

Khaled Altartoor, MBBS¹; Diana Bigler, MD²; Ibtisam
Mohammad, MD²; Jaime Russell, MD²; Stilianos Kountakis, MD²;
Salman Ali, MD³

¹Medical College of Georgia Department of General Surgery
²Medical College of Georgia Department of Otolaryngology – Head
and Neck Surgery

Abstract

A 46-year-old female with left V1/V2 trigeminal neuralgia had imaging showing a non-enhancing lytic lesion of the left petrous apex without typical features of a pseudo-meningocele. An endoscopic endonasal transclival approach was performed, revealing clear fluid within the lesion consistent with a Cerebrospinal fluid CSF-filled pseudo-meningocele. The defect was repaired using fat and mucosal grafts. Postoperative recovery was uneventful, with no CSF leak, and the patient had full resolution of her neuralgia.

Introduction

Petrous apex lesions represent a diagnostic and surgical challenge due to their deep location and proximity to critical neurovascular structures.^{1,2} Cerebrospinal fluid (CSF) pseudomeningoceles of the petrous apex are rare and may lack classic imaging features, leading to diagnostic uncertainty.¹ We present a case of a petrous apex CSF pseudomeningocele presenting as trigeminal neuralgia, successfully treated via an endoscopic endonasal transclival approach.

Case Presentation

A 46-year-old female presented with left-sided trigeminal neuralgia predominantly affecting the V1/V2 distribution. Imaging included CT, MRI, and CT cisternography to further characterize the lesion. Given the unclear etiology and symptomatic presentation, an endoscopic endonasal transclival approach was selected for diagnosis and treatment.

- Surgical steps included:

- Endoscopic endonasal approach with bilateral sphenoidotomy
- Partial ethmoidectomy and posterior septectomy for binarial access
- Transclival drilling to access the petrous apex lesion
- Identification and opening of the lesion under image guidance
- Multilayer reconstruction using fat graft and free mucosal graft
- A postoperative lumbar drain was placed for CSF diversion.

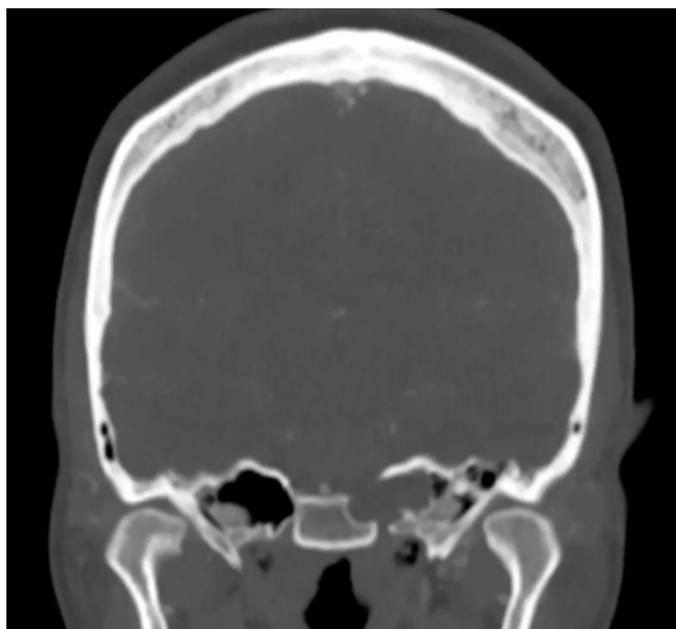


Figure 1: CT Head demonstrated lytic lesion of the left petrous apex

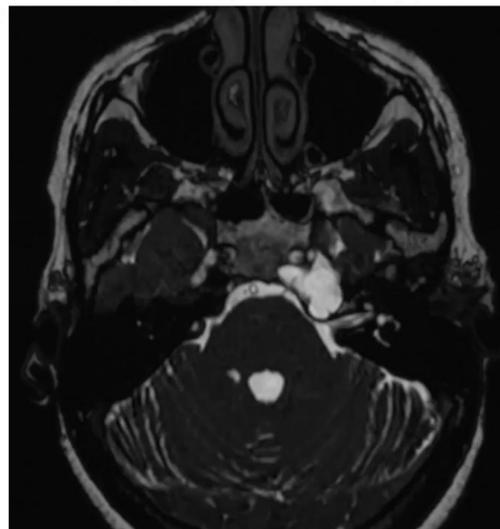


Figure 2: MRI demonstrated left petrous apex lesion with flair hyperintensity and intrinsic T1/T2 hyperintensity and lack of enhancement.

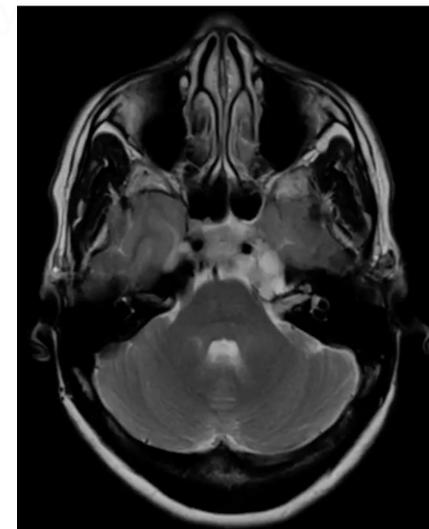


Figure 3: CT Cysternogram demonstrated 2.3 x .6 lytic petrous apex lesion without contrast enhancement.

Results



Figure 4: the lesion was found to contain clear fluid consistent with CSF, confirming the diagnosis of a CSF-filled pseudomeningocele.



Figure 5: Free mucosal graft obtained from the middle turbinate is now laid over top of the fat covering the clival indent.

- Postoperatively, the patient had an uneventful recovery with no evidence of cerebrospinal fluid leak. The lumbar drain was successfully clamped on postoperative day 3 without complications. At the 2-week follow-up visit, appropriate healing was noted, and the patient reported complete resolution of her trigeminal neuralgia symptoms.

Discussion and Conclusion

- This case highlights the diagnostic complexity of petrous apex lesions, particularly when imaging features are atypical. CSF pseudomeningoceles may mimic other cystic or lytic lesions and should remain in the differential diagnosis, especially in symptomatic patients. The endoscopic endonasal transclival approach provides excellent midline access and allowing for direct visualization and safe reconstruction.
- Importantly, this case demonstrates that trigeminal neuralgia can be a presenting symptom of petrous apex CSF pathology and may resolve following definitive surgical repair.

Contact

Khaled Altartoor, MBBS
Medical College of Georgia
1120 15th St, Augusta, GA 30909
kaltartoor@augusta.edu
346-545-0698

References

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