

## Introduction

Anterior cerebral artery variations are often observed and have clinical implications if pathology involves the ACAs or surrounding structures and a variant is present. Bilaterally crossed anterior cerebral arteries are a previously undocumented finding in this vascular territory. A patient is presented with incidentally identified bilaterally crossed anterior cerebral artery circulation during digital subtraction angiography for tumor management.

## Methods

A patient with known metastatic prostate cancer and a recently diagnosed large right extra-axial occipital mass underwent cerebral angiography for potential tumor embolization prior to resection.

## Results

Diagnostic cerebral angiography demonstrated bilaterally crossed anterior cerebral arteries as the typical anterior cerebral artery distribution in each hemisphere received cross-filling from the contralateral circulation. Although incidental, this is likely an asymptomatic variant in a vascular region with frequent pathologies and anatomic variants.

## Conclusions

A previously undocumented variant of bilaterally crossed anterior cerebral arteries is described. While likely uncommon, this variant is an addition to several well-documented anterior cerebral artery anatomical variants. Ongoing appreciation of these variants is critical due to the frequent pathology and procedures involving the anterior cerebral vasculature.

## Learning Objectives

- 1) Describe the normal anterior cerebral artery anatomy.
- 2) Describe common variants encountered in the anterior cerebral artery and anterior communicating artery vasculature.
- 3) Demonstrate knowledge of bilaterally crossed anterior cerebral arteries and the potential clinical implications.

## References

1. Jenkins, JR. Atlas of neuroradiologic embryology, anatomy, and variants. 1st ed. Baltimore: MD. Lippincott Williams and Wilkins; 2000.
2. Perlmutter D, Rhoton AL. Microsurgical anatomy of the distal anterior cerebral artery. J Neurosurg. 1978 Aug; 49(2): 204-28