

Shocking The System: Interdisciplinary Care and Anesthetic Management For a Cesarean Delivery In A Patient with Hypertrophic Cardiomyopathy and Recurrent Ventricular Arrhythmias

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Introduction

- Hypertrophic Obstructive Cardiomyopathy (HOCM) poses unique anesthetic challenges
- The physiologic changes of pregnancy and hemodynamic changes of a cesarean delivery complicate this challenge
- We present a case of a patient with HOCM and recurrent ventricular tachycardia who required inpatient care, medical optimization, and ultimately an urgent operative delivery



Figure 1: Chest X-ray Demonstrating Subcutaneous ICD

Background

- A 28 year old G2P1 at 28/2 gestation with HOCM presented with recurrent VT with appropriate ICD Shocks
- Transthoracic Echocardiogram demonstrated a left ventricular ejection fraction of 60-80%, severe asymmetric septal hypertrophy, and peak left ventricular outflow gradient of 42 mmHg at rest
- Due to recurrent arrhythmias and hypotension despite treatment, delivery at 34 weeks was proposed by an interdisciplinary team of cardiology, maternal fetal medicine, as well as both a cardiac anesthesiology and an obstetric anesthesiologist

Case

- TTE was utilized perioperatively to assess the patient's volume status
- An arterial catheter was placed for hemodynamic monitoring, and two large bore peripheral intravenous catheters placed for resuscitation
- A lumbar epidural was placed, and slowly dosed with 2% lidocaine
- Phenylephrine infusion was empirically initiated to maintain preload and afterload
- Following establishment of surgical anesthesia, the patient delivered a viable female infant
- Oxytocin was administered with early utilization of methylergometrine and carboprost to minimize uterine atony, hemorrhage and subsequent hypovolemia
- The patient was admitted to the cardiovascular ICU following delivery, and discharged 1 week later with appropriate medical therapy

