



The interperiosteodural concept applied to the jugular foramen and its compartmentalization

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OBJECTIVE The dura mater is made of 2 layers: the endosteal layer (outer layer), which is firmly attached to the bone, and the meningeal layer (inner layer), which directly covers the brain and spinal cord. These 2 dural layers join together in most parts of the skull base and cranial convexity, and separate into the orbital and perisellar compartments or into the spinal epidural space to form the extradural neural axis compartment (EDNAC). The EDNAC contains fat and/or venous blood. The aim of this dissection study was to anatomically verify the concept of the EDNAC by focusing on the dural layers surrounding the jugular foramen area. **METHODS** The authors injected 10 cadaveric heads (20 jugular foramina) with colored latex and fixed them in formalin. The brainstem and cerebellum of 7 specimens were cautiously removed to allow a superior approach to the jugular foramen. Special attention was paid to the meningeal architecture of the jugular foramen, the petrosal inferior sinus and its venous confluence with the sigmoid sinus, and the glossopharyngeal, vagus, and accessory nerves. The 3 remaining heads were bleached with a 20% hydrogen peroxide solution. This procedure produced softening of the bone without modifying the fixed soft tissues, thus permitting coronal and axial dissections. **RESULTS** The EDNAC of the jugular foramen was limited by the endosteal and meningeal layers and contained venous blood. These 2 dural layers joined together at the level of the petrous and occipital bones and separated at the inferior petrosal sinus and the sigmoid sinus, and around the lower cranial nerves, to form the EDNAC. Study of the dural sheaths allowed the authors to describe an original compartmentalization of the jugular foramen in 3 parts: 2 neural compartments-glossopharyngeal and vagal-and the interperiosteodural compartment. **CONCLUSIONS** In this dissection study, the existence of the EDNAC concept in the jugular foramen was demonstrated, leading to the proposal of a novel 3-part compartmentalization, challenging the classical 2-part compartmentalization, of the jugular foramen.

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