Modification of the Cushing speculum used for transsphenoidal pituitary surgery

Technical note

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A modification of the original Cushing speculum used in the sublabial-transseptal-transsphenoidal approach to the pituitary is described. Although the modified speculum has smaller dimensions, it allows better visualization of the surgical field, while a new expanding device permits easier opening of the speculum.

KEY WORDS □ pituitary tumors □ transsphenoidal surgery □ speculum

The shape of the nasal speculum used in the sublabial-transseptal-transsphenoidal approach to the pituitary is of primary importance because of the depth and limitation of the surgical field. The first transseptal modification of the transnasal pituitary operation7-9 used a simple Fraenkel speculum or a Jansen mastoid retractor. Cushing1 combined the advantages of the transseptal procedure with the sublabial incision used by Halstead8 to design his own speculum whose dimensions allowed better visualization of the sella floor. Dott introduced two small light bulbs into the speculum to provide better illumination, plus an expanding device based on the scissors principle.2 Hardy4-6 made the surgical procedure more reliable by introducing the x-ray image intensifier and surgical microscope. Also, since the Cushing speculum had a tendency to slip backward, he added toothed edges at the inferior rim of the blades that fixed the device to the maxillary bone. Unfortunately, the voluminous nasal mucosa has a tendency to slip around the entering tips of the old Cushing speculum and diminish the dimension of the surgical field. For this and other reasons we have further modified its design and use.*

New Modification

The blades of our modification have been bent outward to retain the tissue outside the surgical field (Fig. 1 upper left and right). The originally rounded tips have been constructed in a concave shape to fit better against the floor of the sphenoid sinus (Fig. 1 lower right). This change allows a reduction in the width of the blades, enabling the surgeon to

Modification of the Cushing speculum

Fig. 1. *Upper Left:* Photograph of the modified Cushing speculum for trans-sphenoidal pituitary surgery with expanding device. *Upper Right:* Horizontal schematic section through the head with speculum in position to show its relation to mucous membrane. *Lower Right:* Control x-ray film demonstration of close apposition of the speculum blades against the floor of the sphenoid sinus. An intraoperative pneumoencephalogram shows suprasellar extension of the tumor.

preserve the cartilaginous part of the nasal septum. Ordinarily, this septum is cut at its base and at the connection to the bony vomer and is there subluxated toward one side; it can now be replaced at the end of the operation diminishing the danger of atrophic rhinitis developing.

The screw of the Dott modification tends to break in cases with heavy turbinates. Our modified speculum is not subject to this fault because of the heavy forceps-like expanding device (Fig. 1), whose plastic-coated tip is introduced between the speculum blades. It can be opened by direct manual pressure or by turning the screw at its end.

The speculum has been used successfully in more than 40 patients, including a 6-year-old child.
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References


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