The posterior fossa tumors can be situated either dorsal and lateral, ventral and medial, or occupying both regions in relation to the cranial nerves, with the latter position being especially challenging. In an effort to organize neurovascular complexes contained within, anatomically based triangles have been proposed to serve as guiding landmarks for locating critical neurovascular structures. The objectives of this study were to: (1) provide a review of historical anatomically based vascular-centric triangles of the posterior fossa based on respective neurovascular complexes; (2) introduce a more organized alternative system of triangles with the conceptualization of a projection system from superficial to deep; and (3) propose and describe two new triangles of the posterior fossa: Petrous-Acousticofacial triangle and Acousticofacial-Trigeminal triangle. Five cadavers were studied. Neurovascular complexes were described with the use of anatomically guided cranial nerve-centric triangles, each of which was formed by cranial nerves, petrous bone, brainstem, tentorium, and superior petrosal vein. All triangles were measured and anatomical boundaries confirmed by neuronavigation. Two circumferential frameworks were created to correlate superficial and deep anatomy: (1) Outer circumference and (2) Inner circumference. Posterior fossa was divided into the following: (1) Superior complex-corresponds to the sub-asterional region, which was projected to the trigeminal nerve; (2) Middle complex-corresponds to the mastoid emissary vein foramen, which was projected to the facial and vestibulocochlear nerves; and (3) Inferior complex-corresponds to the posterior condylar canal, which projects to the lower cranial nerves. Neuronavigation confirmed these landmarks. Two new triangles were proposed: (1) The Petrous-Acousticofacial triangle, and (2) The Acousticofacial-Trigeminal triangle. Triangles provide a useful anatomical guide to the posterior fossa. Ortiz-Rafael et al. introduced an organized schema, as well as proposed two new triangles, with the intent to minimize manipulation of neurovascular structures [1)].

1)
Ortiz-Rafael J, Chakravarthi SS, Revuelta-Gutiérrez R, Kassam A, Monroy-Sosa A. Microsurgical anatomy of the cranial nerve-centric triangles of the posterior cranial base: cadaveric and radiological anatomical study. Anat Sci Int. 2021 Jun 16. doi: 10.1007/s12565-021-00620-z. Epub ahead of print. PMID: 34132987.

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