



Clinical Features, Management Considerations and Outcomes in Case Series of Patients with Parasellar Intracranial Aneurysms Undergoing Anterior Skull Base Surgery

Daniel M. Raper¹, Dale Ding¹, Elizabeth Evans², Robert M. Starke¹, R. Webster Crowley³, Kenneth C. Liu^{1,4}, Edward H. Oldfield¹, John A. Jane Jr¹

■ **BACKGROUND:** The coincidence of parasellar aneurysms (IAs) and anterior skull base (ASB) lesions, while rare, presents a management challenge. IAs embedded within, or adjacent to, ASB lesions are at risk in the perioperative period and may have unique presentations, natural histories, and outcomes. The objective of this study was to outline management options and nuances in patients with coexisting IAs and ASB lesions.

■ **METHODS:** We retrospectively evaluated all patients who presented for management of IAs and ASB lesions from January 2006 to January 2014. Medical charts and imaging were reviewed for patient, tumor and IA characteristics, pathology, operative findings, complications, and outcomes.

■ **RESULTS:** Of 13 patients included in the study, 11 had histologically proven or presumed pituitary macroadenomas. The majority of cases presented with visual and endocrine deficits, and the median maximal tumor diameter was 3.1 cm. There were 17 IAs, all located in the parasellar area. Endovascular treatment of the IA was performed before tumor resection in 2 cases. Transsphenoidal resection was performed before IA occlusion in 1 case, and intraoperative vascular injury occurred in 2 cases. The median follow-up was 36 months.

■ **CONCLUSIONS:** Management decisions for patients with coincident IA and ASB lesions require careful,

individualized treatment plans. Coil embolization is well tolerated and does not delay surgery, except in cases requiring stent placement. Inadvertent intraoperative rupture of an adjacent IA during anterior skull base surgery may be treated with emergent coil embolization, flow diversion, or carotid sacrifice, but adequate preoperative planning can reduce this risk.

INTRODUCTION

The coincidence of parasellar aneurysms (intracranial aneurysm [IAs]) with pituitary adenomas or other pathologies of the anterior skull base is relatively rare but can represent a challenge in the assessment of management priorities, treatments, and outcomes. Prior estimates of the incidence of IAs in patients with pituitary tumors range from 0.5%–7.4%.^{1–3} IAs are thought to be more commonly detected in these patients than in the general population and have been detected more commonly with pituitary tumors than other types of intracranial tumors.⁴ Cavernous carotid IAs may project medially into a sellar tumor, and supraclinoid, superior hypophyseal, or posterior communicating artery IAs may project into a suprasellar tumor.⁵ There may or may not be intervening dura between the tumor capsule and IA. Management of these and other complexities requires careful anatomic analysis of both lesions before intervention, which can present significant challenges in the

Key words

- Anterior skull base
- Coiling
- Endovascular
- Intracranial aneurysm
- Pituitary adenoma
- Surgery

Abbreviations and Acronyms

- ASB:** Anterior skull base
- CTA:** Computed tomography angiography
- DSA:** Digital subtraction angiography
- GH:** Growth hormone
- IA:** Intracranial aneurysm
- ICA:** Internal carotid artery
- MRI:** Magnetic resonance imaging

SAH: Subarachnoid hemorrhage

TSR: Transsphenoidal resection

From the Departments of ¹Neurosurgery and ⁴Radiology and Medical Imaging and ²School of Medicine, University of Virginia, Charlottesville, Virginia; and ³Department of Neurosurgery, Rush University, Chicago, Illinois, USA

To whom correspondence should be addressed: Daniel M. Raper, M.B.B.S.
[E-mail: dr4sb@hscmail.mcc.virginia.edu]

Citation: *World Neurosurg.* (2017) 99:424–432.
<http://dx.doi.org/10.1016/j.wneu.2016.11.150>

Journal homepage: www.WORLDNEUROSURGERY.org

Available online: www.sciencedirect.com

1878-8750/\$ - see front matter © 2016 Elsevier Inc. All rights reserved.

case of rapidly progressive neurological symptoms or aneurysmal subarachnoid hemorrhage (SAH).

