Clinical Manifestations and Serious Adverse Effects of Subdural Block in Parturients: A Systematic Review

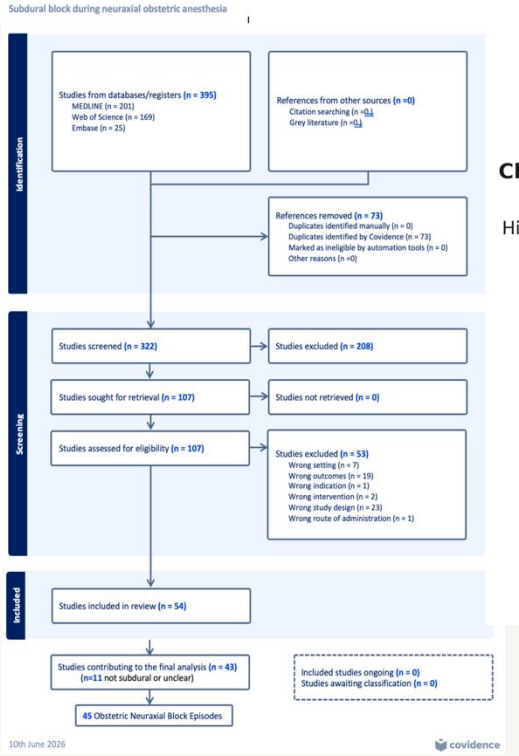
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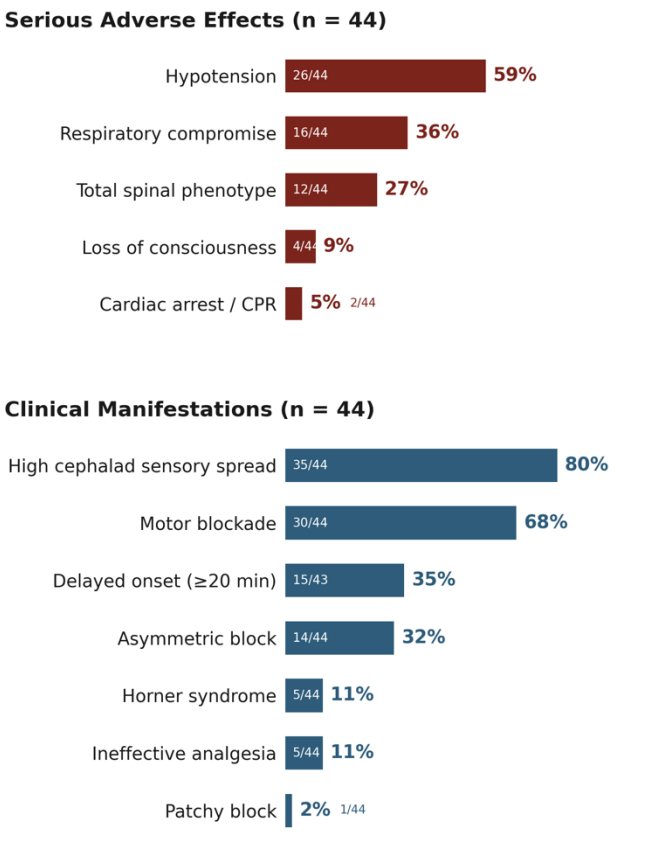
Background / Introduction

- Subdural injection is a recognized but frequently under-recognized complication of neuraxial labor analgesia/anesthesia, occurring when local anesthetic tracks into the potential space between dura and arachnoid.
- Diagnosis relies on clinical pattern recognition (Lubenow criteria: negative aspiration + widespread sensory block, plus delayed onset, variable motor block, disproportionate hypotension) rather than confirmatory imaging.
- Despite four decades of case reports, the frequency and severity of serious adverse effects from suspected subdural block in obstetric patients remain poorly quantified.
- **Objective:** systematically characterize the clinical manifestations and serious adverse effects of suspected subdural block in parturient.

Methods

- Study types included: observational cohorts, case series, case reports, and letters/correspondence with original patient-level data.
- ***Primary*** *(serious adverse effects)*: total spinal phenotype, respiratory compromise, O2/ventilation/intubation, loss of consciousness, hypotension, cardiovascular collapse, CPR.
- ***Secondary*** *(clinical manifestations)*: motor blockade, high cephalad spread, highest sensory level, delayed onset, asymmetric block, Horner syndrome, ineffective analgesia, patchy block, LA type/dose/volume.





Results

- 54 studies met eligibility (1975–2025); 44 obstetric neuraxial block episodes analyzed (26 definite, 18 probable subdural block).
- Maternal age 27.5 ± 4.6 yr; epidural was the intended technique in 43/44 (98%) cases.
- **Serious adverse effects:** hypotension 59%, respiratory compromise 36%, total spinal phenotype 27%, loss of consciousness 9%, cardiac arrest 5%.
- **Clinical manifestations:** high cephalad sensory spread 80%, motor blockade 68%, delayed onset (≥20 min) 35%, asymmetric block 32%; patchy block was rare (1 case).
- All 12 patients who progressed to a total spinal phenotype ultimately recovered fully; neonatal outcomes were generally favorable.

Discussion / Conclusion

- High cephalad sensory spread with motor blockade, not the classically emphasized patchy or asymmetric pattern, is the most reproducible signature of obstetric subdural block.
- Progression to a total spinal phenotype occurred in 12 of 44 cases (27%), a novel finding that contradicts previously established diagnostic criteria for subdural block.
- Serious adverse effects are common: more than 1 in 4 cases progressed to a total spinal phenotype, often after modest cumulative local anesthetic volumes.
- Despite the severity of presentation, maternal recovery was complete in every reported case, and neonatal outcomes were generally favorable.
- These findings support heightened vigilance for unexpectedly extensive cephalad spread after epidural dosing in parturients and challenge established diagnostic criteria for subdural block, particularly when classic features such as patchy or markedly asymmetric block are absent.
- *Limitations: evidence derives from case reports/series, with inherent reporting and publication bias; findings should inform clinical suspicion, not replace diagnostic confirmation.*

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