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Perioperative Management Challenges and Cardiac Arrest in Termination of Pregnancy for Severe Rheumatic Valvular Heart Disease: A Case Report

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ABSTRACT

Pregnancy termination in patients with valvular heart disease carries significant risks, particularly during curettage. This case report describes a 35-year-old woman with severe rheumatic heart disease, including mitral stenosis, regurgitation, and atrial fibrillation. At 10 weeks gestation, she experienced intrauterine fetal demise, and a curettage with sterilization was performed under general anesthesia. The procedure was complicated by a vasovagal reaction causing cardiac arrest, requiring CPR and ICU care. Despite successful resuscitation, the patient needed intensive management for persistent atrial fibrillation, including cardioversion and medications. This case emphasizes the need for meticulous perioperative planning, multidisciplinary care, and close monitoring in high-risk patients to prevent complications and ensure favorable outcomes. Future research should focus on optimizing care protocols for these patients.

Keywords: *Curretage, Anesthesia Procedure, Valvular Heart Disease, Rheumatic Heart Disease*

1. INTRODUCTION

Severe rheumatic valvular heart disease (RHD) remains a significant cause of maternal morbidity and mortality, particularly in low- and middle-income countries where early diagnosis and treatment are often delayed. Pregnancy imposes substantial hemodynamic stress on the cardiovascular system, and in patients with pre-existing critical valve lesions — especially mitral stenosis or aortic insufficiency — the risk of decompensation is markedly heightened (1). Termination of pregnancy (TOP) in such high-risk patients is fraught with anesthetic, surgical, and cardiovascular complexities, where even minor physiologic perturbations can precipitate catastrophic events such as cardiac arrest(2)

Anesthetic management requires meticulous planning to balance preload, afterload, and myocardial oxygen demand, all while minimizing the risks posed by anesthesia-induced vasodilation or sympathetic stimulation. However, despite optimal preparation, the dynamic and unpredictable nature of the peripartum cardiovascular environment can overwhelm compensatory mechanisms. This case report underscores the perioperative management challenges and highlights a catastrophic cardiac arrest in a patient undergoing surgical TOP for severe rheumatic valvular disease, emphasizing the need for heightened vigilance, interdisciplinary collaboration, and institution-specific protocols for managing such precarious scenarios.

Case

Patient and Observation

A 35-year-old woman was diagnosed with rheumatic heart disease, presenting with severe mitral stenosis, severe mitral regurgitation, mild aortic stenosis, moderate aortic regurgitation, and mild tricuspid regurgitation. Her condition was compounded by atrial fibrillation and an ejection fraction of 67%. She experienced significant dyspnea, especially during exertion.

The patient had been on medication for the cardiac condition for two years. The treatment including spironolactone (25 mg) and digoxin (0.25 mg), aiming to manage the symptoms and stabilize cardiac function. At 10 weeks of pregnancy, she was

referred to Soetomo General Hospital due to worsening symptoms. Upon examination, it was found that her cardiac condition had deteriorated further. Additionally, intrauterine fetal demise was diagnosed at this stage. Shortly afterward, the patient experienced rapid atrial fibrillation, further complicating her clinical status.

