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Clinical Record

Profuse epistaxis following sphenoid surgery: a ruptured carotid artery pseudoaneurysm and its management

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Abstract

Objective: We report a rare case of iatrogenic pseudoaneurysm of the internal carotid artery secondary to endoscopic sphenoid surgery.

Method: The management of this unusual complication and a review of the literature are presented.

Results: A 65-year-old woman presented with intractable epistaxis four days following endoscopic sphenoid sinus surgery. Initial, conservative measures were unsuccessful in controlling bleeding. The clinical picture of delayed, severe epistaxis after a sphenoid sinus exploration raised the possibility of injury to the internal carotid artery and subsequent formation of a false aneurysm. The patient's pseudoaneurysm was managed, without visualising it, by packing the sphenoid sinus (achieved by palpating 1 cm above the shoulder of the posterior choana) in order to gain control of the haemorrhage, followed by endovascular occlusion.

Conclusion: An awareness of this rare complication is essential in order to manage this life-threatening condition efficiently.

Key words: Sphenoid Sinus; Internal Carotid Artery; Epistaxis; Pseudoaneurysm

Introduction

An iatrogenic pseudoaneurysm of the internal carotid artery secondary to transsphenoid or intrasphenoid endoscopic surgery is uncommon and may present with delayed, life-threatening epistaxis.[1–3] False aneurysms of the internal carotid artery can also develop after a head injury.[4–6] Delayed epistaxis resulting from iatrogenic trauma to the sphenopalatine branch of the internal maxillary artery (as it crosses the anterior wall of the sphenoid sinus) during transsphenoidal surgery has also been reported.[7]

Case report

A 65-year-old woman who had previously undergone a left maxillectomy for paranasal sinus malignant melanoma was being followed up with a magnetic resonance imaging (MRI) scan. This scan showed a mass in the pituitary fossa (Figure 1a), which was subsequently explored and biopsied endoscopically in another unit.

Four days after the endoscopic surgery, the patient presented with profuse epistaxis.

Nasal packing and inflated balloons in the nasopharynx failed to control the bleeding, and the patient was referred urgently to our unit. After transfer and resuscitation, the bleeding was stopped by packing the sphenoid sinus with oxidised cellulose. This was done 'blind' as the quantity of bleeding prevented the use of an endoscope or head light. The site to be packed was located by palpating the 'shoulder' of the posterior choana and packing approximately 1 cm above this.

Subsequent angiography showed a large right internal carotid artery pseudoaneurysm pointing into the right sphenoid sinus (Figure 1b). This was managed with multiple coils to occlude the internal carotid artery from just below the anterior choroidal artery (Figure 2). At the end of the procedure, the cross-flow from the left internal carotid artery was poor. The patient developed a right hemispherical stroke in evolution post-operatively; however, fortunately she recovered rapidly from her neurological deficit.

Discussion

Most carotid aneurysms are secondary to head trauma.[4,5] The sudden onset of life-threatening epistaxis following sphenoid surgery should prompt suspicion of rupture of a carotid aneurysm.[2,3,8,9] Excessive bleeding during transsphenoidal surgery also raises this possibility, and imaging will help to establish the diagnosis.[8] Early involvement of an experienced rhinologist, an interventional radiologist and possibly a neurosurgeon is needed, after initial resuscitative measures. Angiography is required, both for diagnosis and for treatment (by endovascular occlusion or embolisation or stenting of the aneurysm).[4–6] Angiography performed in patients with refractory bleeding should also include the external carotid artery if nothing abnormal is found in the internal carotid artery territory.[7] The optimal management is carotid occlusion, provided the patient has been able to tolerate a trial of occlusion to show an adequate cross-flow through the circle of Willis.[5,8,9] Bypass surgery is required where the patient

