BOCA
BOLETIM DE CONJUNTURA

ANESTHETIC CHALLENGES IN CESAREAN DELIVERY OF A PREGNANT WOMAN WITH SEVERE LEFT VENTRICULAR DYSFUNCTION: A CASE REPORT

DESAFIOS ANESTÉSICOS NA CESARIANA DE UMA GESTANTE COM DISFUNÇÃO GRAVE DO VENTRÍCULO ESQUERDO: RELATO DE CASO

DESAFÍOS ANESTÉSICOS EN LA CESÁREA DE UNA GESTANTE CON DISFUNCIÓN SEVERA DEL VENTRÍCULO IZQUIERDO: REPORTE DE CASO

https://doi.org/10.56238/bocav25n83-029

Data de submissão: 06/09/2026 **Data de publicação:** 21/10/2026

Natalia Kimie Duarte Nakashima[1], Ana Julia Faria Doro[2], Lara Venancio Valadao[3], Patrícia Gatti Silva[4], Paula Farinasso Biagi Mais[5], Sophia Evaristo Coércio[6], Rafael Ignacio dos Santos[7], Rodolfo de Oliveira Medeiros[8], Raíssa Poletto Maluf Amaral[9]

ABSTRACT

Severe left ventricular dysfunction during pregnancy represents a major challenge for anesthetic management, owing to the physiological cardiovascular changes of pregnancy and the risk of hemodynamic decompensation in the peripartum period. We report the case of a pregnant woman admitted at 26 weeks of gestation with progressive dyspnea, marked lower-limb edema, and signs of pulmonary congestion, with a history of arterial hypertension and prior SARS-CoV-2 infection. Echocardiographic assessment showed a left ventricular ejection fraction of 22%, marked diffuse hypokinesia, severe systolic dysfunction, grade II diastolic dysfunction, moderate mitral regurgitation, and moderate-to-severe pulmonary hypertension. Given the diagnosis of heart failure with reduced ejection fraction and the high cardiovascular risk, the patient was admitted to the intensive care unit and underwent multidisciplinary management, including noninvasive ventilation, diuretic therapy, inotropic support with dobutamine, and subsequent pharmacological optimization with hydralazine, nitrate, and a beta-blocker. After clinical stabilization, she was discharged and remained under specialized follow-up. At approximately 32 weeks, she was readmitted for delivery, clinically compensated, with preserved renal function and coagulation parameters. Cesarean delivery was performed under a sequential neuraxial technique, with an epidural catheter

[1] Doctor. Institution: ABHU. E-mail: Nakashimanatalia@gmail.com
[2] Doctor. Institution: ABHU. E-mail: Anajulea2017@gmail.com
[3] Doctor. Institution: Universidade de Marília (UNIMAR). E-mail: Laravalaadao@hotmail.com
[4] Doctor. Institution: ABHU. E-mail: Pgattisilva@hotmail.com
[5] Medical student. Institution: Universidade de Marília (UNIMAR). E-mail: Paula.fb.masi@gmail.com
[6] Medical student. Institution: Universidade de Marília (UNIMAR). E-mail: Sophiacoercio@gmail.com
[7] Medical student. Institution: Universidade de Marília (UNIMAR). E-mail: Rafa_ynacio@hotmail.com
[8] Doctor of Education. Institution: Universidade de Marília (UNIMAR). E-mail: rodolfomedeiros@unimar.br
[9] Doctor. Institution: ABHU. E-mail: Raissa_poletto_maluf@hotmail.com

followed by a reduced-dose spinal block with hyperbaric bupivacaine and intrathecal morphine, under invasive blood pressure monitoring through a radial artery catheter, central venous access, and a continuous low-dose dobutamine infusion started before the procedure, with hemodynamic stability maintained throughout surgery. The patient had a stable postoperative course, dobutamine was discontinued 24 hours after the procedure, and she was discharged, although she maintained an ejection fraction close to 20% on cardiology follow-up. This case highlights the importance of preoperative cardiovascular optimization, individualized anesthetic planning, careful fluid management, risk-proportional monitoring, and integration among anesthesiology, cardiology, obstetrics, and intensive care in the management of pregnant women with severe ventricular dysfunction.

