A disquieting aura of clinical frustration commonly attends palliative efforts in patients suffering with perineal, perianal, or sacral pain from invasive pelvic malignancy. This pessimism derives variously from the destructive excesses of blind procedures, the inadequacies of compromising measures, and the dismaying complexity of existing methods of selective rhizotomy.

Certain of these patients, when no attempt to spare motor fibers is necessary, may benefit from a simple technique of sacral rhizotomy which furnishes the basis for this report.

Procedure

The patient is placed prone, or on his side, his legs wrapped with elastic bandages, and the back flexed, prepared, and draped. Through a midline lumbosacral incision the usual posterior approach is made. The overhanging tip of the L5 spine and the S1 spine, together with the upper edge of the sacrum, are rongeured away (Fig. 1). The ligamentum flavum is excised, the operative defect is enlarged, and the S1 and S2 roots are located. The heavy silk ligatures are passed extradurally with a right-angle clamp. The upper ligature is tied very tightly below the axillae of the S1 roots. The second ligature is tied as far caudal as possible. As the second tie is being drawn tight, an assistant punctures the fluid-filled sac between the ligatures (Fig. 1, insert). This is an important minor technical point, allowing the second ligature also to be tied tightly. Then the dural sac with all of its contents is divided between the ties. (If the ligatures are not tied correctly the nerve roots will retract and the sutures will slip off the severed dural end.) The spinal canal is packed with Gelfoam as needed for hemostasis, and the incision is closed in layers.

Selection of Patients

As a general rule, major neurosurgical procedures attempting to obtain relief from pain are done best only on patients with histologically proven, uncontrolled, malignant neoplasm. This is certainly true of such a destructive procedure as described above. Since motor function below the first sacral root is sacrificed, normal control of bowel and bladder would preclude use of this technique as illustrated. Accordingly, candidates for this type of sacral rhizotomy are indeed few in number. But it is a significant number. Many patients with cancer, at the time of neurosurgical referral, have had their alimentary and urinary tracts interrupted in the original attempt at surgical cure, or at a secondary higher shunting procedure because of blockage at a lower pelvic level.

In the past 6 years this type of sacral rhizotomy has been performed on 8 patients at the U. S. Naval Hospital, San Diego; the City of Hope, Duarte; the Huntington Memorial Hospital, Pasadena; and the San Gabriel Community Hospital, San Gabriel, California. The histologically verified pathological diagnoses were carcinoma of the rectum (3 cases), cervix (2 cases), bladder (1 case), anus (1 case), and 1 case of primary liposarcoma of the perineum. At the time of rhizotomy all 8 patients had functioning colostomies and 6 had either ileal urinary bladders or long-standing drainage by urethral catheter. All were reasonably good surgical risks and had a reasonable life expectancy. All patients were on large doses of narcotics. All were ambulatory. In all cases attempts at surgical cure had been exhausted, and cobalt irradiation and chemotherapy (including intra-arterial when indicated) had also been utilized or considered not to be indicated. At the time of rhizotomy uncontrolled metastatic disease or invasive malignancy was verified by biopsy or by roentgen-ray evidence in 6 patients. In 2 cases, at the time of rhizotomy, the intractable pain was attributed to recurrent tumor,
but postoperative and postirradiation inflammation was a possible cause.

**Operative Modification**

Before assessing results, even in this small series, there are two modifications of surgical technique that should be mentioned. The first 4 patients had only midline pelvic pain, and the procedure was performed exactly as illustrated. It was believed that pain in the lower extremity (sciatic radiation) was a contraindication to this type of sacral rhizotomy. Instead, the usual contralateral high thoracic chordotomy was used. While this controlled the pain in the lower extremity, the midline pelvic pain usually necessitated a chordotomy on the second side as well. The last 4 patients subjected to sacral rhizotomy all had unilateral sciatic radiation as well as pelvic pain, but sensory tests, motor power and electromyography showed no demonstrable organic involvement above the first sacral level. In addition to the rhizotomy as illustrated, these last 4 patients all had the S1 root on the painful side treated with silver clips and divided, or incorporated in the ligatures, at the time of the rhizotomy.

The other surgical modification was to spare a second sacral root in the 7th patient. He was physically very active in spite of his