

# Transient Paraplegia following Labor Epidural Analgesia

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## Abstract

### Keywords

- labor epidural analgesia
- transient paraplegia
- Anterior spinal artery spasm

Neurological complications following labor epidural analgesia have varied outcomes. While most of the complications resolve spontaneously, a few cases may need appropriate intervention to prevent the progression of transient deficit to a permanent sequela. There have been case reports of permanent damage as well. Here we present a report of a parturient who developed flaccid paraplegia following labor epidural but recovered completely after catheter removal. Catheter-related neurological complications do occur and irritation of the anterior spinal artery causing transient paraplegia was considered as a possible etiology here.

## Introduction

The true incidence of neurological complications following labor epidural analgesia is unknown. Epidural-related nerve injury is rare and may be confounded by labor in the obstetric population.<sup>1</sup>

## Case Report

A 30-year-old term parturient, body mass index of 38.9, in active labor requested for epidural analgesia. Epidural catheterization was performed in sitting position with standard monitors attached. Under aseptic precautions, in L3-L4 interspace epidural space was accessed using 16G Tuohy needle ("Portex," Smiths Medical Czech Republic, Olomoucka 306, 75301 Hranice, Czech Republic) at 6 cm by "loss of resistance" in the third attempt and 5 cm of catheter was left indwelling. She complained of transient paresthesia in both lower limbs during catheterization, which was dismissed as normal.

Free fluid was observed in the epidural catheter; it was labeled as "intrathecal" and 3 mL, 0.15% ropivacaine was

administered. The plan was to retain the catheter for 24 hours to prevent the possibility of headache as per our unit protocol. Numeric pain score decreased from 8/10 to 3/10 in 2 minutes with stable hemodynamics and no motor block.

During our follow-up after 1.5 hours, we found that she was comfortable but complained of inability to move the lower limbs for the past 10 minutes. The attending nurse had passed a urinary catheter 30 minutes earlier; and had not noted any motor blockade, suggesting the paraplegia was of recent onset. On examination, motor power was 0/5 in both lower limbs. Reflexes were absent and sensory block assessed by sensation to alcohol was at T-10. A neurological consult suggested removal of the epidural catheter. After catheter removal, she noticed a slight improvement in the power of the left lower limb, and subsequently, in 15 minutes complete recovery of motor power in both lower limbs was noted. She delivered normally. The overall duration of analgesia was 3 hours and of epidural insertion to delivery was 4 hours. No further neurological sequelae were noted, and the patient was discharged on the third postpartum day.

## Discussion

Incidence of neurological injuries after labor epidural is estimated to be around 0 to 36/10,000 blocks.<sup>2</sup> Etiology may be the procedure itself, but the obstetric causes must also be kept in mind.

Inadvertent dural puncture is a known complication of epidural labor analgesia with an incidence of 0.19 to 3.6%. Retaining the intrathecal catheter for 24 hours prevents post dural puncture headache.<sup>3,4</sup>

Our parturient developed late onset acute flaccid paraplegia that recovered after catheter withdrawal. The probable causes were direct injury to the cord by needle or catheter or hematoma. As she improved after catheter removal, these causes were ruled out. Magnetic resonance imaging might have been an investigation of choice to prove this.

Subdural placement was another differential diagnosis, but our parturient lacked symptoms suggested by Liu et al.<sup>5</sup>

Drug-related causes such as high spinal and ischemic effects of epinephrine were not considered because the moderate dose of ropivacaine that was administered without epinephrine.

Hysterical paraplegia could be a differential diagnosis, but the parturient neither had any apprehension about epidural nor was psychologically compromised.

After excluding above, catheter-related causes appeared to be the most possible etiology. A similar catheter-related claw hand was reported in 2004 by Chakravarthy et al.<sup>6</sup> They had placed a thoracic catheter preoperatively for providing analgesia for coronary artery bypass grafting surgery. The patient had paresthesia and right sided claw hand deformity after insertion of the epidural catheter that reverted on withdrawal of the catheter by 2 cm. Irritation of the posterior nerve root of the brachial plexus caused by epidural catheter itself was brought forth in this report.

Catheter irritation of the spinal cord or lumbosacral plexus was excluded as it may have caused severe back pain and she would have had unilateral deficits in contrast to our observation of bilateral flaccid paraplegia.

A similar observation of bilateral flaccid paraplegia was reported by Ben-David et al.<sup>7</sup> Their patient experienced delayed onset bilateral flaccid paralysis (with intact touch, position, and vibration sense) that resolved after removal of the epidural catheter. The authors purported migration of the catheter and irritation of the anterior spinal artery causing spasm as the probable cause. In the same report, causes of spinal artery spasm were mentioned—administration of a large volume of local anesthetic intrathecally, or use of epinephrine containing local anesthetic solutions, or catheter irritation.

Our parturient had similar symptoms of bilateral flaccid paralysis that resolved completely after catheter withdrawal. Since we had not administered a large volume of local

anesthetic or epinephrine containing a local anesthetic, catheter irritation of the anterior spinal artery causing spasm was considered as the possible etiology.

The anterior spinal artery supplies anterior two-thirds of the spinal cord. Spasm of this induces ischemia of the anterior spinal cord, leading to motor weakness with retention of sensations of the posterior column. In our case, assuming that we were in a higher interspace for epidural placement, the catheter would have migrated cephalad, causing either mechanical irritation or spasm of the anterior spinal artery. Presence of the catheter in the intervertebral foramen causing irritation of the segmental feeder vessel may be yet another possibility, although it may be difficult to predict it retrospectively. Checking for vibration and proprioception prior to catheter withdrawal would have clinched the diagnosis.

When one encounters/suspects neurological manifestations in patients, ongoing infusion of local anesthetic must be immediately ceased to facilitate early neurological assessment. The epidural catheter may be withdrawn slightly or removed based on the need. The victim should be reassured and informed about what is happening. The chronological events may be documented should medicolegal problems appear on the horizon. Our responsibility does not end with placement of epidural catheter; appropriate follow-up, early diagnosis, and intervention will prevent a permanent sequela.

### Conflict of Interest

None declared.

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