Keywords: Heart Failure. Left Ventricular Dysfunction. Obstetric Anesthesia. High-risk Pregnancy. Cesarean Section.

RESUMO

Disfunção severa do ventrículo esquerdo durante a gravidez representa um grande desafio para o manejo anestésico, devido às mudanças fisiológicas cardiovasculares da gravidez e ao risco de descompensação hemodinâmica no período periparto. Relatamos o caso de uma mulher grávida internada com 26 semanas de gestação com dispneia progressiva, edema importante de membros inferiores e sinais de congestão pulmonar, com história de hipertensão arterial e infecção prévia por SARS-CoV-2. A avaliação ecocardiográfica mostrou fração de ejeção do ventrículo esquerdo de 22%, hipocinesia difusa marcada, disfunção sistólica severa, disfunção diastólica grau II, regurgitação mitral moderada e hipertensão pulmonar moderada a severa. Dado o diagnóstico de insuficiência cardíaca com fração de ejeção reduzida e o alto risco cardiovascular, a paciente foi internada na unidade de terapia intensiva e submetida a manejo multidisciplinar, incluindo ventilação não invasiva, terapia diurética, suporte inotrópico com dobutamina e otimização farmacológica subsequente com hidralazina, nitrato e betabloqueador. Após estabilização clínica, foi alta e permaneceu sob acompanhamento especializado. Aproximadamente na 32ª semana, foi readmitida para parto, clinicamente compensada, com função renal e parâmetros de coagulação preservados. O parto cesariano foi realizado sob técnica neuraxial sequencial, com cateter epidural seguido de bloqueio raquidiano de dose reduzida com bupivacaína hiperbárica e morfina intratecal, sob monitoramento de pressão arterial invasivo através de cateter de artéria radial, acesso venoso central e infusão contínua de dobutamina em baixa dose iniciada antes do procedimento, com estabilidade hemodinâmica mantida durante toda a cirurgia. A paciente apresentou curso pós-operatório estável, dobutamina foi descontinuada 24 horas após o procedimento e ela recebeu alta, embora tenha mantido fração de ejeção próxima a 20% no acompanhamento cardiológico. Este caso destaca a importância da otimização cardiovascular pré-operatória, planejamento anestésico individualizado, manejo cuidadoso de fluidos, monitoramento proporcional ao risco e integração entre anestesiologia, cardiologia, obstetrícia e terapia intensiva no manejo de mulheres grávidas com disfunção ventricular severa.

Palavras-chave: Insuficiência Cardíaca. Disfunção do Ventrículo Esquerdo. Anestesia Obstétrica. Gravidez de Alto Risco. Cesariana.

