

Clival Mucocele: A Rare Yet not Forgotten Pathology

Marios Stavrakas, MSc, PhD¹, Hisham S. Khalil, MS, MD¹, Nikolaos Tsetsos, MSc², and Samiul Muquit, FRCS(SN), PgDip(ClinEd)³

Significance Statement

Primary clival mucoceles are a rare clinical entity that usually represents an incidental finding on computed tomography or magnetic resonance imaging scanning. There are only a few reports in the literature of patients who presented with vague symptoms such as headaches, facial paresthesia, and numbness. Clival mucoceles can also be secondary, by extension of a sphenoid mucocele to the clivus. We present a case of primary clival mucocele, aiming to highlight the importance of a multi-disciplinary approach.

Case Presentation

A 44-year-old male patient presented to the acute stroke unit with left-sided pain and paresthesia, affecting his face, upper limb, and lower limb. This was the second presentation with such symptoms, as he had a similar clinical picture 11 years ago with full recovery. After neurological examination, he had a computed tomography head, which did not show any acute intracranial pathology but revealed a pneumatized, fluid-filled clivus. This was further characterized with an magnetic resonance imaging scan (Figures 1-3). The differential diagnosis included a mycetoma or a cholesterol granuloma, with a fistula communicating with the nasopharynx. The patient was seen in the ENT clinic after a few days, and his symptoms had generally subsided, leaving only minor paresthesia of the left hemi-face. Endoscopic evaluation of the postnasal space did not show signs of active discharge, fistula, or any other pathology. The case was discussed at the Skull Base Multidisciplinary Team meeting, and after careful consideration, the panel offered the option of transsphenoidal decompression of the clival cyst. The rationale was to prevent recurrence of symptoms or infection, which may result in intracranial complications. Intraoperatively, the cystic component was marsupialized, and we identified an intact posterior wall. We obtained tissue samples for histology and microbiology, including fungal cultures. Finally, there was no evidence or concerns about a cerebrospinal fluid leak; therefore, any form of skull base reconstruction was not deemed necessary. The procedure was uneventful and the patient recovered well, with complete resolution of his symptoms. All tissue samples came

back as negative for malignancy or fungal process, and also, the microbiology and fungal cultures were negative for bacterial or fungal infection.

Mucoceles of the clivus are extremely rare, with only a few cases published in the literature.¹⁻³ Its pathogenesis should be considered in associating with the embryological development of the clivus. Initially in a cartilaginous structure, the clivus develops into a structure with compact cortical bone anteriorly and posteriorly, filled with cancellous bone including marrow elements.^{4,5} Mucoceles are usually formed by pneumatization secondary to an obstructed communication with the sphenoid sinus.³ Chua and Shapiro (1996) support that most sphenoid mucoceles expand as cystic masses into other cranial base structures; therefore, the majority of the clival mucoceles are not true.¹ In our case, obstruction of an anatomical communication between the clivus and the nasopharynx may have been the cause.

¹ ENT Department, Derriford Hospital, University Hospitals Plymouth NHS Trust, Plymouth, UK

² Department of Otorhinolaryngology, Head and Neck Surgery, "G. Papanikolaou" General Hospital, Thessaloniki, Greece

³ South West Neurosurgery Unit, Derriford Hospital, Plymouth, UK

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Corresponding Author:

Marios Stavrakas, ENT Department, Derriford Hospital, University Hospitals Plymouth NHS Trust, Plymouth PL6 8DH, UK.

Email: mstavrakas@doctors.org.uk



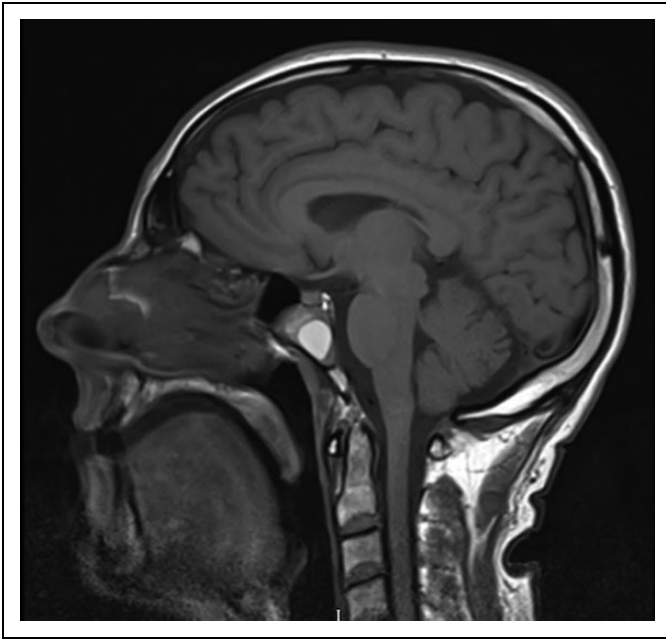


Figure 1. T1 magnetic resonance imaging-sagittal plane, demonstrating pneumatization of the clivus, tracking down at the level of the nasopharynx.



