

# A SIMPLE METHOD FOR DISSECTING THE CORPUS CALLOSUM

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In experimental practice researchers relatively often resort to dissection of the corpus callosum. However, the many methods [1-4, 8, 9] are generally associated with complex and very traumatic operations (wide opening of the skull for some distance, manipulations on the sagittal sinus, disturbance of the normal blood supply of the brain).

In Magni's method [7], an attempt was made to avoid disturbing the brain blood supply. For this purpose, after removing a bone plate along the midline of the skull, a thread whose ends are inserted through the eyes of two small surgical needles is passed through two small holes in the dura mater under the sagittal sinus in an anteroposterior direction. The needles, by means of a stereotaxic instrument are imbedded through the same holes in the dura vertically, eyes downward into the longitudinal fissure of the cerebrum. The corpus callosum is dissected by the thread.

This method, despite all its favorable aspects, does not eliminate the need for wide trephining of the skull and requires a stereotaxic instrument.

We have developed the following variant of this operation.

We took into account that in cats the genu of the corpus callosum is situated at a depth of 12-15 mm and its splenium at a depth of 11-13 mm from the lower surface of the skull. Such anatomic formations as the fornix, anterior commissure, and massa intermedia are situated appreciably lower [5, 6]. On the basis of these data a relatively simple, in construction and manufacture, knife was designed (Fig. 1) which is a steel rod 0.9 mm in cross section with a total length of 95 mm which is triply curved over its length. The first section (20 mm long) is bent along the arc of a circle with a radius of 15 mm, the second (36 mm long) is bent along the arc of a circle 17 mm in radius. The angle ( $\alpha$ ) between the chords of these sections is  $232^\circ$ . The remaining part of the rod, for easy manipulation, is negligibly bent along an arc opening upward. The radius of the arc of the circle of this section is large and can be arbitrary. Further, the rod passes into a handle. The first bent section of the rod is flattened, its end is rounded and slightly thickened owing to soldering on. The place where the first section passes into the second is also flattened, furthermore along the lower edge it is sharpened like a blade.

During the course of the operation under any type of anesthesia, a hole 7 mm in diameter is made by a trephine in the occipital region of the cat's skull along the midline. The dura mater is incised along the edge of the sagittal sinus. The dull end of the bent part of the knife is inserted through this hole into the longitudinal fissure (Fig. 2).

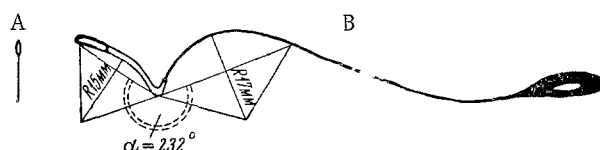


Fig. 1. Knife for transecting corpus callosum. A) Front view; B) side view. Explanation in text.

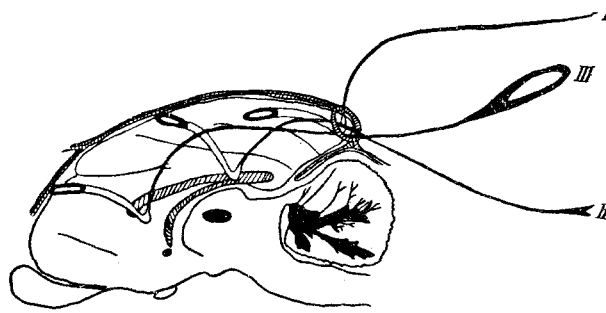


Fig. 2. Diagram of the movement of the blade in the longitudinal fissure during the operation of transecting the corpus callosum. I, II, III) Successive changes of knife position.

After inserting the entire bent part the upper surface of the tentorium cerebelli is contacted by the bent plate, and the handle is maximally lowered.

In this case the dull end of the knife contacts the lower surface of the skull which the operator immediately senses by hand. By continuing to push against the lower surface of the skull by this end, the knife advances 32-34 mm which guarantees dissecting the corpus callosum over its entire length. The knife is extracted by moving in the opposite direction. The trephined hole is closed by the bone section extracted from it. The soft tissues are sutured layer by layer.

Not one of the eleven cats operated by this method died. They all easily underwent the operation. Complete dissection of the corpus callosum was confirmed by a later histological study.

#### LITERATURE CITED

1. K. M. Bykov and A. D. Speranskii, *Russk. fiziol. zh.*, 7, No. 1-6 (1924), p. 351.
2. A. E. Yanishevskii, *Obozr. psikhiatr., nevropatol. i éksper. psikhol.*, No. 4 (1902), p. 241.
3. F. Bremer and N. Stoupe, *Acta physiol. pharmacol. neerl.*, 6 (1957), p. 487.
4. C. Caville and H. Duret, *Arch. Physiol. Norm.*, 7 (1875), p. 352.
5. E. Fifkova and J. Marsala, *Stereotaxie podkorových. struktur mozku krysy. Kralika a kocky. Praha* (1960).
6. F. E. Loewenfeld and R. Y. Altman, *Neuropath Exp. Neurol.*, 15 (1956), p. 181.
7. F. Magni, R. Melzack, and C. J. Smith, *Electroenceph. Clin. Neurophysiol.*, 12 (1960), p. 517.
8. R. E. Myers, *Brain*, 79 (1956), p. 358.
9. R. W. Sperry, *J. Neurophysiol.*, 22 (1959), p. 78.