Figure 2: Transthoracic Echocardiogram Parasternal Long Axis View

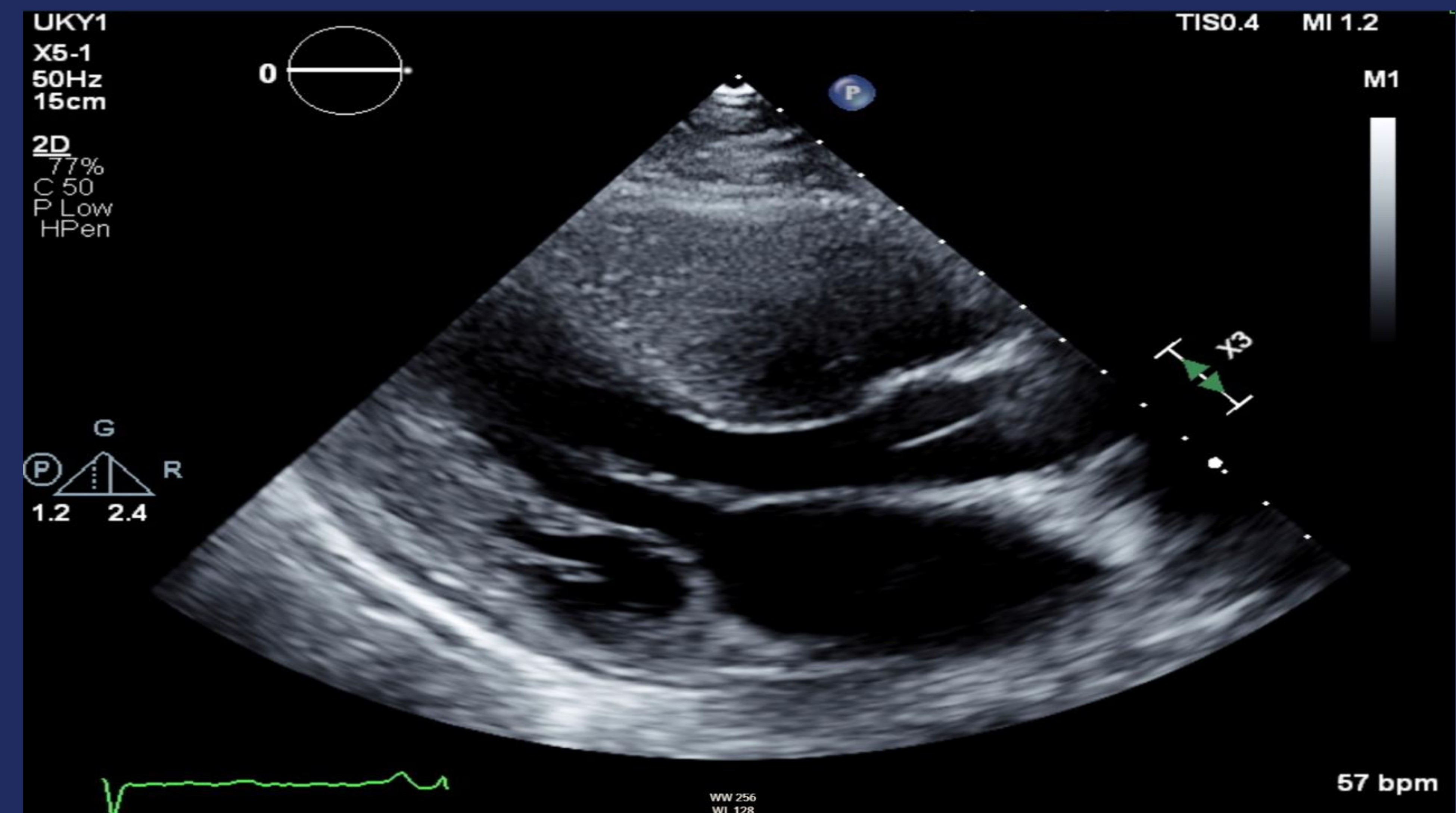
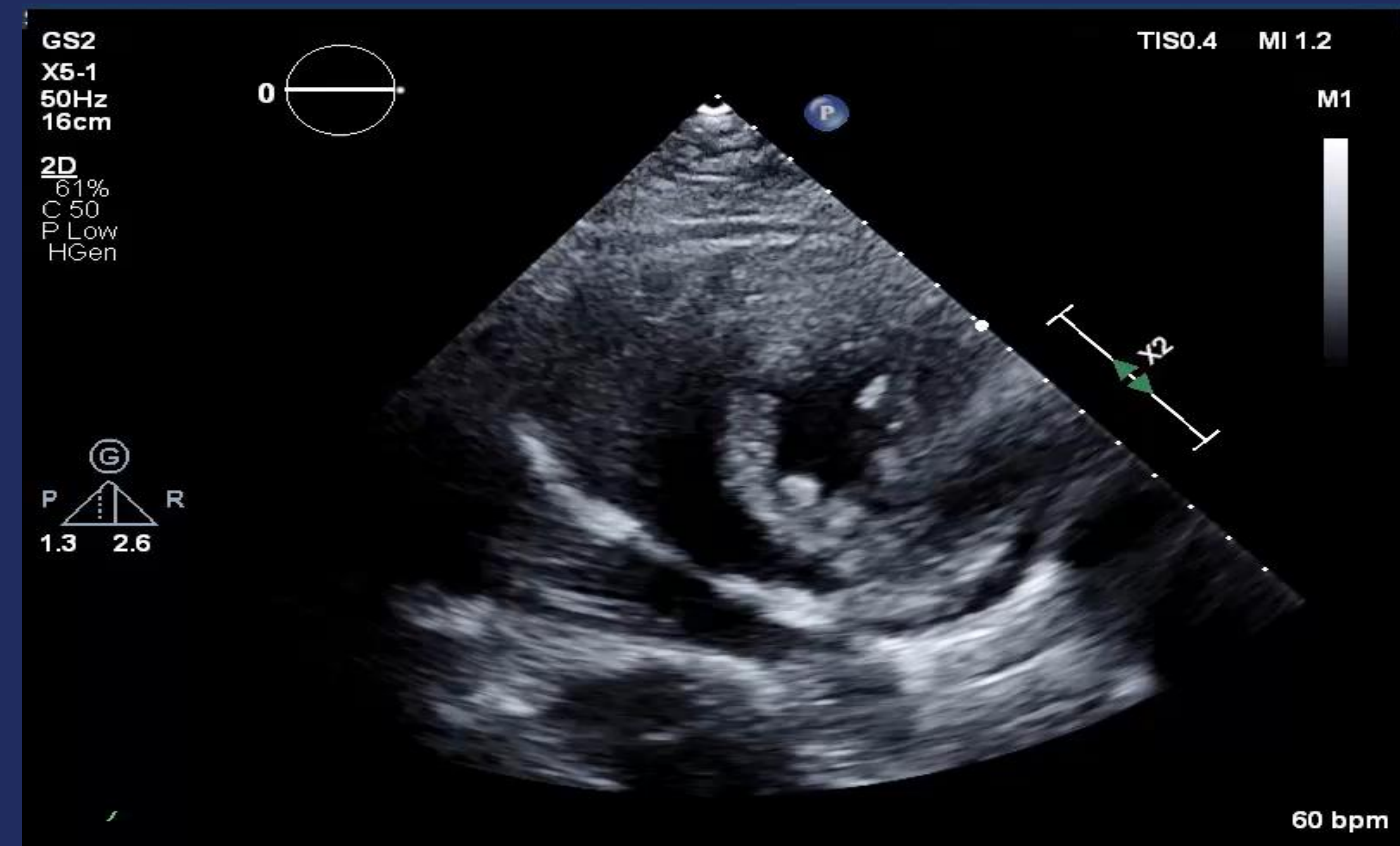


