

# Eagle Syndrome Causing Internal Carotid Artery Pseudoaneurysm: An Unusual Cause of Pulsatile Tinnitus

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## Eagle Syndrome

- Constellation of symptoms caused by elongated styloid process (ESP) (> 30 mm)<sup>1</sup>
- Only 5-10% of ESP symptomatic<sup>1</sup>
- Common symptoms: pharyngeal pain, globus sensation, dysphagia, odynophagia, otalgia, and headache<sup>1</sup>
- Symptoms attributable to compression of the seventh, ninth, and tenth cranial nerves or direct impaction on the pharyngeal wall<sup>1</sup>
- Vascular variant: attributable to compression of the internal jugular vein or extracranial internal carotid artery<sup>1,2,3</sup>
- Previous case reports suggesting Eagle syndrome may cause carotid artery dissections or transient ischemic attacks<sup>2,3</sup>
- Pulsatile tinnitus reported as a symptom resulting from either venous or arterial vascular compression<sup>4,5,6</sup>

## Clinical Course

- 51 yo male with no significant PMHx, evaluated 12/2/25
- Left pulsatile tinnitus for 10 mos, no hearing loss or vertigo
- CTA Head 6/13/25 (Figure 1 & 2)
- Started on aspirin over summer with improvement in tinnitus
- Left-sided neck pain, intermittent odynophagia on the left
- Left styloid excision on 12/29/25
- Returned to ED on 12/30/25 for left facial swelling – CT Neck without hematoma (Figure 3)
- Post-op visit 1/15/26 - tinnitus improved
- Endovascular left carotid artery stent placed 2/19/26 with neurosurgery
- Post-op visit 4/2/26 with neurosurgery – intermittent left tinnitus post-operatively which had resolved by time of visit
- Undergoing genetics workup for possible connective tissue disorder

## Discussion

ESP (length > 30 mm) is seen in about 4% of the population, with only 5-10% causing symptoms<sup>7</sup>. Speculated causes include congenital variants, calcifications of the stylohyoid ligaments due to aging, inflammation or trauma<sup>8</sup>. The vascular form, estimated 24% of cases, is due to contact between the ESP and extracranial internal carotid artery or internal jugular vein, with symptoms including headache, syncope, TIA, stroke and rarely hemorrhage<sup>9</sup>. Symptoms and sequelae can result from static compression or point impingement from neck movement. In this case we postulated that neck movement led to repetitive impingement of the ICA at a site of “pseudoarthrosis” along the stylohyoid chain, causing arterial wall disruption and pseudoaneurysm formation. Treatment of vascular ES is case and provider specific, with management options including antiplatelet/anticoagulant therapy, vascular stenting, and styloidectomy, each alone or in combination<sup>10</sup>. We opted for styloidectomy with vascular stenting given the patient’s young age and risk for subsequent events, such as thromboembolic sequelae. Styloidectomy is performed either trans-cervically or trans-orally. We favor transcervical approach when site of pathology is close to skull base for optimal access to the proximal portion of styloid and neurovascular visualization and control, and transoral primarily for cases where resection of lower aspect of styloid alone is sufficient for symptom control.

