

# **Distinguishing Small Lesions of the Clivus**

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### Introduction

Incidental findings on cranial imaging comprise a significant proportion of neurosurgical referrals. Determining which incidentally found lesions necessitate surgical intervention, and which may safely be observed over time remains a challenge. Apart from metastasis, clival lesions most commonly originate from notochord remnants; they may be benign lesions such as ecchordosis physilaphora (EP) or locally aggressive tumors such as chordoma. Several groups have described features that suggest a lesion is more likely benign such as EP; for example, T1 hypointesity, T2 hyperintesity, and minimal or no enhancement. While these features may be reassuring, the mode of practice is to follow patients with surveillance imaging to detect changes. In this case series, we followed several patients with small lesions of the clivus who underwent surgical intervention. We review the imaging characteristics and histopathologic findings in these cases to develop a set of properties that assist in predicting which small clival lesions may be safely observed and which merit early intervention

# Methods

We performed a retrospective review of our institution's experience with lesions of the clivus between 2006-2016. Cases were identified by ICD9/ICD10 codes and were reviewed for demographic information, imaging characteristics, symptoms at presentation, clinical course and histopathologic correlation where available. This case series was restricted to small lesions of the clivus, with minimal or no radiographic intradural extension as graded by a neuroradiologist, with histopathologic correlation.

# Patient SB Pathology Results



Non-neoplastic Reactive Tissue



Non-neoplastic Reactive Tissue

Patient SB (non-neoplastic) Pre -and Post-operative Imaging



Clival Chordoma Patient Preand Post-operative Imaging



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# Imaging Characteristics by Pathologic Diagnosis

Pethalogic Gagnerik					
Chendama	Hępointenee	Hypotistance	Mainal	None	781
	Hyperdanaa	reportation	Annual	None	206
	Hypointenee	Hyperistance	Mainal	None	rione
	Hypointenee	reportation	017600	None	none
	horiteva	Peperstance	Abrie	None	rore
	Hyperintense	Hypotistarios	None	164	none

## Results

Six patients were identified who fit the above criteria. Three patients were found to have chordoma. The remaining three were diagnosed with benign fibrous tissue, chronic polypoid sinusitis, and lymphoid aggregate tissue, respectively. One patient with chordoma had surgery complicated by persistent CSF leak, requiring early reoperation. The imaging characteristics are summarized in Table 1. All patients remained neurologically intact.

# Conclusions

Chordoma share some imaging characteristics with benign lesions, however dural involvement and even minimal enhancement may be worrisome for more aggressive pathology. Patients with these imaging characteristics should be followed closely and considered for early surgical intervention. Care must be taken not too extrapolate too broadly from this small case series.

# **Learning Objectives**

1. To learn the differential diagnosis for lesions of the clivus.

 To identify imaging characteristics that support one diagnosis or another.
To review the histopathologic diagnoses of clival lesions.

4. To determine criteria on imaging that predict the diagnosis of a clival mass.

# References

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