18th International Congress of Anesthesiology, Critical Care and Pain

Anesthetic Challenges in Preeclampsia
Contemporary Clinical Guidelines

راهنماهای نوین بالینی :چالش‌های بیهوشی در پره‌اکلامپسی

Dr. Shekoufeh Behdad

Professor of Anesthesiology · Shahid Sadoughi University of Medical Sciences, Yazd, Iran

18–20 November 2026 · Tehran, Iran · From Innovation to Resilience

About the Speaker



- Dr. Shekoufeh Behdad
- Academic role: Professor of Anesthesiology
- Shahid Sadoughi University of Medical Sciences, Yazd, Iran
- Research and clinical focus:
- Obstetric and gynecologic anesthesia
- Perioperative management of preeclampsia and other high-risk obstetric conditions

Outline

1. Background: why preeclampsia challenges anesthesia
2. Evidence update: reviews, consensus and guidelines
3. Preoperative assessment and optimization
4. Neuraxial vs general anesthesia: decision-making
5. Intraoperative and postpartum priorities

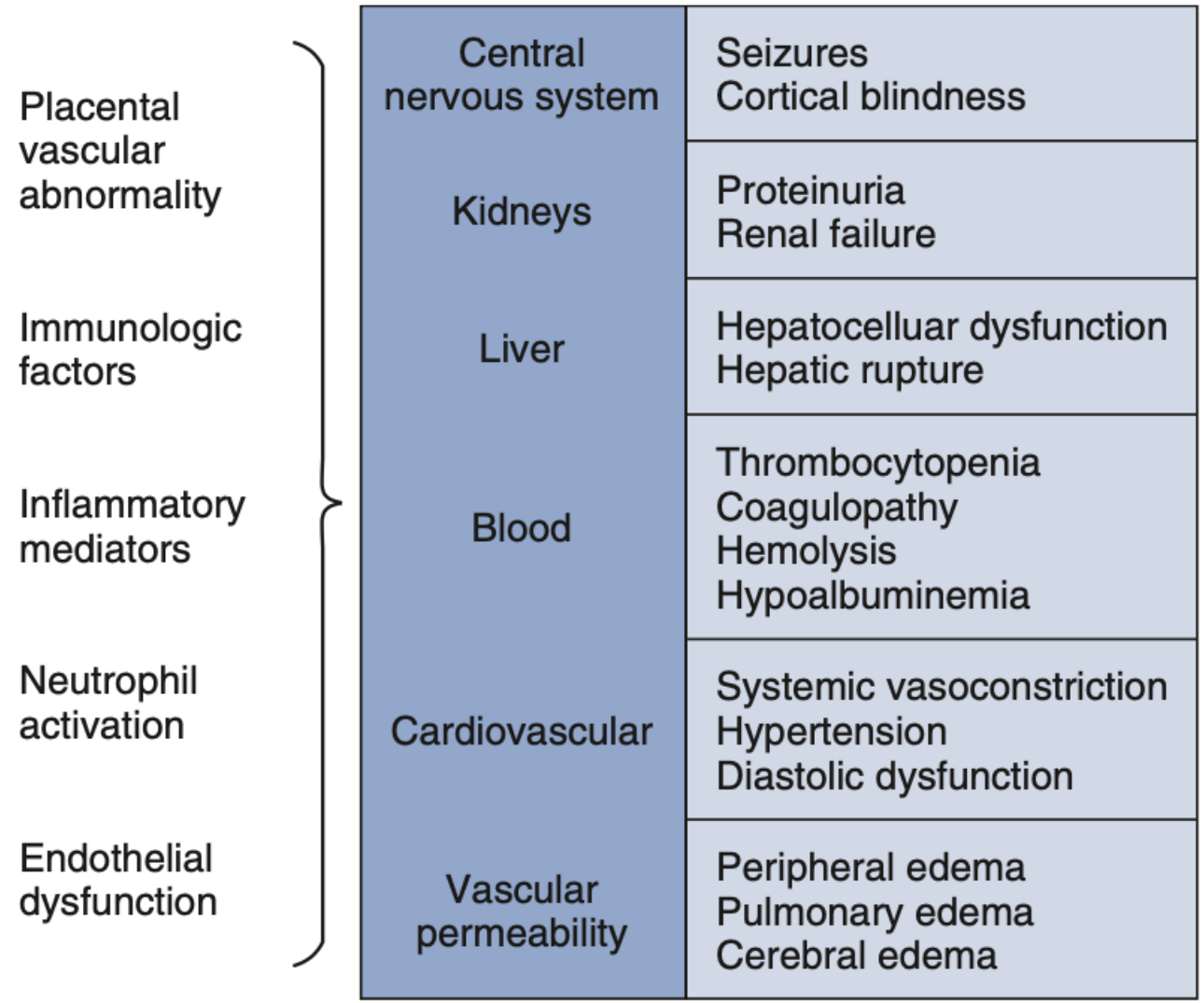
01

From pathophysiology to perioperative risk



Preeclampsia: pathophysiology

Preeclampsia is a pregnancy-induced condition that usually occurs after 20 weeks' gestation, characterized by **hypertension and proteinuria**. The cause remains unknown but is likely related to a **placental abnormality** producing a diffuse maternal endothelial effect, which leads to **vasospasm and reduced organ perfusion** (Fig. 77.3).



• **Fig. 77.3** Pathophysiology and multiorgan effects of preeclampsia.

Preeclampsia Severe Features

Systolic blood pressure (BP) ≥160 mm Hg
Diastolic BP ≥110 mm Hg
Thrombocytopenia (<100K × 10^9/L)a
↑Liver function tests (transaminase concentrations above 2× the upper limit of normal for the local lab) or severe right upper quadrant (RUQ) pain unresponsive to medication
↓Renal function (creatinine [CR] level >1.1 mg/dL or doubling of prior CR)
Pulmonary edema (in the absence of obvious fluid overload)
New-onset cerebral (e.g., severe headache) or visual disturbance

Preeclampsia: antihypertensive treatment

The goals of antihypertensive treatment include minimizing the risk of placental abruption and **preventing cerebrovascular accident, which accounts for 15% to 20% of maternal deaths associated with preeclampsia.**

The goal of therapy is to maintain BP below 160/110 mm Hg.

TABLE 30.8 Treatment of Systemic Hypertension Associated With Preeclampsia

