Treatment Dilemma of Latrogenic Pseudoaneurysm of the Intracavernous Internal Carotid Artery in Young Girl Following Transnasal Transsphenoidal Surgery: A Case Report

Amit K. Sharma¹ Anita Jagetia¹ Ghanshyam D. Singhal¹ Shaam Bodeliwala¹ Arvind K. Srivastava¹ Daljit Singh¹

¹Department of Neurosurgery, Govind Ballabh Pant Institute of Postgraduate Medical Education and Research, New Delhi, India

Address for correspondence Amit Kumar Sharma, MBBS, MS, MCh, Department of Neurosurgery, Govind Ballabh Pant Institute of Postgraduate Medical Education and Research, New Delhi 110002, India (e-mail: Dr.amitsharma982@gmail.com).

Abstract

Epistaxis following transnasal transsphenoidal (TNTS) removal of pituitary adenoma can be massive and life-threatening. The intracranial source of bleeding is usually the intracavernous segment of the internal carotid artery (ICA) or adjacent branches. Injury to the cavernous ICA can lead to pseudoaneurysm (PA) or fistula formation. Management of PA is different from saccular aneurysms. A timely diagnosis and adequate management can restore vessel integrity and prevent associated morbidity. A young patient of growth hormone-secreting pituitary adenoma, who underwent microscopic TNTS excision of the tumour, presented with massive epistaxis. Pseudoaneurysm of the cavernous ICA was initially not seen on computed tomography angiography and was later diagnosed on digital subtraction angiography. The attempted management of PA with coils without stent could not stop aneurysm recurrence. The management of such complicated PAs is discussed, and a literature review is done regarding epistaxis in growth hormone secreting adenoma.

Introduction

Epistaxis following transnasal transsphenoidal (TNTS) removal of pituitary adenoma can be massive and life-threatening.¹ The intracranial source of bleeding is usually the intracavernous segment of the internal carotid artery (ICA) or adjacent branches. Injury to the cavernous ICA can lead to pseudoaneurysm (PA) or fistula formation.² Management of PA is different from saccular aneurysm. The timely diagnosis and adequate management can restore vessel integrity and prevent associated morbidity.³ We are reporting a case of growth hormone-secreting pituitary adenoma in a young girl who underwent microscopic TNTS excision of the tumor and had presented with massive epistaxis. Pseudoaneurysm of the cavernous ICA was initially not seen on computed tomography (CT) angiography initially and later diagnosed on digital subtraction angiography (DSA). The attempted management of PA with coils without stent could not stop aneurysm growth. The management of such complicated PAs is discussed, and a literature review is done regarding epistaxis in growth hormone (GH) secreting adenoma.

Case Report

Twenty-six-year old young unmarried female was diagnosed with growth hormone-secreting pituitary macroadenoma...
for the last 3 years with features of acromegaly. Magnetic resonance imaging revealed a sellar mass of size $1.5 \times 1.6 \times 1.7$ cm. The GH level was 27.8 ng/mL. The near-total tumor excision was done using a microscopic TNTS approach. Tumor was greyish pink and soft with rubbery inconsistency. Intraoperatively, there was moderate bleeding and could be controlled without much effort. Seller floor was reconstructed with fat, cartilage, and bone. The next 48 hours were uneventful until the removal of the nasal pack, which resulted in torrential hemorrhage. The nasal cavity was repacked. The patient was stabilized hemodynamically, and CT angiography brain was done, which did not reveal any vascular injury (►Fig. 1B). The patient was reoperated to remove the nasal pack, and the tumor bed was inspected for any bleeding point. There was no active bleed. The patient was discharged after 2 days. After 2 weeks of surgery, she had repeated minor epistaxis at home, followed by one episode of massive epistaxis. The patient was readmitted, and nasal gauze packing was done. The GH level was 7.8 ng/mL. Digital subtraction cerebral angiography was performed, which revealed a PA arising from the cavernous segment of the right ICA measuring $0.75 \times 0.45$ cm with no cross flow between two ICAs (►Fig. 2A). Two ev3 (Covidien) three-dimensional coils $6 \times 10$ cm and $3 \times 6$ cm coils were placed within the aneurysmal sac to occlude the neck. A postoperative angiogram showed complete obliteration of the aneurysmal sac (►Fig. 2B). The patient was discharged with no neurological deficits. Her features of acromegaly were resolving. Examining angiogram 6 weeks thereafter showed refilling of aneurysm and coil mass compaction (►Fig. 3A). The aneurysm was recoiled, and since there was no residual filling of the aneurysm (►Fig. 3B), no stent across the aneurysm neck was placed. However, checking DSA 4 weeks thereafter again revealed coil mass compaction with recurrence of the aneurysm. Ultimately stent-assisted (Solitaire, Covidien) coiling of the aneurysm was performed (►Fig. 4A). At one-year follow-up the patient was asymptomatic with stable obliteration on MRI and MRA (►Fig. 4B).
1.2%. The incidence of vascular injury following TNTS is 0.2 to 2.3%.

