

Table S1. Patients characteristics in ATPA

No	Age	Sex	Location	Pathology	Air cell of petrous apex (PA)	Tract pattern (PA)	Air cell in squamous part of temporal bone (TB)	Tract pattern (TB)	Thin tympanic tegmen	Dural closure pattern	Spinal drainage	CSF leak
1	35	M	Petrous	Chondrosarcoma	-	-	+	Typical	+	Type 1	-	-
2	45	M	Petroclival	Meningioma	-	-	+	Typical	-	Type 2	-	-
3	46	F	Cavernous sinus	Meningioma	+	Direct	+	Typical	+	Type 3	+	-
4	70	F	Meckel's cave	Metastatic tumor	+	Unusual (Peritubal)	+	Typical	-	Type 3	+	-
5	56	F	Petroclival	Meningioma	+	Unusual (Peritubal)	+	Unusual (Squamous tympanic)	-	Type 3	+	-
6	50	F	Petroclival	Meningioma	-	-	+	Typical	-	Type 2	+	-
7	68	F	Petroclival	Meningioma	-	-	+	Unusual (Squamous tympanic)	-	Type 2	-	-
8	53	M	Petroclival	Meningioma	+	Unusual (posterosuperior cell)	+	Typical	-	Type 3	-	-
9	41	F	Petrous	Meningioma	-	-	+	Unusual (Squamous tympanic)	+	Type 2	-	-
10	55	F	Petroclival	Meningioma	+	Unusual (Hypotympanic)	+	Unusual (Squamous tympanic)	+	Type 3	+	-
11	76	F	Petroclival	Epidermoid	-	-	+	Typical	-	Type 2	-	-

Table S2. Comparison of the incidence of CSF leakage and methods of CSF leakage prevention in ATPA among previous literatures

Author	Year	N	CSF leak(%)	Methods							
				Preoperative imaging check	Preoperative 3D simulation	Flap	Fat	Fiblin glue	DuraGen	Endoscopy	Postoperative spinal drainage
Van Gompel [27]	2015	46	4	NA	NA	NA	NA	NA	NA	NA	NA
Tamura [24]	2019	117	14.5	+	-	+	+	+	-	-	+
Volovici [28]	2020	25	28	-	-	+	+	+	-	-	+
Tomio [26]	2021	274	13.5	+	-	+	+	+	-	-	+
Adachi [1]	2023	48	0	+	-	+	+	+	-	-	-
Cheng [5]	2023	128	3.1	-	-	+	NA	NA	NA	+	+
Giammattei [10]	2023	49	0	+	-	+	+	+	-	-	-
Present series	2023	11	0	+	+	+	+	+	+	+	+

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