Anomalous subarcuate loop

Technical note

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An anomalous subarcuate loop of the anterior inferior cerebellar artery is described in which the artery is adherent to or penetrates the posterior fossa dura in the subarcuate fossa. When encountered during acoustic neurilemoma surgery, the artery should be carefully mobilized along with a sleeve of dura to prevent its injury.

KEY WORDS | acoustic neurinoma | anterior inferior cerebellar artery | cerebellopontine angle | anomalous vessel

In this report, we describe an anomalous postmeatal subarcuate loop of the anterior inferior cerebellar artery (AICA) encountered during surgery for acoustic neurilemmas. The surgeon should be aware of this possibility so that damage to the artery can be avoided.

Anatomical Description

In approximately 300 operations in the cerebellopontine angle performed by the senior author (L.N.S.), three cases were encountered in which the AICA traversed the dura overlying the posterior surface of the petrous bone and subarcuate fossa. The attachment of the artery to the posterior surface of the petrous bone prevented a conventional surgical approach to the internal auditory meatus and canal (Fig. 1). Accordingly, in all three cases the artery, along with a sleeve of the surrounding dura, was dissected from the bone as shown in Fig. 2. A tiny vessel, probably the subarcuate artery, bled as the AICA was elevated from the bone. This was controlled by bipolar cautery without occlusion of the AICA and waxing of the petrous bone. Surgery for the acoustic neurinoma was then completed.

Discussion

Martin, et al., studied the cerebellopontine angles in 50 cadaveric specimens and found 17 cases of a laterally
FIG. 2. Photograph (upper) and line drawing (lower) showing retraction of the anterior inferior cerebellar artery (AICA) with the dura, exposing the tumor. Roman numerals denote cranial nerves.

convex curve of the AICA directed toward the subarcuate fossa. They called it “the subarcuate loop.” They also discovered that the apex of the loop was occasionally adherent to the dura over the subarcuate fossa at the point where the subarcuate artery arose. Lang found in 6% of his dissections that the subarcuate loop was either traversing the dura or actually piercing through the bone of the region.

Various authors have described the possibility of brain-stem infarction and death if the postmeatal segment of the AICA is clipped during surgery for acoustic nerve-sheath tumors. The danger of brain-stem infarction is more likely if the ipsilateral posterior inferior cerebellar artery is rudimentary. Coagulation of the AICA may lead to hearing loss or facial palsy. This artery can inadvertently be ruptured during retraction of the cerebellum away from the posterior surface of the petrous bone if it is densely adherent to or traverses through the dura. Surgeons managing cerebellopontine angle tumors should be aware of this possibility.

References


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