RESUMEN

La disfunción severa del ventrículo izquierdo durante el embarazo representa un gran desafío para el manejo anestésico, debido a los cambios fisiológicos cardiovasculares del embarazo y al riesgo de descompensación hemodinámica en el período periparto. Reportamos el caso de una mujer embarazada ingresada con 26 semanas de gestación con disnea progresiva, edema marcado de miembros inferiores y signos de congestión pulmonar, con antecedentes de hipertensión arterial e infección previa por SARS-CoV-2. La evaluación ecocardiográfica mostró una fracción de eyección del ventrículo izquierdo del 22%, hipocinesia difusa marcada, disfunción sistólica severa, disfunción diastólica grado II, regurgitación mitral moderada e hipertensión pulmonar moderada a severa. Dado el diagnóstico de insuficiencia cardíaca con fracción de eyección reducida y el alto riesgo cardiovascular, la paciente fue ingresada en la unidad de cuidados intensivos y sometida a manejo multidisciplinario, incluyendo ventilación no invasiva, terapia diurética, soporte inotrópico con dobutamina y posterior optimización farmacológica con hidralazina, nitrato y betabloqueante. Tras la estabilización clínica, fue dada de alta y permaneció bajo seguimiento especializado. Aproximadamente en la semana 32, fue readmitida para el parto, clínicamente compensada, con función renal y parámetros de coagulación preservados. El parto por cesárea fue realizado bajo técnica neuraxial secuencial, con catéter epidural seguido de bloqueo raquídeo de dosis reducida con bupivacaína hiperbárica y morfina intratecal, bajo monitoreo invasivo de presión arterial a través de catéter de arteria radial, acceso venoso central e infusión continua de dobutamina en dosis baja iniciada antes del procedimiento, con estabilidad hemodinámica mantenida durante toda la cirugía. La paciente presentó un curso postoperatorio estable, la dobutamina fue discontinuada 24 horas después del procedimiento y fue dada de alta, aunque mantuvo una fracción de eyección cercana al 20% en el seguimiento cardiológico. Este caso destaca la importancia de la optimización cardiovascular preoperatoria, la planificación anestésica individualizada, el manejo cuidadoso de líquidos, el monitoreo proporcional al riesgo e integración entre anestesiología, cardiología, obstetricia y cuidados intensivos en el manejo de mujeres embarazadas con disfunción ventricular severa.

Palabras clave: Insuficiencia Cardíaca. Disfunción del Ventrículo Izquierdo. Anestesia Obstétrica. Embarazo de Alto Riesgo. Cesárea.

1 INTRODUCTION

Pregnancy induces progressive cardiovascular changes aimed at meeting maternal and fetal metabolic demands, including plasma volume expansion, increased heart rate, and increased cardiac output. Although physiological, these adaptations may reduce cardiovascular reserve and precipitate decompensation in patients with structural or functional heart disease. In this context, heart failure with reduced ejection fraction during pregnancy constitutes a condition of high complexity, particularly when associated with severe left ventricular dysfunction (RIZI *et al*., 2024; TOGNOLA *et al*., 2025).

Among the possible etiologies of myocardial impairment in women of reproductive age, inflammatory and post-viral processes have gained greater relevance following the COVID-19 pandemic. A temporal association between SARS-CoV-2 infection and cardiovascular manifestations, including myocarditis and ventricular dysfunction, has been described in the literature (PRUZANSKY *et al*., 2022; YAGHOOBPOOR *et al*., 2022; ABUMAYYALEH *et al*., 2025). However, causal attribution requires careful clinical evaluation, since different conditions may result in heart failure during pregnancy (ARANY, 2024; SIGAUKE; NTSINJANA; TSABEDZE, 2024). In the obstetric setting, regardless of the definitive etiology, the presence of significant ventricular dysfunction substantially changes risk stratification and delivery planning.

From an anesthetic standpoint, markedly reduced ventricular function poses challenges related mainly to the limited capacity to adapt to changes in preload, afterload, and contractility. Abrupt hypotension, tachycardia, volume overload, excessive increases in systemic vascular resistance, or myocardial depression can compromise cardiac output and uteroplacental perfusion. Thus, rather than the isolated choice of a given anesthetic technique, perioperative management should be guided by hemodynamic goals established in advance and consistent with the patient's cardiovascular pathophysiology (MENG *et al*., 2023).

The timing and mode of delivery must therefore integrate obstetric, cardiologic, anesthetic, and fetal aspects. In higher-risk patients, multidisciplinary involvement allows potential complications to be anticipated, the patient to be clinically optimized before the procedure, and monitoring and cardiovascular support strategies to be defined. Early involvement of anesthesiology is particularly relevant for technique planning, assessment of

the need for invasive monitoring, careful fluid management, and the availability of vasoactive drugs and intensive support in the perioperative period (MENG *et al*., 2023; DE BACKER *et al*., 2025).

