Anterolateral Cordotomy by an Anterior Approach
Report of a Case

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While removing a cervical herniated intervertebral disc by the anterior approach it appeared that this accessibility to the anterior surface of the spinal cord should allow performance of a cordotomy. This report describes a case in which the anterior surface of the spinal cord was exposed and, under direct visualization of the anterior spinal artery, the right anterolateral quadrant of the cord was incised.

Case Report
A 47-year-old female was suffering from severe pain in the left hip caused by metastasis. She had undergone salpingohysterectomy for a carcinoma of the fallopian tube in 1935. A laparotomy in April 1961 disclosed widespread abdominal metastasis. Large doses of narcotics were required during the months prior to cordotomy.

Cervical cordotomy was performed by an anterior approach on Nov. 28, 1961. Endotracheal anesthesia was used. The incision of the cord was made at the level of C5.

The patient tolerated the procedure well, and has been quite comfortable since the evening of operation. There is analgesia below the 1st thoracic dermatome on her left side. A transient right upper monoparesis was the only complication.

Technic
The approach is essentially that outlined by Cloward for anterior removal of cervical discs. The only difference is that a small lateral extension of the usual bony opening was necessary and, of course, the dura mater was opened.

The incision in the skin was made to the right of the thyroid cartilage. The carotid sheath was separated from the tracheal sheath by blunt dissection, exposing the anterior surfaces of the bodies of the 4th and 5th cervical vertebrae. A circular bony opening then was made by removing part of the adjacent bone about the C4–C5 intervertebral space after the intervertebral disc had been removed. The epidural vessels were elevated cautiously from the dura mater and coagulated. The dura mater was opened transversely, exposing the anterior surface of the spinal cord. This allowed approximately 20-30 ml of cerebrospinal fluid to be aspirated.

The anterior spinal artery and dentate ligaments formed visual landmarks for the incision. Under this exposure the right anterolateral quadrant of the cord was incised.

Gelfoam was placed over the dural opening. A circular bone graft was inserted into the bony defect which immobilized the 4th and 5th cervical vertebrae (Figs. 1 and 2). The subcutaneous tissue and skin were closed with interrupted silk. No cerebrospinal-fluid leak resulted.

Discussion
Spiller and Martin reported the first case of cordotomy in 1912. Schüller first proposed division of the anterolateral column of the spinal cord for relief of pain in 1910 but reported no cases.

The standard technic of cordotomy is a laminectomy, which exposes the posterior aspect of the spinal cord. The actual incision of the cord is performed in order that the anterolateral quadrant be divided. This report describes a case in which the anterior surface of the spinal cord was exposed and, under direct visualization, the right anterolateral quadrant of the cord was incised.

The technic was not difficult. The anterior approach to disease of the cervical disc has been performed by Cloward 200 times in 3 years. The approach employed here was the same, except that a lateral extension of the bony opening was necessary and the dura mater was opened.

Accessibility to the anterior surface of the spinal cord is achieved. Traumatic spinal injuries, excision of tumors, bilateral cordotomy, anterior commissurotomy or other selective divisions of spinal tracts may be amenable to this approach. Studying the physiology of the anterior aspect of the spinal cord with stimulating electrodes might be possible.

Cordotomy by this anterior approach may have distinct advantages: higher sensory levels might be obtained since the incision can be made more safely, closer to the anterior spinal artery; postoperative discomfort to the patient probably would be less; local anesthesia, a more precise means to the desired level of analgesia, might be employed more easily. Cloward uses local anesthesia for his surgical approach to cervical discs, thereby demonstrating its feasibility for cordotomy by this proposed approach.

Summary
The anterior surface of the spinal cord has been exposed surgically in a patient suffering with severe pain. Cervical cordotomy then was performed under direct visualization of the anterior spinal artery.

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Accessibility to the anterior surface of the spinal cord and performance of a cordotomy by an anterior approach are thought to be presented for the first time.

**References**


