

# Surgical Strategies for Endoscopic Endonasal Access to the Retrosellar Region: Evaluating the Type of Pituitary Transposition Technique Based on Disease



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## Objective

The expanded endoscopic endonasal approach (EEA) is increasingly used for resecting of retroinfundibular, upper clival and interpeduncular tumors, providing direct access with minimal optic and oculomotor nerves manipulation, which occurs frequently with open approaches. Various pituitary transposition techniques (extradural, interdural, intradural) exist, but recommendations for selecting the most appropriate technique based on tumor characteristics are not well-established. This study aims to evaluate the most suitable technique based on tumor pathology and extension, focusing on extent of resection (EOR) as well as postoperative neurological and endocrinological outcomes.

## Materials and Method

We analyzed specific anatomical landmarks involved by the tumor, indications, EOR, and postoperative outcomes in 10 skull base tumor cases, and illustrated key surgical steps of interdural and intradural techniques with two illustrative cases.

## Results

The goal should be to effectively access the retrosellar region with minimal manipulation. Typically, we prefer using hemitransposition over full transposition to partially preserve venous drainage, reduce stalk manipulation, and protect pituitary function while achieving the desired exposure.

Among the four lesions originated from the bone and/or extending into the interdural space and parasellar area (e.g., chordoma, chondrosarcoma) the interdural technique provides extensive access to the cavernous sinus and the tumor's superior aspect. By employing a transcavernous approach with angled endoscopes, we successfully removed lesions behind the cavernous ICA. Sacrificing the inferior hypophyseal artery is usually unnecessary unless it significantly restricts access.

In the six cases of tumors located in the interpeduncular fossa that did not involve the cavernous sinus, we used the intradural technique to minimize the risk of substantial venous bleeding, offering us better exposure of the midline structures and still allowing for removal of the posterior clinoid process (PCP). This approach is ideal for tumors like retroinfundibular craniopharyngioma, meningioma, chordoma, chondrosarcoma, and teratomas, usually preserving pituitary function.

In our surgical practice, we limited the use of the extradural technique because it offers restricted access to the superior retrosellar area and makes visualization of the top of the PCP difficult.

## Conclusion

By tailoring the transposition technique to the specific tumor extension and type, the expanded EEA can enhance the rate of gross-total tumor removal with minimal sequelae in the retrosellar and parasellar regions. The utilization of hemitransposition technique can further preserve pituitary function.