FIGURE 1. Chest X-Rays shows Cardiomegaly and interstitial lung oedema

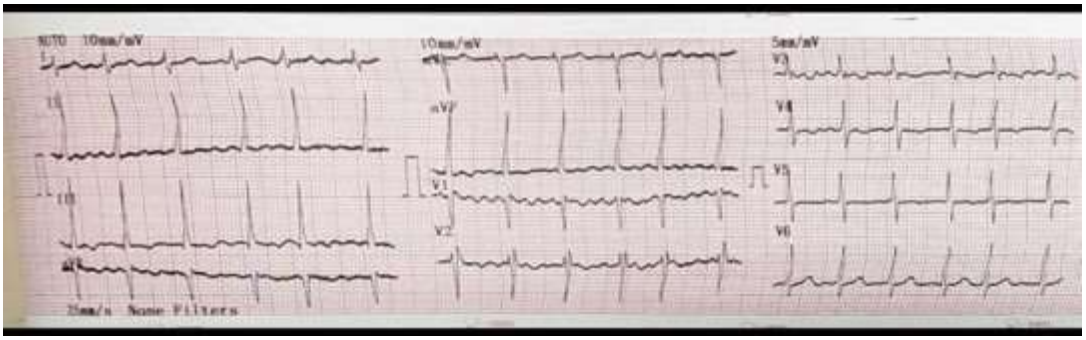
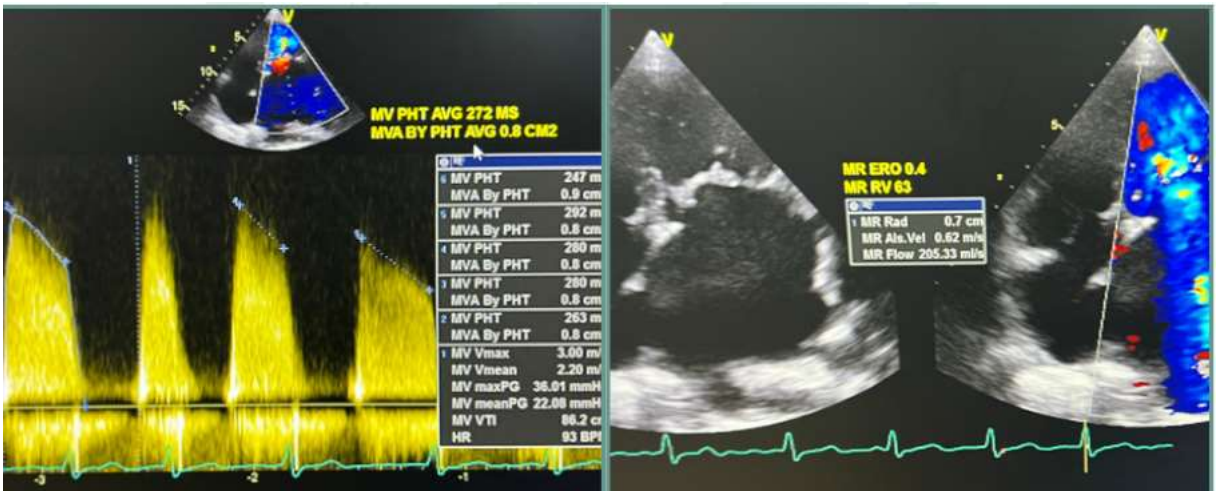


FIGURE 2. ECG Shows moderate atrial fibrillation



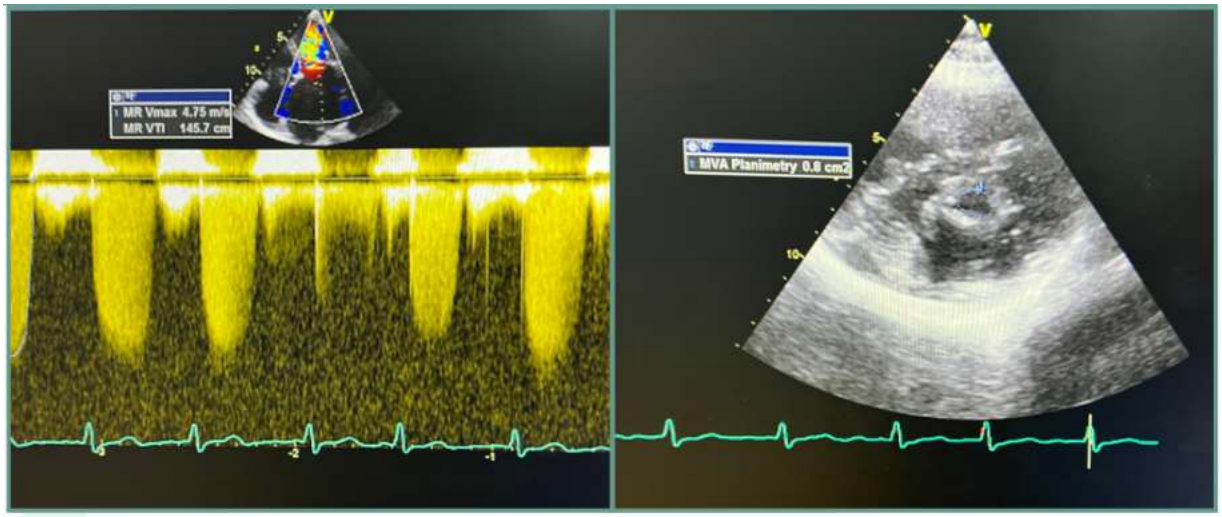


FIGURE 3: Echocardiography showed rheumatic heart disease, high probability of PHT ((TR VMax 4.01 m/s; PVACCT 80 ms. est PASP 74.46 mmH) severe mitral stenosis, severe mitral regurgitation, mild aortic stenosis, mild aortic regurgitation, mild tricuspid regurgitation, mild pulmonary regurgitation and normal left ventricle function (EF by MOD A4C 67 %; by MOD A2C 67%, Biplane 68 %).

