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## Retrograde Epidural Catheter Relieves Intractable Sacral Pain

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## CASE REPORT

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### Retrograde epidural catheter relieves intractable sacral pain

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### Abstract

Pain caused by tumor infiltration of the sacral area remains a major clinical challenge. Patients with poor pain control despite comprehensive medical management may be treated with neuraxial techniques such as continuous epidural or spinal anesthetic. We report a case in which a patient with metastatic breast cancer experienced inadequate pain relief after multiple intravenous pain management regimens as well as intrathecal (IT) drug delivery. The concentration of local anesthetics delivered via the IT catheter was limited due to the patient's baseline motor weakness which would be exacerbated with higher concentrations of local anesthetics. Thus, a decision was made to insert an epidural catheter via a retrograde technique to provide the patient with a "band of anesthesia" which would provide profound sensory blockade without concomitant motor weakness. Pain refractory to other modalities of pain control was successfully treated with the epidural technique.

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### Full Text

#### Introduction

Patients with severe sacral tumor pain despite medical management may be treated with neuraxial opioids and adjuvants. Intrathecal drug delivery (IDD) offers continuous pain relief using low-dose opioid delivery, minimizing the side effects.[1] However, there is an increase in motor weakness from these catheters. Epidural catheters allow profound sensory block without a concomitant motor blockade. We report a case of a patient experiencing inadequate pain relief from IDD, who was then treated successfully with an epidural. To the best of our knowledge, the use of retrograde epidural catheters for treatment of pain refractory to IDD therapy has not been reported before. Thus, our technique and approach are unique.

## Case Report

A 37-year-old female with metastatic breast cancer (expected survival <1 year) was admitted for pain control and treatment of spinal cord compression. Her symptoms were poor bladder/bowel control, weakness of the lower extremities (bromage score III), tingling of the toes, and inability to lay supine/sit due to extreme pain up to T10 dermatome. Computed tomography scan revealed a 2 cm × 7.5 cm presacral mass with soft tissue in the spinal canal down to S3. At the time of admission, she was using gabapentin 2400 mg/day, acetaminophen 3 g/day, and morphine 50 mg/day with no pain relief.

Multiple palliative modalities were attempted by the oncologist and radiation oncologist with minimal pain relief, so a decision was made to place an intrathecal (IT) catheter at the level of the L1 vertebral body. Initially, morphine 0.5 mg/ml/h was infused alone then in combination with clonidine 0.75 mcg/ml/h and bupivacaine 0.0625 mg/ml/h, and the infusion was run at 1 ml/h. We were careful not to increase the bupivacaine dose aggressively due to preexisting lower extremity weakness. An IT contrast study was done which confirmed IT catheter tip position at L1 with good dye spread.

Morphine 0.5 mg/ml/h was changed to Dilaudid 0.75 mg/ml/h to assess if a different opioid would provide better pain relief. Dilaudid was titrated upward to a total of 25 mg daily with unsatisfactory pain control and also the development of undesirable side effect of itching, which was treated with benadryl. A decision was made to place to stop the IDD and place a retrograde epidural catheter.

The IT catheter was left in the place in case the epidural catheter trial failed, and under fluoroscopic guidance a 17 gauge Tuohy needle (with the tip curved) was advanced into the epidural space via the interlaminar approach at L4–L5. The tip of the Tuohy needle was directed caudally, and a 19-gauge flexi-tip reinforced catheter was passed into epidural space and directed sacrally. The tip of the catheter was placed near the S1–S2 level corresponding to the area of metastatic lesions. Epidural placement was confirmed with contrast after which 5 ml of 0.25% Bupivacaine was injected. The patient reported >50% reduction in her pain. The catheter was tunneled subcutaneously to the side and sutured to the skin to provide pain relief in the subacute setting.

A continuous infusion of morphine 1 mg/ml, bupivacaine 0.125%, and clonidine 1 mg/ml was infused at 5 ml/h. The patient's pain dramatically improved, and she was able to ambulate and sit with minimal pain. After 2 days, the infusion was changed to morphine 200 mcg/ml, bupivacaine 0.0625 mg/ml, and clonidine 1 mg/ml at 7 ml/h with further reduction in pain score. The patient was discharged home with home health care, and the epidural infusion was managed by an infusion agency with skilled home nurses in pain management.

## Discussion

Patients with poor sacral pain control despite comprehensive medical management may be treated with neuraxial opioids and adjuvants. Despite the high cost of initial placement, within 6 months, there is a break even point due to less opioid consumption and the financial benefits favor neuraxial analgesia.[1] Hence, this technique is financially targeted toward patients expected to live longer than 6 months, as with our patient whose survival was almost 1 year.[2]

IDD allows low-dose opioid delivery, minimizing the side effects.[3] IDD with morphine results in less sedation and an increased ability for ambulation.[4],[5],[6],[7] Despite the advantages, it is possible that the location of the pain generator makes IDD less effective as described in this case, due to undesirable motor blockade and/or hypotension.

Epidural catheters have also been an established method to treat cancer-related pain.[8],[9] Because they do not provide as dense a block as IDD, require greater dosages and volumes, and possible development a “patchy” epidural, they are often deemed less desirable than IDD.

Consequently, multiple postoperative studies have shown IDD to be the preferred postoperative approach to pain management compared to Continuous Epidural Analgesia (CEA).[10],[11],[12] Sakowska showed that patients who underwent IDD postoperatively were found to have a decrease in hospital stay by 3.5 days compared to patients who underwent CEA.[10] In the

same study, the postoperative hypotension was also much greater in CEA than in with IDD.[10]

Despite this, we opted to introduce our epidural catheter into the sacral epidural space via the retrograde technique, thereby allowing us to impose a "band of analgesia" over the exact location of the tumor (which is not possible with an IT technique) without increasing the patient's baseline lower extremity weakness. This precise nerve root positioning of the catheter helped us selectively block painful afferents, without the same level lower limb weakness.

## Conclusion

Our case demonstrates that there continues to be a role for epidural catheters, especially via the retrograde technique, in patients who are suffering from a dense motor blockade from the IDD technique (our patient's bromage score was III). Furthermore, it is important to remember that pain management must be tailored using the principle of "the right intervention, in the right person, by the right person, at the right time and place". Further research, possibly via randomized clinical trials, is necessary to establish appropriate indication guidelines for patients within whom the retrograde CEA would be most effective.[13]

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Nil.

Conflicts of interest

There are no conflicts of interest.

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