

Internal carotid artery injury is a potentially lethal **complication** in **transsphenoidal approach** for **pituitary lesions**. The **intercarotid distance** (ICD) is thus a major parameter, determining the width of the surgical corridor.

Measurements were performed using thin slice T2-weighted MRI, and/or time-of-flight MR angiography imaging for 64 non-functioning pituitary neuroendocrine tumors (NF-pitNETs), 22 growth hormone-producing pitNETs (GH producing pitNETs), and 46 normal controls. We measured the ICD at 3 anatomic levels: at the distal dural ring (ICD-A); at the most concave point of the C4-C5 bend (ICD-B); and at the most convex point of the C4 bend (ICD-C). Additionally, we measured the sagittal distance between the tuberculum selle and the junction of the sellar floor and clivus on the mid sagittal MRI (TS-C).

Results: We found that ICD-B was the longest and that ICD-A was the shortest among the three distance parameters in all groups ($P < 0.001$). The comparison of the groups revealed that the NF-pitNET group had longer distances than the normal control group at all ICDs ($P < 0.001$). The GH producing pitNET group had longer distance than the normal control group at ICD-B ($P < 0.001$). Tumor volume was correlated with ICD-A and ICD-B in the NF-pitNET, and was correlated with ICD-C in the GH producing pitNET group.

Conclusion: Among the distance parameters, ICD-B is the longest, and was approximately twice the width of the TS-C. The shape of the sella is an ellipse that is widest in the lateral dimension in TSS. A horizontal based dural incision may be more rational than a conventional X-shaped dural incision ¹⁾

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Tsuneoka H, Tosaka M, Yamaguchi R, Tanaka Y, Mukada N, Shimauchi-Ohtaki H, Aihara M, Shimizu T, Yoshimoto Y. The Significance of the Intercarotid Distances for Transsphenoidal Pituitary Surgery: A Magnetic Resonance Imaging Study. World Neurosurg. 2023 Apr 10;S1878-8750(23)00483-7. doi: 10.1016/j.wneu.2023.04.009. Epub ahead of print. PMID: 37044207.

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