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REVISITING THE REGIONAL MICROSURGICAL ANATOMY AND VARIATIONS OF THE ANTERIOR CLINOID PROCESS IN RELATION TO SUPRA- AND PARASELLAR LESIONS

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Despite significant progress in radiology and microsurgical techniques, performing microsurgery in the supra- and parasellar region still poses a significant challenge for neurosurgeons who are at the beginning of their early career. The anterior clinoid process (ACP) is the main bony structure which obscures whole area and the optic nerve (ON), internal carotid and ophthalmic arteries and the oculomotor nerve are at risk during exploration of this area. The aim of this study was to better define the microsurgical anatomy of the supra- and parasellar region and to describe the variations of the ACP along with pertinent case illustrations in which different neurosurgical approaches were used.

Fifteen formalin fixed cadaveric heads and 25 dry skulls were used to define the microsurgical anatomy of the ACP and related structures. Length, basal width and thickness of the ACP were measured on both sides with digital caliper. The presence of the caroticoclinoid foramen (CaCF) which is a bony bridge between clinoid processes as well as other relevant measurement were all noted. Radiological examination of the CaCF was also demonstrated on dry skulls.

The interosseous bridges which are formed between the anterior and middle clinoid processes or connecting the all three (anterior, middle and posterior) clinoid processes were found in 30% of the specimens. The average width, length and thickness of the ACP were 7.3 mm, 9.7 mm and 5.4 mm, respectively. Length of the ON up to the falciform ligament (FL) was 10.9 mm, length of the ON under the FL was 2.7 mm, length of ON after removing of the ACP and unroofing the optic canal was 21.1 mm, distance to the FL to anterior border of the dural portion of the diaphragma sella was 10.1 mm.

The microsurgical anatomy of the supra- and parasellar region has been presented extensively. This study is to clearly redefine the relationship of important vascular, neural, bone and dural layers of this region and also demonstrates the variations of these structures with radiologic examinations from neurosurgical perspective.

