

## Arterial infarct following surgery for pituitary adenoma

Sir,

Transsphenoidal surgery for pituitary adenomas is a routine, safe, and widely accepted procedure.<sup>[1]</sup> Vascular complications following this surgery are very rare, but whenever they occur they are fatal.<sup>[2]</sup> We are reporting three cases of post-operative arterial infarcts that had fatal outcome, two of them following transsphenoidal decompression and one following the transcranial decompression of large pituitary

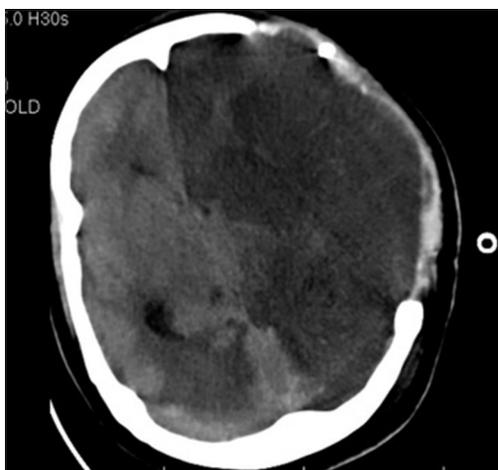
adenomas. In case 1, a 29-year-old female had large sellar, supra-sellar mass measuring  $4.7 \times 3.4 \times 5.1$  cm. The tumor was reaching up to the floor of 3<sup>rd</sup> ventricle superiorly and encasing the bilateral internal carotid artery (ICA) to the sides. Clinically she had no perception of light in the left eye and was barely able to count fingers on the right side at 1 meter. She was operated by transsphenoidal approach, partial decompression done [Figure 1]. On the 10<sup>th</sup> post-op (post-operative) day she developed left ICA infarct, and lapsed into altered sensorium with weakness in the right half of the body [Figures 2 and 3]. In case 2, a 50-year-old male, had large mass measuring  $4.8 \times 4 \times 5.5$  cm in sella with supra-sellar extension up to foramen Monro and obstructive hydrocephalus [Figures 4 and 5]. He was operated by the same transsphenoidal route, partial decompression done, developed infarct in right ACA territory [Figure 6]



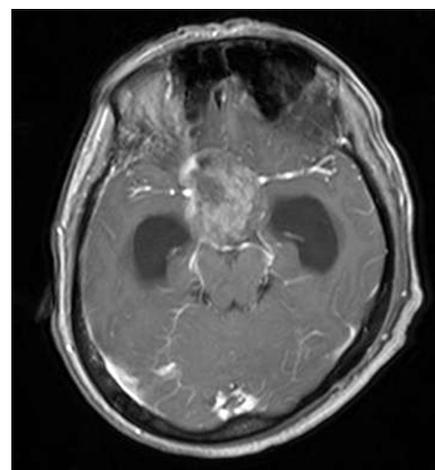
**Figure 1:** Case 1: CT scan brain plain done on 1<sup>st</sup> post op day showing partial decompression of the tumor with a residual tumor in sella supra-sellar region and bilateral cavernous sinuses



**Figure 2:** Case 1: CT scan brain plain done on 10<sup>th</sup> post op day showing LT ICA infarct



**Figure 3:** Case 1: CT scan brain plain after decompressive craniectomy showing established LT ICA infarct with evolving RT PCA infarct

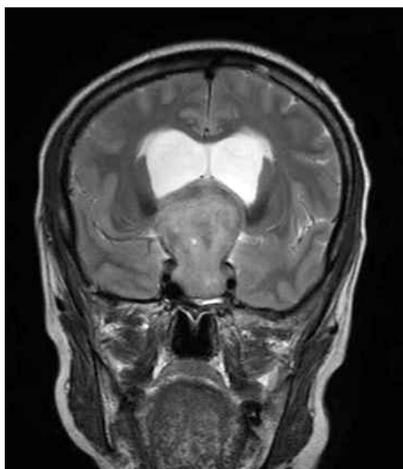


**Figure 4:** Case 2: MRI brain contrast axial section showing displacement of both ICA

on the second post-op day. In case 3, a 42-year-old male underwent bifrontal craniotomy subfrontal approach and decompression for large pituitary adenoma [Figure 7], who developed infarct in the left thalamus on the fourth post-op day though, there was no vascular injury noted intra-operatively [Figure 8]. All the three cases ultimately succumbed, despite decompressive craniectomy and best medical management was done.

