METHOD OF EXPOSING THE GASSERIAN GANGLION: REMOVAL OF THE SUPERIOR MAXILLARY NERVE.*

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This patient, about 60 years of age, is brought before you to illustrate certain methods of procedure in operating on the Gasserian ganglion. He was affected with neuralgia confined almost entirely to the superior maxillary nerve. For this condition several operations had been done on the face, but the pain having returned I performed Carnochan's operation on Meckel's ganglion. An opening was made in the anterior wall of the maxillary sinus, the posterior wall was chiseled through and by means of hooks and curettes the ganglion was broken up and removed as much as possible. He remained free from pain for three or four months and then had a return. The question arose as to whether an attack should be made on the Gasserian ganglion itself or on the superior maxillary nerve within the skull. The removal of the ophthalmic branch with the ganglion is now, I believe, avoided when possible, and as both it and the inferior maxillary divisions were free from pain I decided to limit my interference to the superior maxillary nerve.

The main difficulties experienced in the operation have arisen from the hemorrhage encountered, and it was to this question that my attention was mainly directed. The bleeding in cutting the flap is considerable, as is also that from the middle and small meningeal arteries and the veins, including the cavernous sinus, in the region of the ganglion. Any bleeding from the sinus was obviated by not interfering with the ophthalmic nerve. To control the arterial bleeding it was decided to ligate the external carotid artery. This procedure was, I believe, suggested by Dr. Fowler.

In ligating the external carotid artery the ligature was placed around it just above the digastric muscle. (See illustration.) The incision was placed behind the angle of the jaw along the anterior edge of the sternomastoid muscle. This was pulled backward and the parotid gland pushed forward. The veins contributing to form the external jugular were pulled forward and the oblique fibers of the digastric muscle came into view: a little parting of the tissues then enabled one to see the hypoglossal nerve below the muscle and winding around the occipital artery to its outer side; to the inner side, coming from the trunk of the external carotid, were the commencement of the facial and lingual arteries. The ascending pharyngeal artery is posterior and may not be seen. Just above the digastric muscle is seen the stylohyoid muscle, and the posterior auricular artery, comparatively small, may be seen winding along the upper edge of the digastric muscle. The stylohyoid muscle was pulled upward, the digastric downward, and the ligature of catgut placed between them on the external carotid artery. This allowed the blood still to ascend to the scalp through the occipital and posterior auricular arteries.

To cut the usual Hartley-Krause horseshoe-shaped flap with its base on the zygoma would be to court sloughing of the flap if the main blood-supply, through the temporal artery, was cut off by ligation of the external carotid artery. Necrosis of the bone and even

sloughing of the flap itself have been known to occur. To avoid this a flap of the shape of a truncated cone was cut with its base upward and small end downward. Two longitudinal cuts were made upward, one from the junction of the anterior edge of the ear and the zygoma and the other from the junction of the anterior and middle thirds of the zygoma; these were joined by a transverse cut along the zygoma. This flap embraced the skin and superficial fascia down to the temporal aponeurosis.

The temporal muscle and aponeurosis was then cut in the lines of the two lateral incisions, but the transverse cut was made high up near the temporal ridge. This muscle, having been thus loosened above, was pushed down beneath the zygoma. The skull was opened by a trephine and the opening enlarged by the rongeur forceps. In biting away the bone the middle meningeal artery was torn but gave rise to no troublesome bleeding. The dura mater and brain were then lifted and the supe-

rior maxillary nerve exposed as it ran from the Gasserian ganglion to the foramen rotundum. Grasping the nerve as it entered the bone, with a hæmostatic forceps, it was pulled upward. With another forceps it was grasped closer to the ganglion and twisted loose from it. The bone was not replaced, but the temporal fascia and muscle were drawn upward and sutured in place by catgut. The flap was then brought down and sewed in position.

The bleeding during the operation was at no time troublesome. As to the subsequent course, the wounds healed by primary union; there were no circulatory disturbances. The opening in the skull is closed by firm fibrous tissue and the pain has disappeared. The non-replacement of the bone was suggested by Professor Tiffany, and this case demonstrates that the brain is sufficiently protected without it.

*Read in a Symposium on the "Fifth Nerve in its Neurological and Surgical Relations," before the College of Physicians of Philadelphia, April 20, 1900.