

Neuraxial Anesthesia for Cesarean Delivery in Peripartum Cardiomyopathy: A Case Series

Y. Lee MD¹, R. Jindal MD¹, J. Im MD^{1,2}

1 Department of Anesthesiology, Montefiore Medical Center, Bronx, NY

2 Albert Einstein College of Medicine



INTRODUCTION

- Peripartum cardiomyopathy (PPCM) is a leading cause of maternal mortality globally, affecting approximately 1 in 2,000 deliveries.¹
- Diagnosis of exclusion characterized by a new onset of heart failure with a reduced ejection fraction (EF) of less than 45%, presenting in the last month of pregnancy or within five months postpartum, without other identifiable causes.
- In high-risk patients requiring cesarean delivery, anesthetic management is critical to optimize safety.
- Combined spinal-epidural (CSE) anesthesia is frequently chosen due to its rapid onset and reliably prolonged effect, as it induces sympathetic blockade to minimize hemodynamic fluctuations and promotes reductions in preload and afterload.² Patients with PPCM generally less able to tolerate significant increases in preload or afterload.
- Full recovery from PPCM (defined as EF >50-55% at 6-month mark) varies globally but estimated reports: 21%-63%.³

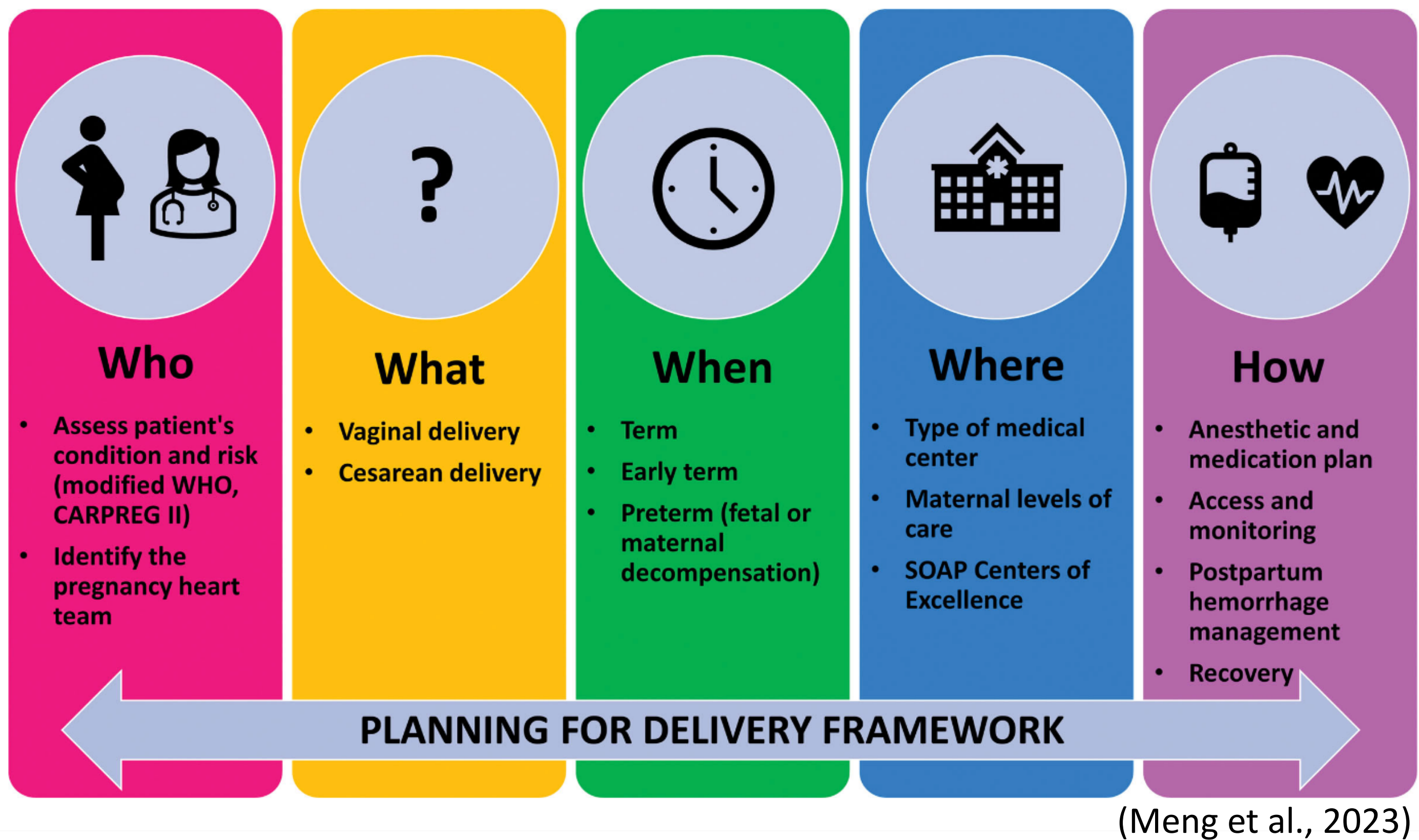


Figure 1: Accurate risk assessment and multidisciplinary coordination, including development of delivery and anesthetic plans, are critical for optimal cardio-obstetrics care.⁴

CASE 1 DESCRIPTION

- A 27-year-old woman (G3P0101) with a past medical history of preeclampsia and pulmonary embolism in a prior pregnancy who presented at 22 weeks pregnant with elevated blood pressure, hypoxia, and tachypnea.
- Admitted for preeclampsia with severe features complicated by pulmonary edema and newly reduced ejection fraction of 45%. Ultimately underwent urgent cesarean section due to worsening respiratory status and uncontrolled hypertension.
- CSE block was performed using Touhy needle for epidural placement followed by intrathecal injection of bupivacaine 0.75% with Gertie-Marx needle. Test dose of 1.5% lidocaine with epinephrine administered to confirm placement.
- Close hemodynamic monitoring with arterial line.
- Patient was postoperatively monitored in ICU. Quick improvement of respiratory status, and hypertension was better controlled.
- Postpartum EF improvement to 40% then 50%.

CASE 2 DESCRIPTION