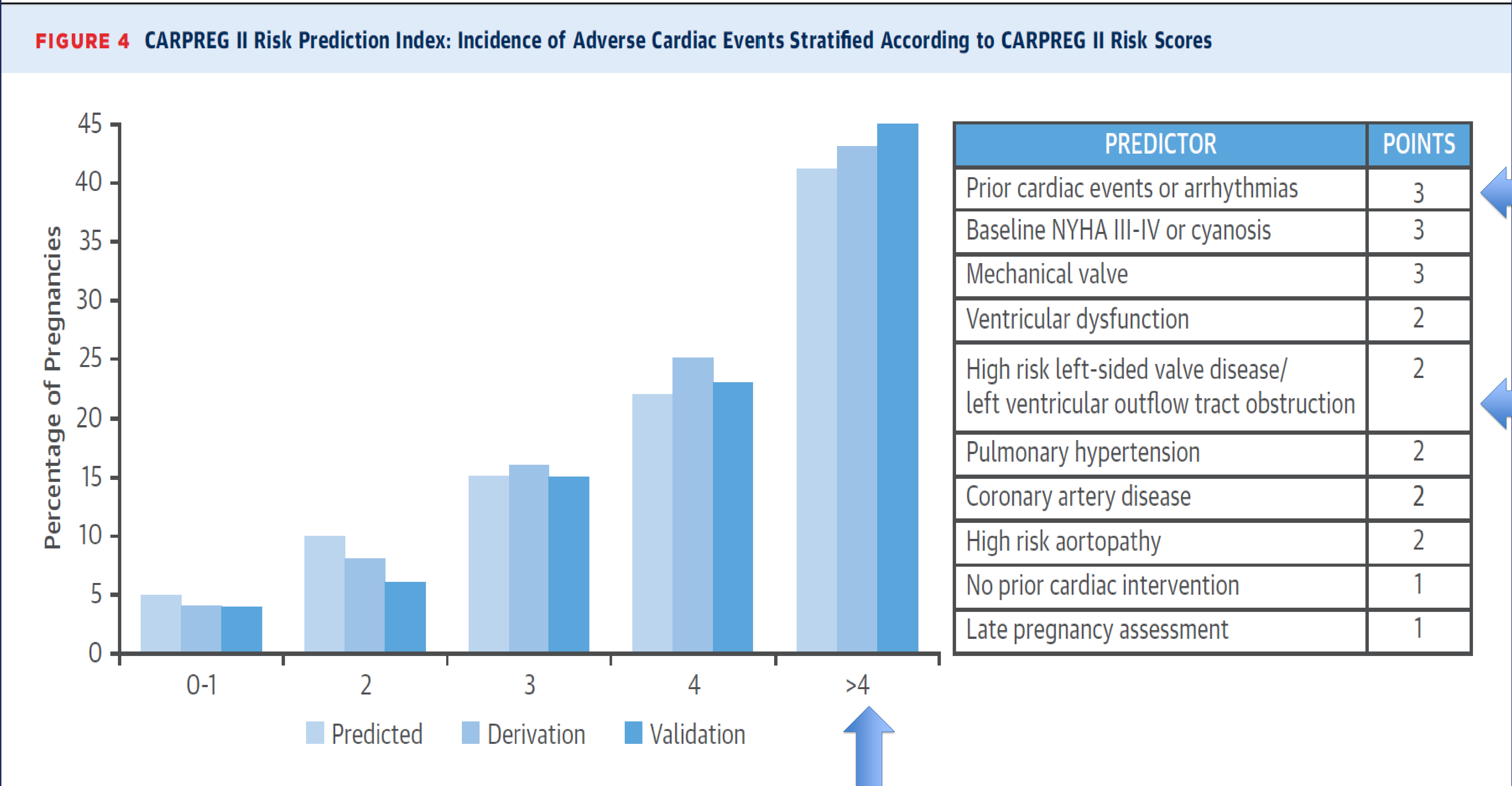
Figure 3: Transthoracic Echocardiogram Parasternal Short Axis View



Discussion

- HOCM is a leading cause of sudden cardiac death in young adults
- Cardiovascular disease is the leading cause of maternal death in the United States
- This patient’s HOCM and arrhythmias gave her a CARPREG II score of 5, with >40% risk of cardiac events [1]
- Interdisciplinary care was required to develop a safe delivery plan, and operative delivery was needed due to the patient’s unstable cardiac status
- To minimize outflow tract obstruction, the management of HOCM includes: maintenance of preload, increased afterload, with avoidance of tachycardia and excess contractility
- A Spinal anesthetic was avoided due to its rapid drop in SVR
- A General Anesthetic was avoided given the risks of hypotension and aspiration
- A slowly titrated epidural was chosen as the safest anesthetic to maintain favorable hemodynamics for this patient during her cesarean delivery

Figure 4: CARPREG II Risk Prediction Index from Silversides et al. (1)



References

1. Silversides, Candice K., et al. "Pregnancy Outcomes in Women with Heart Disease: The CARPREG II Study." *Journal of the American College of Cardiology*, vol. 71, no. 21, 2018, pp. 2419–2430.

2. Poliac, Liviu C., et al. "Hypertrophic Cardiomyopathy." *Anesthesiology*, vol. 104, no. 1, 2006, pp. 183–192.