Discussion

Abbreviations: DSA, digital subtraction angiography; MRI, magnetic resonance imaging; NR, no response.

Treatment options include carotid ligation to endovascular intervention. The endovascular procedure includes parent artery occlusion, coil embolization, stent-assisted coiling, covered stent placement, and onyx embolization.11–14 Endovascular intervention is the most preferred approach. The management of PA differs from saccular nondisseminating aneurysm. Since the repair of the intima is essential in dissecting aneurysms, only coiling may not work. The wall can heal by covering it with a stent. The risk of long-term anticoagulation to prevent stroke is a major concern. Our assumption of putting the coils and trying to achieve a good result was wrong as the treatment of dissecting aneurysm is the reconstruction of vessel. The treatment got stable only when a stent was placed across the neck of the aneurysm, which helped in healing the wall and prevented the subsequent flow of blood in the sac.

Conclusion

Delayed massive epistaxis is rare but is a serious complication of transphenoidal surgery. Vessel wall healing is as important as occluding the pseudoaneurysm.

Funding

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Conflict of Interest

None declared.

References


<table>
<thead>
<tr>
<th>Studies</th>
<th>Age/Sex</th>
<th>Diagnosis</th>
<th>Time of diagnosis</th>
<th>Treatment</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilson et al15</td>
<td>NR</td>
<td>Delayed epistaxis</td>
<td>NR</td>
<td>Carotid ligation</td>
<td>NR</td>
</tr>
<tr>
<td>Cabezudo et al16</td>
<td>41/F</td>
<td>Delayed epistaxis</td>
<td>1 mo</td>
<td>Gradual closure of carotid with Silverstone clamp over 7 d</td>
<td>Good</td>
</tr>
<tr>
<td>Reddy et al17</td>
<td>56/F</td>
<td>Angiogram</td>
<td>6 wk</td>
<td>The surgical clip of supraclinoid ICA and ligation of extracranial ICA</td>
<td>Good</td>
</tr>
<tr>
<td>Ahuja et al18</td>
<td>52/F</td>
<td>Follow-up angiogram</td>
<td>9 d</td>
<td>Endovascular occlusion of ICA</td>
<td>Temporary hemiparesis</td>
</tr>
<tr>
<td>Raymond et al19</td>
<td>28/F</td>
<td>Angiogram</td>
<td>10 d</td>
<td>Surgical packing</td>
<td>Good</td>
</tr>
<tr>
<td>Cappabianca et al16</td>
<td>22/F</td>
<td>Angiogram</td>
<td>NR</td>
<td>Coil embolization of the aneurysm</td>
<td>NR</td>
</tr>
<tr>
<td>De Souza et al5</td>
<td>38/F</td>
<td>Postoperative MRI</td>
<td>NR</td>
<td>Endovascular cover stent</td>
<td>Good</td>
</tr>
<tr>
<td>Cinar et al6</td>
<td>69/M</td>
<td>Angiogram</td>
<td>9 d</td>
<td>Endovascular Parent artery occlusion</td>
<td>Expired on 12th day</td>
</tr>
<tr>
<td>Current case (2015)</td>
<td>26/F</td>
<td>Postoperative DSA</td>
<td>2 wk</td>
<td>Endovascular stent-assisted coiling</td>
<td>Good</td>
</tr>
</tbody>
</table>

Abbreviations: DSA, digital subtraction angiography; MRI, magnetic resonance imaging; NR, no response.