Given this scenario, the present report describes the management of a pregnant woman with heart failure and severe left ventricular dysfunction, a history of SARS-CoV-2 infection, and a subsequent need for surgical delivery, emphasizing elements of anesthetic interest related to cardiovascular assessment, preoperative optimization, multidisciplinary planning, hemodynamic monitoring, and prevention of cardiovascular decompensation in the peripartum period.

2 CASE REPORT

A pregnant woman at 26 weeks of gestational age was referred from the obstetric emergency department and admitted to the intensive care unit on January 5, 2026, after developing dyspnea initially on moderate exertion, followed by dyspnea at rest and marked lower-limb edema. She had a history of arterial hypertension for approximately three years without regular medical follow-up, and reported a prior episode of COVID-19 in March 2022 that did not require hospitalization. In early pregnancy, she was using spironolactone and enalapril, which were later discontinued during prenatal care.

On admission to the intensive care unit, she was alert and oriented, with blood pressure of 132 × 75 mmHg, heart rate of 84 beats per minute, respiratory rate of 20 breaths per minute, and peripheral oxygen saturation of 99%. She had preserved peripheral perfusion, pulmonary crackles predominantly at the lung bases, mild respiratory discomfort, and bilateral lower-limb edema graded 4+/4+, with no clinical signs of deep vein thrombosis. Fetal heart rate was 142 beats per minute, and fetal echocardiography performed on January 5 showed no abnormalities.

Cardiovascular investigation revealed significant myocardial impairment. Transthoracic echocardiography showed a left ventricular ejection fraction of 22%, marked diffuse hypokinesia, severe left ventricular systolic dysfunction, grade II diastolic dysfunction with increased filling pressures, moderate mitral regurgitation, and moderate-to-severe pulmonary hypertension. Based on the clinical and echocardiographic findings, a diagnosis of heart failure with reduced ejection fraction was established. Initial laboratory evaluation

showed hemoglobin 12.2 g/dL, hematocrit 35.6%, leukocytes 18,900/mm³, creatinine 0.87 mg/dL, sodium 137 mEq/L, potassium 3.1 mEq/L, AST 33 U/L, ALT 52 U/L, and INR 1.28.

Given the severity of the ventricular dysfunction and the risk of maternal deterioration, joint management was instituted by the intensive care, cardiology, and obstetric teams. Treatment included noninvasive ventilatory support, respiratory physiotherapy, furosemide, and inotropic support with dobutamine, together with strict control of urine output, fluid intake, and body weight. During the clinical course, hydralazine, nitrate, and metoprolol were introduced, followed by weaning of dobutamine and adjustment of diuretic therapy. Cardiology assessment classified the patient as at high cardiovascular risk for the obstetric procedure, highlighting the need for restrictive fluid management and strict hemodynamic control.

During hospitalization, on January 9, she developed a clinical picture consistent with pneumonia, characterized by cough, crackles at the left lung base, and leukocytosis, and antibiotic therapy with cefepime and azithromycin was instituted. After clinical stabilization and successive adjustments of cardiovascular therapy, she was discharged from the ICU on January 19 and from the hospital on January 21, 2026, maintaining treatment with metoprolol 25 mg every 12 hours, hydralazine 25 mg every eight hours, isosorbide mononitrate 20 mg every eight hours, and furosemide 40 mg in the morning, in addition to outpatient cardiology follow-up.

On February 18, 2026, at approximately 32 weeks of gestation, the patient returned to the obstetric service, referred by prenatal care, for admission and scheduling of delivery. She was clinically compensated and asymptomatic, denying vaginal discharge and urinary symptoms and reporting preserved fetal movement. Laboratory tests showed hemoglobin 11.7 g/dL, hematocrit 32.7%, platelets 181,000/mm³, creatinine 0.72 mg/dL, sodium 135 mEq/L, potassium 3.8 mEq/L, AST 16 U/L, ALT 21 U/L, and INR 1.18.

