

1 Case study

2 **Title:** Middle ear adenoma with uncommon presentation: A case report

3 **Abstract**

4 Adenomas of the middle ear are even rarer. Although considered benign tumors, they carry a  
5 risk of recurrence and malignant transformation. We present a 37-year-old patient with a  
6 hypoacusis of the left ear with purulent otorrhea on a non-marginal tympanic perforation as  
7 symptomatology. The audiogram showed transmission deafness, and the scanner found a  
8 fleshy attic mass with a preserved ossicular chain. The patient underwent an antro-atticotomy  
9 with mass excision, the anatomopathological result of which was in favor of an adenoma of  
10 the middle ear. The patient has shown no recurrence for almost 2 years. In conclusion, middle  
11 ear adenomas are rare neoplasms and have no specific symptoms or clinical presentation.  
12 Total exploration and extirpation is required for treatment, and microscopic and  
13 immunohistochemical examinations are mandatory for a definitive diagnosis.

14 **Keywords:** case report, adenoma, middle ear, atticotomy

15 **Introduction**

16 Ear tumors form a heterogeneous group whose diagnosis must be evoked in the face of any  
17 unilateral damage (hearing, vestibular), any duct polyp, or unfavorable development of a usual  
18 treatment must lead to an auditory examination [1]. The adenoma of the middle ear is a benign  
19 tumor, but there is a risk of recurrence and malignant transformation [2].

20 Middle ear adenoma is a rare disease with few published cases in the literature [1-4]. Here we  
21 presented a 37-year-old patient with a hypoacusis of the left ear with purulent otorrhea who  
22 underwent surgery and was diagnosed histopathologically as an adenoma of the middle ear.

23 **Case Presentation:**

24 A 37-year-old patient consulting for recurrent left ear infections associated with hearing loss.  
25 otoscopy find the presence of purulent otorrhea on a non-marginal tympanic perforation and  
26 a fleshy polyp in the middle ear. Acoumetry and audiogram find transmission deafness.

27 A computed tomography (CT) scan of the rocks was performed, which resulted in the  
28 presence at the attic level of a fleshy filling with a continuous ossicular chain (Figure 1).

29 The patient underwent antro-atticotomy with mass removal, the anatomopathological result of  
30 which was in favor of an adenoma of the middle ear (Figure 2). The patient has shown no  
31 recurrence for almost 2 years.

Comment [FA1]: Add a figure.

Comment [FA2]: Add some operative findings.

Comment [FA3]: Add the pathologic features of this mass.

Comment [FA4]: Add the pathologic photo.

32 **Discussion**

33 Middle ear adenoma (sometimes incorrectly called "carcinoid tumor" or "ceruminoma") is a  
34 rare benign epithelial tumor; only about 100 cases are reported, with a small (<10mm), well-  
35 limited size [5, 6]. It is derived from pluripotent epithelial cells of the middle ear mucosa, of  
36 endodermal origin, which have a double capacity of exocrine differentiation (cells with  
37 mucosal secretion granules) and neuroendocrine differentiation (cells with neurosecretory  
38 granules)[6].

39 The average age of onset is between 20 and 40 years. The most common symptoms are  
40 hearing loss, fullness of the ear, tinnitus and otorrhea. Dizziness and peripheral facial  
41 paralysis are more rarely reported[1, 7].

42 Clinical examination may reveal non-pulsatile retrotympanic greyish mass. The eardrum is  
43 rarely invaded by the tumors[7].

44 The main differential diagnoses are usually eliminated by preoperative radiologic imaging [CT  
45 and Magnetic resonance imaging (MRI)]: paraganglioma, cholesteatoma, or much more rarely  
46 schwannoma of the tympanic segment of the facial nerve, meningioma, etc. [3]. In CT scan,  
47 adenoma occurs as a mass of the eardrum cage that may affect the patient. In the ossicular  
48 chain. Mastoid extension, ossicular lysis and bone erosion – including the tegmen rupture as  
49 described in our clinical case – are rare. In MRI, the lesion is elevated after gadolinium  
50 injection and is not hypersignal on the diffusion sequences, distinguishing it from the  
51 cholesteatoma[6].

