



Infero-Lateral Trunk (ILT): anatomical study, surgical relevance, and technical nuances in lateral transcavernous endoscopic endonasal surgery.



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ABSTRACT

OBJECTIVE:

During endoscopic endonasal surgery (EES) Infero-Lateral Trunk (ILT) sacrifice may be required to efficiently and safely achieve tumor resection within the lateral compartment (LC) of the cavernous sinus (CS). The authors investigated the surgical anatomy and variations of the ILT, aiming to provide practical information to safely expose, coagulate, and transect this artery during EES.

METHODS:

In this anatomical study, 24 injected specimens were dissected, and 41 sides examined. The origin, course, branching pattern, and relations of the ILT with surrounding structures were investigated. Clinical charts of patients surgically treated in our institution for pituitary adenomas (PAs) with LC invasion from July 2018 to April 2023 were also retrospectively analyzed. Illustrative cases are provided.

RESULTS:

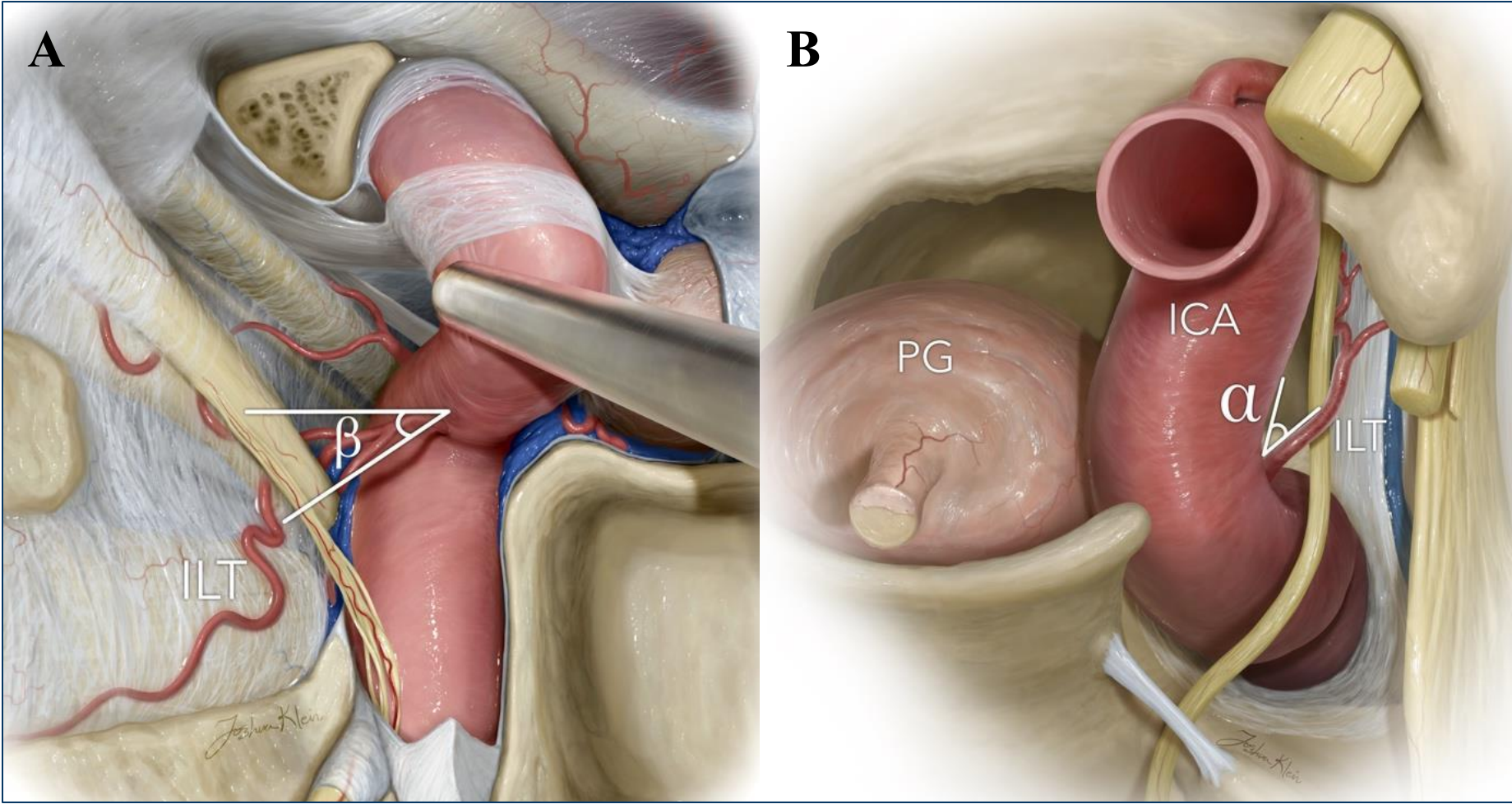
The ILT was found in 93% (n=38/41) of sides, mainly arising from the infero-lateral aspect (91%, n=30/33 sides) of either the middle or posterior third (82%, n=27/33 sides) of the horizontal segment of the internal carotid artery (ICA). After a short common trunk (mean length, 3 mm), the artery divided into two (21%, n=8/38) or, more frequently, three (73.5%, n=28/38) branches, giving blood supply to cranial nerves (CNs) III, IV, V1, V2, V3, VI and the Gasserian ganglion. While the sympathetic plexus was always located anterior to the ILT, CN VI was found anterior to ILT in 82% (n=31/38) sides. The lateral parasellar ligament (LPL) enwrapped the ILT and its branches in 43% (n=15/35) sides. From our investigations, the ILT origin was found, in the coronal plane, at the level of the sellar floor (0 ± 1 mm) and at the level of the LPL (0 ± 2 mm).