Cesarean delivery took place on February 19, 2026. Given the high cardiovascular risk and severe ventricular dysfunction, the peripartum period was managed under a strategy of advanced hemodynamic monitoring. On arrival in the operating room, the patient was monitored with noninvasive blood pressure, pulse oximetry, and electrocardiography, with adequate parameters. She already had a central venous catheter in the right internal jugular vein, previously inserted by the intensive care team, and an 18G peripheral venous line was

placed. The left radial artery was cannulated with a 20G catheter for invasive blood pressure monitoring, without complications. Before the start of the procedure, a continuous infusion of dobutamine at 2.5 µg/kg/min was started through the central venous access using an infusion pump.

Neuraxial anesthesia was then performed. A single-puncture epidural block was carried out, with insertion of an epidural catheter and administration of 0.5% enantiomeric excess bupivacaine (Novabupi®), followed by a spinal block with 80 µg of morphine and 7.5 mg of hyperbaric bupivacaine. After the adequacy of the sensory block level was verified and confirmed, surgery was authorized. The procedure was uneventful, and hemodynamic stability was maintained throughout the operation. At the end of surgery, 5 mL of 0.5% Novabupi® was administered through the epidural catheter for postoperative analgesia. The available records do not detail the fluid therapy regimen. The patient was transferred to the intensive care unit in good general condition, with preserved hemodynamic parameters and maintenance of dobutamine at 2.5 µg/kg/min.

At the anesthetic visit performed 24 hours after the procedure, the patient was asymptomatic and denied pain or other complaints. Given her stability and the absence of an indication to maintain vasoactive or inotropic drugs, dobutamine was discontinued and the epidural catheter was removed without complications. The radial artery catheter was removed on February 21, when the patient remained clinically stable and was transferred to the ward. She was discharged from the hospital on February 24. On cardiology follow-up performed in April, significant left ventricular dysfunction persisted, with an ejection fraction of approximately 20% and diffuse hypokinesia.

Table 1

Summary of the main clinical and perioperative elements of anesthetic relevance

Time point	Main findings	Anesthetic/perioperative relevance
01/05/2026 – 26 weeks	Progressive dyspnea, 4+/4+ edema, pulmonary crackles	Clinical evidence of congestion and low cardiovascular reserve
Initial echocardiogram	LVEF 22%, diffuse hypokinesia, severe systolic dysfunction, grade II diastolic dysfunction, moderate MR and pulmonary hypertension	High risk of instability given changes in preload, afterload, and contractility
ICU admission	BP 132 × 75 mmHg; HR 84 bpm; SpO_2 99%	Initial pressure stability despite severe ventricular dysfunction
Intensive care treatment	NIV, furosemide, and dobutamine	Initial need for respiratory support, decongestion, and inotropic support
Cardiovascular optimization	Hydralazine, nitrate, metoprolol, and diuretic adjustment	Reduced congestion and hemodynamic optimization before delivery
Cardiology assessment	High cardiovascular risk	Need for multidisciplinary planning and an individualized anesthetic strategy
02/18/2026 – approximately 32 weeks	Clinically compensated; Hb 11.7 g/dL; platelets 181,000/mm³; creatinine 0.72 mg/dL; INR 1.18	Clinical and laboratory status prior to delivery
02/19/2026	Cesarean delivery under an epidural catheter followed by a reduced-dose spinal block (hyperbaric bupivacaine 7.5 mg + morphine 80 µg); dobutamine 2.5 µg/kg/min started before the procedure	Titratable neuraxial strategy with preemptive inotropic support and intraoperative hemodynamic stability
Peripartum period	Invasive blood pressure monitoring through a left radial artery catheter (20G) and central venous access in the right internal jugular vein	Advanced hemodynamic monitoring in the context of severe ventricular dysfunction
02/20/2026	Anesthetic visit at 24 h: asymptomatic, no pain; dobutamine discontinued; epidural catheter removed	Adequate neuraxial analgesia and tolerance of inotrope withdrawal
02/21–24/2026	Radial artery catheter removal, clinical stability, and discharge	Favorable postoperative course
04/08/2026	LVEF approximately 20%, diffuse hypokinesia	Persistent ventricular dysfunction on follow-up

Source: prepared by the author(s), 2026.