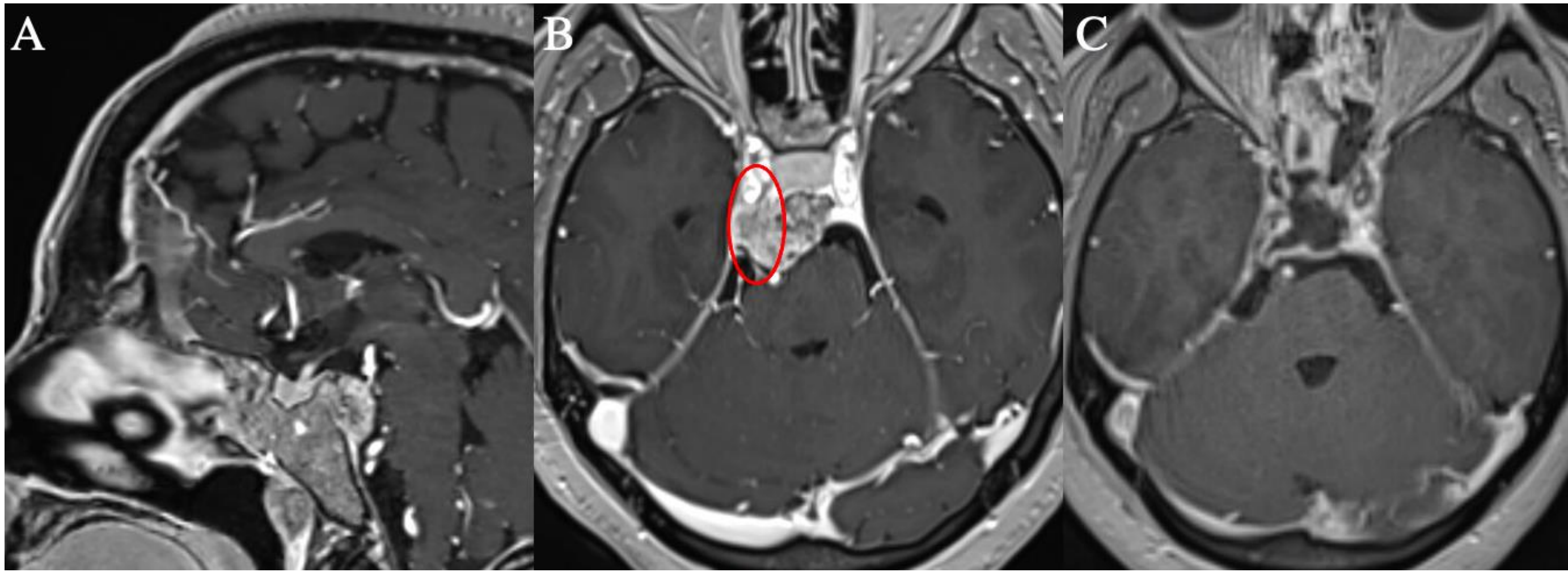


Figure 1. Case 1

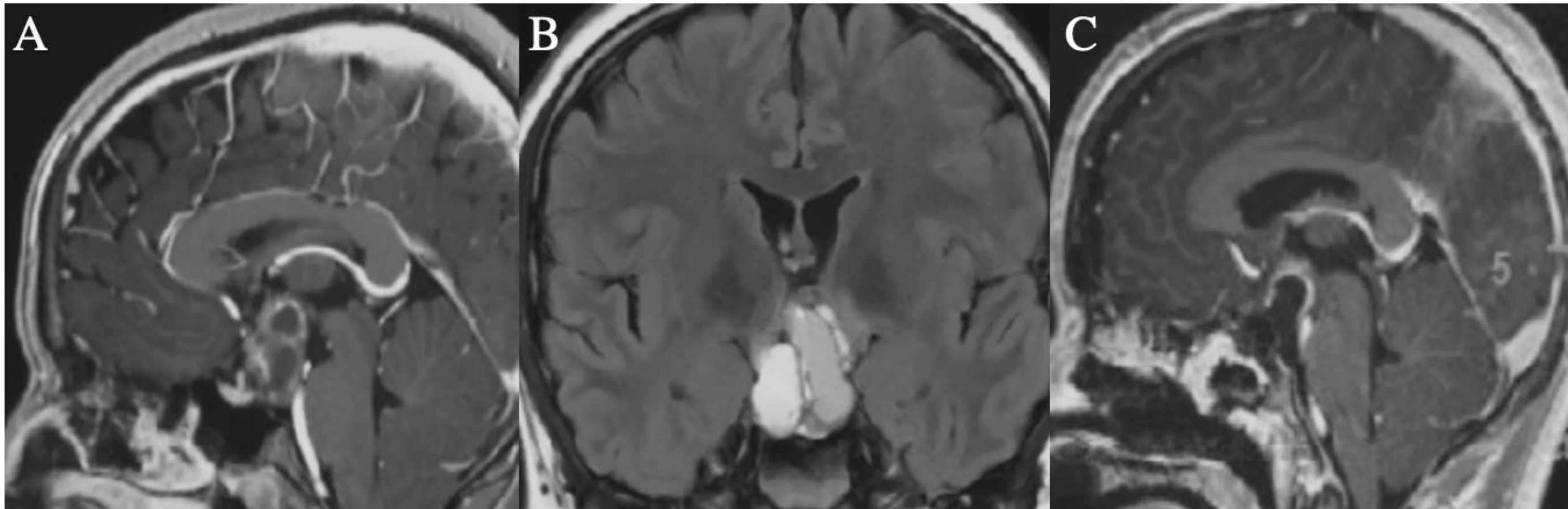


Figure 2. Case 2

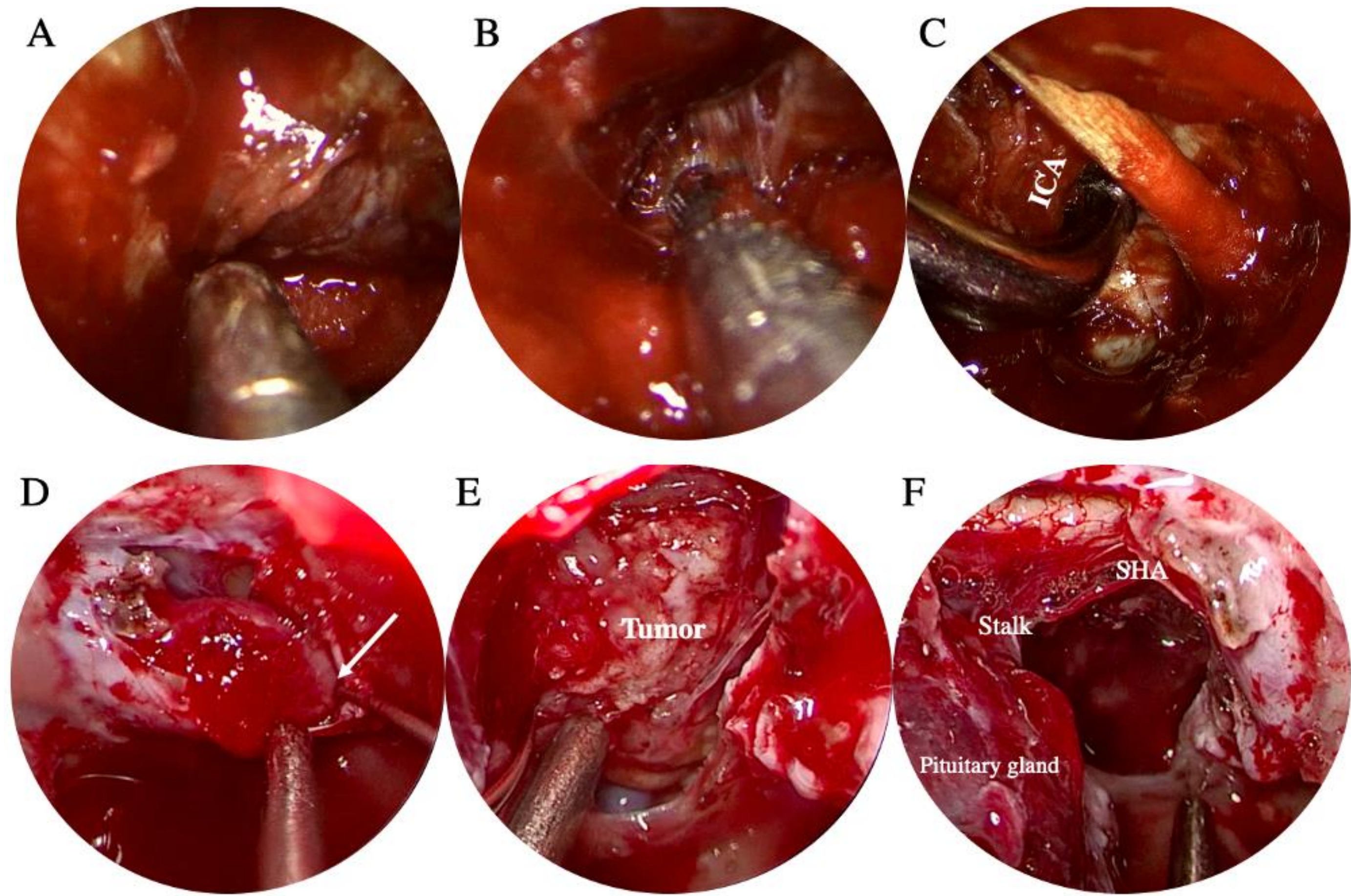


Figure 3. Intraoperative images A-C: interdural pituitary hemitransposition (Case 1)  
D-F: intradural pituitary hemitransposition (Case 2)

