Incidentally detected fossa navicularis magna raising clinical concern for a neoplastic process

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Clinical Presentation

- A 37-year-old female patient, initially presenting with concerns of multiple sclerosis, underwent an MRI study of the brain, which was negative for demyelinating disease. However, a lesion was noted in the clival/nasopharyngeal region.
- A subsequent CT study of the sinuses was performed for better bony assessment. Nasal endoscopy revealed a midline mass in the nasopharynx.

Imaging Findings -MRI

- Clival defect involving the basiocciput including the anterior margin with circumscribed margins.
- Polypoidal, enhancing soft tissue prominence in the nasopharynx along the midline, with contiguous enhancement extending to portion of the clival defect.
- Central T2 hyperintense fluid-like signal with a peripheral rim of enhancement in the remaining portion of the defect.
- No expansile or destructive appearance of the clivus. No adjacent abnormal marrow signal or adjacent intracranial abnormalities.
- Appearance of nasopharyngeal soft tissue favored nonspecific adenoidal prominence, with a less likely possibility of clival pathology such as a chordoma extending into the nasopharynx.

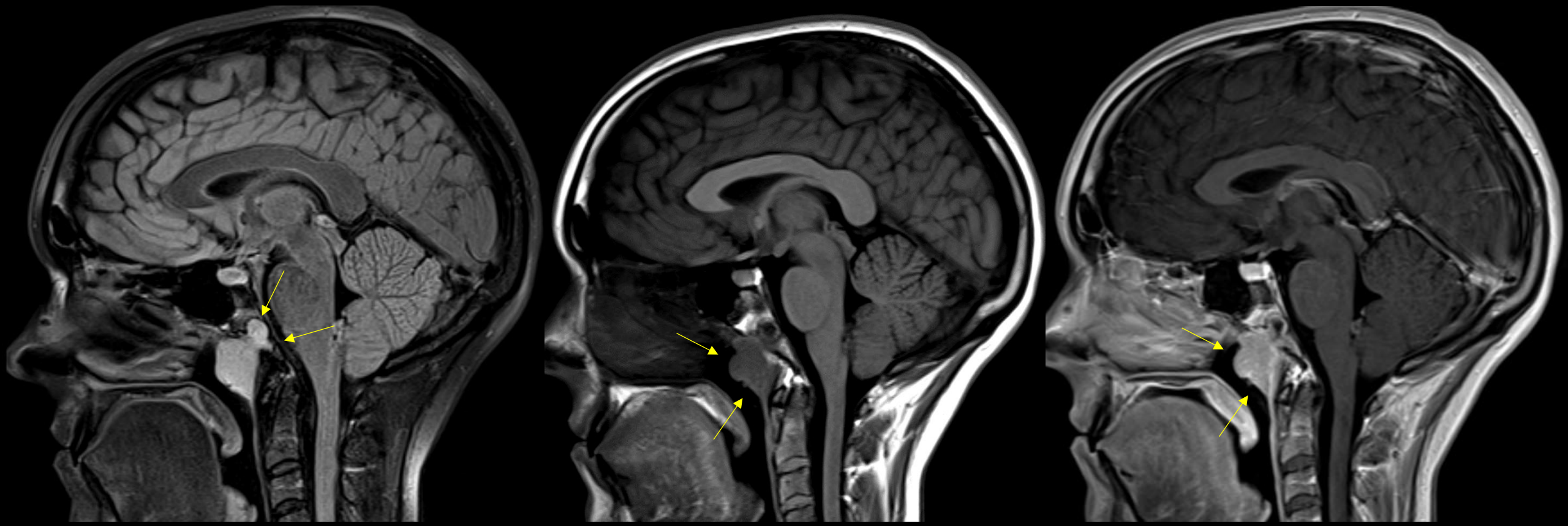


Fig. 1. Sagittal FLAIR (A) image demonstrating clival defect (yellow arrows) involving the basiocciput, including the anterior margin, with relatively circumscribed margins and polypoidal soft tissue prominence in the nasopharynx. Sagittal T1W (B) and T1W CE (C) images showing enhancement of the nasopharyngeal soft tissue prominence (yellow arrows) with contiguous enhancement extending to the portion of the clival defect.

