

PALLIATIVE SURGERY IN EPIDURAL MALIGNANT TUMOUR

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Epidural malignant tumour often causes weakness of the legs as well as pain. A series of 37 consecutive cases treated with surgery for these symptoms is presented. Considerable pain reduction was achieved in half of the cases, and 6 months after surgery one fourth could walk. The authors have found bone cement (polymethyl methacrylate) to be quite suitable for stabilizing the spinal column. Surgery is regarded as complementary to the use of cytostatics, hormones and radiotherapy.

Key words: bone cement; epidural tumour; spinal stabilization; spinal tumour

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Laminectomy with extirpation of malignant epidural tumour has been practised for a long time, but became more common about 1950. Since 1950, several methods to stabilize the spinal column have been adopted as part of the surgery. We present below the majority of surgical methods found in the literature on the subject.

A. Methods for stabilizing the spinal column via the dorsal approach: a steel wire compound in combination with a cortical bone transplant (Böhler 1958, Szava et al. 1959, Martin & Williamson 1970, Raycroft et al. 1978); a steel wire compound and AO-plates (Stener & Johnsen 1969); a bone cement layer and steel wire compound or metal plates with screws (Scoville et al. 1967, Fernandez et al. 1977, Unander-Scharin et al. 1978, Clark & Keggy 1980); or by a bone cement layer alone (Pfeiffer 1967, Arcq 1975, Clark & Keggy 1980).

b. Substitutes for vertebral bodies: bone transplant (Stener & Johnsen 1969, Szava 1972, Raycroft et al. 1978); metal spacer with adjustable height without embedding in bone cement (Szava et al. 1959, Szava 1972, Ciugudean &

Immenkamp 1974) or with embedding in bone cement (Ono & Tada 1975, Poster & Brinckmann 1977); bone cement filling reinforced by a steel mesh (Scoville et al. 1967), or bone cement filling reinforced by metal plates and screws (Ciugudean & Immenkamp 1974); or, finally, bone cement filling plus a central longitudinal steel pin bored into adjacent vertebral bodies.

The purpose of this investigation was to evaluate the results of surgery in patients with epidural malignant tumour. The primary aim of surgery was to improve the quality of life in these seriously ill patients. There was little expectation that the operations would prolong their lives.

MATERIAL AND METHODS

Thirty-seven consecutive cases with epidural malignant tumour, treated surgically during the period 1968–1979, are evaluated. Of these 37 patients, 16 suffered from myeloma and 21 from other diseases (Table 1).

At surgery, the median age was 64 years (range 33–88 years), and 19 of the 37 patients were in the 60–69-year group. The degree of tumour extension was

Table 1. Preoperative diagnoses

Myeloma	16
Cancer of the prostate	5
Bronchial cancer	2
Breast cancer	1
Ovarian cancer	1
Cancer of the uterine cervix	1
Cancer of the stomach	1
Renal cancer	1
Carcinoid of the lung	1
Cancer of the urinary bladder	1
Liver cell cancer	1
Chondrosarcoma of the tibia	1
Cancer of the hypopharynx	1
Malignant lymphoma	1
Non-defined cancer	1
Non-defined tumour	1
Total	37

determined from plain X-ray films in all cases. Additional positive contrast myelography was performed in 36%, tomography in 10% and computer-assisted tomography in one case.

Pain had been registered preoperatively in 33 of the patients, and the onset of pain was 4 months before surgery (= median value, range 4–1,245 days). The 23 patients with weakness of the legs had suffered from this symptom 1–240 days before surgery (median value 7 days). Metastases were registered in sites other than the spinal column before operation in 22 patients. Before or during the operations, tumour destruction was

discovered in vertebral bodies in 92% of the cases, tumour growth in epidural soft tissue in 84%, destruction of laminae in 68% and compression of vertebral bodies in 65%.

Treatment

Eleven operations consisted only of laminectomy with exeresis of epidural tumour growth in soft tissues. During the period 1968–1974, the spinal column was stabilized with metal plates connecting a row of spinous processes with or without the addition of a bone transplant. In 12 operations during 1974–1979, the stabilization was accomplished with the use of a layer of bone cement reinforced by a glass-fibre mesh imbedding the stripped spinous processes and dorsal laminae of the two non-invaded vertebrae on both sides of the invaded region. Thus the bone cement layer incorporated at least five vertebrae (Figure 1).

During the years 1974–1979, the predominant operation in this material was a combination of the following five procedures:

1. Laminectomy.
2. Exeresis of tumour growth in epidural soft tissue.
3. Exeresis of tumour growth in vertebral bodies.
4. Bone cement filling in vertebral bodies (Figure 2).
5. Interspinal stabilization with bone cement layer (Figure 2).

Vertebral body exeresis was performed from the lateral ventral direction in the cervical region, and from the dorsal approach in the thoracic and lumbar regions. In the region D2–D11, as a rule, no stabilizing means were used, since the thorax itself was considered to give sufficient stability.