Figure 3. Computed tomography-axial plane showing extensive pneumatization of the clivus.

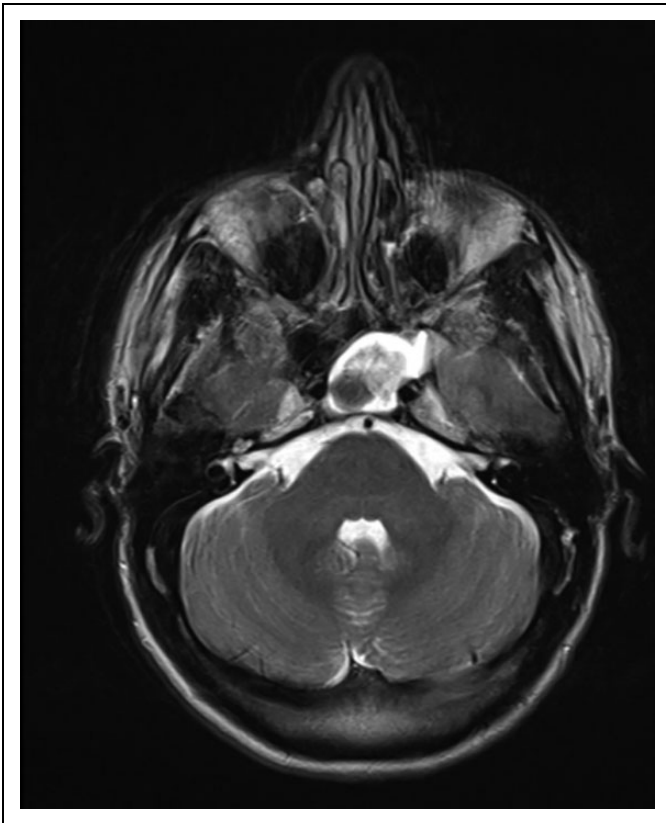


Figure 2. T2 magnetic resonance imaging-axial plane, demonstrating the relationship with the sphenoid sinus.

Presenting symptomatology depends on the area of extension and may include facial pain secondary to compression of Meckel cave.¹ According to the literature, the sooner the mass is drained, the better the chance of cranial nerve recovery, and the approach of choice is the transsphenoidal.^{1,2,6-9}


Declaration of Conflicting Interests


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ORCID iDs

Marios Stavrakas  <https://orcid.org/0000-0003-1774-0665>

Nikolaos Tsetsos  <https://orcid.org/0000-0003-1884-6824>

References

1. Chua R, Shapiro S. A mucopyocele of the clivus: case report. *Neurosurgery*. 1996;39(3):589-591.
2. Heller EM, Persky MS. Trans-septal sphenoidotomy approach for cystic lesions of the clivus. *J Otolaryngol*. 1988;17(4):155-158.
3. Fujimoto Y, Harada Y, Toyota S, Wakayama A, So H, Yoshimine T. Primary clival mucocele. *Neurol Med Chir (Tokyo)*. 2011;51(3):250-252.
4. Chaljub G, Van Fleet R, Guinto Jr FC, Crow WN, Martinez L, Kumar R. MR imaging of clival and paraclival lesions. *AJR Am J Roentgenol*. 1992;159(5):1069-1074.

5. Hoistad DL, Duvall AJ 3rd. Sinusitis with contiguous abscess involvement of the clivus and petrous apices: case report. *Ann Otol Rhinol & Laryngol*. 1999;108(5):463-466.
6. El-Fiki ME, Abdel-Fattah HM, El-Deeb A-K. Sphenoid sinus mucopyocele with marked intracranial extension: a more common phenomenon in the third world? *Surg Neurol*. 1993;39(2):115-119.
7. Gonsalves CG, Briant TD. Sphenoid mucocele presenting as a pre-pontine mass. *J Otolaryngol*. 1978;7(4):371-373.
8. Nugent GR, Sprinkle P, Bloor BM. Sphenoid sinus mucoceles. *J Neurosurg*. 1970;32(4):443-451.
9. Stankiewicz JA. Sphenoid sinus mucocele. *Arch Otolaryngol & Neck Surg*. 1989;115(6):735-740.