To define the patient characteristics, treatment priorities, and outcomes for this group of patients, we performed a retrospective cohort study of patients presenting for surgery for an anterior skull base lesion who were also diagnosed with an IA over a 10-year period at our institution. Our goals are to highlight the range of patient factors and management considerations in patients with IAs and concurrent anterior skull base lesions.

METHODS

Study Design and Setting

The study design is a clinical case series. We performed a retrospective evaluation of all patients presenting at our tertiary care institution for surgery of anterior skull base and pituitary lesions between January 2006 and January 2016. Data collection and review of clinical follow-up were performed through June 2016.

Participants and Variables

Patient clinic and hospital records, neuroimaging studies, and operative notes were reviewed to identify patients diagnosed with coexisting sellar or parasellar tumors and IAs. Those with non-aneurysmal vascular abnormalities, traumatic dissections, or pseudoaneurysms were excluded from the analysis. Variables extracted from the chart review included patient, tumor and aneurysm characteristics, pathology, operative findings, and complications. For each tumor, the maximum diameter and, where appropriate, Knosp classification were recorded.⁶ In the classification of IA, “paraophthalmic” refers to aneurysms originating from the internal carotid artery (ICA) just proximal to the origin of the ophthalmic artery. Our general treatment strategy was to treat IAs via endovascular coiling, if possible. Specific considerations regarding IA treatment were made on a case-by-case basis. Outcomes assessed include neurologic status, visual function, dependency, and death.

Bias, Study Size, Quantitative Variables, and Statistical Methods

As this is a retrospective case series, no efforts were made to address potential bias. Statistical analysis was not performed for

Table 1. Clinical Details of Patients with Anterior Skull Base Lesions and Parasellar Aneurysms

Patient	Age	Sex	Tumor		Aneurysm		Treatment			Outcome
			Max Diameter (mm)	Pathology	Number	Max Diameter (mm)	Location	Tumor	IA	
1	54	M	33	NFA	1	3.7	Paraophthalmic	GTR	Coiling 3 months before TSR	NI
2	60	F	21	NFA	1	2.0	Cavernous	GTR	None	NI
3	69	F	45	NFA	3	4.3	Paraophthalmic	STR	None	Baseline VF deficit
						2.0	Cavernous			
						4.0	Paraophthalmic			
4	80	F	29	NFA	1	4.0	Cavernous	GTR	Balloon-assisted coiling 3 weeks before TSR	NI
5	81	F	16	Unknown	2	7.8	Sup hypophyseal	None	Stent-assisted coiling of both aneurysms	Death
						3.5	Sup hypophyseal			
6	37	M	29	NFA	2	3.4	ICA bifurcation	GTR	None	NI
						2.7	PCOM			
7	63	M	31	Apoplexy	1	4.0	Paraophthalmic	Steroids	Coiled; required recoiling for recurrence 2 years later	NI
8	59	F	38	NFA	1	2.5	Paraophthalmic	STR	None	NI
9	60	F	3.1	Meningioma	1	4.5	Paraophthalmic	STR	Carotid sacrifice	Improved VF deficit
10	77	F	30	Unknown	1	2.5	Cavernous	None	None	NI
11	55	M	37	NFA	1	4.8	Sup hypophyseal	GTR	Stent assisted coiling	Dependent
12	74	M	NA	Mucormycosis	1	14.7	Petrous	Debulking	PED	Worsened VF deficit
13	60	F	NA	NFA	1	3	Cavernous	STR	EC-IC bypass and carotid sacrifice	Worsened VF

IA, intracranial aneurysm; M, male; NFA, nonfunctioning adenoma; GTR, gross total resection; TSR, transphenoidal resection; NI, neurologically intact; F, female; STR, subtotal resection; VF, visual function; ICA, internal carotid artery; PCOM, posterior communicating artery; NA, not available; PED, pipeline embolization device; EC-IC, external carotid to internal carotid.

Download English Version:

<https://daneshyari.com/en/article/5634846>

Download Persian Version:

<https://daneshyari.com/article/5634846>

[Daneshyari.com](https://daneshyari.com)