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CASE REPORT

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Successful lumbar epidural catheter placement through a lower back lipoma

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Abstract

Structural abnormalities of the lumbar spine or the overlying structures may represent a relative contraindication or technical difficulty to neuraxial anesthesia. We report a case of successful epidural catheter placement through a lower back lipoma for vascular bypass surgery of the lower extremity.

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Full Text

Introduction

The choice of anesthetic depends on many factors. While absolute and/or relative contraindications may guide anesthesiologists in determining the best technique, other factors may play an important role in such determination. In this case report, the patient refused adamantly general anesthesia for revascularization surgery. As a neuraxial technique was considered, the patient was found to have a soft tissue benign tumor extending over the lumbo-sacral area. A successful placement of an epidural catheter through the lipoma was performed and surgery was performed safely as planned. In this report, we discuss the risks and the need for further follow-up to determine the long-term safety in such patients.

Case Report

A 67-year-old white male (106 kg, 173 cm) was admitted with peripheral vascular disease and gangrene of the right first and second metatarsal bones requiring vascular bypass surgery of the right lower extremity. His past medical history was significant for hypertension, coronary artery disease, and diabetes mellitus. Past surgical history was significant for orthotopic liver transplantation, coronary artery bypass surgery for three-vessel disease, and tracheostomy 7 years ago, which was closed subsequently. At that time, the patient was advised that his tracheal lumen was small and difficult to intubate and that if he is to undergo surgery, general anesthesia should be avoided if at all possible. The physical examination was unremarkable except for a lower back mass measuring 20 × 15 cm [Figure 1] overlying the middle of his lower back. Neurological exam was unremarkable apart from diabetic neuropathy in both lower extremities. An X-ray of the spine showed no gross abnormalities. Work-up of the lower back mass at another hospital revealed a diagnosis of lipoma. {Figure 1}

Considering the patient's refusal of general anesthesia, his request for an alternative technique, and given the duration of the procedure (5-7 h), an epidural anesthesia was chosen. The anesthetic options were discussed at length with the patient and the vascular surgeons, including the risk of the remote possibility of seeding the epidural space with lipomatous cells. After obtaining the informed consent, the area overlying the lower back, including the lipoma, was prepped and draped using sterile techniques. A 9-cm, 18-G Tuohy epidural needle (PERIFIX Epidural Anesthesia Tray, B. Braun Medical Inc., Bethlehem, PA, USA) was placed through the lipoma (midline approach) into the L2/3 intervertebral space. Loss of resistance was achieved at 8 cm. The epidural catheter was threaded and the needle was removed. The catheter length measured 14 cm at the skin. After administering a negative test dose of lidocaine 1.5% with 1:200,000 epinephrine (3 ml), bupivacaine 0.5% (10 ml) was given through the epidural catheter. Right superficial femoral artery to popliteal artery bypass with amputation of first and second metatarsal bones was performed under epidural anesthesia and minimal sedation. Postoperatively, the epidural provided excellent pain relief and was discontinued on the 4th postoperative day. There were no complications and the patient was discharged home. Six months follow-up revealed unchanged neurological exam.

Discussion

There have been case reports of neuraxial blockades in patients with spina bifida [1],[2],[3],[4] and lipomyelocoele, [5] but there have been no documented reports of epidural catheter placement through an overlying mass or lipoma. We report a case of successful epidural catheter placement through a lower back lipoma for vascular bypass surgery of the lower extremity. Though epidural anesthesia may not be the ideal anesthetic for the above patient, the patient's previous tracheostomy leading to his adamant refusal of general anesthesia and the known benefit of neuraxial anesthesia on vascular graft patency after revascularization surgery [6] made it a reasonable alternative technique.

In our patient, technical difficulty due to obliteration of bony landmarks by the overlying lipoma was obvious but did not prevent successful placement of a neuraxial catheter. Although subarachnoid block (SAB) was an alternative option in this patient, it was not chosen because of the unpredictable duration of the proposed procedure. Paramedian approach, as opposed to a midline approach, did not offer any advantage as the lipoma extended more than 6 cm on both sides of the midline. Thoracic epidural was not considered for two reasons: (a) the extent of the tumor over the lower thoracic vertebrae and (b) the unlikelihood that the catheter would extend caudad yielding incomplete anesthesia to the intended lumbar/sacral dermatomes. Caudal epidural anesthesia was not considered, in spite of its popularity in children, [7],[8],[9] for three reasons: (a) the relative technical difficulty encountered in adults due to anatomical variability, (b) high failure rate, and (c) the high dose requirement of local anesthetic to have adequate anesthesia for lower extremity surgery. [10]

Lipoma is the most common form of benign soft tissue tumor. Epidural lipomatosis is a rare but well-known disease and has the potential to cause spinal cord compression. [11],[12] Epidural lipomatosis has been observed in obese patients and patients taking long-term corticosteroids. [13],[14] Consideration should be given to the extent and depth of the lipoma. Involvement of the epidural space can make the anatomy of the epidural space unpredictable. [15] Inserting a needle through a lipoma has a risk of seeding the epidural space

with viable tumor cells, although remote, it is of a real concern. Seeding of spinal canal with epidermoid cyst has been reported as a rare complication of lumbar puncture that may become evident years after the procedure is performed. [16],[17] It may be caused by epidermoid tissue that is transplanted from the skin into the spinal canal during lumbar puncture without a stylet, or with one that is poorly fitting. It was suggested that it probably can be avoided by using spinal needles with tight-fitting stylets during lumbar puncture. [16]

In our case, we used an epidural needle (Tuohy-Scliff) with a side bevel. This design makes the hollow needle opening at a 90° angle to the direction it cuts the tissues during advancement, preventing the coring effect that is possible with needles that have a straight bevel. In addition, the Tuohy needle tip is blocked by a fitted inner stylet that further decreases the chance of carrying tumor cells to the epidural space [Figure 2]. Hence, the stylet removal should only be done after engaging the needle in the interspinous ligament beyond the lipoma. Our 6-month follow-up did not reveal any complication related to the procedure. {Figure 2}

In conclusion, this report shows that multiple factors can affect the indications and contraindications of neuraxial anesthesia. Anesthetic choice should be individualized and carefully planned based on risks and benefits. Long-term follow-up is important in determining the safety of epidural anesthesia in such patients.

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