Vascular occlusion leading to infarcts can occur in large pituitary adenomas either spontaneously or post operatively. Thirteen cases of spontaneous infarcts in various territories following of pituitary apoplexy are described literature previously.<sup>[3,4]</sup> Post-operative vascular occlusion can be due to overzealous packing of sella or due to post-operative edema/hemorrhage in the residual tumor. S. Kurschel described ICA infarct in pituitary adenoma following partial decompression by the transsphenoidal route<sup>[5]</sup> and Goel reported

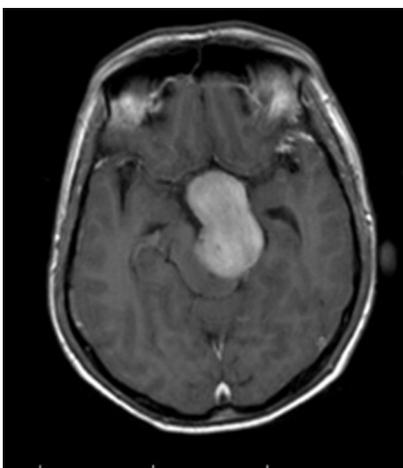
in two cases operated by the transcranial route.<sup>[6]</sup> Both of them attributed compression of vessels by edema/hemorrhage in residual tumor. Post-operative Vasospasm is also described as the possible mechanism of vascular infarcts in four reported cases.<sup>[7]</sup> Various possible causes for vasospasm after surgery include direct mechanical damage to arterial walls, blood in the basal cisterns, meningitis, or release of some chemical substances during tumor removal. Interesting points in these cases are, all the tumors were large and had significant cavernous sinus and supra-sellar extensions. In one case ICA is totally encased by the tumor. These findings prompted us to propose a novel mechanism for the cause of ICA infarct. The changes in the tumor which occur following surgery surrounding the ICA may literally strangulate ICA which as it is already compromised by the tumor [Figures 9 and 10]. We did a decompressive craniectomy for the all cases to prevent herniation; however none of the patients survived.



**Figure 5:** Case 2: MRI T2WI coronal section showing large tumor with supra-sellar extension to foramen of Monro with obstructive hydrocephalus and elevation of both ACA



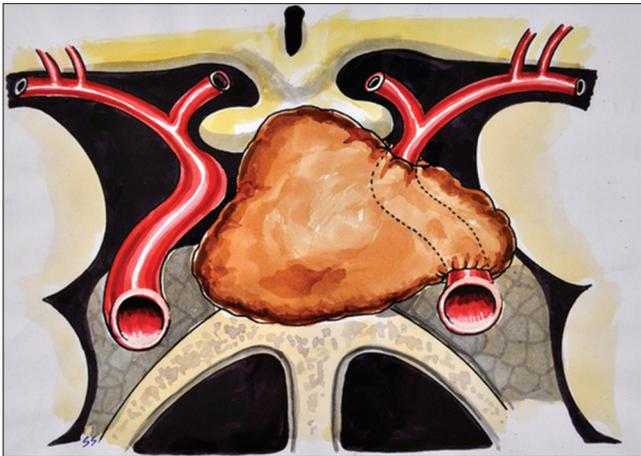
**Figure 6:** Case 2: Post-op CT scan on the second post-op day showing residual tumor with an increase in hydrocephalus and RT ACA infarct



**Figure 7:** Case 3: MRI contrast axial section showing large pituitary adenoma with compression of LT cerebral peduncle



**Figure 8:** Case 3: Post op CT scan done on the fourth post-op day showing infarct in LT thalamus



**Figure 9:** Artist's impression of encasement of ICA by tumor before surgery



**Figure 10:** Artist's impression of strangulation of ICA by residual tumor after the surgery

A pre-op MRI finding of encasement of ICA should alert the neurosurgeon to this rare complication.

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