

A SURGICAL APPROACH TO THE STELLATE GANGLION

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The approach to the ganglion from the ventral side of the neck or even through the anterior opening of the thorax [1] involves the difficult dissection of the vago-sympathetic bundle along the common carotid artery in the neighborhood of the large vessels of the thorax. It is applicable to acute experiments, but in a prolonged experiment, particularly when degeneration of the sympathetic fibers in different organs is being examined after removal of the ganglion, damage and degenerative changes inevitably occur in the vagi. In cats, dissection in the region of the large vessels and of the pleura is complicated by the fact that as a rule the anterior aperture of the thorax is rather small.

In cats it is more convenient to approach the ganglion laterally through the first intercostal space, by a method we have developed in the course of an experimental histological study of degeneration of the endings of the sympathetic nerves in the heart.

The cat under ether anesthesia is fixed on its back or slightly to one side, with the hind legs crossed. A bar is placed beneath the chest. The forelimbs are separated at an angle of 120-150°.

An incision directed towards the hind end of the thorax is made in the skin and subcutaneous fat of the thorax in the region of the axilla. The pectoral muscles and their fascia then become visible.

The erector spinae, which are the largest muscles of the thorax, are divided along the length of the fibers parallel to the cutaneous incision and pushed aside. The scapula is displaced dorsally and the serratus magnus (corresponding to the serratus anterior of man) is divided into layers along the fibers. Then the glistening flat tendon of the ilio-costalis muscle becomes visible.

The ganglion lies in the first intercostal space ventral to the first tendon of the ilio-costalis muscle. The external and internal intercostal muscles of the first intercostal space are removed with a scalpel and forceps for a distance of 1 cm ventral to the ilio-costalis tendon. When the hemorrhage has been arrested with tampons moistened in boiling physiological saline the stellate ganglion can be seen beneath the muscles and is distinguished by its characteristic shape, white color, considerable firmness, and slippery surface. It lies up against the pleura and moves slightly during respiration.

To remove the ganglion it is pulled with forceps away from the outer pleural sheet into the intercostal space and its branches are carefully divided with eye scissors. The wound is sewn up in layers.

The same approach may be convenient for experiments involving stimulation of the stellate ganglion, etc. If a larger operative field is required it may easily be obtained by subperiosteal resection of the first or second ribs.

Instrumentation: scalpels, scissors, forceps, clamps for gauze pads and hemorrhage arrestors, needle holder with supply of surgical needles. Sutures, tampons, pads, hot physiological saline. The operation is carried out in a very deep wound, and therefore good lighting from the side is required.

SUMMARY

Instead of the generally accepted surgical approach to the stellate ganglion through the anterior opening of the thorax, we have proposed a simpler and more precise approach through the first intercostal space. This method precludes any injury to the vagi and major vessels.

LITERATURE CITED

1. E. N. Speranskaya. *Methods of Operation on Dogs and the Performance of Chronic Experiments in Physiology*. [in Russian] AN SSSR. Moscow-Leningrad, 1953.