In our case series of 25 EES for PAs with LC invasion, the ILT was sacrificed in 5 with no permanent postoperative cranial nerve deficit reported.

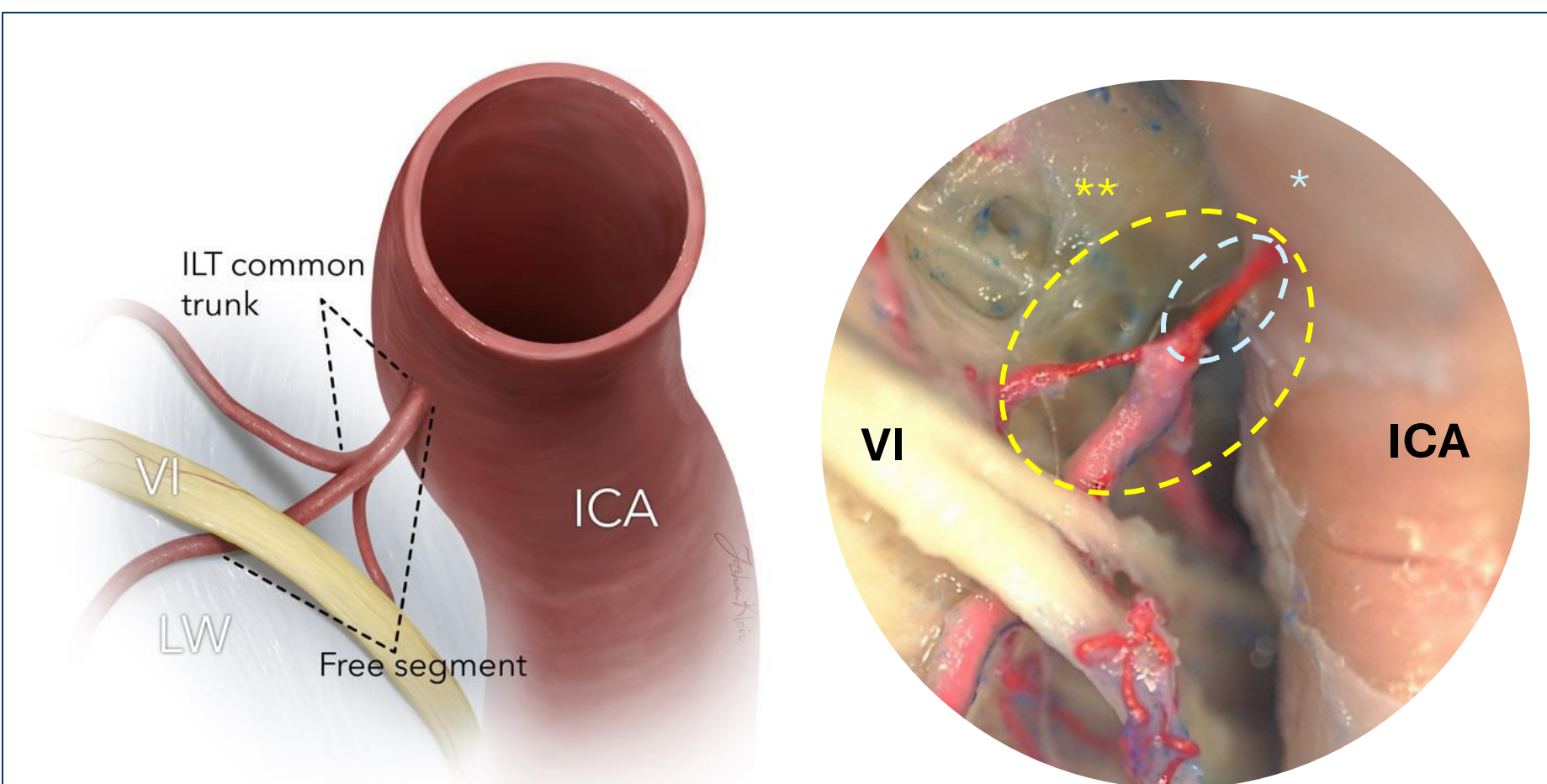
CONCLUSIONS:

