center for emergent embolectomy. Patient did not get recombinant tissue plasminogen activator (rTPA) due high INR. Patient was taken to neurointerventional suite.

## PROCEDURE

The patient was placed supine upon the neuroangiography table. The skin of both groins was prepped and draped in sterile fashion. Under local anesthesia with lidocaine and sterile technique, the right common femoral artery was percutaneously accessed with a 4 French micropuncture set. A short 5 French sheath was then placed. A 5 French 1 diagnostic catheter was then advanced over an angled guidewire into the aortic arch and used to selectively and subselectively catheterize the right common carotid artery and the left common carotid artery. Digital subtraction angiograms of the head and left neck were performed in multiple projections

<sup>1</sup>Critical Care Medicine, Regions Hospital, Saint Paul, Minnesota, USA

<sup>2</sup>Banner Health Clinic, Greeley, Colorado, USA

<sup>3</sup>HealthPartners Research Institute, Saint Paul, Minnesota, USA

<sup>4</sup>Midwest Radiology, Roseville, Minnesota, USA

<sup>5</sup>Critical Care Unit, Centro Policlinico del Olaya (CPO), Bogota, Colombia; Latinamerican Council of Neurocritical Care (CLaNI), Colombia

**Corresponding Author:** Luis Rafael Moscote-Salazar, Critical Care Unit, Centro Policlinico del Olaya (CPO), Bogota, Colombia; Latinamerican Council of Neurocritical Care (CLaNI), Colombia, Phone: +573385978, e-mail: rafaelmoscote21@gmail.com

**How to cite this article:** Janjua T, Souslian F, Meyer SA, et al. Successful Embolectomy of over 10 cm Clot in Acute Internal Carotid Artery. *Panam J Trauma Crit Care Emerg Surg* 2021;10(3):141–142.

**Source of support:** Nil

**Conflict of interest:** None

with these catheterizations. Left carotid artery (LCA) bifurcation was present at approximately C3 level. There was large amount of partially calcified atherosclerotic plaque present along the LCA bifurcation. The cervical LICA was occluded at its origin. Left common carotid artery and the left external carotid artery were patent without significant stenosis using the North American Symptomatic Carotid Endarterectomy Trial criteria. Cranial images reveal that there was minimal patchy collateralized stagnant opacification of the intracranial (LICA) and subtle minimal opacification of the left middle cerebral artery. The cross flow through the anterior communicating artery supplied the left anterior cerebral artery. There was a congenitally small A1 segment left anterior cerebral artery. There were moderate leptomeningeal collaterals from the left anterior cerebral artery to the occluded left middle cerebral artery territory.

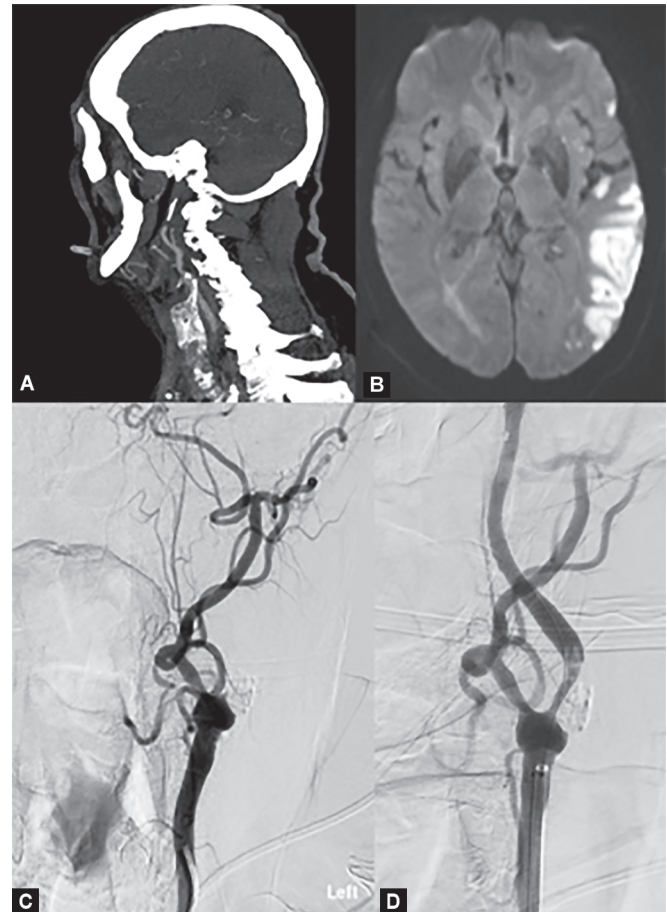
The diagnostic catheter was advanced into the LICA over a stiff angled guidewire where it was exchanged over a Rosen wire for a 6 French, 90 cm sheath. A Zoom 71 reperfusion catheter was then advanced over the Fathom wire into the distal cervical LICA. The Zoom catheter was then used to perform aspiration thrombectomy. After a single pass the device yielded a just



**Fig. 1:** Postembolectomy clot

over 10 cm long thrombus, a follow-up digital subtraction angiogram of the head and neck was performed through the left internal carotid guide sheath to assess for any progress in recanalization. This showed near complete reperfusion of the left middle cerebral artery. There was a persistent embolic occlusion of a terminal M4 branch of the posterior division left middle cerebral artery. This was in the region of the parietal lobe. The intracranial and mid to distal cervical LCAs widely patent. There was no angiographic evidence of complication. The guide sheath appears to be flow-limiting within a carotid artery origin stenosis [Figures 1 and 2](#).

Anticipating the possibility that angioplasty or stenting of the internal carotid artery origin may be necessary, a 6 mm Angioguard protection device was advanced through the LICA guide sheath deployed within the distal cervical LICA, just proximal to the skull base. Immediately prior to protection device deployment, 3,000 units of intravenous heparin was given in hopes that this would reduce the chance of new thrombus formation on this metal device. The guide sheath was then pulled down into the distal left common carotid artery where follow-up angiogram was performed to evaluate for stenosis. The follow-up cervical left common carotid artery angiogram revealed that there was a 60% segmental stenosis of the LICA origin. There was a 2 cm long wormlike filling defect within the LICA origin suggestive of additional thrombus. In order to treat this thrombus with the Zoom 71 catheter, the protection device was carefully removed. The Zoom catheter was then advanced over the fathom wire into the origin of the LICA where aspiration was performed. We could not definitively visualized aspirated thrombus in the vacuum container. Follow-up angiograms of



**Figs 2A to D:** Image with angiogram and follow-up MRI: (A) Later view of CTA-Neck showing complete occlusion at the origin of Left ICA; (B) MRI showing stroke; (C) Pre-embolectomy with complete occlusion; (D) Postembolectomy with reperfusion and underlying chronic stenosis due to previous radiation for head and neck cancer

the head and the neck were performed. These show complete removal of the LICA thrombus. There is a persistent moderately long segment of 60% stenosis within the left ICA origin this did not appear to be flow-limiting. The stenosis appeared fairly smooth.

The guide sheath was pulled down into the distal thoracic aorta where it was exchanged over a Rosen wire for a 7 French short sheath. The sheath was secured to the skin with suture material. A sterile dressing was applied to the sheath site.

Post procedure was stable. Patient showed improved movement of right side with full speech after the procedure. Follow-up MRI brain next day showed partial stroke in the posterior LMCA distribution.