A new bipolar right-angled coagulation forceps for pituitary surgery

Technical note

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A new instrument is described which allows easy and precise bipolar coagulation of the anterior intercavernous sinus. In some cases this sinus covers the anterior aspect of the pituitary and may render transsphenoidal pituitary surgery difficult.

Key Words □ cavernous sinus □ surgical hemostasis □ hypophysectomy □ microsurgery □ pituitary neoplasm □ coagulation forceps □ instrumentation

The intercavernous sinus varies considerably among patients in size and orientation, factors which can influence the course of an operation in the pituitary region. An anterior intercavernous sinus situated in the angle formed by the diaphragma sellae and the dural sheath covering the anterior wall of the sella was found in 76% of the normal sellae examined by Renn and Rhoton. In approximately as many as 10% of patients examined, this sinus extended downward and covered part of the anterior aspect of the pituitary. A large intercavernous sinus may render transphenoidal pituitary surgery difficult. Large pituitary adenomas usually compress the intercavernous sinus, in which case the sinus is obliterated. But this is not so in the case of microadenomas or functional hypophysectomy. Abundant hemorrhage from an intercavernous sinus may force the surgeon to abandon the procedure.

It is essential to have perfect dural hemostasis before attempting the removal of a microadenoma, because continuous oozing may obscure delineation and make complete excision of the abnormal tissue difficult. To achieve this hemostasis, compression of an injured intercavernous sinus with either hammered muscle tissue and pledgets of oxidized cellulose or with low-current monopolar coagulation has been recommended. The muscle fragments and pledgets, however, may be dislodged inadvertently during subsequent dissection of the adenoma. Monopolar coagulation may shrink the dura, which leads to more intense bleeding from the enlarged opening in the sinus. As the bipolar coagulation forceps that we described earlier can be used only for intercavernous sinuses situated in the dura covering the inferior aspect of the pituitary, we have constructed a new device that allows bipolar coagulation of the sinuses along the superior and lateral margin of the opening made in the dura for intrasellar operations.*

Design and Use of the Instrument

The bipolar right-angled coagulation forceps basically is designed like an angled forceps for applying clips (Fig. 1). However, the instrument’s lock consists of insulating material, and the inner shaft also is covered from end to end with a plastic sheath. The handles are connected to a usual high-frequency coagulator unit. As the coagulating footplate is only 4 mm long, it can be introduced easily into the dural opening (Fig. 2). The instrument is sterilized by gas.

The two dural layers of the venous sinus are grabbed with the instrument and sealed tightly. The coagulating current is set low because otherwise it may have a cutting effect. The instrument allows precise, rapid, and secure closure of the injured intercavernous sinus and medial extension of the cavernous sinus.

*Bipolar right-angled coagulation forceps manufactured by Aesklap-Werke AG, D-72 Tuttingen, Germany, and 807 Grandview Drive South, San Francisco, California.
Right-angled bipolar coagulating forceps

Fig. 1. Left: Bipolar right-angled coagulation forceps.
Right: The tips of the instrument. Scale in centimeters.

Fig. 2. Artist's view of the forceps during coagulation of a bleeding intercavernous sinus.

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References


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