Maintain SBP <160 mm Hg, DBP <110 mm Hg
Labetalol 20 mg IV, followed by escalating doses up to a cumulative dose of 300 mg (caution when used in women with asthma)
Hydralazine 5–10 mg IV every 20–30 min up to a cumulative dose of 20mg
Nifedipine 10–20 mg orally, repeat in 20 min, if needed, followed by 10–20 mg every 2–6 hours, as needed
If above unsuccessful:
Nicardipine infusion 0.5 µg/kg/min, titrated to response or
Nitroglycerine 0.5 µg/kg/min IV, titrated to response

Labor Analgesia and Cesarean Delivery Anesthesia in preeclampsia

Preeclampsia: Labor Analgesia

In addition to the known benefits of **epidural labor analgesia**, the initiation of neuraxial techniques in patients with pre-eclampsia **may help facilitate BP control during labor.** Provided that perfusion pressure is maintained, epidural analgesia may also increase intervillous blood flow, thereby improving utero-placental performance and improving fetal status.

Preeclampsia: Labor Analgesia

Because patients with preeclampsia are at high risk of requiring cesarean delivery, early placement of an epidural is recommended to provide an in situ catheter for rapid conversion to surgical anesthesia, should it become necessary, and thereby reduce the need for and risks of general anesthesia.

No significant alterations in the usual doses and strategies for labor analgesia are generally needed unless the hemodynamic condition is grossly abnormal.

Preeclampsia: Cesarean Delivery

In the absence of a specific contraindication, **spinal anesthesia is the technique of choice** for patients with preeclampsia who undergo cesarean delivery without an in situ epidural catheter.

Although a large proportion of patients with preeclampsia have decreased intravascular volume, these individuals develop **less hypotension after the administration of spinal** anesthesia when compared with healthy normotensive parturients.

Over the past decade, it has become routine to initiate a **phenylephrine or norepinephrine infusion** to **prevent** spinal-induced hypotension during cesarean delivery.

Preeclampsia: Cesarean Delivery

In the absence of a specific contraindication, **spinal anesthesia is the technique of choice** for patients with preeclampsia who undergo cesarean delivery without an in situ epidural catheter.