3 DISCUSSION

The present case illustrates the complexity of perioperative management in a pregnant woman with severe left ventricular dysfunction and heart failure during pregnancy. The ejection fraction of 22%, associated with diffuse hypokinesia, diastolic dysfunction, mitral regurgitation, and pulmonary hypertension, indicated markedly reduced cardiovascular reserve. In pregnant women with heart disease, the physiological adaptations of pregnancy can precipitate congestion and hemodynamic deterioration, making early risk stratification

and integrated involvement of the cardiology, obstetrics, anesthesiology, and intensive care teams indispensable (TOGNOLA *et al*., 2025; DE BACKER *et al*., 2025).

Preoperative preparation was one of the most relevant aspects of this case. The patient initially presented with clinical manifestations of decompensated heart failure, requiring diuretics, noninvasive ventilation, and inotropic support with dobutamine. The subsequent course, with weaning of the inotrope and introduction of hydralazine, nitrate, and a beta-blocker, allowed delivery to take place later in a more stable clinical condition. From an anesthetic perspective, this trajectory reinforces that cardiovascular optimization before delivery, whenever the maternal-fetal context allows, may be just as relevant as the choice of anesthetic technique itself (MENG; SCHRODER; LINDLEY, 2024; ARANY, 2024).

Hemodynamic goals in patients with severe ventricular dysfunction must consider the narrow margin between hypovolemia and congestion. Abrupt reductions in systemic vascular resistance can produce hypotension and compromise maternal and uteroplacental perfusion, whereas excessive volume expansion can precipitate pulmonary edema in a ventricle with low contractile capacity. Likewise, tachycardia and excessive increases in afterload increase myocardial demand and can worsen impairment of cardiac output. The strict monitoring of fluid intake, weight, and urine output recorded during hospitalization shows that fluid management was a central concern from the time of clinical stabilization and should remain a priority goal throughout the perioperative period (MENG *et al*., 2023; MENG; SCHRODER; LINDLEY, 2024).

The choice of anesthetic technique in pregnant women with heart disease must be individualized. Neuraxial techniques may offer advantages by avoiding the sympathetic response to laryngoscopy and intubation, but the abrupt onset of sympathetic block can produce a significant reduction in systemic vascular resistance and venous return (MENG *et al*., 2023). In patients with significant ventricular dysfunction, techniques that allow progressive titration of the block may, in appropriate situations, provide greater control of cardiovascular repercussions. On the other hand, general anesthesia may be necessary in the presence of contraindications to neuraxial block, respiratory failure, instability, or the need for immediate airway control, although it also carries risks related to induction, positive-pressure ventilation, and the adrenergic response to airway manipulation (MENG *et al*., 2023; MENG; SCHRODER; LINDLEY, 2024). In the present case, the sequential neuraxial

technique, with an epidural catheter followed by a reduced-dose spinal block (7.5 mg of hyperbaric bupivacaine), combined the reliability of the subarachnoid block with the possibility of titrating anesthesia and extending analgesia through the catheter, avoiding both the abrupt hemodynamic repercussions of a conventional-dose single-shot spinal and the risks of general anesthesia (MENG *et al*., 2023; MENG; SCHRODER; LINDLEY, 2024). Intrathecal morphine and the epidural bolus at the end of surgery contributed to postoperative analgesia, which is relevant because pain and the resulting adrenergic activation increase heart rate and afterload in a ventricle with little reserve. In addition, starting dobutamine at a low dose before the block constituted a preemptive inotropic support strategy, aimed at preserving cardiac output during the reduction in systemic vascular resistance and venous return induced by the sympathetic block. Although a single case does not allow the favorable outcome to be attributed exclusively to the anesthetic technique, the hemodynamic stability observed throughout the procedure is consistent with these principles.