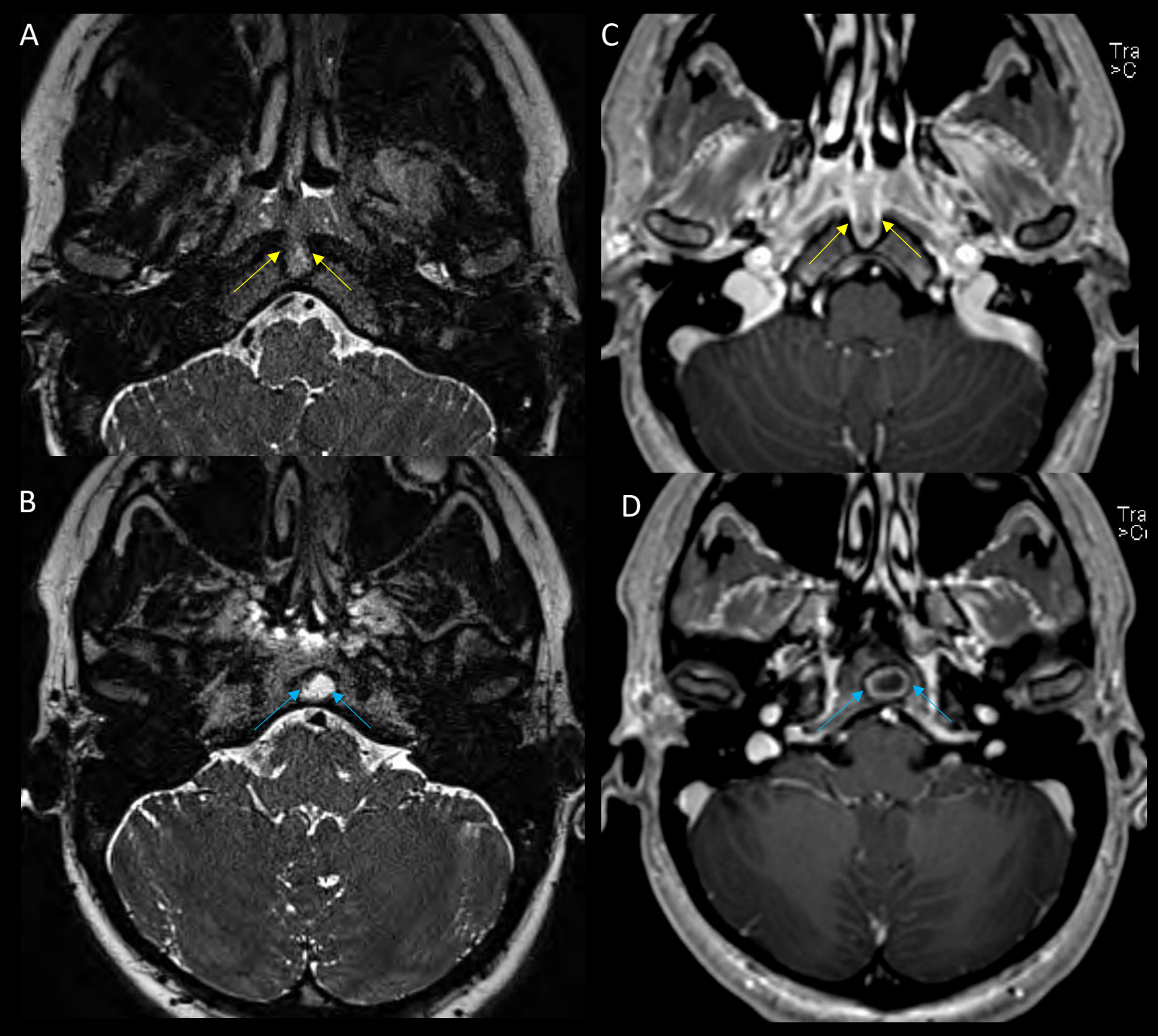


Fig. 2. Axial T2 images in inferior (A) and superior (B) aspects of the clival defect. Axial T1W CE images at similar inferior (C) and superior (D) levels. These demonstrate enhancing tissue in the inferior aspect of the clival defect contiguous with nasopharyngeal tissue (yellow arrows) and central fluid-like signal with a rim of enhancement in the remaining superior portion (bue arrows).

Imaging Findings - CT

- Well-demarcated defect in the basiocciput, involving the anterior clival margin, with sclerotic borders in the remaining portions.
- Adjacent portions of the clivus appeared unremarkable.