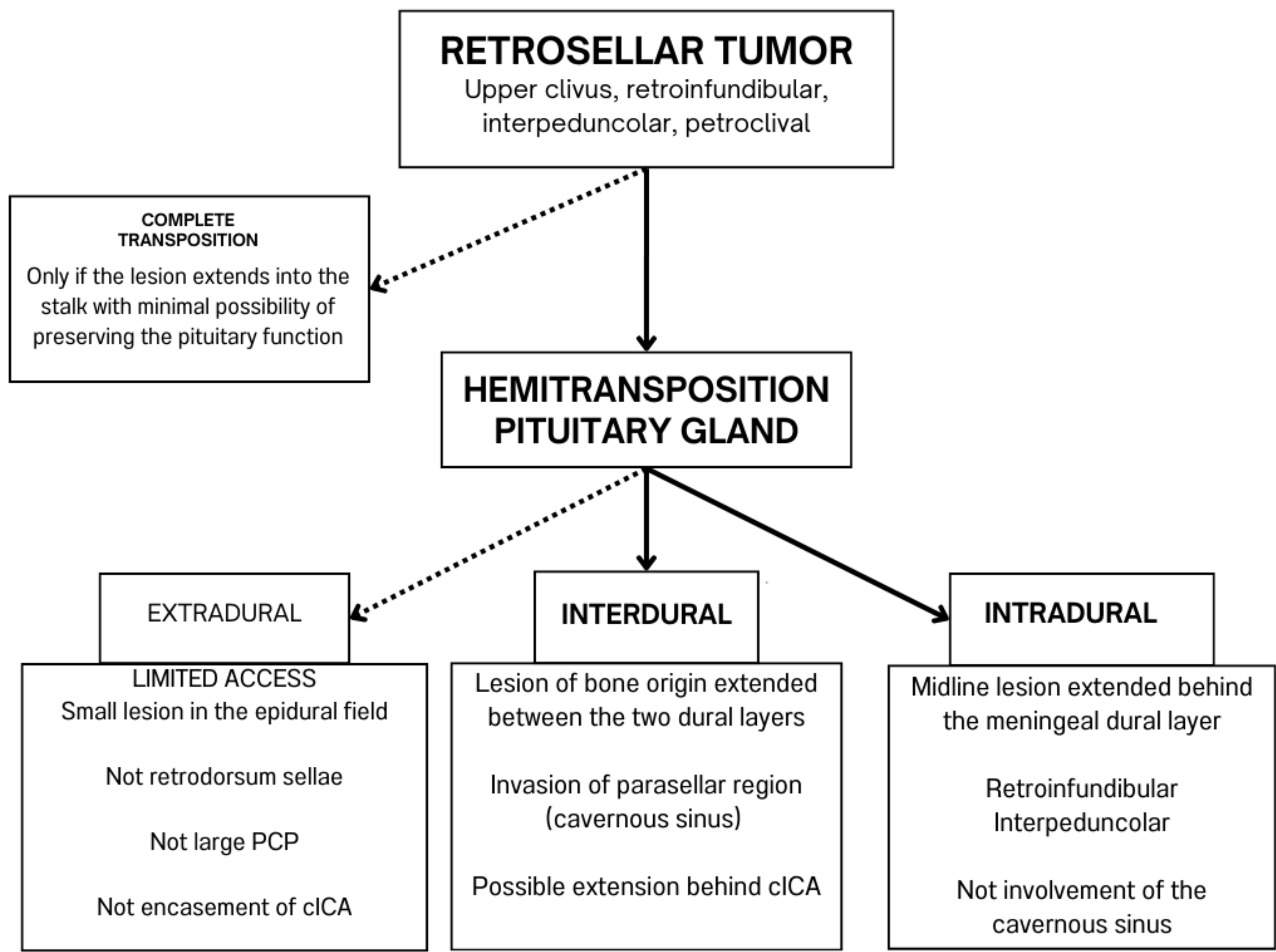


Figure 4. Choice of transposition techniques related to tumor characteristics