Another point of interest is the intensity of perioperative monitoring. Invasive blood pressure monitoring through a radial artery catheter, associated with central venous access, shows that the team opted for advanced hemodynamic monitoring given the high cardiovascular risk (FATIMA *et al*., 2025; NAHID *et al*., 2025). Invasive monitoring should not be used indiscriminately in all pregnant women with heart disease, but may be considered on an individualized basis when the information obtained has the potential to change therapeutic management. In a patient with an ejection fraction close to 20%, pulmonary hypertension, mitral regurgitation, and a recent history of inotropic support, continuous beat-to-beat blood pressure monitoring allows early detection and prompt correction of hypotension during the onset of the neuraxial block and at delivery, when changes in preload, afterload, and cardiac output take on special relevance, while central venous access allows safe infusion of the inotrope. The maintenance of dobutamine and invasive monitoring in the intensive care unit, with withdrawal of inotropic support only after 24 hours of stability and removal of the arterial catheter on the second postoperative day, also underscores the importance of vigilance beyond the intraoperative period (KACHHWAHA *et al*., 2025).

Finally, although the history of COVID-19 and the hypothesis of post-viral myocardial impairment are relevant elements of the history, the available data do not allow a definitive causal relationship to be established between the prior SARS-CoV-2 infection and the

ventricular dysfunction observed. This point must be interpreted with caution, particularly given the persistence of an ejection fraction close to 20% at postpartum follow-up (PRUZANSKY *et al*., 2022; YAGHOOBPOOR *et al*., 2022; ABUMAYYALEH *et al*., 2025). Regardless of the etiology, the central element of the case remains anesthesiologically relevant: a pregnant woman with severe left ventricular dysfunction underwent cesarean delivery under titratable neuraxial anesthesia after a period of clinical stabilization, multidisciplinary planning, and invasive hemodynamic monitoring, with an uneventful peripartum course.

4 FINAL CONSIDERATIONS

Perioperative anesthetic management of pregnant women with severe left ventricular dysfunction requires individualized planning, multidisciplinary integration, and an understanding of the hemodynamic repercussions specific to pregnancy and delivery. In the case presented, the identification of a markedly reduced ejection fraction, associated with manifestations of heart failure, led to the need for intensive care admission, inotropic support, decongestion, and cardiovascular optimization before delivery.

In addition to the use of a titratable neuraxial technique with preemptive low-dose inotropic support, this case highlights the importance of patient preparation, careful fluid management, prior definition of hemodynamic goals, and monitoring proportional to cardiovascular risk. The favorable maternal outcome after delivery, despite the subsequent persistence of ventricular dysfunction, reinforces the role of perioperative planning and coordinated action among anesthesiology, cardiology, obstetrics, and intensive care in the care of pregnant women with high-risk heart disease.

REFERENCES

ABUMAYYALEH, Mohammad; SCHUPP, Tobias; BEHNES, Michael; EL-BATTRAWY, Ibrahim; HAMDANI, Nazha; AKIN, Ibrahim. COVID-19 and myocarditis: trends, clinical characteristics, and future directions. Journal of Clinical Medicine, Basel, v. 14, n. 13, p. 4560, 2025. Available at: https://doi.org/10.3390/jcm14134560. Accessed on: 10 Aug. 2026.

ARANY, Zoltan. Peripartum cardiomyopathy. The New England Journal of Medicine, Boston, v. 390, n. 2, p. 154-164, 2024. Available at: https://doi.org/10.1056/NEJMra2306667. Accessed on: 11 Aug. 2026.