Therapeutic Intervention

Given the severity of the condition and fetal demise, the patient was advised to undergo curettage and sterilization under general anesthesia as part of her management plan. This decision was made to address both her cardiac risks and prevent future complications associated with pregnancy. Propofol and fentanyl were administered to induce general anesthesia during the procedure. Following the curettage, a vasovagal reaction occurred during a vaginal examination, leading to bradycardia and hypotension. Subsequently, the patient experienced cardiac arrest. Immediate cardiopulmonary resuscitation (CPR) was performed, successfully achieving return of spontaneous circulation (ROSC). Despite the resuscitation efforts, atrial fibrillation persisted as a complication. The patient was then intubated and transferred to the intensive care unit for further monitoring and management.

During the course in ICU, the goals were to avoid hypoxia and hypercarbia, lowering the risk of pulmonary congestion by reducing preload (diuresis, hemofiltration, vasodilatation), pulmonary vasodilatation and mechanical ventilator support, especially PEEP, also plays important part. Maintaining adequate systemic vascular resistance using inotropes and vasopressors using support of 50nanograms of Epinephrine, 125nanograms of nor-epinephrine, 0.3mcg of milrinone and 3mcg of dobutamine, she was sedated using midazolam and rocuronium for early phase. Rapid atrial fibrillation was treated with cardioversion and medications such as amiodarone and digoxin.

On the fifth day in the ICU, the patient was extubated after being weaned from the ventilator and tapered off of vasopressors and inotropes. The following day, the patient was moved to the high-care cardiology unit, and ten days later, she was discharged from the hospital.

2. DISCUSSION

The perioperative management of pregnant patients with severe cardiovascular disease, particularly rheumatic valvular lesions, is exceptionally high-risk and demands a highly coordinated, multidisciplinary approach. It is now well-established that a parturient with significant cardiovascular disease must be managed at a tertiary care facility with access to specialized cardiology, anesthesiology, obstetric, and critical care services capable of addressing both anticipated and emergent complications (2,3). Anything less is a systemic failure in the standard of care, particularly given the known physiological burden that pregnancy imposes on the cardiovascular system — including a 30–50% increase in blood volume and cardiac output (4).

Several risk stratification tools have been developed to assist in identifying patients at greatest risk of adverse maternal or neonatal outcomes. Among these, the Modified World Health Organization (mWHO) Classification remains the most comprehensive and clinically practical system. It categorizes maternal cardiovascular risk from Class I (low risk) to Class IV (pregnancy contraindicated), guiding management decisions around pregnancy continuation and delivery planning (2). Anesthesiologists must be intimately familiar with this classification, as it directly informs the anesthetic technique, monitoring intensity, and urgency of interventions.

The anesthetic goals in patients with severe valvular heart disease are distinct and non-negotiable. Paramount among them is the maintenance of systemic vascular resistance (SVR); any significant decrease, such as from regional anesthesia without vasopressor support, can provoke catastrophic hypotension and myocardial ischemia (5). Preserving a normal heart rate and sinus rhythm is critical, particularly in mitral stenosis, where tachyarrhythmias like atrial fibrillation can rapidly lead to pulmonary edema and cardiac decompensation. Additionally, anesthesiologists must vigilantly prevent aortocaval compression by positioning and maintain preload to support cardiac output without inducing volume overload. Every component of anaesthetic management — induction, maintenance, emergence — must be designed to avoid myocardial ischemia and hemodynamic instability (6)

A common, and frankly dangerous, occurrence during obstetric procedures such as curettage is the operator's underestimation of the physiologic risk inherent in "simple" interventions. Excessive manipulation, unnecessary procedural extensions, and poor intraoperative communication can acutely destabilize a patient whose cardiovascular system is precariously balanced. Anesthesiologists must be assertive in setting clear intraoperative boundaries and should not hesitate to interrupt or modify surgical plans if patient safety is jeopardized. Failure to do so risks converting an already high-risk case into a preventable disaster (7)

Finally, it is essential to recognize that the anesthesiologist's role extends beyond merely reacting to cardiovascular collapse. In these patients, proactive optimization — ensuring preload is carefully adjusted, afterload is supported, myocardial oxygen delivery is preserved, and arrhythmias are aggressively managed — can be the difference between survival and irreversible cardiac arrest. Even when underlying cardiac disease is severely advanced, a well-executed anesthetic plan can meaningfully improve perioperative outcomes (8). The mindset must not be one of defeatism but one of maximal optimization within the constraints of the patient's physiology.

In summary, the case illustrates how critical it is to anticipate rather than react, to prioritize collaboration rather than independent action, and to maintain an unwavering commitment to the principles of cardiac anesthetic management even under procedural pressure. Anything less risks failing the patient when they are most vulnerable.

Summary

Anesthetic management of commonly simple procedures, such as curettage, cannot be underestimated, especially in patients with valvular heart disease. A better understanding of physiological changes in pregnancy, the pathological impact of valvular heart disease over pregnancy, and a multidisciplinary approach in the diagnosis and management could reduce mortality and morbidity.

Acknowledgement

None

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed

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Authors' contributions

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