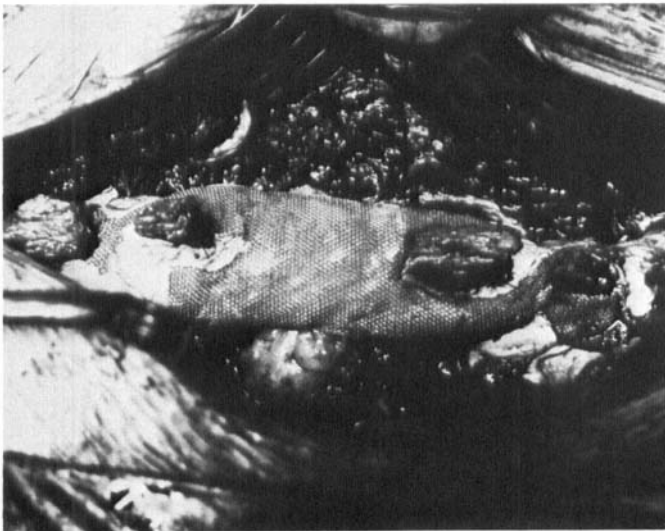
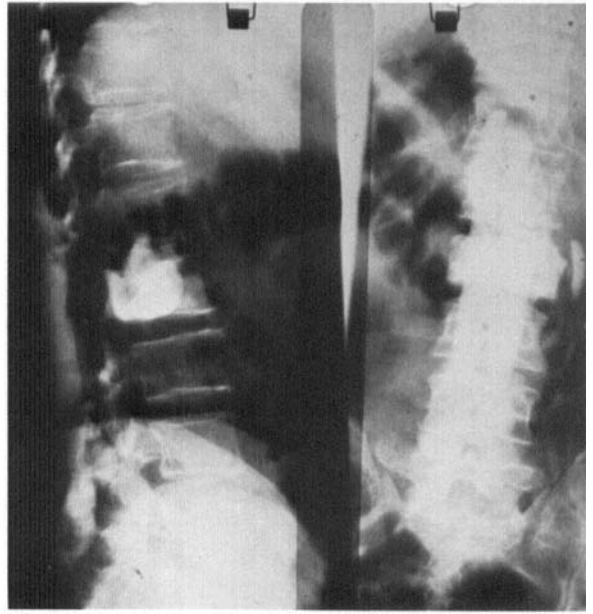


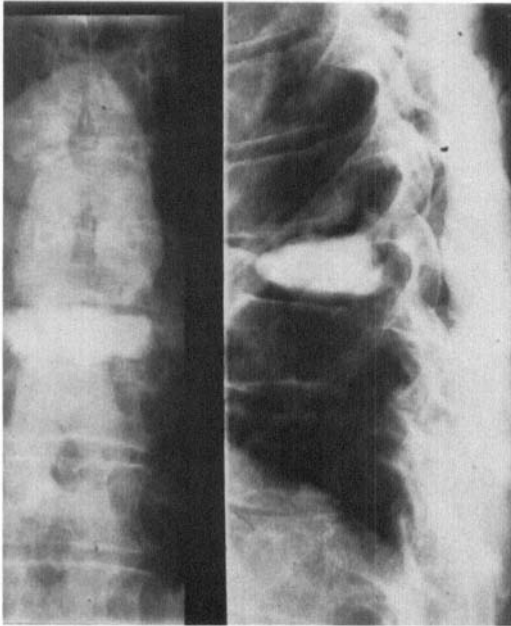
Figure 1. Bone cement layer connecting two spinous processes on both sides of a destructed vertebra, the body of which has been filled with bone cement.



a



c



b

Figure 2. (a) Destruction of bodies of C6 and C7, substituted by bone cement. Interspinous stabilization C3-D2 with bone cement layer. (b) Destruction of body of D8, substituted by bone cement. Interspinous stabilization D6-D10 with bone cement layer. (c) Destruction of body of L2, substituted by bone cement. Interspinous stabilization D1-L4 with bone cement layer.

In addition to surgery, the treatment included cytostatics in 59% of the cases, radiotherapy in 46%, corticosteroids in 24% and sexual hormones in 22%.

Complications

Peroperative complications were two cases of cardiac arrest on the operation table. One of these was irrever-

sible, but in the other patient normal heart function was promptly regained, and no damaging effects were reported later. Postoperative complications occurred in four patients. One of them suffered from decubital ulcerations in the lumbosacral region over a bone cement layer, and this was the only case with postoperative infection. There were two cases of loosened metal plates and one case of slight dislocation of a bone cement filling registered on X-ray films but giving no symptoms.

RESULTS

Six months after the operation the result for each patient was registered.

Substantial reduction of pain was achieved in 22 of the 37 patients (59%). Of the 16 patients who were paraplegic before the operation, two were ambulatory (13%), one was paraparetic, one paraplegic and 12 were dead, and of the four

patients who were paraparetic before the operation, one was paraparetic and three were dead at the follow-up.

Of the 17 patients who were ambulatory before operation, eight were ambulatory, one was paraparetic and eight were dead at the follow-up.

A total of 20 non-ambulatory patients were operated on, and of these two were ambulatory (10%), two paraparetic, one was paraplegic and 15 were dead at the follow-up.

In the whole series, 10 patients were ambulatory at the follow-up (27%), seven of whom had myeloma and three had other diseases. All 10 had destruction in one or more vertebral bodies at the time of operation, and nine of them had tumour growth in epidural soft tissues. Patients who had a solitary vertebral lesion showed no better outcome than those with tumour growth in more than one vertebra.

In the whole series, 17 patients were operated on for pain, and 10 of these (59%) experienced substantial relief, whereas of those 20 who were operated on for weakness of the legs, two (10%) were ambulatory at the follow-up.

DISCUSSION

The benefit of operation for epidural malignant tumour seems to be the relief from great pain – in 59% of the cases. However, the preservation or restoration of walking ability appears to be more difficult to achieve – only 10%. Moreover, we have not found any method to predict which patients would benefit from an operation to improve walking ability. We have chosen to recommend surgery for those patients who suffer great pain from their tumour and/or are beginning to show weakness of the legs, if the general condition of the patient is good. We wish to emphasize the complementary feature of the role of surgery, and we insist that the oncologist should make full use of his therapeutic possibilities.

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