- A 32-year-old woman (G7P5015) with a past medical history of pre-eclampsia and peripartum cardiomyopathy diagnosed during a prior pregnancy, reduced ejection fraction (EF) of 30%, and hypertension presented at 24 weeks pregnant with elevated blood pressure of 191/153, shortness of breath, and headache.
- Admitted to cardiac ICU for treatment of preeclampsia with severe features and peripartum cardiomyopathy. Placed on antihypertensive regimen (nicardipine infusion, isosorbide dinitrate, hydralazine). Ultimately underwent urgent cesarean section.
- A CSE block was initiated using a 9-cm Touhy needle. The epidural space was successfully accessed on a second attempt using a 13-cm Weiss needle. Followed by successful intrathecal injection of bupivacaine 0.75% with Gertie-Marx needle. A test dose of 1.5% lidocaine with epinephrine was administered to confirm catheter placement.
- Close hemodynamic monitoring with arterial line and central line.
- Patient was postoperatively monitored in ICU. Continued treatment for uncontrolled hypertension. However following neonatal demise, patient left against medical advice. Postpartum EF improved to 55%.

DISCUSSION

- High-risk pregnancies such as those complicated by preeclampsia or impaired cardiac function require tighter hemodynamic control.³
- Smaller intrathecal dose given in CSE anesthesia allows for a slower onset of sympathetic blockade with the availability of fast pain control. Placement of epidural catheter allows incremental titration and extension of blockade as needed.
- The potential for pronounced sympathetic stimulation with general anesthesia reinforces the need for careful anesthetic selection.
- Consequently, general anesthesia is reserved for emergent deliveries involving severe coagulopathies or when neuraxial anesthesia is contraindicated (i.e. anatomical abnormalities or infection at the injection site).
- CSE anesthesia minimizes necessity for general anesthesia which subjects patient to greater hemodynamic fluctuations and overall greater risks during delivery.

CONCLUSION

- Two high-risk cesarean sections successfully managed with CSE anesthesia
- When coupled with vigilant monitoring and prompt hemodynamic management, neuraxial anesthesia offers a reliable approach for PPCM patients. This case report highlights the efficacy and safety of neuraxial anesthesia—specifically CSE—in the management of cesarean delivery for patients with PPCM.
- Further research is warranted to refine guidelines and establish standardized best practices for this high-risk population.

CITATIONS

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