EFFECTIVENESS OF VARIOUS OPERATIONS FOR TRIGEMINAL NEURALGIA*

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The history of trigeminal neuralgia gives eloquent testimony of the deadly, mutilating and disabling extremities to which patients and their surgeons have gone in the attempt to relieve this frightful pain. Much progress has been made, but the continuous development of new procedures shows that perfection has not been attained. With temporal rhizotomy pain could be relieved with a minimal rate of fatality, but at the cost of facial anesthesia, paralysis of the masseter and the risk of corneal ulceration.

Sensory rhizotomy and later partial rhizotomy by the suboccipital route diminished these hazards, but at the risk of surgical safety. Later by the temporal approach preservation of the motor root was perfected, leaving facial anesthesia the major hazard. This risk was reduced greatly by partial sensory rhizotomy, but preserving sensory fibers increased the rate of recurrence and the need for secondary operations.

In Busch’s Clinic, Taarnhøj3 discovered a new technique by which pain was relieved without anesthesia; this was accepted gratefully everywhere. Unfortunately, this operation also proved to offer less than ideal results, recurrences of pain gradually mounting with the passage of time. Almost simultaneously in 1954 and 1955 came reports from Stender4 of Berlin and Shelden2 of Pasadena, California of a new operation so simple in performance and so baffling in mechanism that it has not enjoyed the vogue it seems to merit. Its proponents have advanced hypotheses for its mechanism of effect that are unconvincing to the average surgeon. Having long enjoyed the acquaintance of both these people and being convinced of their integrity, I have adopted their procedure on an empirical basis, leaving explanation of its mechanism to better theorists than am I. Although the presentation may be premature, it was thought that a progress report on the modest series of cases of trigeminal neuralgia from the Buffalo (New York) General Hospital might be interesting. I am indebted to my colleagues, Doctors Carl Graf and George Cohn, for permission to include their cases in the report, although the bulk of the series is my own responsibility.

The temporal rhizotomy referred to here consists of the extradural, temporal approach to the ganglion and sensory root performed on the seated patient. The greater superficial petrosal nerve and the trigeminal motor

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Forty-three rhizotomy operations, orries ganglion fibers. It ganglion, sensory-root fied root severed 1040 have been of this problem in the approach the operation has been employed chiefly in cases in which a small etiologic cerebellopontine-angle lesion was considered possible.

After description by Sjöqvist of the effects of section of the spinal tract of the trigeminal, tractotomy was employed in a series of rather special cases over a 10-year period.

The operation attributed to Taarnhøj in this paper is actually its modification demonstrated by Norlén. It is done on the seated patient by the extradural approach, the porus trigemini being cut through well into the tentorium, but not into the incisura, to avoid the trochlear nerve. Dr. Taarnhøj's indulgence is requested for applying his name to this modification.

The Shelden-Stender operation has been our primary reliance since 1955. It consists simply of exposing the sensory root as for the usual temporal rhizotomy, stripping the arachnoidal sheath widely, then manipulating the sensory-root fibers with a small dissector and nerve-hook to separate the fibers thoroughly. Stender apparently believes that manipulation of the ganglion is the important factor, while Shelden considers mild trauma to the root to be most important. We concentrate on the root rather than the ganglion, but I have no good idea of the mechanism of the effect of the procedure.

Rather than develop an elaborate critique of all possible phases of the problem at this time, it was considered worth while to present the pattern of recurrences of pain requiring reoperation in our series of patients. Subsequent operations were selected to offer the greatest predictable relief of pain with minimal cost in sensation. These have consisted of simple repetition of the original operation, extending to complete sensory rhizotomy when considered necessary. All patients are told in advance of the known possibilities and are conditioned to the idea of multiple operations when necessary. If they desire it, the sensory root is severed completely at any stage, but this has been done primarily or even secondarily in very few cases. Relief of pain has required 3 operations in only 3 of 60 instances of reoperation. Bilateral operations have been done in 6 (1.3 per cent) of 457 patients; these have been considered separate primary operations, rather than primary and secondary.

None of these 5 operations has been entirely successful; temporal partial rhizotomy has required the fewest reoperations, 7.5 per cent (Table 1). Forty-three additional such rhizotomies have been done after other primary operations, lowering the rate of failures to 6.2 per cent. Suboccipital rhizotomies required reoperation in 9 per cent of cases, tractotomy in 29 per cent,