Trigeminal Compression for Tic Douloureux
An Evaluation

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Since the introduction by Shelden⁷ in 1955 of the “compression” operation for trigeminal neuralgia, we have in this clinic employed the procedure in 131 patients. It was thought appropriate, at this time, to evaluate the effectiveness of the operation in the first 100 of these. In a previous report, Hamby¹ alluded to a representative number of patients included in the present report. I am grateful to him, and to Dr. George Cohn for allowing me to include their cases in this study.

The indulgence of Dr. Shelden is asked when referring to the operation bearing his name because it is felt more precise to refer to the procedure that we have carried out as the “compression operation.” It is not certain that we have been performing the operation exactly as he has described it.

In evaluating the operation we have analyzed the following factors which, we thought, might be significant.

Age of Patients at Operation
The average age of patients at the time of operation was 59 years; the youngest of these was 37 years, and the oldest, 91 years old. There were 30 men and 70 women.

Duration of Pain Prior to Operation
The average time between the onset of the first attack of tic pain and operation (compression) was 5.5 years. The longest history of pain was 40 years; the shortest was 10 days.

Site of Pain
In 56 instances, pain was localized to the right side; in 44, to the left side. The highest incidence (35 per cent) of pain was referred to the mandibular division of the trigeminal nerve; the lowest incidence (4 per cent) was referred to the ophthalmic and mandibular divisions in combination.

Recurrence of Pain After “Compression” Procedure
There was no correlation between the incidence of recurrence of pain following operation and specific divisions involved in the pattern of pain. There was no correlation between recurrence of pain and the age or sex of the patient. However, in those patients who had “tic” pain after operation, it was noted that they had had pain for much longer periods of time before operation than did those patients whose pain did not recur. For example, of 21 patients with postoperative “tic” pain, 10 had histories of intermittent episodes of pain over a period from 6 to 21 years. Of these, 8 had histories of pain for 10 or more years. In those patients relieved by the “compression” operation, attacks of “tic” pain had occurred an average of 2.2 years prior to operation.

There were 124 operations performed on the 100 patients. Ten preferred a 2nd or 3rd compression operation when pain recurred; another 12 elected to have the root sectioned. There was therefore an incidence of recurrence (or of failure) of 24 per cent, with a single operation. In the 1st group of 10 people, each of 2 had 3 compressions made.

Of our patients, 96 per cent were relieved of pain with the primary operation; 4 per cent were not. The longest period of relief has been 8 years and 3 months; the shortest, 3 months. There has been “permanent” relief of pain in 11 of the 12 patients who had secondary rhizotomy. (The unrelieved patient has complete one-sided facial analgesia.) In those patients who elected a secondary

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Shelden operation, the longest period of relief from pain between the two operations was 4 years and 9 months; the shortest, 3 months. In 1 instance, relief from pain was not obtained with the second compression. The longest period of control of pain with secondary compression has been 5 years and 8 months.

Twenty other patients said they continued to have pain in the face after operation. Of these, 2 said it was of the same character as before operation, whereas 3 others described it as similar, though milder, and noted only during damp, cold weather. The others in this group indicated their pain as being dull, throbbing, pulling, burning, sharp (but less severe than before operation), aching and as an occasional “twinge.” None, however, felt the discomfort to be of sufficient severity to seek further surgical relief.

**Postoperative Paresthesia**

Of our patients, 76 per cent described unusual postoperative sensations on the affected side of the face. This was not a spontaneous complaint, being indicated only upon direct questioning about such sensations. The sensations were stereotyped as “numbness,” tingling, burning and crawling. Less common descriptions were a sense of deep pressure, pulling, stiffness, tightness and swelling. These symptoms commonly were aggravated by emotional stress. In 2 instances, taste was impaired on the ipsilateral side of the tongue, and in 2 others, hearing was impaired ipsilaterally.

It had been our impression that those patients who had “temporary” sensory changes (subjective or objective) after operation stood a better chance of a “good result.” This review, however, points up the fact that all patients upon whom a 2nd operation was made had rather marked sensory disturbances after the 1st operation.

Before operation, 42 people had had one to four alcohol blocks in an effort to control their pain. Of these, 23 said that the sensory symptoms following alcohol injection were more disagreeable than those occurring postoperatively. Eleven patients felt a greater sensory discomfort after operation than they had experienced with alcohol block. The remaining 8 patients suggested that there was no appreciable difference in the sensory experience after alcohol block or operation. Most did not prefer the block, because of only temporary relief of pain, to which were added the uncomfortable facial sensations.

**Discussion**

The findings of this review leave much to be desired as concerns a satisfactorily conclusive interpretation. We are not prepared to answer the question of why the compression procedure is effective in relieving the pain of trigeminal neuralgia. At this point, any explanations seem only theoretical. The technique employed in performing the operation here probably is not the same as (though perhaps comparable to) that suggested by Shelden. We have varied the operative procedure depending upon the whims of the moment and one’s inability to do “the identical thing in the identical way.” We have, for example, varied the site of compression so that at times this has been directed solely to the posterior root of the 5th nerve as it passes from the posterior to the middle cranial fossa over the petrous ridge. At other times, attention has been focused on the ganglion alone. Lastly, the posterior root, ganglion and the maxillary and mandibular divisions at their respective foramina of exit from the skull have been treated similarly. Further differences no doubt lie in the degree of compression and perhaps the extent of the operative exposure. These factors, it would seem, from a technical standpoint are important, if quantitative trauma is a significant feature of this operation.

It is evident that with the passage of time, the incidence of recurrent pain rises. Hamby reported an incidence of failure of 7.8 per cent for the compression procedure. Seventy per cent of the patients in the present report were included in the study by Hamby. Seventeen of the 70 patients required secondary operation. Four of the remaining 30 (present