

# CASE REPORT

**MANAGEMENT OF PSEUDOANEURYSM AND CERVICAL  
HEMATOMA FOLLOWING CAROTID SHEATH  
PLACEMENT IN A PATIENT WITH MIDDLE CEREBRAL  
ARTERY THROMBOSIS: A CASE REPORT**

## Management of Pseudoaneurysm and Cervical Hematoma Following Carotid Sheath Placement in a Patient with Middle Cerebral Artery Thrombosis: A Case Report

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<b>Journal Name</b>	Journal of Medical Case Reports
<b>Publisher</b>	BioMed Central
<b>Impact Factor</b>	0.8

### Abstract

**Background:** Occlusions in the middle cerebral artery (MCA) are observed in nearly 33% of patients with acute ischemic stroke undergoing endovascular mechanical thrombectomy and can effectively repair a proximal MCA stroke. Reperfusion and intravenous thrombolysis in clinical practice. However, there is a risk for carotid sheath placement, such as a pseudoaneurysm or hematoma.

**Case Presentation:** We present a 73-year-old Iranian male with right MCA occlusion that developed a pseudoaneurysm and cervical hematoma after carotid sheath placement upon mechanical thrombectomy. Even with these complications, the patient underwent surgical repair with a full recovery.

**Conclusions:** This case emphasizes the importance of timely middle cerebral artery thrombectomy and highlights the potential complications of carotid sheath placement. It underscores the need for timely management to minimize risks and achieve optimal outcomes.

**Keywords:** Mechanical thrombectomy, Middle cerebral artery, carotid sheath placement, cervical hematoma, pseudoaneurysm.

### Introduction

Up to one-third of patients with acute ischemic strokes who undergo endovascular mechanical thrombectomy (MT) have middle cerebral artery (MCA) occlusions [1]. MCA occlusions result in severe neurologic deficits due to the MCA's extensive vascular territory [2]. Timely and effective surgical treatment is critical for MCA occlusions, since delays can be detrimental and lead to irreversible brain damage [3]. Improvements in surgical techniques, including MT, have changed the paradigm for treatment of acute ischemic stroke due to proximal MCA occlusions. The outcomes of

thrombectomy for MCA occlusions are very effective if performed within 6 hours of symptom onset, especially when performed in combination with intravenous thrombolysis. Surgical technique during MT is paramount to minimize any potential complications and optimize outcomes [4].

Direct arterial access and sheath placement for management of MCA thrombosis is essential and can lead to significant complications at the access site [5]. This case report will review a patient who developed cervical hematoma and a pseudoaneurysm as a complication of performing carotid sheath placement during the surgical procedure for MCA

thrombosis, and strategies for the management of these complications.

### Case presentation

A 73-year-old Iranian man with hypertension and diabetes mellitus came to the emergency department. He presented with sudden left-sided weakness (hemiplegia), aphasia, visual changes, and confusion. Non-contrast head computed tomography (CT) showed a hyperdense MCA sign, and CT angiography confirmed right MCA occlusion. However, immediately following the procedure and removal of the carotid sheath, the patient began to bleed and developed a large hematoma in the carotid area with a feeling of fullness (Fig. 1). Examination revealed a tense, pulsating mass in the right neck. Following the

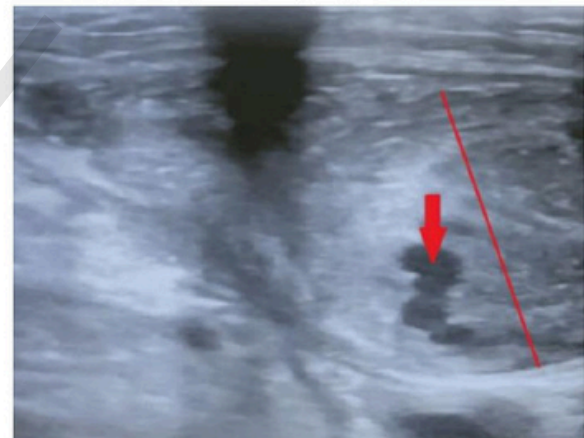
examination, a femoral angiogram was performed, but no vascular extravasation (leak) was found despite the presence of a hematoma.



**Fig. 1:** Arrow indicates hematoma on the right side of the neck

An emergency neck Doppler ultrasound demonstrated a pseudoaneurysm measuring 10 mm at the site of insertion of the carotid sheath and a hematoma in the neck measuring 50 mm × 20 mm adjacent to the pseudoaneurysm (Fig. 2). The patient was taken to the operating room for repair and evacuation of the hematoma. The patient received general anaesthesia, and the skin was incised longitudinally along the anterior border of the sternocleidomastoid muscle. The hematoma was evacuated, and an opening in the pseudoaneurysm wall was identified.

A direct surgical repair of the pseudoaneurysm was undertaken, using a technique of patch angioplasty.



**Fig. 2:** Arrow indicates pseudoaneurysm on the right side of the neck. The red line highlights the hematoma surrounding the pseudoaneurysm

## Discussion

Acute ischemic stroke secondary to middle cerebral artery (MCA) occlusions poses considerable clinical challenges, and the best treatment paradigm is unclear. Mechanical thrombectomy (MT) has unique challenges in these cases, and favourable outcomes with MT are rarely reported [6]. A single publication reported that intraoperative thrombosis within the stents during the MT procedure occurred in 2 patients (8%). However, 2 weeks after discharge, 1 patient emerged from the hospital with a large hematoma requiring

surgical drainage. Digital subtraction angiograms (DSA) were performed in 16 patients (64%) and identified 21 aneurysms (67%). In the literature, there have been case reports where the adventitia or surrounding soft tissue is involved in the largest form which maintenance/patch angioplasty will provide excellent repair. This form of repair is particularly useful in complex forms, as one may make errors, such as in more traditional forms of management [7]

## Conclusion

The surgical management of MCA aneurysms and pseudoaneurysms requires unique surgical strategies aimed at preserving perfusion and reducing complications such as hematoma. Patch angioplasty is an excellent approach for pseudoaneurysms in complex areas, such as the MCA, particularly as other treatment options have more inherent risks. Ongoing research is warranted to optimize the options available for treatment.

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SAMPLE WORK