DE BACKER, Julie *et al.* 2025 ESC Guidelines for the management of cardiovascular disease and pregnancy. European Heart Journal, Oxford, v. 46, n. 43, p. 4462-4568, 2025. Available at: https://doi.org/10.1093/eurheartj/ehaf193. Accessed on: 13 Aug. 2026.

FATIMA, Wajeeha *et al.* Cardiac complications in women with hypertensive disorders of pregnancy undergoing a cesarean section: role of intraoperative hemodynamic monitoring. Cureus, Palo Alto, v. 17, n. 11, p. e97135, 2025. Available at: https://doi.org/10.7759/cureus.97135. Accessed on: 8 Aug. 2026.

KACHHWAHA, Avaish *et al.* Perioperative management of a pregnant patient with severe mitral stenosis and pulmonary hypertension for repeat cesarean section: the role of standby extracorporeal membrane oxygenation. Cureus, Palo Alto, v. 17, n. 8, p. e89986, 2025. Available at: https://doi.org/10.7759/cureus.89986. Accessed on: 7 Aug. 2026.

MENG, Marie-Louise *et al.* Anesthetic care of the pregnant patient with cardiovascular disease: a scientific statement from the American Heart Association. Circulation, Dallas, v. 147, n. 11, p. e657-e673, 2023. Available at: https://doi.org/10.1161/CIR.0000000000001121. Accessed on: 7 Aug. 2026.

MENG, Marie-Louise; SCHRODER, Jonathan; LINDLEY, Kathryn. Obstetric anesthesia management of dilated cardiomyopathies and heart failure: a narrative review. International Journal of Obstetric Anesthesia, Edinburgh, v. 60, p. 104251, 2024. Available at: https://doi.org/10.1016/j.ijoa.2024.104251. Accessed on: 13 Aug. 2026.

NAHID, Seema *et al.* Hemodynamic and monitoring in pregnancy. In: HEMODYNAMICS and hemodynamic monitoring. London: IntechOpen, 2025. Available at: https://doi.org/10.5772/intechopen.1013589. Accessed on: 5 Aug. 2026.

PRUZANSKY, Alix J.; SLADE, Justin J.; STEPHENSON, Megan; PURSNANI, Seema. A review of cardiovascular complications among pregnant patients with COVID-19. Reviews in Cardiovascular Medicine, Singapore, v. 23, n. 11, p. 383, 2022. Available at: https://doi.org/10.31083/j.rcm2311383. Accessed on: 5 Aug. 2026.

RIZI, Shekoofeh Saboktakin; WIENS, Evan; HUNT, Jennifer; DUCAS, Robin. Cardiac physiology and pathophysiology in pregnancy. Canadian Journal of Physiology and Pharmacology, Ottawa, v. 102, p. 552-571, 2024. Available at: https://doi.org/10.1139/cjpp-2024-0010. Accessed on: 5 Aug. 2026.

SIGAUKE, Farai Russell; NTSINJANA, Hopewell; TSABEDZE, Nqoba. Peripartum cardiomyopathy: a comprehensive and contemporary review. Heart Failure Reviews, New York, v. 29, n. 6, p. 1261-1278, 2024. Available at: https://doi.org/10.1007/s10741-024-10435-5. Accessed on: 3 Aug. 2026.

TOGNOLA, Chiara *et al.* Cardiovascular disease in pregnancy: when two hearts beat as one. Diagnostics, Basel, v. 15, n. 22, p. 2921, 2025. Available at: https://doi.org/10.3390/diagnostics15222921. Accessed on: 11 Aug. 2026.

YAGHOOBPOOR, Shirin *et al.* Cardiovascular complications of COVID-19 among pregnant women and their fetuses: a systematic review. Journal of Clinical Medicine, Basel, v. 11, n. 20, p. 6194, 2022. Available at: https://doi.org/10.3390/jcm11206194. Accessed on: 8 Aug. 2026.