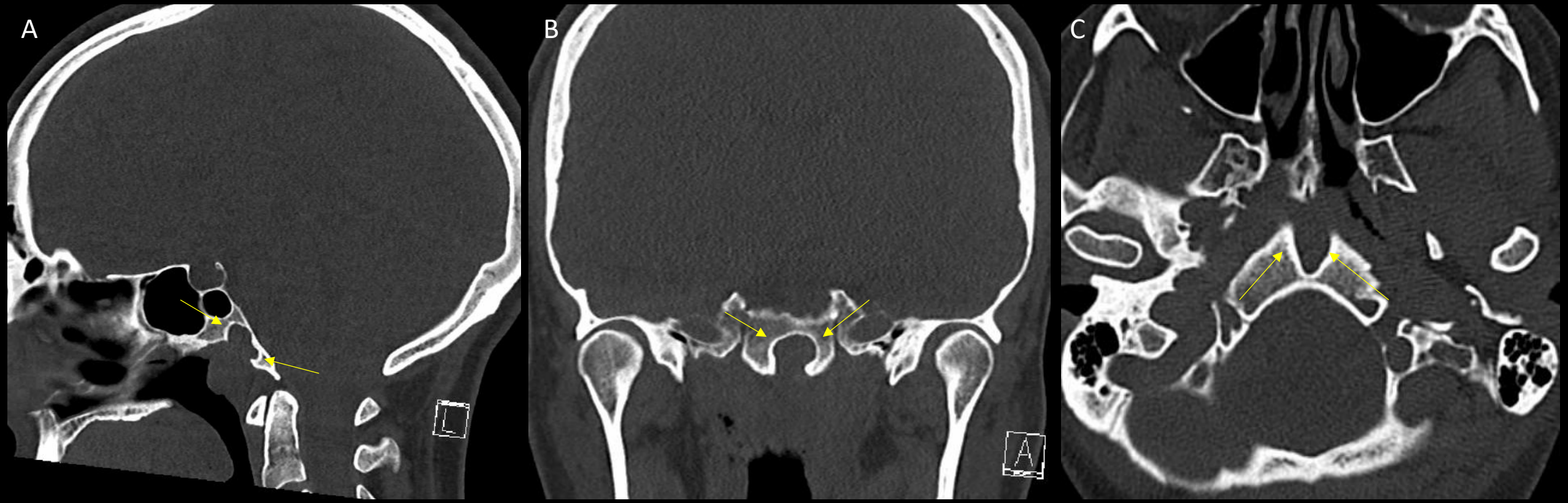


Fig. 2. CT in sagittal (A), coronal (B) and axial (C) CT planes showing well-demarcated defect in the clivus involving anterior margin with sclerotic borders (yellow arrows).

Imaging Findings - Differential Diagnosis

- Given the well-demarcated appearance of the clival defect with sclerotic margins and the lack of aggressive, destructive, or expansile features, a developmental variant such as fossa navicularis magna was favored.
- Possibility of a chordoma or other clival lesion extending into the nasopharynx, or a nasopharyngeal pathology with clival involvement, was considered but deemed less likely.

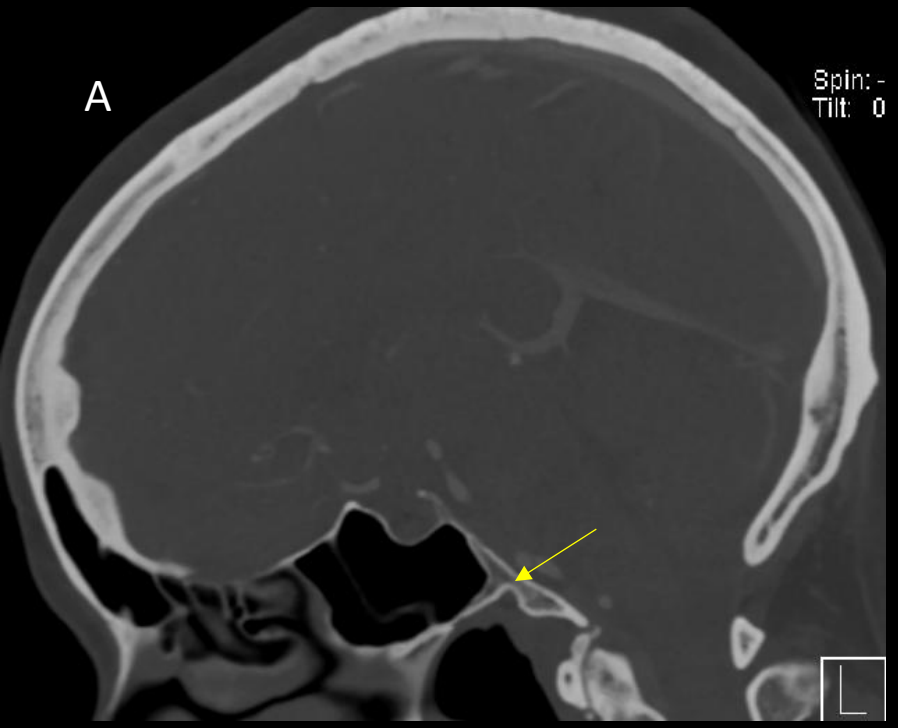
Management Outcome

- Due to clinical concern for a potential neoplastic pathology, specifically a chordoma, an endoscopic trans-nasal biopsy of both the nasopharyngeal mass and clival lesion was performed.
- Histologic analysis of the nasopharyngeal mass revealed benign lymphoid tissue, with no evidence of neoplasm. Clival specimen demonstrated reactive follicular hyperplasia (lymphoid tissue).
- Findings confirmed that the clival abnormality represented a benign condition, consistent with the favored imaging diagnosis of fossa navicularis magna, a developmental variation, with extension of benign adenoidal tissue into the defect.

