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Three-dimensional modeling of Eagle syndrome

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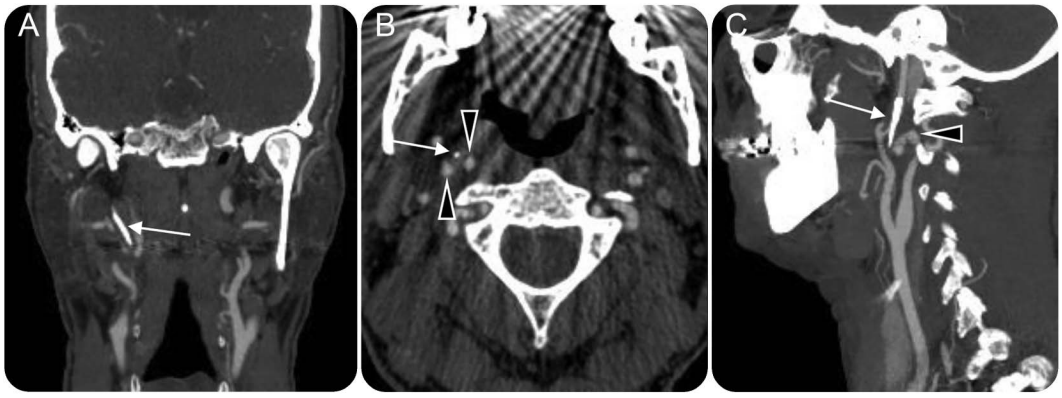
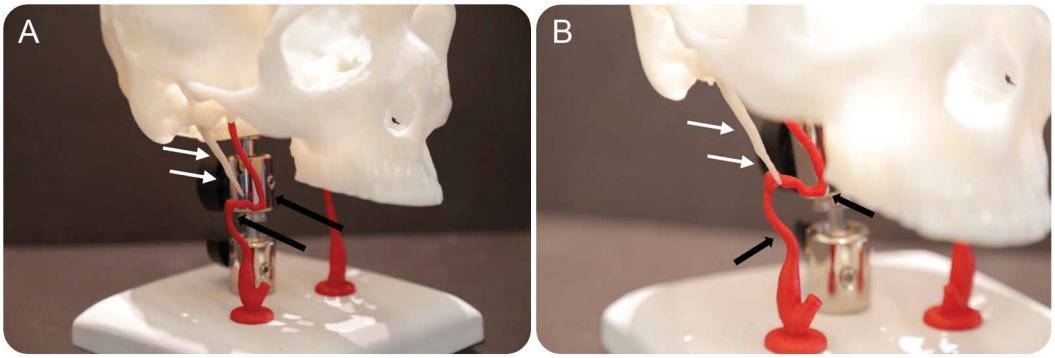
Figure 1 CT angiography of styloid-carotid artery syndrome



Coronal (A), axial (B), and sagittal (C) maximum intensity projection shows the elongated right styloid process (arrows, A–C) along with the tortuous right internal carotid artery (arrowheads, B and C).

A 63-year-old man presented with transient episodes of left-hand weakness and right-eye vision loss following a lengthy airplane trip. The patient had reported right neck pain after sleeping awkwardly on the flight. Carotid dissection, paradoxical embolism, atherosclerotic occlusion, and thrombotic occlusion were considered possible etiologies of the associated carotid occlusion. Following a period of anticoagulation, a subsequent CT angiography (figure 1, A–C) revealed findings consistent with the styloid-carotid artery, or Eagle, syndrome.[1] A 3-dimensional model was subsequently created (figure 2, A and B) utilizing a 3D printer, which provided the most versatile, safe, and cost-efficient option[2] to visualize the patient's unique anatomy and plan for surgical intervention.

Figure 2 Three-dimensional model of Eagle syndrome



This flexible 3-dimensional model (A and B), created from CT angiography data, allowed for unrestricted manipulation of the patient's skull and experimentation with various head and neck positions to evaluate the interaction between the elongated styloid process (white arrows, A and B) and right internal carotid artery (black arrows, A and B). This precluded the need for additional angiography.

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2. Preece D, Williams SB, Lam R, Weller R. "Let's get physical": advantages of a physical model over 3D computer models and textbooks in learning imaging anatomy. Anat Sci Educ 2013;6:216–224.