En bloc resection of the sellar dura to achieve biochemical cure in functional adenoma.

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INTRODUCTION

Surgical resection is the first-line therapy for functional pituitary adenomas. Tumor invasion into the medial wall of the cavernous sinus may not be apparent on MRI and is often a source of persistent disease and failure to achieve biochemical remission. Somatotroph tumors specifically have demonstrated increased invasion rates compared to other functional adenomas. Advanced transcavernous surgical approaches for pituitary adenoma resection have been well defined.[1,2] Selective resection of the cavernous sinus medial wall is associated with improved extent of resection and remission rates.[3-5] Here we demonstrate a novel technique for *en bloc* removal of the sellar dura including bilateral resection of the cavernous sinus medial walls to achieve biochemical cure in a patient with a mammosomatotroph pituitary macroadenoma.

PATIENT CASE

The patient is a 79-year-old right hand dominant female. She presented to the emergency department with severe hyponatremia (Na 116). Endocrine workup revealed an elevated prolactin (110), HGH (27), and IGF-1 (458) as well as low am cortisol (1.7), ACTH (1.6), FSH (0.4), LH (<0.1). She had no headache or visual disturbance, and her neurological exam was intact. MRI demonstrated a 2.6 x 2.7 cm pituitary macro-adenoma with hemorrhage causing expansion of the sella as well as bulging into the suprasellar cistern with superior displacement and mild compression of the optic chiasm. There was no obvious cavernous sinus invasion. CT demonstrated expansion of the sellar floor (Figure 1). She underwent endoscopic endonasal transsphenoidal approach for resection pituitary macroadenoma. There was evidence of bilateral invasion of the medial cavernous sinus walls. The sellar dura was removed *en bloc* to facilitate biochemical cure (Figure 2, Video 1). At 2-weeks follow-up the patient was doing well and remained neurointact on exam with no CSF leak. Pathology confirmed mammosomatotroph pituitary adenoma. From an endocrine perspective, her secondary adrenal insufficiency was managed with hydrocortisone, her hyponatremia resolved, and her prolactin (0.9) and IGF-1 (24) levels normalized. At 2 mths post-op MRI demonstrated no residual/recurrent tumor and her prolactin (1.1) and IGF-1 (15) levels remained low demonstrating biochemical cure.

PRE-OPERATIVE IMAGING

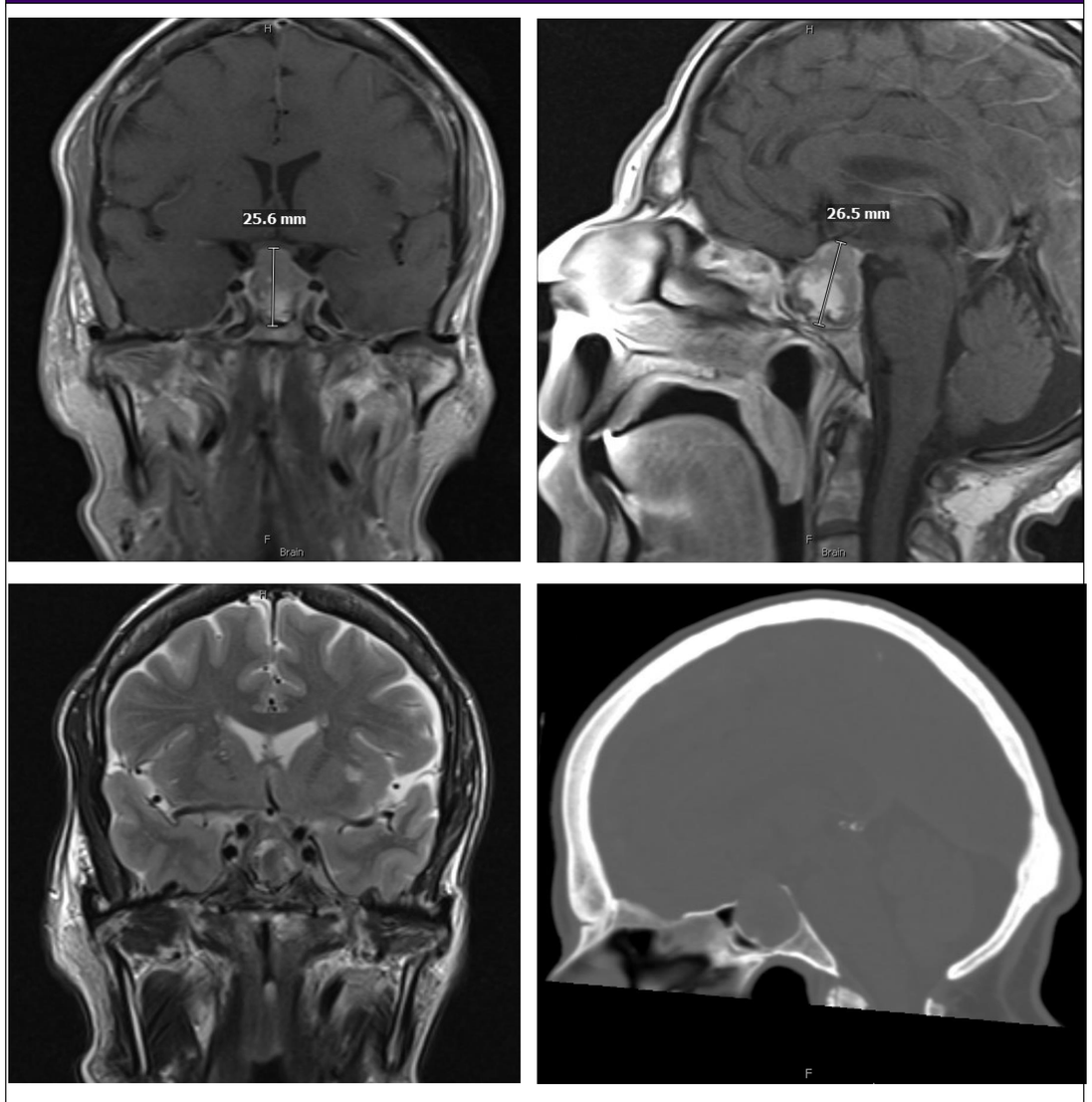

Figure 1. Pre-operative imaging. MRI T1 post contrast in coronal and sagittal planes, coronal T2 MRI and sagittal CT bone.

OPERATIVE PROCEDURE

Figure 2. *En bloc* resection sellar dura endoscopic view. A. The tumor and hematoma were evacuated from the sella and the pituitary gland was visualized. B. There was visible infiltration of the right medial wall. The right cavernous sinus was opened, the medial wall dissected from the carotid artery, and superior attachments were released. C. The dural sellar dura was dissected free from the sellar floor and dorsum sellae. D. The left medial wall also appeared infiltrated. The left cavernous sinus was opened and the medial wall dissected free. E. The pituitary gland and diaphragma were dissected free and the dural flap was removed in one piece. F. The defect was covered with Dura-Matrix onlay and held in place with rolls of Surgicel and gel foam packing. A large naso-septal flap was then placed.

CONCLUSION

En bloc resection of the entire sellar dura is a safe and feasible technique in functional pituitary macroadenoma cases with bilateral invasion of the cavernous sinus medial walls. This technique improves the extent of resection and increases likelihood of biochemical cure in these complex patients.

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