This study provided a detailed anatomical investigation of the ILT, which is crucial when accessing the LC of CS. We proposed 2 reliable landmarks to identify the ILT intraoperatively: the sellar floor and the LPL. Furthermore, our investigations confirmed that the ILT can be sacrificed without causing permanent cranial nerve deficits, due to the existence of collateral supply.

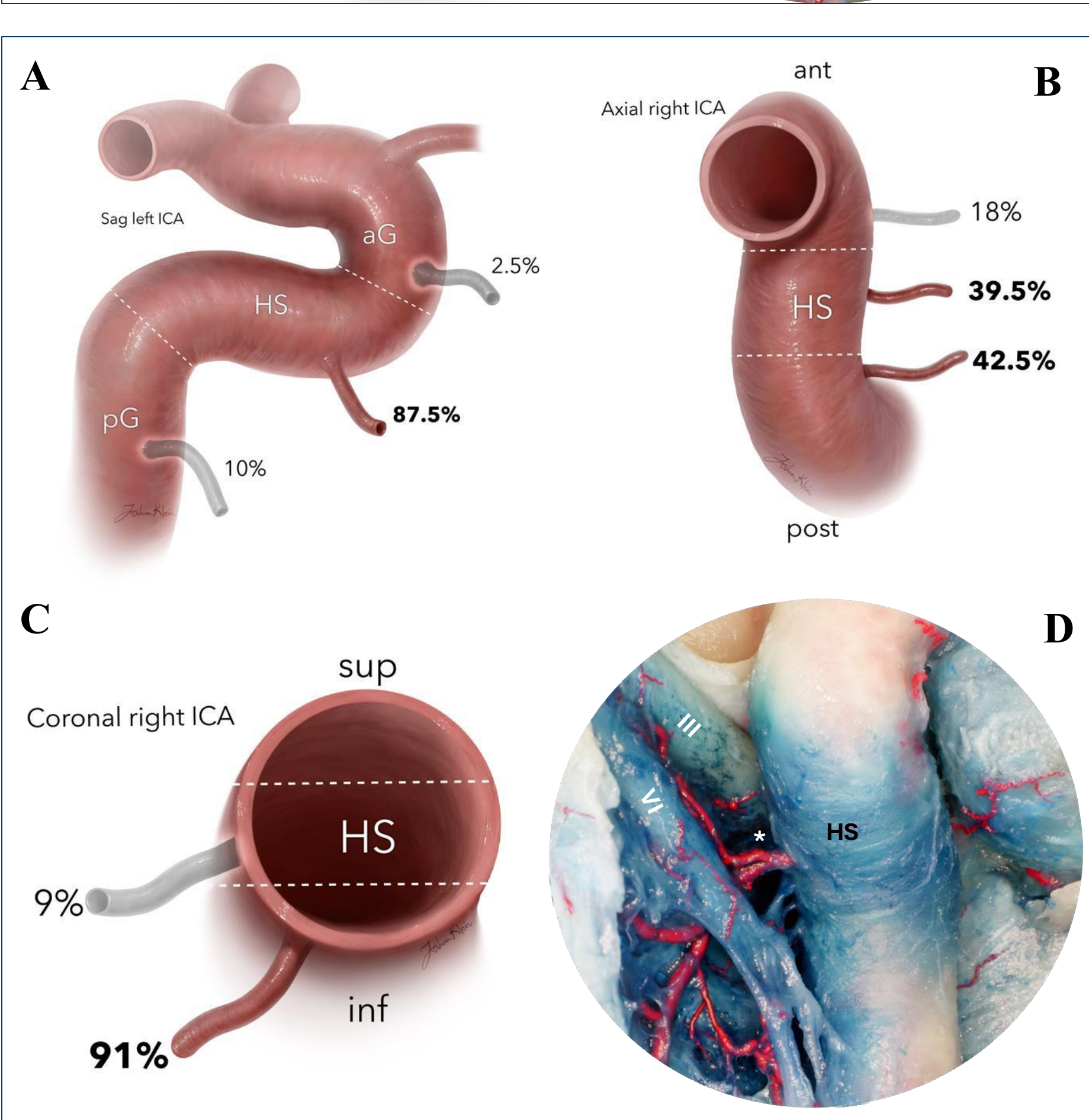
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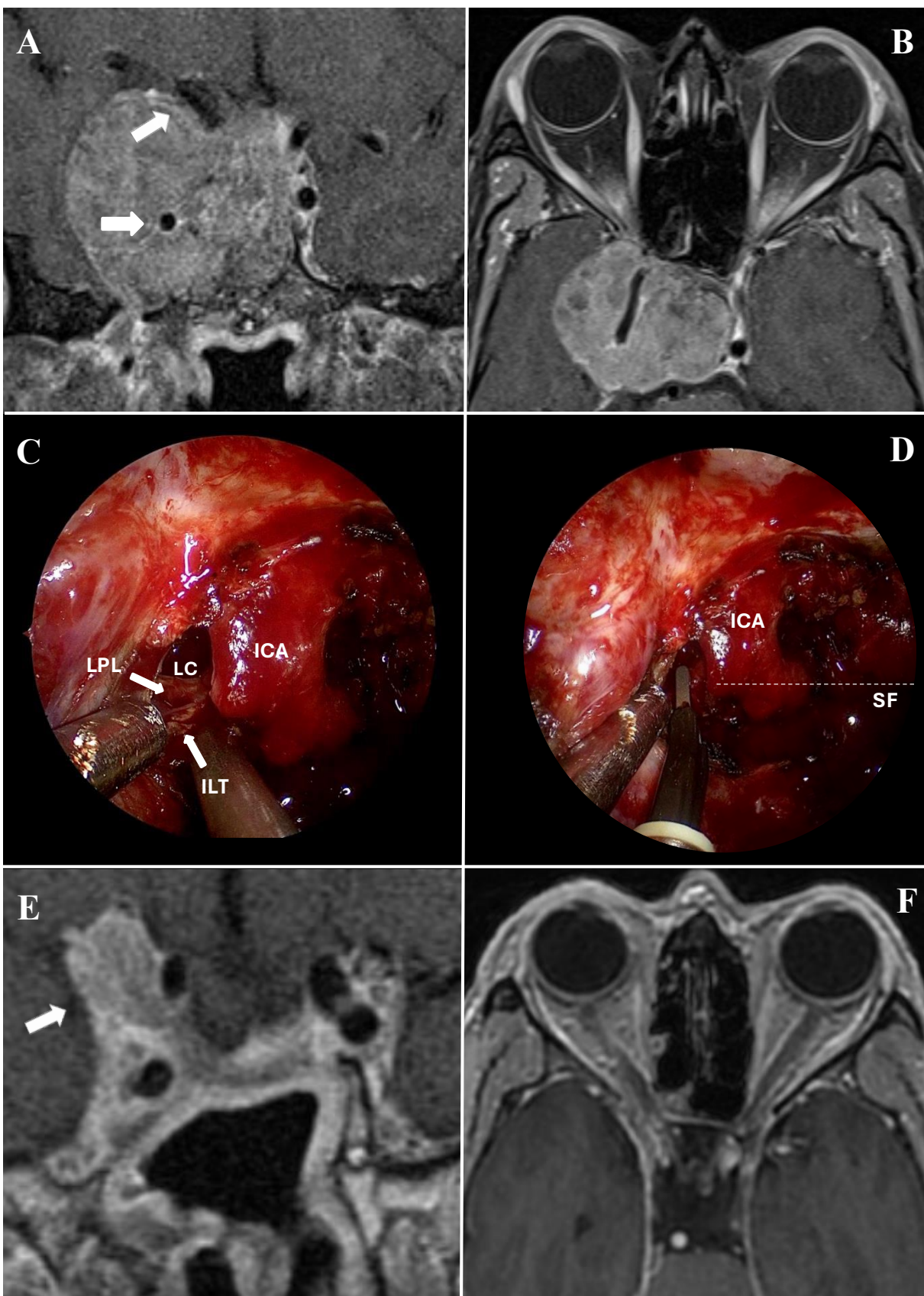
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