Avoidance of diabetes insipidus in transsphenoidal hypophysectomy

A modified technique of selective hypophysectomy

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A modified transsphenoidal microsurgical technique of selective hypophysectomy is described. By preserving the posterior lobe, the pituitary stalk, and the blood supply from the inferior hypophyseal arteries, diabetes insipidus was avoided.

KEY WORDS • diabetes insipidus • hypophysectomy • transsphenoidal surgery • mammary carcinoma

Surgical Technique

The sublabial, rhinoseptal, transsphenoidal approach, as described in detail by Hardy, was utilized in all 15 cases in this series. The approach to the sella will not, therefore, be repeated here.

Once the sella is reached, a rectangular window is made in the anterior wall and the dura opened by a cruciate incision to expose the anterior surface of the gland. Using microsurgical techniques, the parenchyma of the gland is elevated from the dura, and the stalk is identified. The stalk is protected by two pledgets of cotton (Fig. 1). This maneuver also allows us to elevate the arachnoid pouch, which is often present at this level and therefore prevents the surgeon from entering the subarachnoid space. It should be noted that since we instituted this technique, no intraoperative or postoperative cerebrospinal fluid fistula has occurred.

The anterior lobe of the pituitary gland is then removed piecemeal using microscissors and a micropituitary rongeur.* The midline portion of the gland in front of the stalk and the posterior lobe are not disturbed. Particular caution must be exercised so as not to scrape the walls of the cavernous sinus posteriorly and to avoid damaging the inferior hypophyseal

* The microsurgical instruments were manufactured by Codman and Shurtleff, Inc., Randolph, Massachusetts.
Selective hypophysectomy to avoid diabetes insipidus

<table>
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<th>TABLE 1</th>
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<td>Incidence of diabetes insipidus after hypophysectomy</td>
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<tr>
<td>Diabetes Insipidus</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>yes</td>
</tr>
<tr>
<td>no</td>
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<td>total cases</td>
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arteries. Because the pituitary is removed in fragments, the surgeon must be aware of the danger of leaving a portion of the lateral wing behind: to do so might produce a less than satisfactory result due to the persistence of anterior lobe secretion by any remaining fragment.

Because this technique does not involve entering the subarachnoid space, packing the sella with fat or muscle is unnecessary. A piece of Surgicel is placed in the empty space following pituitary removal, and a small sheath of Silastic adequately replaces the anterior wall of the sella. Surgical closure is performed by replacing the nasal septum in the midline and approximating the mucosa with Vaseline gauze, as described in the original monograph of Hardy.3

Results and Discussion

In a series of 50 cases of transsphenoidal hypophysectomy for metastatic breast carcinoma, 15 operations were performed using the modified technique described above. While DI was permanent in five and transient in 10 of the 35 patients with nonselective procedures performed, for an incidence of 43%, DI did not occur when the modified technique was used (Table 1). We recognize that this series is small, and that future studies may show an increase in the incidence of DI; nevertheless, the fact that, among 15 cases, no DI was seen with the selective hypophysectomy procedure is remarkable.

The incidence of postoperative pain and objective remissions did not differ significantly in the nonselective and selective procedures. Avoidance of DI cannot be attributed to a selective anterior pituitary removal alone, since previous attempts at such a technique have resulted in failure to prevent this complication.4,5 We think that recognition of the role of the inferior hypophyseal artery and care taken to avoid compromise of the pituitary blood supply explain the results reported in this article.

We are aware that DI does not occur following all total pituitary ablation procedures. However, we think that this modified technique, by avoiding a bothersome complication of hypophysectomy, should further tilt the balance of opinion in favor of hypophysectomy when an ablative palliative procedure is considered necessary.

References


Manuscript received February 27, 1981.
Accepted in final form December 29, 1982.

This paper was presented in part at the Annual Meeting of the American Association of Neurological Surgeons, New York, New York, April 20-24, 1980.

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