

Direct neck exposure for endovascular mechanical thrombectomy in a patient with acute internal carotid occlusion concurrent type A aortic dissection

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Background: Mechanical thrombectomy is an effective management for acute stroke with large vessel occlusion. However, difficult anatomical approach via the post-operation aorta is difficult and time-consuming. Here, we presented a case who suffered from right common carotid artery and internal carotid artery total occlusion and received direct neck exposure and mechanical thrombectomy after acute type A aortic dissection status post aorta repair and right brachiocephalic trunk re-anastomosis.

Case description: A middle-aged man had type A aortic dissection with presentation of neck pain radiated to head and back, transient dizziness and blurred vision. Aortic valve resuspension, proximal anastomosis of ascending aortic grafting, partial aortic arch grafting replacement and innominate artery reimplantation were performed. However, sudden onset of left arm weakness was noted after transferring to intensive care unit hours later. National Institute of Health Stroke Scale (NIHSS) was 7. Computed tomography angiography (CTA) of brain showed right common carotid artery (CCA) occlusion up to C2 internal carotid artery (ICA), favor dissection related (Fig. 1). We exposed the right CCA and then punctured the artery directly in a fully equipped neuroendovascular operating room (Fig. 2). We used Neuron 070 to suck out the clots and then deployed total 5 stents. Angiography showed antegrade flow from CCA to ICA and final TIC1 3 result (Fig. 3). We then closed the puncture site via suture directly. The follow-up left arm muscle power improved from 3 to 4+ and he could ride bicycles after one year. The modified Rankin Scale score was 1. The follow-up digital subtraction angiography one year later revealed stent from brachiocephalic trunk to right ICA without in-stent thrombosis.

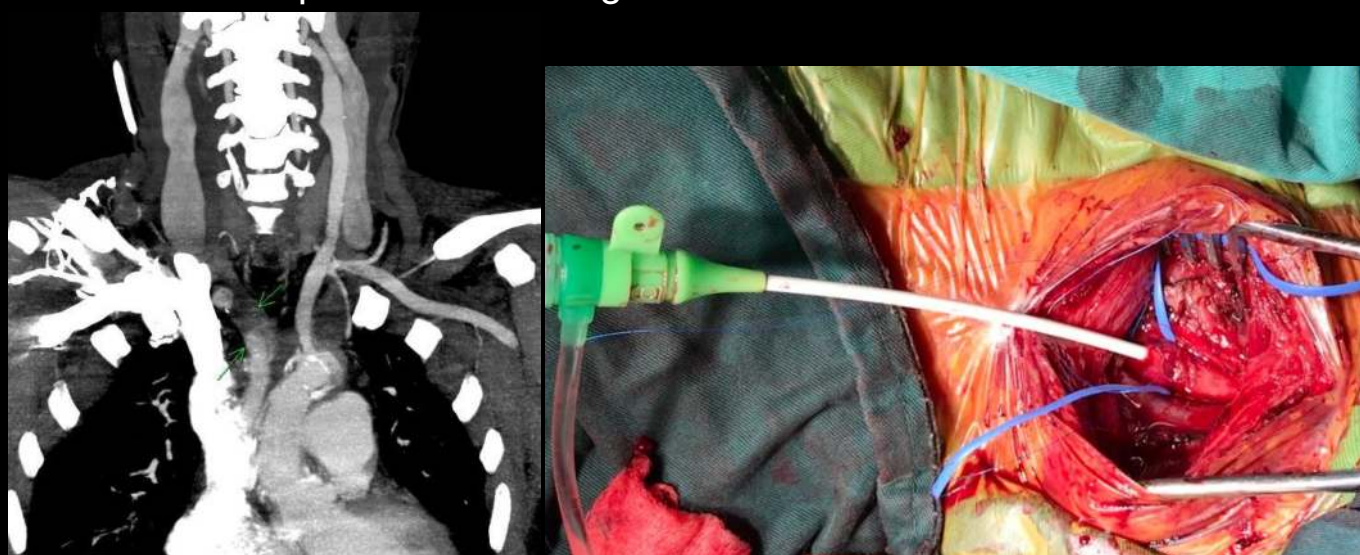


Figure 1.

Figure 2.

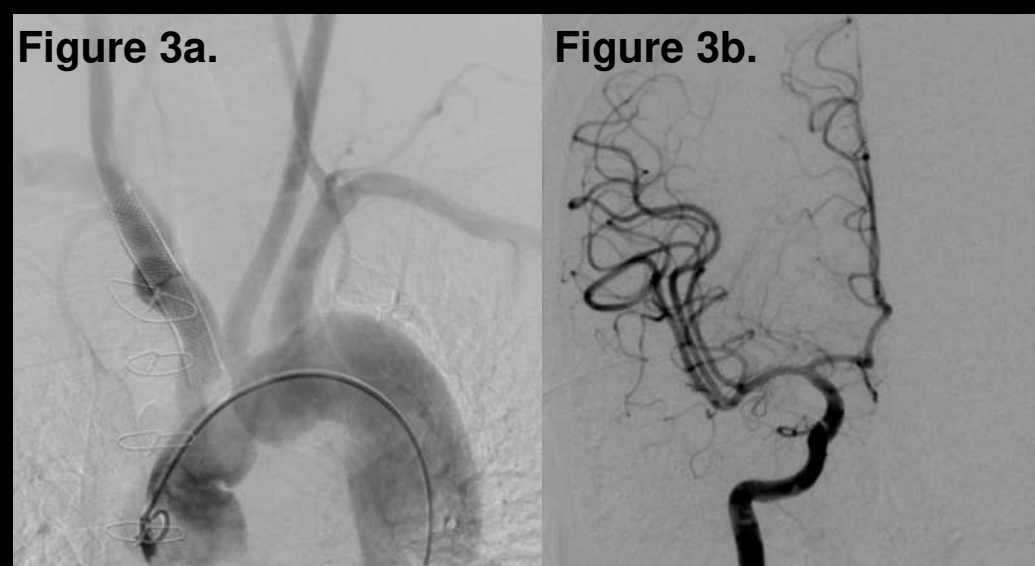


Figure 3.

Discussion: In this case, the residual dissection of the descending aorta, the difficulty to pass the graft stent, the steepness and the distance between re-implanted innominate artery and the top of the arch (type III arch) made the entry from the transfemoral route to brachiocephalic trunk time-consuming and even hazardous. CTA revealed occlusion over distal brachiocephalic trunk, proximal CCA and subclavian artery. To access the true lumen in the dissection related occlusion can be difficult and dangerous. Echo-guided common carotid puncture is an effective and alternative method for patients with inaccessible transfemoral route. However, echo-guided common carotid puncture have also demonstrated some possible complications, such as vessel dissection, hematoma formation and sheath kinking. Exposing the right CCA in a fully equipped neuroendovascular operation room can assist operator to puncture right CCA directly. Direct neck exposure can bypass anatomically unfavorable areas and significantly shorten the time from establishing access to successful revascularization. Besides, open direct carotid puncture got fewer risks of hematoma formation at the closure of the puncture site. The bleeding complication can be avoided by direct visual puncture and suture.

Conclusions: Endovascular mechanical thrombectomy is an effective and life-saving emergent and time-racing procedure for acute large vessels stroke. In patient with difficult anatomic routes or aortic dissection that unable to approach from common pathway, direct neck explore and CCA expose is also an effective method.