

Parasomnia-Related Delayed Emergence Following Emergency Cervical Decompression

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Background

Erector Spinae Plane Block (ESPB)

- Primarily anesthetizes the dorsal rami of spinal nerves supplying the posterior thoracic and abdominal wall, with possible spread to ventral rami, intercostal nerves, and sympathetic chain.
- Increasingly used for perioperative analgesia in spine surgery.
- Improves postoperative pain and reduces opioid consumption and PONV, in addition to improving early postoperative recovery quality and facilitating earlier mobilization.

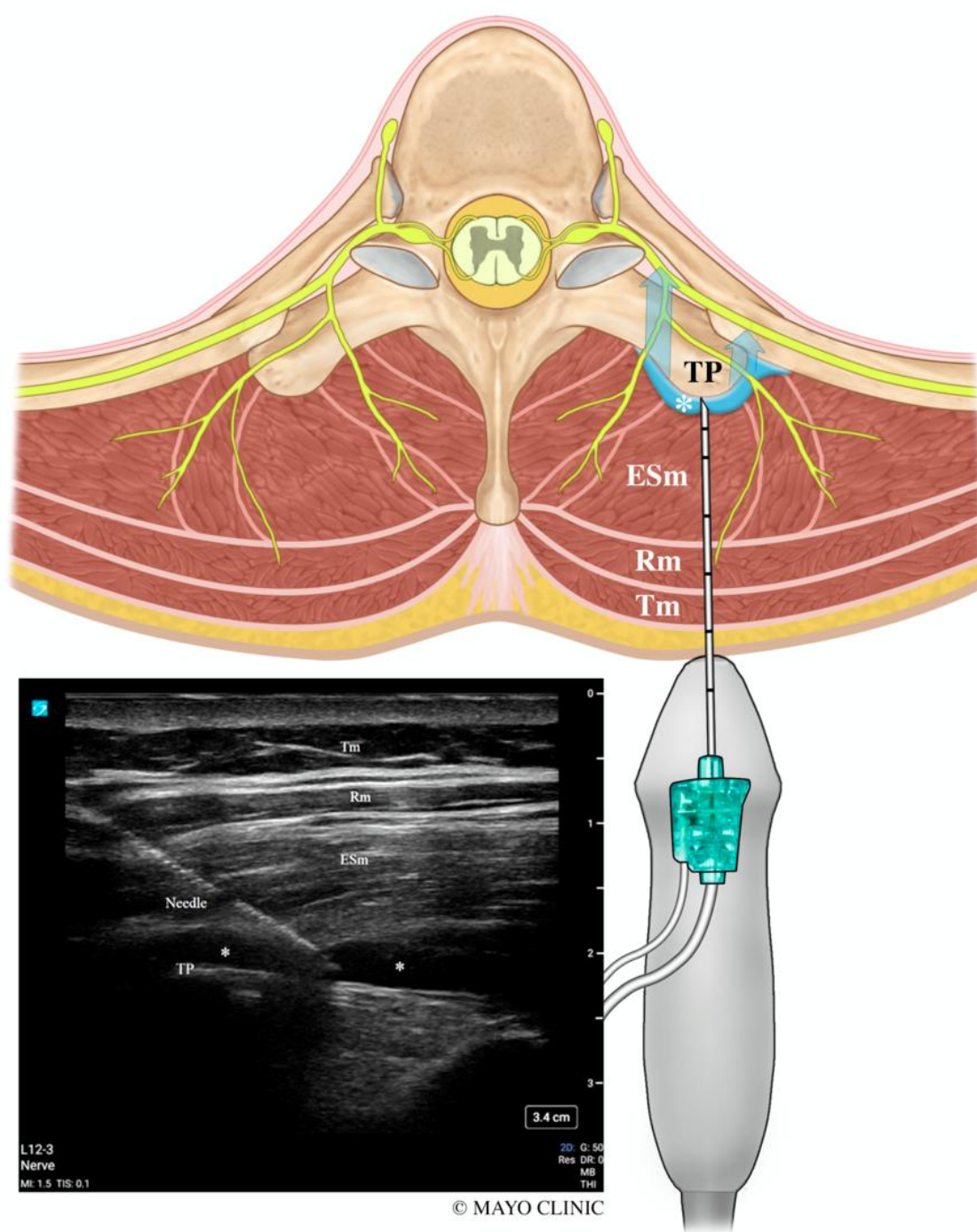


Figure 1. Ultrasound Guided Erector Spinae Plane Block

Parasomnia overlap disorder

- Co-existence of REM sleep behavior disorder and non-REM parasomnia.
- Pathophysiology centers on instability in arousal mechanisms: cyclic alternating patterns and abnormal slow-wave synchronization increasing susceptibility.

Delayed Emergence

- Patients with cervical myelopathy are particularly vulnerable due to impaired respiratory function and increased sensitivity to anesthetic agents.
- Contributing factors include high intraoperative opioid use, sedative medications (clonazepam), or underlying neurological compromise.

Case Description

- 40-year-old male who sustained traumatic C6 disc extrusion with cervical cord compression undergoing urgent C3-7 posterior cervical decompression laminoplasty.
- Past medical history:
 - Parasomnia overlap disorder (restless bilateral upper extremities plus sleepwalking) on a stable dose of clonazepam 1mg daily
 - Congenital cervical spinal stenosis on gabapentin
 - Myofascial pain syndrome on acetaminophen
- General anesthesia was induced and maintained with propofol and sufentanil infusions.
- Preoperative ultrasound-guided bilateral T1 ESPB was performed using liposomal bupivacaine for postoperative analgesia.
- The intraoperative course was unremarkable. Despite early anesthetic discontinuation, emergence was delayed 1 hour and 28 minutes.



Figure 2. Parasagittal CT Demonstrating C6 Disc Extrusion

	13:40	15:20	15:30	15:40	15:50	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10
Propofol	150	-----	75	---	-----	-----	-----	-----	25	---	OFF	Spontaneous breathing			Naloxone 0.04 mg x 2		Caffeine 250 mg	Airway removal criteria met	
