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Eclampsia Is a Perioperative Emergency: Delays to Magnesium and Anesthetic/ICU Utilization in a Timestamped Multi Hospital Electronic Health Record Cohort

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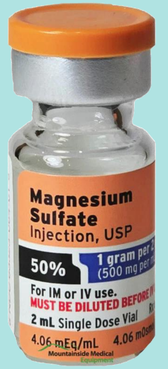
Background

- Magnesium sulfate ($MgSO_4$) is the first-line treatment for eclampsia.[1]
- Prompt administration terminates seizures and reduces complications.
- Delayed initiation is associated with increased maternal morbidity, including recurrent seizures, hypoxia, aspiration, pulmonary edema, cardiopulmonary arrest, and renal failure.



Objective: Quantify seizure-to-MgSO4 administration timing, anesthetic techniques, and ICU utilization in a multi-hospital, adjudicated eclampsia sample.

[1] **American College of Obstetricians and Gynecologists.** Gestational hypertension and preeclampsia: ACOG Practice Bulletin No. 222. *Obstet Gynecol.* 2020;135(6):e237–e260. doi:10.1097/AOG.0000000000003891

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Methods

Study Design
Retrospective EHR study of a multi-hospital health system

Study Population
164,808 deliveries
44 eclampsia cases

Case Identification
International Classification of Diseases (ICD)-based phenotype plus **natural language processing** of clinical notes for seizure/eclampsia concepts, followed by manual validation.

Primary Outcomes
Seizure-to-MgSO4
Seizure-to-Admission

Secondary Outcomes
Anesthetic technique at delivery
ICU Admission

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Results

Primary Outcomes

Most patients with eclampsia (65%) experienced seizures out-of-hospital. Most initial **in-hospital seizures** occurred postpartum (63%).

Median seizure-to-MgSO4 initiation was 379 minutes (IQR 56.5–825).

- ≥1 hour delays were more common in cases of ante/intrapartum vs postpartum eclampsia (88% vs 43%).

Secondary Outcomes

ICU admission

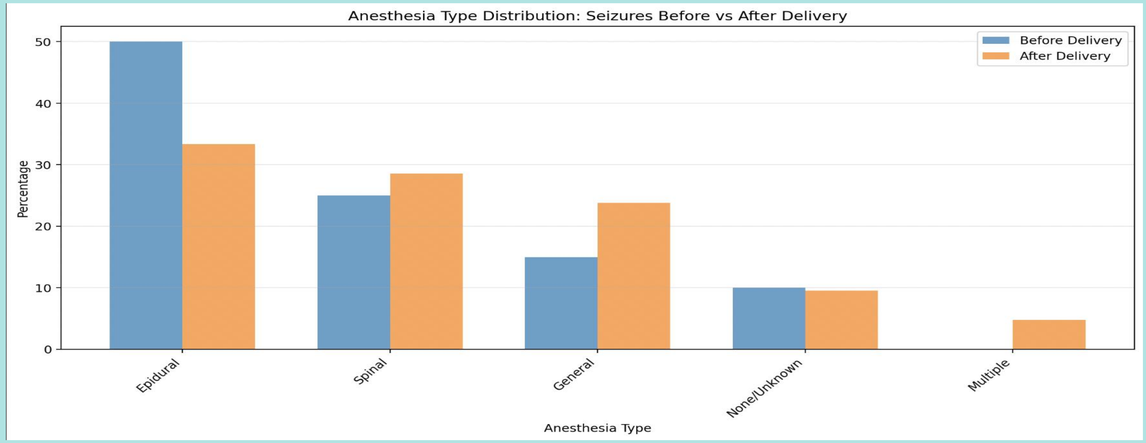
Occurred in 27% of patients with eclampsia, without significant differences between both groups.

Delivery techniques

Cesarean delivery predominated (82%) in those with ante/intrapartum seizures

- 36% in those with postpartum seizures

General anesthesia was utilized in 25% of patients with eclampsia (versus 72% neuraxial) and significantly more often in those with ante- or intra-partum seizures (36% v 6%, p<0.05).



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Conclusion

Using a multihospital, manually adjudicated EHR cohort, we found that:

- **Eclampsia frequently presents before hospital admission or late postpartum**.
- Median seizure-to-$MgSO_4$ time was **over 6 hours,** with only 1 in 4 patients receiving $MgSO_4$ within 60 minutes.
- **ICU admission** is common, regardless of eclampsia onset before or after delivery.

Future

Our findings support **cross-unit, anesthesia-inclusive eclampsia response pathways.**

Image generated using ChatGPT.

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