Partial Extracranial Section of Seventh Nerve for Hemi-Facial Spasm

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Hemifacial twitching or tic is not uncommon and proves a most fatiguing and embarrassing disability, generally found in middle-aged or older persons having cerebral arteriosclerosis or hypertension. Numerous surgical procedures have been described for its relief, including alcohol block, sectioning with resuture, sectioning of the ocular branch, decompressive operations, and cross-anastomoses. None of these procedures has proved satisfactory because of too much initial paralysis followed by an early return of spasm or mass reaction. German in 1942 described the most satisfactory method to date; this method, which involved partial sectioning of each of the three branches of the facial nerve distal to the parotid gland, presented certain technical difficulties and frequently was followed by early regeneration. We have devised a new technique based on German’s work, with partial sectioning of the seventh nerve in its main trunk just distal to the stylohyoid foramen and just proximal to its first main branching.

Technique

It is imperative that the operation be performed under local anesthesia with the facial muscles under observation. With the patient on his side, an incision is made around the inferior edge of the ear (Fig. 1). The facial nerve is identified at its exit from the stylohyoid foramen by exposing the anterior edge of the sternomastoid muscles, utilizing blunt dissection to deeper planes with a Kelly hemostat with appropriate use of a localizing nerve stimulator (Fig. 1 inset). Additional aids can include chiseling off the tip of the mastoid or exposing the digastric muscle and its small nerve branch from the seventh nerve trunk proper. Magnifying spectacle loupes are of great help. The main trunk of the seventh nerve is exposed and freed to its primary branching which lies 1 to 2 cm distal to the mastoid bone and just under the edge of the parotid gland. A self-retaining retractor is used. A small square of sterile tongue stick or other hard, smooth surface is placed under the nerve trunk, which is sectioned approximately two-thirds through its total diameter, beginning at its superficial surface. The sectioned portion is then ligated tightly, turned back on itself, stripped for a distance of 0.5 cm, and sutured to the sternomastoid muscle. This partial sectioning of the nerve trunk can be carried out with a bit of razor blade held horizontally in a mosquito hemostat (Fig. 1).

To prevent the danger of inadvertently cutting too deeply, one may prefer first to insert a right-angled bent 27-gauge hypodermic needle through the nerve trunk and cut down on this needle with the razor blade; or one may first slit the nerve horizontally with an iridectomy knife or a small bent Beaver blade or with the stylet of the hypodermic needle transfixing the nerve trunk after removing the needle proper. This stylet can be grasped on either side of the nerve by mosquito hemostats and slid longitudinally to split the nerve. The superficial half of the nerve is then cut with tiny scissors. If possible, the distal cut fibers should also be tied.

Because of this nerve’s extreme propensity for regeneration, a good two-thirds of the thickness should be sectioned; thus will result in a visible near paralysis of both the orbital and mouth muscles, so that the patient is barely able to close his eyes or show his teeth. By experiment we have found that it makes no difference if one sections the superficial or the deep surface of the trunk so long as some of the fibers which run to both main branches are left intact. Hence, the sectioning must be done just proximal to its primary branching.

Closure is done with finest silk throughout, without drains, and the patient is allowed up at once. There will be a very appreciable paresis of the facial musculature lasting an average of 3 months, but regardless of the degree of paralysis all pa-
Fig. 1. Exposure and partial section of the seventh nerve. Upper Left: Semicircular incision is made below the ear. Right Inset: Blunt dissection of the sternomastoid muscles and identification of facial nerve. Lower Center: Partial sectioning of facial nerve with razor blade held in a mosquito hemostat.
tients have shown a return to normal function in several months' time.

Discussion

The operation herein described offers the following advantages: 1) a hidden scar; 2) greater facility of exposure and of sectioning than in the more distal procedures; 3) lower incidence of recurrence and a longer period of relief than in other procedures; 4) greater ease of reoperation; and 5) retention of discrete functions lost in complete section plus resuture or in anastomotic operations. The fact that partial section of the proximal trunk does not appear to affect one division more than another suggests incomplete orientation of fibers at this level. A warning is given against intracranial exploration or partial sectioning of the eighth nerve within the cerebellopontine angle since patients with hemifacial spasm are likely to develop unilateral deafness following even a simple intracranial exposure without sectioning.

A very slight mass reaction of split axon regeneration is noted in all cases indicating some regeneration of the cut fibers, but it is much less than that seen in complete sections or anastomotic operations.

Results

There should be a complete cessation of spasm and twitching. A temporary paresis of the facial muscles may be anticipated for 3 months, and a mild late return of eyelid tic under fatigue will occur after 2 to 4 years. Recurrence sufficient to warrant reoperation has been rare and can be corrected by a repeat procedure at the same level. A poor result will be due to too little rather than too great fractional sectioning of the nerve trunk.

In one case of extreme recurring bilateral facial spasm secondary to Paget's disease, both facial nerves were ultimately completely sectioned without undue residual difficulty in eating and with great satisfaction to the patient.

References