Sufentanil	0.25	-----	-----	-----	-----	OFF													
Patient's Anesthetic Timeline. Propofol infusion dosed in micrograms per kilogram per minute. Sufentanil infusion dosed in micrograms per kilogram per hour.																			

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- Laboratory investigations were unremarkable.
- He eventually emerged spontaneously without neurologic sequelae but was admitted to the ICU for continued norepinephrine requirements.
- Postoperative evaluation raised concern for anesthetic potentiation due to the patient's underlying parasomnia disorder and cervical pathology.

Discussion

Delayed emergence from anesthesia is multifactorial and requires prompt evaluation to rule out etiologies such as intracranial events, metabolic derangements, or residual anesthetics.

In this case, multiple factors may have contributed to the delayed emergence:

- T1 ESPB with liposomal bupivacaine
 - Possibility of cephalad spread with partial neuraxial effect, in the context of cervical pathology.
 - Although ESPB's are generally considered safe, inadvertent epidural or intrathecal spread may potentiate central sedation and delay awakening.
- The patient's history of parasomnia, including sleepwalking and restless arms
 - Suggests an atypical sleep architecture or altered neurochemical regulation that might increase anesthetic sensitivity.
- Cervical cord compression can also affect autonomic and neurologic responses to anesthetic drugs.
- The delayed emergence was not fully explained by residual opioids or sedatives.
 - Following a 3-hour infusion, the context sensitive half-time of propofol and sufentanil are 30 minutes and 45 minutes respectively
 - The patient did not receive any other medications that could have prolonged emergence.
 - Despite early discontinuation of propofol and sufentanil in addition to administration of naloxone, the patient remained unresponsive.

This case underscores the importance of maintaining a broad differential and considering unique patient-specific factors, such as neurologic comorbidities, spinal pathology, and regional anesthesia techniques, when evaluating delayed emergence in otherwise healthy patients.

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