Although a large proportion of patients with preeclampsia have decreased intravascular volume, these individuals develop **less hypotension after the administration of spinal** anesthesia when compared with healthy normotensive parturients.

Over the past decade, it has become routine to initiate a **phenylephrine or norepinephrine infusion** to **prevent** spinal-induced hypotension during cesarean delivery.

- While the sensitivity to α1-agonist agents (e.g., phenylephrine and norepinephrine) **is significantly reduced in normal pregnancy**, the dose response to these vasopressor agents in patients with preeclampsia appears **to be similar** to the nonpregnant response.
- As such, **the administration of reduced doses of vasopressor agents is recommended, at least initially, for patients with preeclampsia** to minimize the risk of complications associated with elevated BP in this patient population.

Preeclampsia: Cesarean Delivery

In general, vascular volume is decreased moderately in preeclampsia due to low oncotic pressure.

Fluid management is complicated by the conflicting goals of repleting fluids in an intravascularly depleted patient and restricting fluids **in a patient at risk for pulmonary edema**.

There is no demonstrated role **for albumin** in volume replacement.

Preeclampsia: Cesarean Delivery

General anesthesia may be required for cesarean delivery when there is insufficient time to perform a neuraxial technique or if initiation of a neuraxial technique is not feasible **due to severe thrombocytopenia**.
In addition to the known risks of general anesthesia during pregnancy, **patients with preeclampsia are at a higher risk of difficult intubation** than healthy pregnant counterparts.
The increased likelihood of difficulty in airway management may also place **patients with preeclampsia at a higher risk of pulmonary aspiration.**

Preeclampsia: Cesarean Delivery

Patients with preeclampsia may exhibit an exaggerated hypertensive response to laryngoscopy.
The administration of adjuvants, **such as remifentanil**, should be considered **during intubation in order to minimize the risk of hemorrhagic stroke and other complications.**

Preeclampsia: Cesarean Delivery

Patients with preeclampsia on magnesium therapy may exhibit greater sensitivity to the action of nondepolarizing muscle relaxants; small doses should be titrated with the use of neuromuscular blockade monitoring.

The smooth muscle relaxant effects of magnesium may also contribute to uterine atony and peripartum hemorrhage, although studies have not consistently demonstrated this.

Choosing the anesthetic technique

- NEURAXIAL — often preferred when clinically appropriate
- Avoids airway manipulation and the marked pressor response to laryngoscopy.
- Provides effective labor analgesia and cesarean anesthesia.
- Check platelet count, trend, bleeding history, DIC signs and clinical context.
- SOAP: ≥70 × 10^9/L is generally a low-risk threshold in selected etiologies; 50–70 requires individualized risk–benefit judgment; <50 usually favors avoiding neuraxial procedures.

DECISION FRAMEWORK

1 Obstetric urgency
2 Platelet count + trend / etiology
3 Bleeding history or DIC?
4 Airway and cardiopulmonary risk
5 Patient preference + team expertise

→ Choose the technique with the lowest overall maternal–fetal risk.

Evidence: SOAP consensus (2021); Dennis et al. (2025); UpToDate: Anesthesia for the patient with preeclampsia (literature current through Jun 2026).

Choosing the anesthetic technique

GENERAL ANESTHESIA — when indicated

- Anticipate airway edema, difficult/failed intubation and rapid desaturation.
- Prepare a strategy to blunt hypertensive response to laryngoscopy.
- Avoid severe hypertension during induction and emergence; plan postoperative respiratory and hemodynamic monitoring.

DECISION FRAMEWORK

1 Obstetric urgency
2 Platelet count + trend / etiology
3 Bleeding history or DIC?
4 Airway and cardiopulmonary risk
5 Patient preference + team expertise

→ Choose the technique with the lowest overall maternal–fetal risk.

Evidence: SOAP consensus (2021); Dennis et al. (2025); UpToDate: Anesthesia for the patient with preeclampsia (literature current through Jun 2026).

Choosing the anesthetic technique

The goals of antihypertensive treatment include minimizing the risk of **placental abruption** and **preventing cerebrovascular accident, which accounts for 15% to 20% of maternal deaths associated with preeclampsia.**
The goal of therapy is to maintain BP below 160/110 mm Hg.

DECISION FRAMEWORK

1 Obstetric urgency
2 Platelet count + trend / etiology
3 Bleeding history or DIC?
4 Airway and cardiopulmonary risk
5 Patient preference + team expertise

→ Choose the technique with the lowest overall maternal–fetal risk.