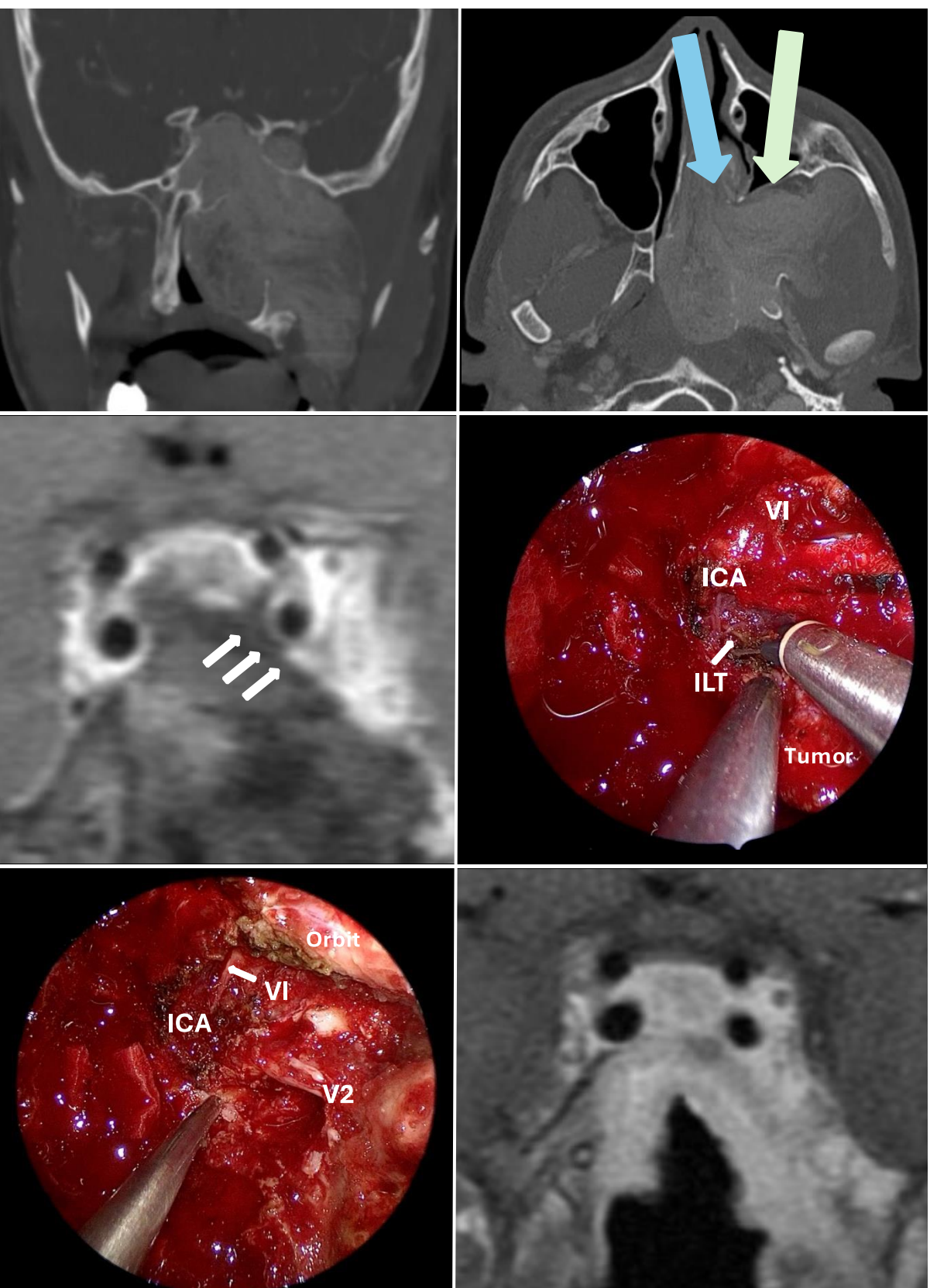
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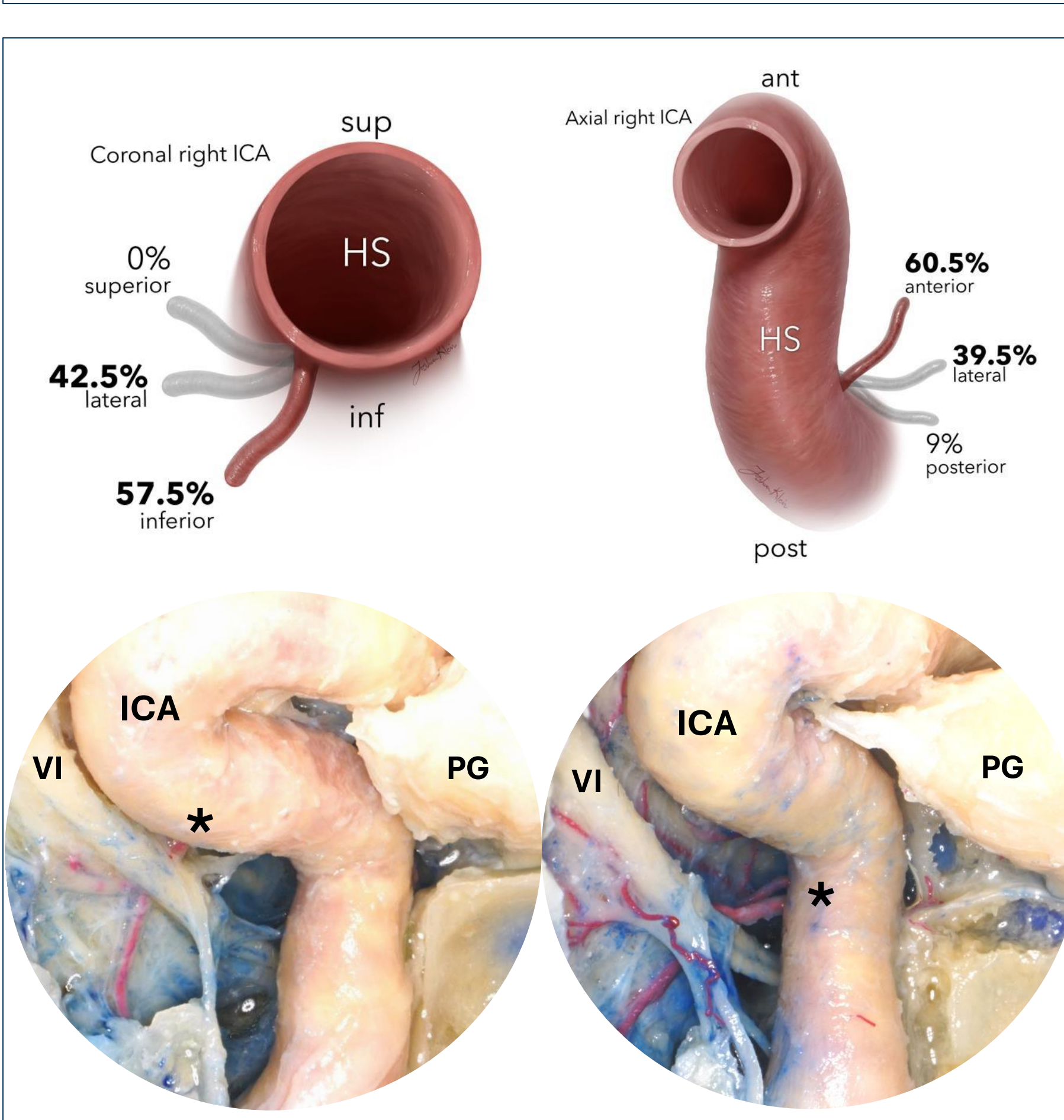
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