TRACTOTOMY FOR THE RELIEF OF TRIGEMINAL NEURALGIA

OBSERVATIONS IN 124 CASES

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One of the chief objections to section of the 5th cranial nerve, according to Frazier, is the resulting total loss of sensation in the trigeminal area which, though tolerated by most patients, is always an unpleasant sequel. In some instances the operation has resulted in painful paresthesias in the anesthetic area.

To eliminate these complications Sjöqvist, in 1937, as an outcome of his anatomical study of the trigeminal root, performed the first operative sectioning of the descending tract of the trigeminal nerve in the medulla oblongata, and obtained a dissociated anesthesia.

Since 1937 approximately 284 cases of tractotomy for various neuralgic syndromes have been reported from several different clinics. From the extensive material in Olivecrona's clinic I believe it is justifiable to draw conclusions regarding the indications for and against this method.

CLINICAL MATERIAL

During the years 1937 to 1948, 124 patients suffering from major trigeminal neuralgia have been operated upon at Serafimerlasarettet (in this series cases of bilateral neuralgia have not been included)

The patients might be divided into two groups, according to the level at which section of the trigeminal tract was performed: (Group 1) Those patients, a total of 40, in whom the tractotomy was performed at a level corresponding to the border between the middle and the inferior third of the olivary eminence, as originally recommended by Sjöqvist. These cases were reported on fully by Olivecrona in 1942.

(Group 2) The 84 patients (1940–1948) in whom the tractotomy was performed at the level of the obex or, in a few cases, caudal to it. This modification of Sjöqvist's original technique was dictated by the conviction that most of the symptoms following tractotomy by his method were due to injury of the restiform body and the vagus rootlets. (Weinberger and Grant are given credit for being the first to carry out this modified technique, but unfortunately their paper was not available in Sweden during the war.)

At the level of the obex, or a few mm. caudal, the trigeminal tract emerges from under the restiform body, and appears on the external surface of the medulla oblongata, forming at this point, between the posterior and lateral areas, a more or less pronounced elevation, called the tuberculum

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cinereum. The tuberculum cinereum, as pointed out by Gonzalez, is not always situated at the same level. Its position in the medulla oblongata varies not only in different individuals, but also in the two sides of the same individual. As a rule, however, it is pronounced a few mm. caudal to the level of the obex. Root section at this level, therefore, the spinal tract of the trigeminal nerve being no longer covered by the restiform body and the lowest rootlets of the vagus nerve having left the medulla rostral to this level, should not be followed by these complications.

**OPERATIVE TECHNIQUE**

The operative technique is the same as that described by Olivecrona in 1942. Even today a local anesthesia is preferred, because the pain experienced by the patient and the ensuing analgesia assist the surgeon to regulate the extent and depth of the incision.

The incision should be made at a level corresponding to the lower end of the 4th ventricle, or 1 to 2 mm. caudal to it, immediately lateral to the funiculus cuneatus, and extended ventrally to a point just dorsal to the level of the vagus rootlets. To ascertain the exact position of the sensory fibers of the 5th cranial nerve, it is a good plan to feel gently over the probable area with a blunt dissector. Location of the nerve will give pain in the corresponding side of the face. At the moment of incision, if it has been correctly placed, the patient will feel pain in the whole trigeminal area. If pain is felt only in the ophthalmic area, the incision should be extended a little in the dorsal direction. If pain is felt only in the mandibular area, the incision needs to be extended slightly in the ventral direction. To confirm that the incision has been correctly placed the sensation in the face is tested.

Great care must be taken to make the incision no deeper than 2 to 3 mm. in order to prevent damage to the ambiguous nucleus and sympathetic fibers. If the incision is extended too far in a dorsal direction the posterior columns and their nuclei may be damaged. If it is extended too far in a ventral direction, the spinothalamic and spinocerebellar (ventral) tract may be injured.

For neuralgia localized in the 3rd division, section of the trigeminal tract at the level of the obex does not always have the desired effect. If a cautious extension of the incision in a dorsal direction does not give complete analgesia, a new incision should be made slightly rostral to the first one.

**OPERATIVE MORTALITY**

In this series there have been 2 operative deaths (1.6 per cent). One patient died from pulmonary edema and a postoperative clot in the posterior fossa. The other patient died from a clot in the cerebellopontine cistern caused by bleeding from the tractotomy incision. Autopsies were performed in each case.