52 Given the rarity of these lesions and the lack of specific clinical presentation, the diagnosis is  
53 rarely mentioned in the preoperative period. The treatment is surgical removal, sometimes  
54 with the need for an ossicular sacrifice to allow complete removal[6]. The diagnosis is then  
55 confirmed by histological and immunohistochemical examination. Recurrences after complete  
56 removal are rare[8].

57 **Conclusion:**

58 Middle ear adenomas are rare neoplasms and have no specific symptoms or clinical  
59 presentation. Total exploration and extirpation is required for treatment, and microscopic and  
60 immunohistochemical examinations are mandatory for a definitive diagnosis.

Comment [FA5]: Discuss the outcome and recurrence and compare it with your case.



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62 **Figure 1:**CT images of a middle ear adenoma, showing a nonspecific middle ear  
63 mass(arrow).

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Comment [FA6]: Arrowed the tumore.

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66 **Figure 2:** intraoperative photo showing the adenoma after mastoidectomy (arrow).

Comment [FA7]: Arrowed the tumore.

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68 **References:**

- 69 1. Isenring D, Pezier TF, Vrugt B, Huber AM. Middle ear adenoma: case report and discussion.  
70 Case Rep Otolaryngol. 2014;2014:342125. PubMed PMID: 25045567. Pubmed Central PMCID:  
71 PMC4090429. Epub 2014/07/22. eng
- 72 2. Sterrer E, Windisch F, Frey K, Rettensteiner K, Loader B. Middle ear adenoma with  
73 neuroendocrine differentiation : A pediatric case report. Wien Klin Wochenschr. 2017 Mar;  
74 129(5-6):208-11. PubMed PMID: 27761737. Epub 2016/10/21. eng
- 75 3. Cardoso FA, Monteiro EMR, Lopes LB, Avila M, Scarioli BO. Adenomatous Tumors of the  
76 Middle Ear: A Literature Review. Int Arch Otorhinolaryngol. 2017 Jul;21(3):308-12. PubMed PMID:  
77 28680503. Pubmed Central PMCID: PMC5495583. Epub 2017/07/07. eng
- 78 4. Wang L, Ouyang N, Guo HX, Liu QY. Middle ear adenoma with uncommon presentation and  
79 literature review. BMJ Case Rep. 2017 Jun 13;2017. PubMed PMID: 28611057. Pubmed Central  
80 PMCID: PMC5534660. Epub 2017/06/15. eng
- 81 5. da Luz Martins M, Boutin P, Bozorg-Grayeli A, Cazals-Hatem D, Bouccara D, Sterkers O.  
82 [Middle ear adenoma: report of two cases and review of the literature]. Ann Otolaryngol Chir

83 Cervicofac. 2002 Dec;119(6):337-40. PubMed PMID: 12527842. Epub 2003/01/16. Adénome bénin de  
84 l'oreille moyenne: a propos de deux cas. fre  
85 6. Torske KR, Thompson LD. Adenoma versus carcinoid tumor of the middle ear: a study of 48  
86 cases and review of the literature. Mod Pathol. 2002 May;15(5):543-55. PubMed PMID: 12011260.  
87 Epub 2002/05/16. eng  
88 7. Mori E, Kojima H, Wada K, Moriyama H. Middle ear adenoma diagnosed by recurrent facial  
89 paralysis. Auris Nasus Larynx. 2009 Feb;36(1):75-8. PubMed PMID: 18328653. Epub 2008/03/11. eng  
90 8. Bakhos D, Lescanne E, Fetissof F, Robier A, Morinière S. Neuro-endocrine adenoma of the  
91 middle ear: a case study. Eur Arch Otorhinolaryngol. 2007 Dec;264(12):1525-8. PubMed PMID:  
92 17639440. Epub 2007/07/20. eng

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