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65.1 Epidemiology and Clinical Presentation

- A persistent trigeminal artery (PTA) is a remnant structure from the fetal vasculature that may fail to regress during development.
- PTA is the most common and most cephalad of the persistent communications between the carotid and vertebro-basilar systems [1].
- The incidence of PTA ranges from 0.1 to 0.76 % in the general population [1].
- Although PTAs are almost always asymptomatic and are usually incidental findings, the existence of a PTA may have major implications for selection of a surgical approach for any coexistent lesions in the sellar region.
- PTAs have been reported to coexist with pituitary adenomas [2–4], craniopharyngiomas, cerebral aneurysms [5, 6], or cavernous fistulas [1, 7].
- Rarely, PTAs can present clinically with trigeminal neuralgia or hyperprolactinemia caused by pituitary stalk effect [8].

65.2 Imaging Features

- On standard MR sequences, a flow void may be seen coursing through the sella or lateral to it.
- Confirmation of a PTA can be made using CT or MR angiography or with standard cerebral angiography as needed (Fig. 65.1).
- PTAs arise from the intracavernous ICA and run caudally, either passing beneath the dorsum sellae (lateral type) or passing directly through the sella and dorsum sellae (medial type), to communicate with the basilar artery. The types occur with equal frequency [9, 10].
- The Saltzman classification of PTA has also been widely used to classify these anomalies. In the Saltzman type 1 PTA, the posterior communicating (PCOM) artery is absent. In the Saltzman type 2 PTA, the ipsilateral posterior cerebral artery (PCA) arises directly from the ICA, and the P1 segment is absent, indicating a fetal origin of the PCA. A hypoplastic basilar artery proximal to the anastomotic point is usually seen with both types [10, 11].
- PTAs occur on the left side in 62.5 % of cases [12].

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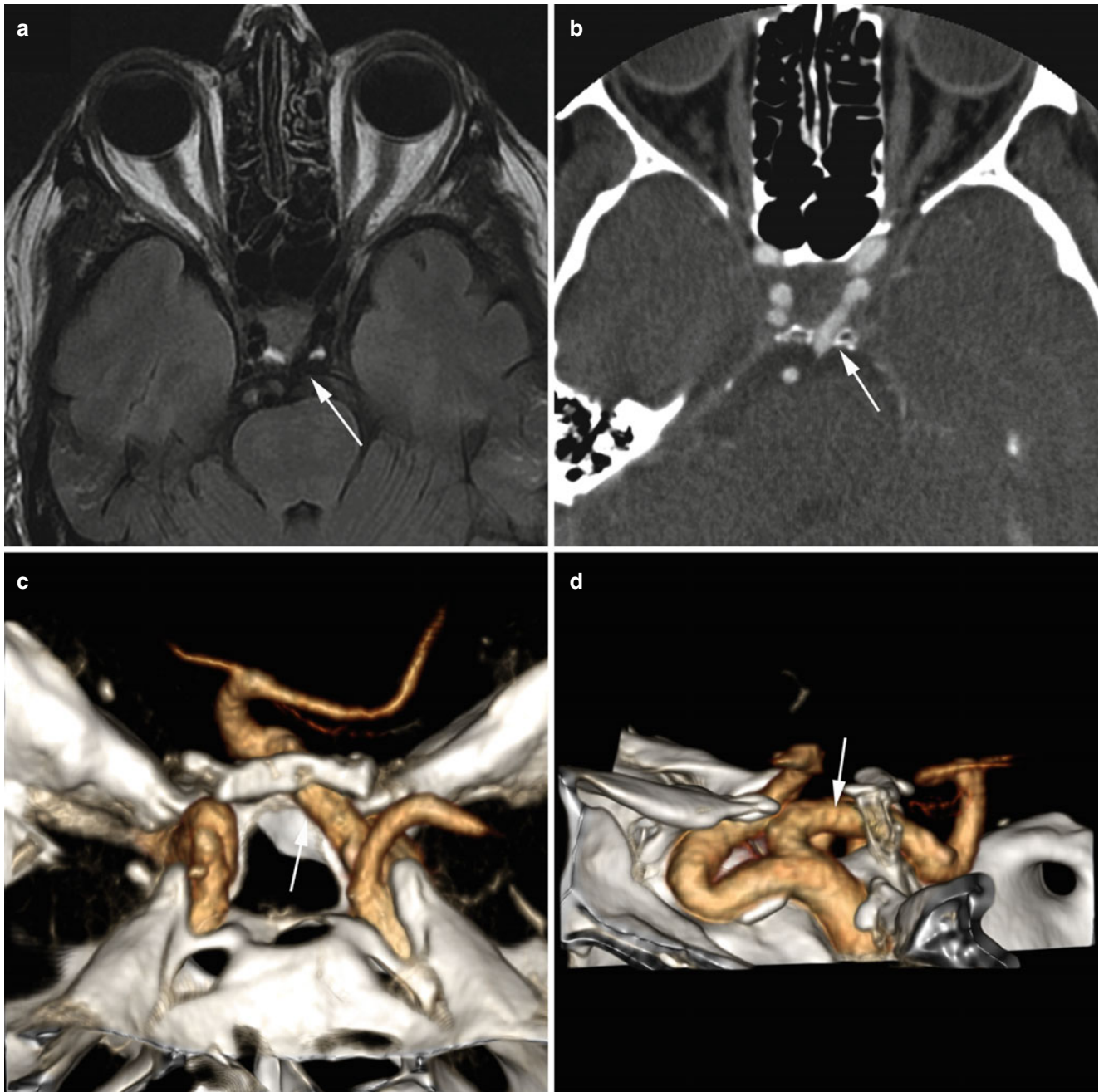


Fig. 65.1 Persistent trigeminal artery (PTA) extending through the sella turcica and pituitary gland. (a) Axial noncontrast MRI showing a flow void through the dorsum sellae (*arrow*) arising from the left ICA. (b) Axial CT angiogram showing the PTA arising from the left ICA (*arrow*) and communicating with the basilar artery system after passing

through the dorsum sellae. (c) Three-dimensional reconstruction (anteroposterior view) showing PTA arising from the left ICA and communicating with the basilar artery (*arrow*). (d) Three-dimensional reconstruction (lateral view) showing PTA arising from the left ICA and communicating with the basilar artery (*arrow*)

65.3 Clinical and Surgical Management

- No clinical management is required. The importance of a sellar PTA is that it may affect surgical planning for other lesions of the sellar and parasellar region [13].
- Successful transsphenoidal surgery for a pituitary adenoma has been performed in a patient with an intrasellar PTA [3].
- In rare cases, microvascular decompression or coil embolization may be warranted in patients with PTA causing trigeminal neuralgia [1, 14].

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