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Case Report

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Transnasal hypophysectomy in conchal sella: a case report

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ABSTRACT

The trans-sphenoid access to the pituitary gland is the most common approach for pituitary adenomas. The different routes to the sella ultimately traverse the sphenoid sinus. Therefore the anatomical variations of the sphenoid sinus have major impact on the surgical access. The conchal non-pneumatized sphenoid was always considered to be a contraindication to the trans-sphenoid approach to the sella. The preset study was conducted on a 50 year old male with conchal sella with chief complains of headache and associated loss of vision in left eye is being reported. MRI brain and sella (with contrast) showed evidence of well-defined altered signal intensity in sellar and suprasellar region 12×18×15 mm. DNE showed posterior septectomy defect from previous surgery. Anterior wall of sphenoid was thick and no other landmark was identified. Keeping in midline using the sphenoid rostrum as landmark, drilling was started in 1×0.5 cm area and continued till a depth of around 1 cm till dura was visualized. Intra operative confirmation of the sphenoid and sella was done using C-ARM. It can be utilized to confirm surgical landmarks to access the sella through the sphenoid sinus accurately even in poorly pneumatized sphenoid.

Keywords: Conchal sphenoid, Trans sphenoidal hypophysectomy, MRI, CT scan, C-ARM imaging

INTRODUCTION

Trans-sphenoid access to the pituitary gland is the most common approach for pituitary adenomas.[1] The different routes to the sella: transethmoid, transnasal, trans-septal, whether microscopic or endoscopic, ultimately pass through the sphenoid sinus to reach the sella. Therefore the anatomical variations of the sphenoid sinus have major impact on the surgical access and the possibility of complications.[2] The conchal nonpneumatized sphenoid was always considered to be a contraindication to the trans-sphenoid approach to the sella and it usually makes this approach less favorable. However, with the surgeon pre-informed, his armamentarium is upgraded to gain access through such a sella. Keeping this in view, the following case of is being reported.

CASE REPORT

A 50 year old male presented with chief complains of severe headache associated with loss of vision in the left eye which was sudden in onset from last 8-10 days. He had previous pituitary adenoma surgery in 2010 (records not available). On examination, light perception was absent in left eye but pupillary reflexes (ipsilateral and consensual) were preserved. Fundus examination showed disc pallor. MRI brain and sella (with contrast) showed evidence of well-defined altered signal intensity in sellar and suprasellar region with internal enhancing component of size 12×18×15 mm. CT nose and para nasal sinuses was suggestive of bony defect in posterior part of nasal septum and markedly thickened floor of sella (postoperative changes) as in Figure 1. Patient was worked up for any endocrinological abnormalities and after required fitness, was posted for endoscopic transnasal transsphenoidal hypophysectomy.

Transnasal endoscopy exhibited the posterior septectomy defect of the previous surgery. Anterior wall of sphenoid was thick and no other landmark was discerned. A midline access utilizing the sphenoid rostrum as a landmark, drilling was started in 1×0.5 cm area as guided

by the size of drill bits. Drilling was continued with diamond burrs till a depth of around 1 cm till dura was visualized. Intra operative confirmation of the sphenoid and sella was done using C-ARM with angled and straight positioning of radio-opaque suction tip at the tuberculum sella and the clinoid recess. Dura was fulgurated and tumor tissue was dissected out using ring curette till the optic chaisma was visualized and found to be normal. Minimal CSF leak was noted which was repaired using multiple layers of surgical, and a Hadad flap harvested from left side as shown in Figure 2.

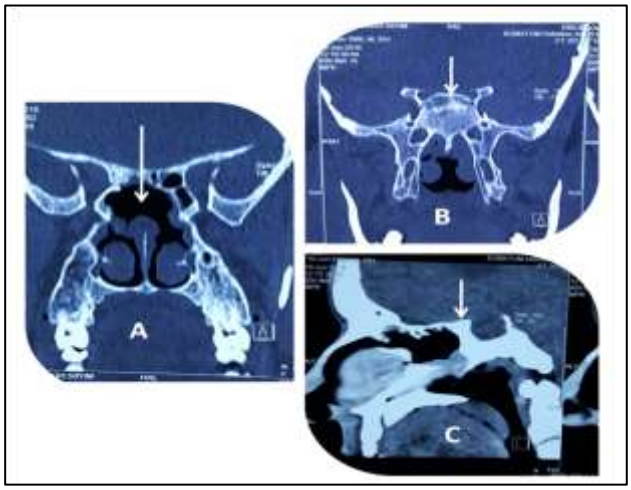

Figure 1: CT scan PNS. A) Coronal section showing posterior septectomy defect; B) Coronal section showing non pneumatized sphenoid sinus; C) Saggital cut showing thick anterior wall of sphenoid sinus.

