ON THE ANATOMY OF ANTEROLATERAL CORDOTOMY*

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The fact that prefrontal lobotomy is being used with increasing frequency in cases in which a properly performed anterolateral cordotomy would suffice for the relief of intractable pain, is to us an indication that the exact technique of the latter procedure is still not common knowledge.

Prefrontal lobotomy is a definite contribution to the control of pain but it is as yet not a precision operation and the results are consequently unpredictable. It is now accepted that more obvious personality defects arise when the procedure is used for pain than for psychosis. Consequently the relief of pain is sometimes obtained at the price of a change of character in the patient which is most distressing.

In general, we believe that when pain can be controlled by a properly performed root or tract section, lobotomy should be held in abeyance. An exception to this rule is when life will still be intolerable following the relief of pain because of severe apprehension or some unsightly ulcerative deformity. Here lobotomy may be the operation of choice.

In 1937 the conclusion was reached in this clinic6 that in order to obtain high levels of analgesia that would persist, the incision had to be carried not just to the anterior nerve root but from 1 to 2 mm. anterior to it. This was later confirmed by Hyndman and Van Epps5 and by Walker6 in man, and by Weaver and Walker7 in the monkey.

Cordotomy patients are notoriously difficult to follow postoperatively since the majority die in nursing homes at a distance from the neurosurgical clinic. In a necessarily incomplete check-up study in 1948, we were surprised to learn that many of our patients were still not obtaining complete relief of pain or were having recurrence. It was then suggested that the incision be carried invariably 2 mm. anterior to the anterior nerve root.6

In the past 3 years 63 patients have undergone anterolateral cordotomy on the ward service. Many of these operations were carried out by residents usually supervised by the senior author who insisted on their demonstrating an incision into the cord substance anterior to the anterior nerve root. In all but 1 case a satisfactory upper level of analgesia was obtained, though in several instances it was not higher than the 11th dorsal segment. In only the 1 case was it necessary to re-operate to obtain a higher level of analgesia,

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in spite of the fact that these procedures were all carried out under general anesthesia.

In 4 cases, however, the saddle or leg area was spared on one side, or normal sensation returned to it within a few days, the recurrence of pain necessitating re-operation. The avoidance of this particular error constitutes the basis for the following discussion, for cordotomy is a precision operation. The procedure should not be condemned if a poor result follows faulty technique.

CASE REPORTS

Case 1.—A 38-year-old negro woman had been treated for medullary squamous cell carcinoma of the cervix in 1947–48 by total hysterectomy and x-ray therapy. Six months prior to admission to the University Hospital increasingly severe pain developed in the low back and right leg.

Examination. A hard mass of nodular outline filled the right pelvis. A hard supraclavicular node was present on the right, biopsy of which revealed metastatic neoplastic tissue.

1st Operation. Cordotomy was performed on June 22, 1950, the left side being sectioned first. Before the right side was cut the patient became hypotensive.

Course. The following day the level of analgesia was at the 4th thoracic segment on the left and the 9th on the right. This patient had had an irradiation vesicular reaction on the buttock as a result of further x-ray therapy given 2 months prior.

![Fig. 1. Cordotomy at C3 cord segment. Arrow points to center of anterior nerve root. There has been some damage to "caudal" rubrospinal tracts; clinically there was no paralysis.](image-url)