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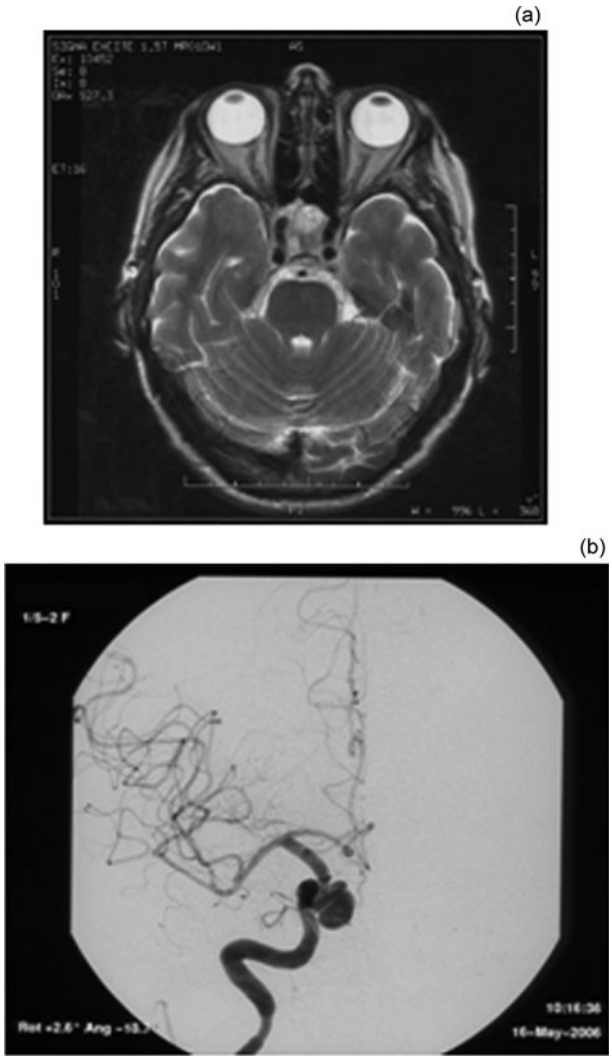

FIG. 1

(a) Axial computed tomography scan at the level of skull base and (b) angiogram (lateral view), showing a large right internal carotid artery pseudoaneurysm pointing into the right sphenoid sinus.

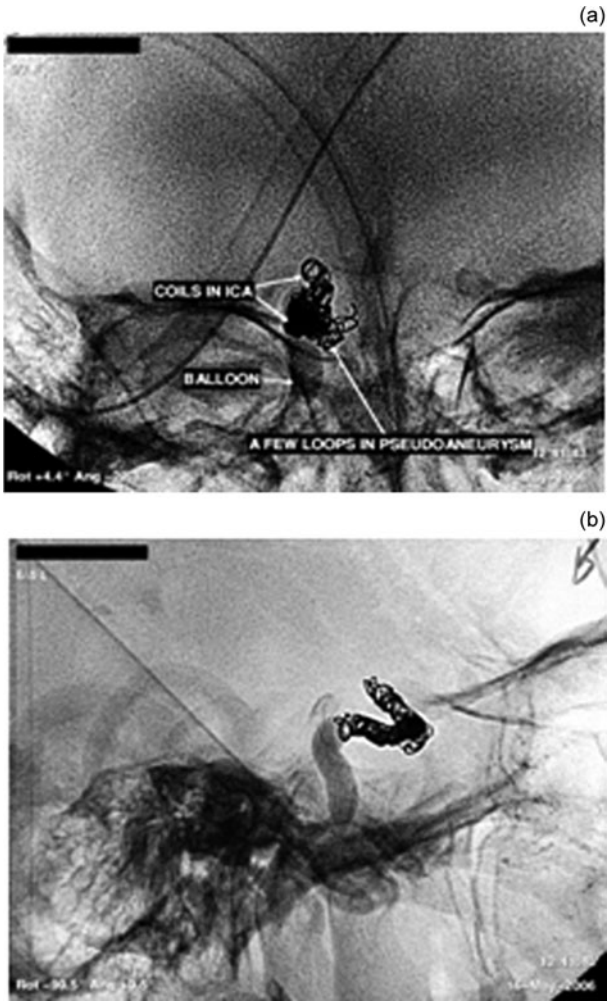

FIG. 2

(a) Angiography images in the antero-posterior view and (b) lateral view, showing multiple coils in situ, used to occlude the internal carotid artery (ICA).

cannot tolerate the balloon occlusion test, although in an emergency situation a trial occlusion is not possible.[5,8]

- **This paper describes a rare case of iatrogenic pseudoaneurysm of the internal carotid artery secondary to endoscopic sphenoid surgery, resulting in profuse epistaxis**
- **Any episode of torrential epistaxis after sphenoid surgery should raise the possibility of damage to the internal carotid artery**
- **Early diagnosis and treatment is needed in order to avoid exsanguination and to maintain circulation until interventional radiology can be undertaken**

Conclusion

Any episode of torrential epistaxis after sphenoid surgery should raise the possibility of damage to the internal carotid artery. Awareness of this complication is important in order to recruit the appropriate help as soon as possible. Early diagnosis and treatment is needed in order to avoid exsanguination and to maintain circulation until interventional radiology can be performed.

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