Evidence: SOAP consensus (2021); Dennis et al. (2025); UpToDate: Anesthesia for the patient with preeclampsia (literature current through Jun 2026).

Key Message

Preeclampsia is a progressive multisystem endothelial disease requiring vigilant anesthetic management throughout the peripartum period.

A practical perioperative pathway

IDENTIFY SEVERE FEATURES / ORGAN DYSFUNCTION

↓

STABILIZE BEFORE DELIVERY

- Treat persistent BP ≥160 systolic or ≥110 diastolic urgently (target treatment within 30–60 min).
- Magnesium sulfate for seizure prophylaxis/treatment when indicated; monitor respiratory status, reflexes and renal function.
- Restrict maintenance fluids; replace measured losses and avoid routine fluid loading.

↓

SELECT ANESTHESIA

- Neuraxial if appropriate after platelet/coagulation assessment.
- If GA: difficult-airway plan + attenuation of laryngoscopy response.

↓

RECOVERY & POSTPARTUM

- Continue BP and symptom surveillance; monitor urine output, oxygenation, bleeding and magnesium toxicity.
- Escalate to high-dependency/ICU care for organ dysfunction or clinical instability.

Clinical synthesis: Dennis et al. 2025; ACOG/SMFM; UpToDate topics on anesthesia and intrapartum/postpartum management (literature current through Jun 2026).

Decision points at a glance

Clinical issue	Evidence-informed approach	Important caveat
Severe BP	Persistent ≥160 systolic and/or ≥110 diastolic: treat promptly; initiate within 30–60 min.	Avoid abrupt overshoot; reassess response.
Platelets / neuraxial	≥70 × 10^9/L: low risk in selected patients; 50–70: individualized; <50: generally avoid.	Trend, etiology, bleeding/DIC, urgency and airway matter.
Fluids, magnesium & postpartum	Restrict and individualize fluids; monitor Mg toxicity, respiration, reflexes, urine output; continue postpartum BP/neurologic/respiratory surveillance.	Pulmonary edema and postpartum deterioration remain important risks.

Take-Home Messages

1

Anticipate

Preeclampsia is multisystem disease; assess organ dysfunction and trajectory, not BP alone.

2

Individualize

Choose neuraxial or general anesthesia using the full clinical context—not a platelet number in isolation.

3

Continue vigilance

Control BP, avoid fluid overload, and plan active postpartum surveillance and escalation.

Selected references

1. Dennis AT, Xin A, Farber MK. Perioperative Management of Patients with Preeclampsia: A Comprehensive Review. Anesthesiology. 2025;142(2):378–402. doi:10.1097/ALN.0000000000005296.
2. Andersson ML, Lindelof K, Wikkelsø A. Anaesthesiological management of pre-eclampsia and eclampsia. Ugeskr Laeger. 2024;186(38). doi:10.61409/V05240333.
3. Bauer ME, et al. SOAP Interdisciplinary Consensus Statement on Neuraxial Procedures in Obstetric Patients with Thrombocytopenia. Anesth Analg. 2021;132(6):1531–1544. doi:10.1213/ANE.0000000000005355.
4. Pre-eclampsia – anaesthetic considerations. Anaesthesia & Intensive Care Medicine. 2025;26(4):201–207. doi:10.1016/j.mpaic.2025.01.015.
5. ACOG. Gestational Hypertension and Preeclampsia. Practice Bulletin No. 222. Obstet Gynecol. 2020;135:e237–e260.
6. ACOG. Emergent Therapy for Acute-Onset, Severe Hypertension During Pregnancy and the Postpartum Period. Committee Opinion No. 767. Obstet Gynecol. 2019;133:e174–e180.
7. Hawkins JL, McQuaid-Hanson E. Anesthesia for the patient with preeclampsia. UpToDate. Topic last updated Dec 9, 2024; literature review current through Jun 2026. Accessed Nov 5, 2026.
8. Norwitz ER. Preeclampsia: Intrapartum and postpartum management and long-term prognosis. UpToDate. Topic last updated Jun 29, 2026; literature review current through Jun 2026. Accessed Nov 5, 2026.

Thank You for Your Attention

Questions and Discussion

Dr. Shekoufeh Behdad · Professor of Anesthesiology