

**Introduction:**

As described by Zhang et al., acute carotid stent thrombosis (ACST) is a rare (0.5-5%) complication associated with significant risk in carotid artery stenting (CAS) <sup>1,2</sup>. Treatment options include thrombolysis, facilitated thrombolysis, percutaneous mechanical thrombectomy, thromboaspiration, and carotid endarterectomy (CEA), the procedure that was demonstrated in the case report of this paper.

**Article Findings and Discussion:**

Zhang et al. outlined several risk factors that may be associated with ACST formation, including inadequate antiplatelet therapy and faulty positioning of the stent. In the subacute setting of carotid stent thrombosis, faulty positioning of the stent plays a more significant role in neointimal hyperplasia via vascular injury, which may ultimately cause restenosis after CAS <sup>3</sup>.

The approach to ACST treatment is influenced by numerous factors. These factors include the presence of neurological injury, the timing ACST occurrence during stent placement or after the procedure, and the overall resources available to the treatment team. CEA is generally recommended in cases of refractory ACST and neurological deterioration <sup>4</sup>. While it has debatable benefit as a single criterion, carotid artery stump pressure measurement has been used to monitor cerebellar perfusion and potentially indicate the need for shunting during CEA <sup>5</sup>. Electroencephalography and somatosensory evoked potential can be used in conjunction as a sensitive and specific intraoperative multimodality for neurophysiological monitoring during CEA <sup>6</sup>. In situations of asymptomatic ACST, the overall recommendation is to pursue conservative management without surgical intervention like CEA <sup>4</sup>. While there is limited data on the efficacy of dual antiplatelet therapy (DAPT) and no standard treatment dosing regimens are recommended, aspirin (75-325 mg) and clopidogrel (75 mg) DAPT daily are generally advised both before and after CAS for a minimum of four weeks post-procedure <sup>7,8</sup>. After discontinuation of DAPT, a daily aspirin lifelong regimen is advised. While there is

increasing interest in the development of numerous stent materials, bare-metal carotid stents are currently the most commonly used <sup>9</sup>.

### **The Direction of Future Research and Conclusion:**

At this time, there is limited data evaluating the use of drug-eluting carotid artery stents <sup>9</sup>. When comparing the open-cell to closed-cell architecture carotid stents, there is indication of lower rates of occlusions occurring in open-cell architecture carotid stents <sup>10</sup>. Research into the use of drug-eluting stents and stent architecture may offer therapeutic advantage for future treatment. Zhang et al. highlight the importance of predicting the potential risk of delayed treatment and the associated risk of ischemic brain injury. In the setting of an ACST, the balance between the benefit of CEA stroke reduction and the risks associated with surgical complications are difficult to predict in each patient situation. As Zhang et al. stated, the data is limited on the topic of ACST and further research into CEA as an intervention for ACST could prove beneficial.

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9. He D, Liu W, Zhang T. The Development of Carotid Stent Material. *Interv Neurol.* 2015;3(2):67-77. doi:10.1159/000369480
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*2<sup>nd</sup> revision:*

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Reviewer #1:

**Thank you. The authors have followed the suggestions and improved the manuscript. Please add comment which method of neuromonitoring would you recommend to reduce the risk of stroke.**

**Thank you for this recommendation. Method of neuromonitoring has now been addressed in the paper.**

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*1<sup>st</sup> revision:*

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Reviewer #1:

**Scientific Quality:** Grade B (Very good)

**Language Quality:** Grade B (Minor language polishing)

**Conclusion:** Accept (General priority)

**Specific Comments to Authors:** nil

**Thank you for taking the time to review our manuscript. Your expertise is appreciated.**

Reviewer #2:

**Scientific Quality:** Grade B (Very good)

**Language Quality:** Grade A (Priority publishing)

**Conclusion:** Accept (General priority)

**Specific Comments to Authors:** Thank you for this comment. I agree with that ACST should be treated based on the neurological injury. CEA is generally recommended in such cases of refractory ACST and neurological deterioration. Prediction is usually difficult and complicated. Further high-level evidence is required to elucidate the issue.

**Thank you for taking the time to review our manuscript. Your expertise is appreciated.**

Reviewer #3:

**Scientific Quality:** Grade B (Very good)

**Language Quality:** Grade B (Minor language polishing)

**Conclusion:** Major revision

**Specific Comments to Authors:** I have several comments that limit the scientific value of this commentary: 1. The most important reference is missing (the original article this commentary refers to) 2. Pls re-phrase "in vascular injury promoted neointimal hyperplasia" 3. The sentence "Typically, the approach to ACST treatment is determined by indication of ..." is not clear. Needs to be re-phrase and corrected for grammar mistakes. 4. Pls re-phrase "With discontinuation of DAPT" - as it should be "after discontinuation"... 5. Pls correct to "drug-eluting" 6. In the case of CEA under the setting of ACST, the authors could consider stump pressure for intraoperative neuromonitoring and risk prediction? Pls see the reference: Sef D et al. Neuromonitoring during Carotid Endarterectomy and Impact of Contralateral Internal Carotid Occlusion. J Stroke Cerebrovasc Dis. 2018 May;27(5):1395-1402.

**Thank you for taking the time to review our manuscript. We appreciate the specific suggestions you have made and papers you have included for us to review. Your editorial review has been incredibly helpful.**

1. The most important reference is missing (the original article this commentary refers to)

**Excellent point, the reference has been added.**

2. Pls re-phrase "in vascular injury promoted neointimal hyperplasia"

**Thank you for your advice, this sentence has been rephrased.**

3. The sentence "Typically, the approach to ACST treatment is determined by indication of ..." is not clear. Needs to be re-phrase and corrected for grammar mistakes.

**Thank you for your advice, this sentence has been rephrased.**

4. Pls re-phrase "With discontinuation of DAPT" - as it should be "after discontinuation"...

**We appreciate this comment and have changed the sentence structure accordingly.**

5. Pls correct to "drug-eluting"

**Thank you for this recommendation. The correction has been made.**

6. In the case of CEA under the setting of ACST, the authors could consider stump pressure for intraoperative neuromonitoring and risk prediction? Pls see the reference: Sef D et al. Neuromonitoring during Carotid Endarterectomy and Impact of Contralateral Internal Carotid Occlusion. J Stroke Cerebrovasc Dis. 2018 May;27(5):1395-1402.

**Thank for bringing this to our attention. We have included this reference and commenting on the topic within the manuscript.**