

A Case of Blindness After Transcatheter Aortic Valve Replacement

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Abstract

Embolic stroke is a relatively rare complication that may occur in patients who undergo a transcatheter aortic valve replacement (TAVR). This case presents a patient with an extensive past medical history that underwent complications during the procedure that ultimately resulted in blindness. This case emphasizes the importance of maintaining a high level of suspicion when encountering atypical neurologic findings postoperatively, such that timely interventions may occur and improve patient outcomes.

Learning Objective

Discuss cortical blindness as a potential serious complication after transcatheter aortic valve replacement (TAVR) and the methods used to evaluate and manage visual disturbances postoperatively.

Introduction

Transcatheter aortic valve replacement (TAVR) has become a more prevalent, minimally invasive approach relative to open surgical aortic valve replacement in the United States. Although the procedure was initially performed under general anesthesia, studies have shown that this procedure can be performed under moderate sedation and local anesthesia with similar outcomes. Complication rates amongst the methods are comparable, with vascular complications being one of the most common reasons to upgrade from moderate sedation to general anesthesia. Amongst the possible complications following TAVR, embolic stroke remains one of the most serious.

Case Description

An 89-year-old male with a past medical history of interstitial lung disease, myelodysplastic syndrome, chronic kidney disease, and moderate mitral regurgitation presented following multiple days of shortness of breath worsened by exertion. He was diagnosed with acute diastolic heart failure, acute kidney injury, and new onset atrial fibrillation. Echocardiography revealed moderate to severe aortic stenosis, requiring urgent TAVR.

During the operation, respiratory distress required placement of a laryngeal mask airway followed by an endotracheal tube. After the procedure, the patient was extubated. Physical exam in the PACU demonstrated continued sedation, gurgling sounds, and no response to command or noxious stimuli. He had recurrent respiratory distress resulting in re-intubation and was subsequently transferred to the ICU while sedated and intubated. On postoperative day three the patient was successfully extubated and reported cortical blindness. MRI revealed acute and subacute bilateral infarct in the MCA, PCA, and SCA vascular territories.