## Clinical Imaging

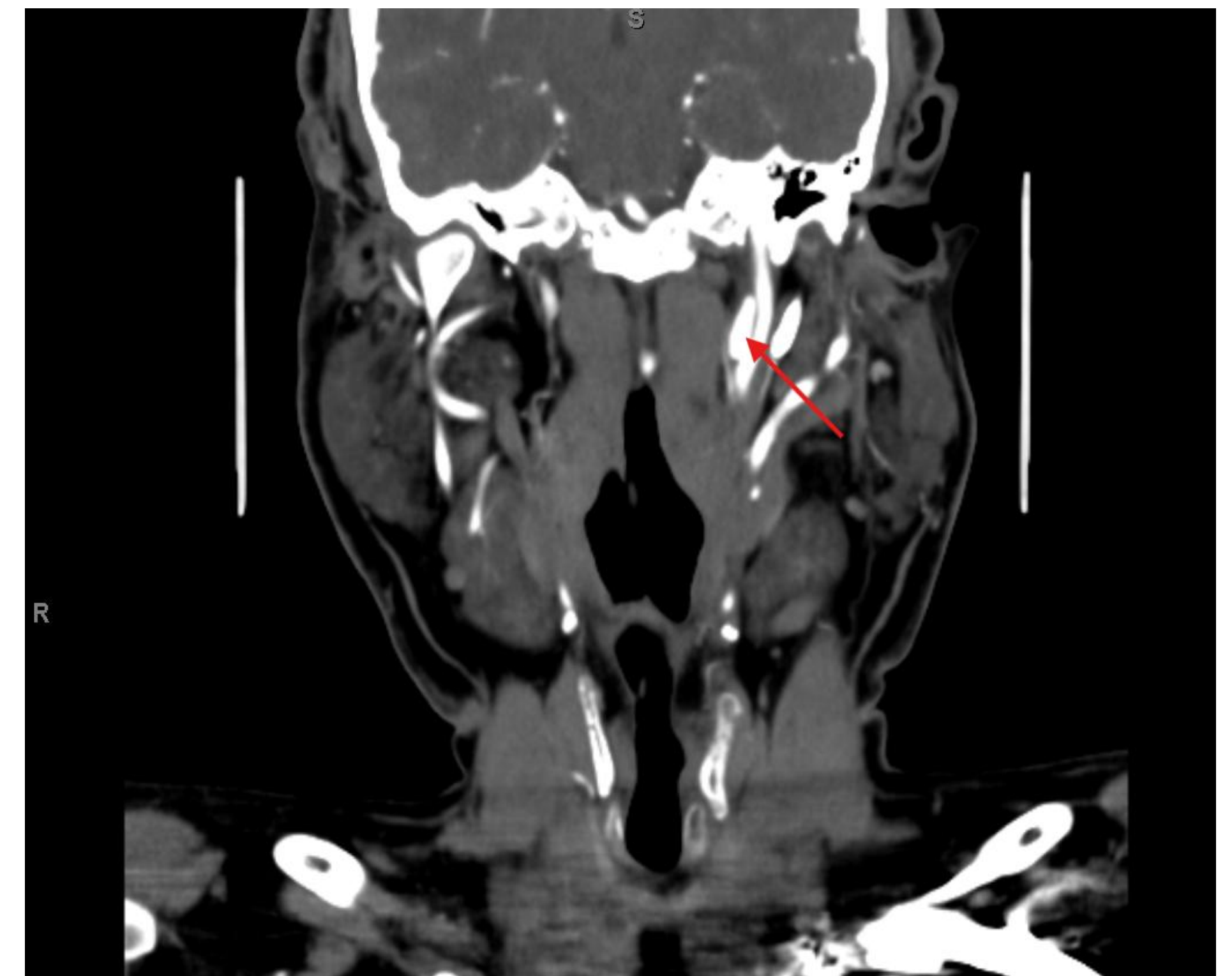


Figure 1: Coronal CT Angiography of the Neck. Red arrow identifying left ICA pseudoaneurysm



Figure 2: Coronal CT Angiography of the Neck, bone window. Red arrow identifying pseudoarthrosis of the left styloid

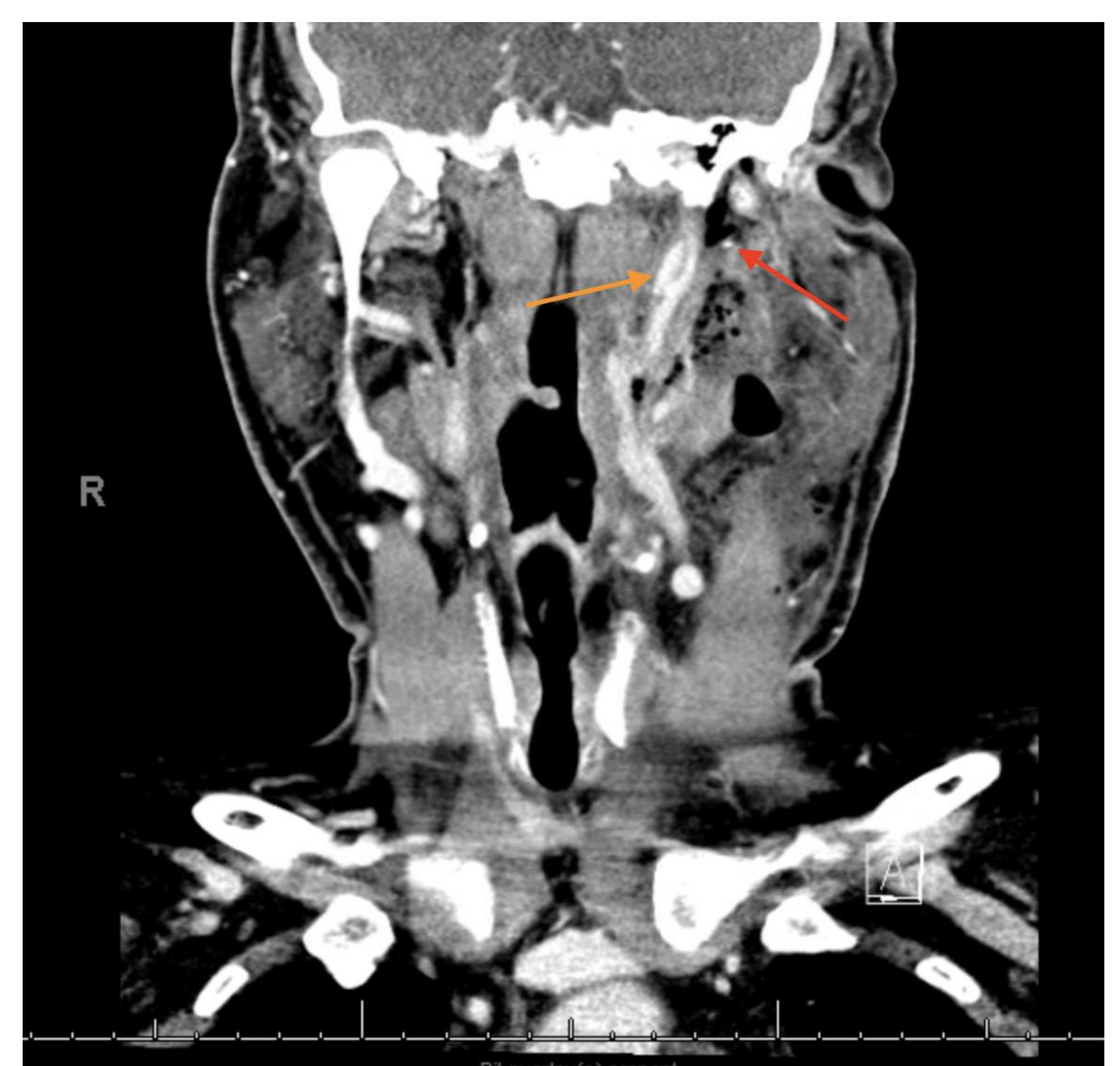


Figure 3: Post-op Coronal CT Angiography of the Neck, bone window. Distal aspect of remaining left styloid (red arrow) now separated from pseudoaneurysm (orange arrow)

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