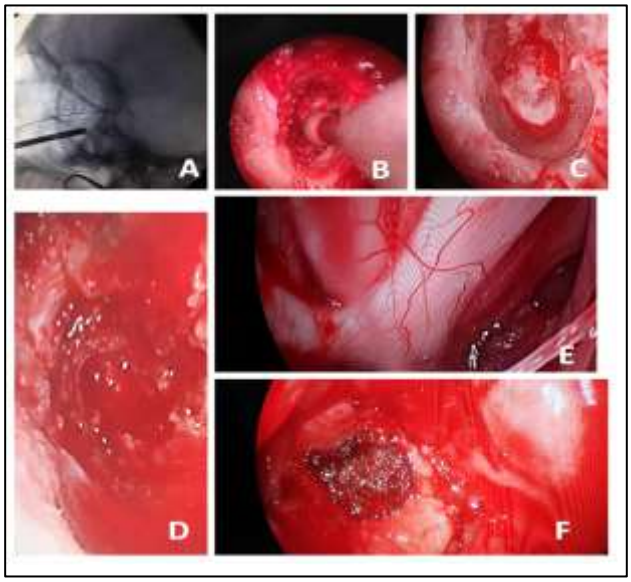

Figure 2: Intraoperative pictures. A) C-arm to confirm the position of sphenoid and sella; B) Drilling with diamond burr; C) Drilling continued upto 1 cm; D) Dura visualized after drilling; E) Optic chiasma found free of tumour; F) Closure of defect with hadad flap and surgicel.

Hemostasis achieved and anterior nasal tamponade with merocel was done. Lumbar drain was inserted after surgery.

Postoperative period was uneventful with no significant complains. Histopathological examination was consistent with pitutary adenoma.

DISCUSSION

The trans-sphenoid access to the pituitary is the most common approach to the pituitary adenomas. The versatility of this approach is based on solid foundations: it is the least traumatic route to the sella turcica, it avoids brain retraction, and it provides excellent visualization of the pituitary gland and the related lesions. It also offers a lower morbidity and mortality rate when compared with a transcranial procedure.

The different routes to the sella: transethmoid, transnasal, trans-septal, whether microscopic or endoscopic, ultimately pass through the sphenoid sinus to reach the sella. Therefore the anatomical variations of the sphenoid sinus have major impact on the surgical access and the possibility of complications. Knowing the details of the anatomy of the sphenoid sinus and the extent of pneumatization can guide the surgeon through difficult corners of the approach. Preoperative evaluation of the anatomy of the sphenoid sinus by computed tomography (CT) scan and magnetic resonance imaging (MRI) is a routine procedure and can direct the surgical decision.

The degree of pneumatization of the sphenoid sinus varies considerably, and 3 main types are recognized, first described by Hamberger et al.[4] In the sellar type, a sellar floor bulges into a well-developed sinus, pneumatization extending beyond the tuberculum sellae. Pneumatization extends only as far posteriorly as the tuberculum sellae in the pre-sellar type, where the sphenoid sinus is usually small and sometimes rudimentary. In the conchal type, the sphenoid sinus is characterized by a very small sinus, separated from the sella turcica by a wall approximately 10 mm thick. Another pattern of pneumatization is the post-sellar (occipito-sphenoid) type, where the sinus is over pneumatized and the posterior border extending beyond dorsum sellae, even across the occipital synchondrosis.[3,4]

The sella turcica is seen as a prominence in the roof of a well-pneumatized sphenoid sinus and is known as the sellar bulge. This is considered one of the most important surgical landmarks to the sellar floor. The conchal nonpneumatized sphenoid was always considered to be a contraindication to the trans-sphenoid approach to the sella. It usually makes this approach less favorable. However, with the surgeon informed in advance, different tools can make such an approach feasible.

The key points with regard to the surgical procedure are as follows: i) full use must be made of the preoperative

imaging data, and the surgery-associated anatomical characteristics, as well as the depth and width of the sellar tumor requiring removal, must be determined; ii) the rostrum sphenoidale and posterior sections of the nasal septum must be used as the reference point for the midline, at which a position 2 cm above the choana should be selected as the hypothetical position of the ostium of the sphenoidal sinus; iii) a high-speed drill is considered as an alternative to the osteotome and rongeur as it appeared to confer a number of advantages in the present case, including exerting a hemostatic effect on a small amount of bleeding from the sellar tumor, a clean surgical view and improved surgical safety.[1]

CONCLUSION

The availability of intraoperative C-arm imaging or navigational devices can be used to confirm surgical landmarks, making it possible to access the sella through the sphenoid sinus safely even in these poorly pneumatized cases.

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