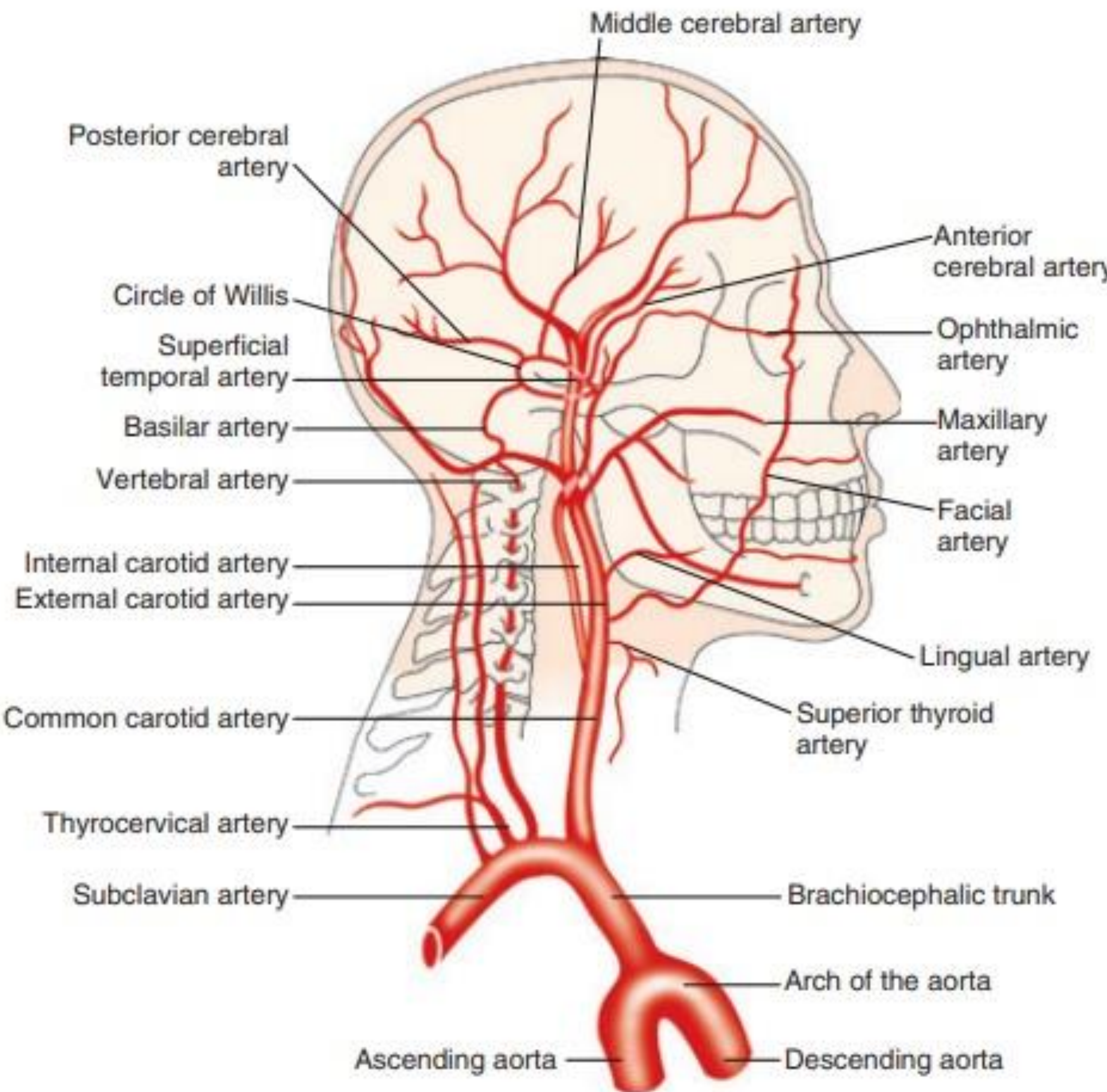
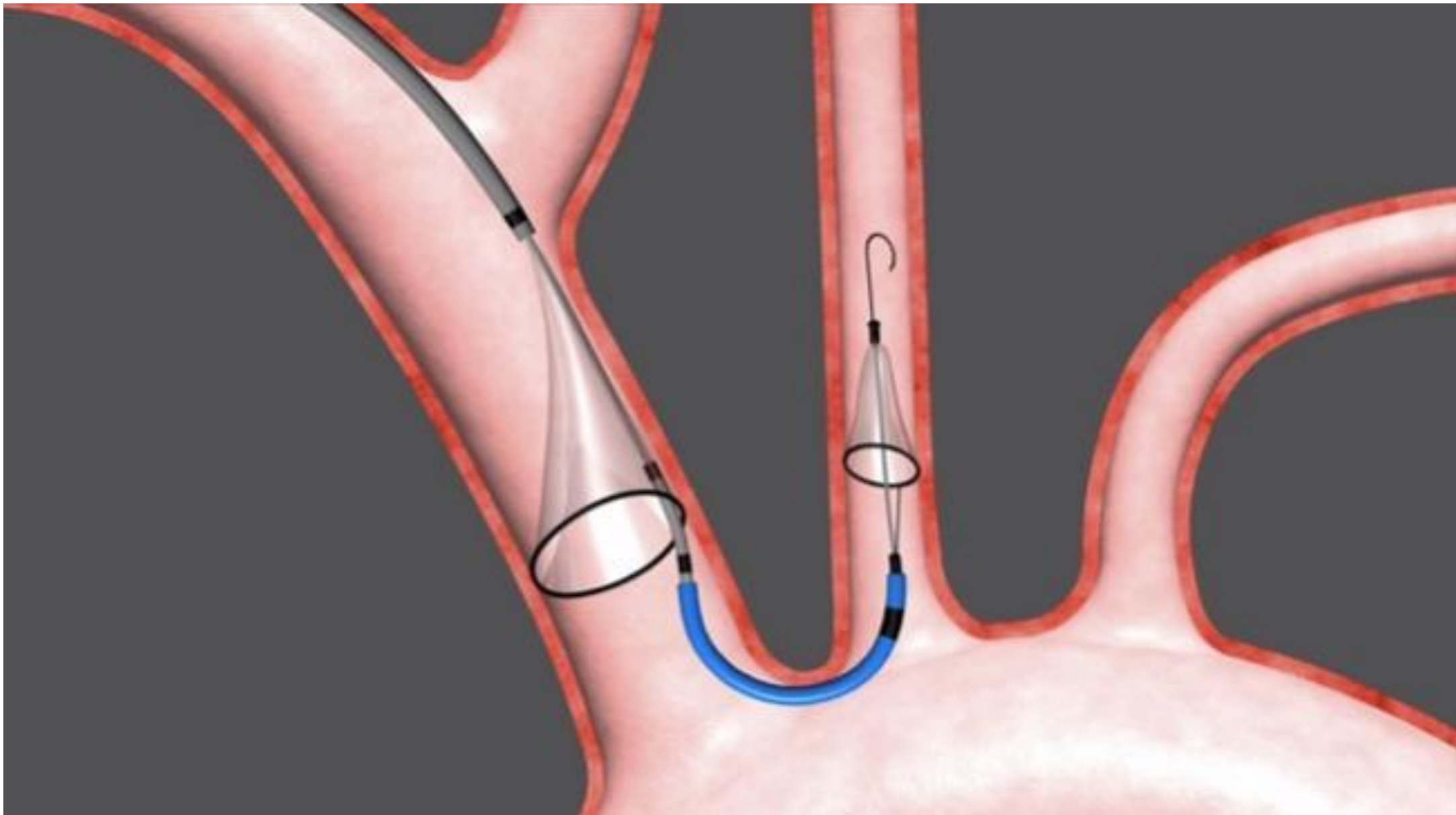


FIGURE 19-9 Right aspect of the common carotid artery.

Discussion

Amongst the complications following TAVR, embolic stroke has an occurrence rate of 2-5%.¹ The pathophysiology of stroke in this patient likely came from the perioperative embolization of debris from the stenotic valve or vasculature. The debris likely traveled through the brachiocephalic trunk and common carotid arteries to reach the infarcted regions causing the patient's visual impairment. Devices for cerebral embolic protection such as the Sentinel™ Cerebral Protection System have been developed to mitigate the risk of stroke during TAVR. Although these devices have not been shown to significantly reduce incidents of perioperative stroke, studies have shown a statistically significant reduction of disabling stroke.^{2, 3}

Perioperative strokes can be challenging to identify, especially in sedated patients who may not express the typical neurological deficits. In high-risk patients undergoing a cardiac procedure with atrial fibrillation, there should be a high level of suspicion when encountering atypical neurologic findings. Sudden respiratory distress, delayed emergence from sedation, and lack of responsiveness to stimuli could be indicators of neurologic injury. In such cases, an anesthesiologist's vigilance and timely intervention can be critical for optimal patient outcomes.

Conclusion

Although highly improbable, a cardioembolic debris can potentially travel various cerebral arteries and result in blindness. This case demonstrates the importance of recognizing atypical neurologic findings and taking postoperative visual disturbances seriously. This allows the provider to rapidly apply diagnostic studies and interventions to mitigate major negative patient outcomes..

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