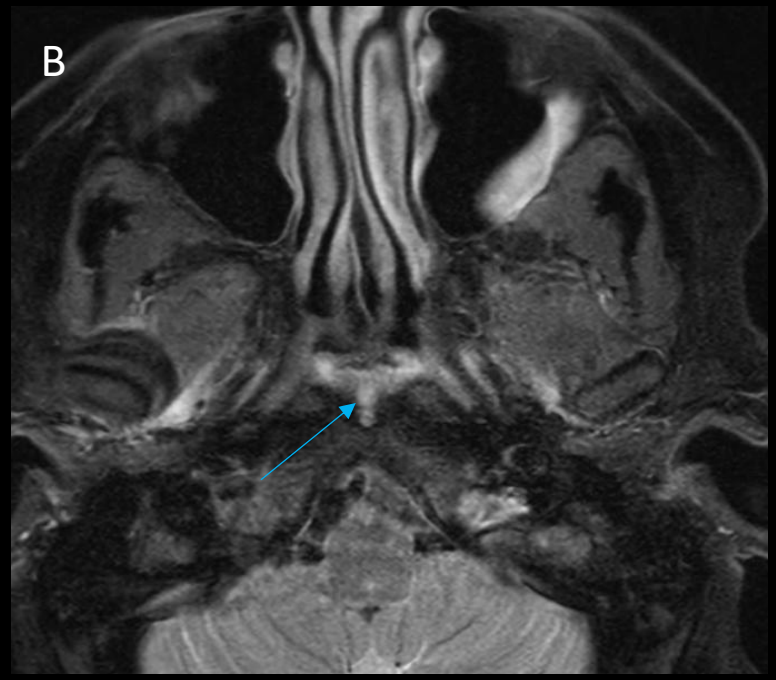
Take Home Points

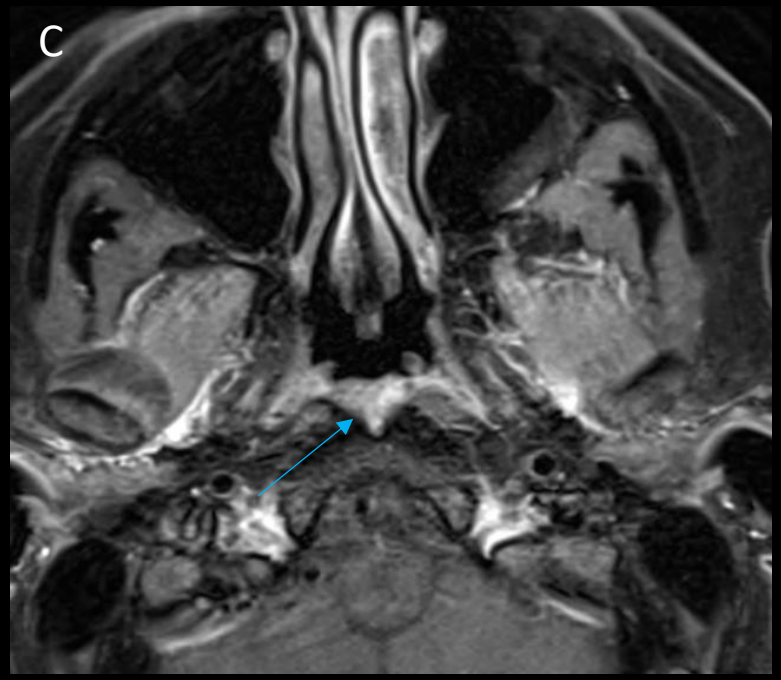
- The clivus can exhibit multiple developmental variations, including fossa navicularis magna, median basal canal, and craniopharyngeal canal. Awareness of anatomical variants is essential to avoid unnecessary alarm or intervention.

Orange: Craniopharyngeal canal
Pink: Spheno-occipital synchondrosis
Blue: Fossa navicularis magna
Green: Median basal canal



Companion case of incidentally detected fossa navicularis and incidentally associated persistent infundibular recess of the third ventricle, another developmental anomaly. Fig. 4. Sagittal CT (A) showing well defined defect in the anterior clivus with sclerotic margin (yellow arrow). Axial T2 (B) and T1 CE (C) images demonstrating extension of adenoidal tissue into the clival defect (blue arrows). Sagittal T1 (D) image showing persistent infundibular recess of the third ventricle (green arrow). Clival defect not well seen in this sagittal T1 image.





Take Home Points

- A bony defect or notch in the clivus with well-demarcated margins, sclerotic borders, and absence of expansile or destructive features should raise the consideration of a developmental variation.
- Benign adenoidal lymphoid tissue often extends into fossa navicularis magna, accounting for soft tissue component.