

Outer arachnoid

The outer [arachnoid](#) is a thin layer of tissue that covers the brain and spinal cord and is located between the dura mater (a tough, protective layer of tissue) and the inner arachnoid (a delicate membrane that lines the brain and spinal cord). It plays an important role in protecting the brain and spinal cord from injury and infection. In the [cerebellopontine angle](#) (CPA), which is a region of the [skull base](#) where many neurosurgical operations are performed, the outer arachnoid is the key structure that is approached to access any pathologies present in the [region](#).

The cerebellopontine angle (CPA) is a common location for skull base pathologies, making it a target for neurosurgical operations. The outer arachnoid is the key structure to approach these lesions. The study aimed to describe the microsurgical anatomy of the outer arachnoid of the CPA and its pathoanatomy in the case of space-occupying lesions. The study was performed on 35 human cadaveric specimens, and a retrospective analysis of 35 CPA operations was conducted. The results revealed that the outer arachnoid cover is loosely attached to the inner surface of the dura of the CPA. The pia mater strongly adheres to the outer arachnoid at the petrosal surface of the cerebellum, and at the level of the dural penetration of the cranial nerves, the outer arachnoid forms sheath-like structures around the nerves. The outer arachnoid becomes detached from the pial surface in the midline and forms the base of the posterior fossa cisterns. Pathologically, the outer arachnoid becomes displaced, and the way of displacement depends on the origin of the lesion. The most characteristic patterns of changes of the outer arachnoid were described in the case of meningiomas, vestibular schwannomas, and epidermoid cysts of the CPA. Understanding the anatomy of the outer arachnoid of the cerebellopontine region is crucial for performing safe microsurgical approaches and dissections during the resection of pathological lesions ¹⁾

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Kurucz P, Ganslandt O, Buchfelder M, Barany L. Microsurgical anatomy and pathoanatomy of the outer arachnoid membranes in the cerebellopontine angle: cadaveric and intraoperative observations. *Acta Neurochir (Wien)*. 2023 May 3. doi: 10.1007/s00701-023-05601-x. Epub ahead of print. PMID: 37133788.

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