

The Safety of Epidural Analgesia for Delivery in a Patient with Aortic Stenosis



Vered Schwell MD, Nihar Shah MD
NYU Grossman School of Medicine

Department of Anesthesiology,
Perioperative Care, and Pain
Medicine

Learning Objectives

- Management of laboring patients with aortic stenosis
- Maintenance of hemodynamic stability
- The use of neuraxial analgesia

Patient History

A 23-year-old woman presented to the labor and delivery unit for induction of labor at 35 weeks, 6 days for worsening aortic stenosis (AS).

PMH:

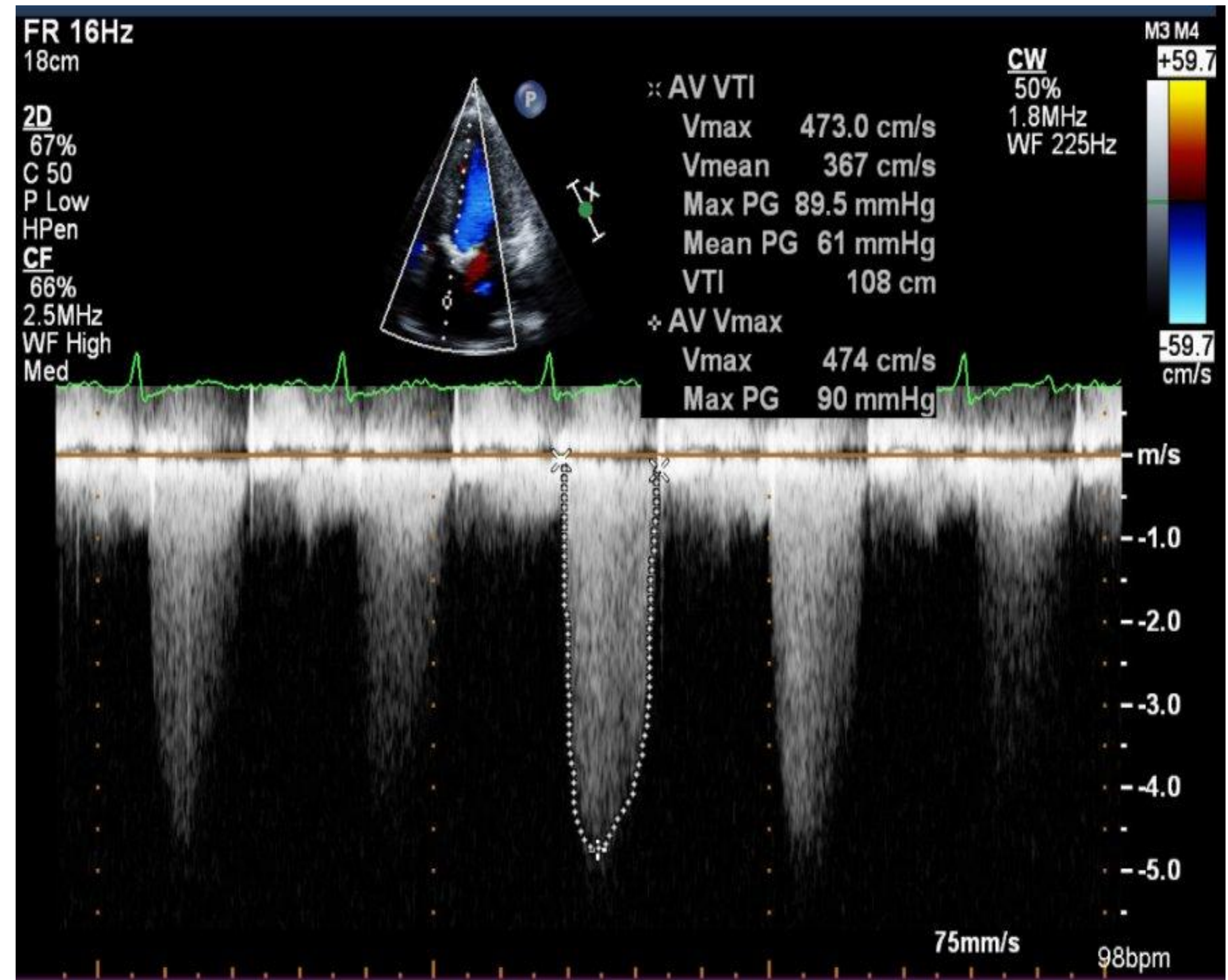
- Bicuspid aortic valve repaired, 7 years before, with a bioprosthetic valve
- 1 prior non-spontaneous vaginal delivery without cardiopulmonary or hemodynamic problems
- 1 year before the current pregnancy, her transthoracic echocardiogram showed mild aortic regurgitation with normal left ventricular ejection fraction

Case Description

- Monitoring during pregnancy showed prosthetic valve degeneration, worsening AS, and a stably dilated ascending aorta
- She developed symptoms of heart failure including - palpitations, fatigue, tachycardia, and orthopnea
- Planned made to induce labor at 35 weeks after analgesia with a slowly loaded epidural
- During labor, she experienced pain due to fetal malpresentation. Additional doses of epidural bupivacaine were given without pain relief.
- Given the incomplete pain control and tachycardia, the patient was taken for cesarean section under general anesthesia.

Peak Aortic Valve Area

- Transthoracic echocardiogram done 1 week prior to deliver



Discussion

Pregnancy has numerous effects on the heart. The rise in progesterone and prostacyclin reduces systemic vascular resistance and increases heart rate and stroke volume, causing a rise in cardiac output. (Driul et al, 2020) AS increases cardiac afterload by working the heart against a fixed outflow obstruction, creating a delicate balance between cardiac output and mean arterial pressure. Close monitoring and control of blood pressure and heart rate is necessary for parturients with AS, as pain, anxiety, and contractions disrupt the delicate balance. (Pessel et al, 2014)

Of primary concern is whether these patients can trial vaginal delivery. When deemed appropriate, epidural analgesia can aid in maintaining hemodynamics for patients with AS by reducing sympathetic tone during labor. Vacuum or forceps assisted delivery minimizes Valsalva maneuvers and the resulting decreased preload. (Pessel et al, 2014; Driul et al, 2020)

Consensus opinion states that central regional anesthesia is contraindicated in those with severe aortic stenosis. Yet, several case reports describe the successful use of epidurals with close hemodynamic monitoring. (Driul et al, 2020) In our case, the decision was made to for emergent cesarean delivery with general anesthesia only after the patient’s tachycardia increased the risk of hemodynamic instability.

REFERENCES

- Pessel C, Bonanno C. Valve disease in pregnancy. Semin Perinatol. 2014 Aug;38(5):273-84. doi: 10.1053/j.semperi.2014.04.016. Epub 2014 Jun 25. PMID: 25037517
- Driul L, Meroi F, Sala A, Delrio S, Pavoni D, Barbariol F, Londero A, Dogareschi T, Spasiano A, Vetrugno L, Bove T. Vaginal delivery in a patient with severe aortic stenosis under epidural analgesia, a case report. Cardiovasc Ultrasound. 2020 Nov 2;18(1):43. doi: 10.1186/s12947-020-00226-x. PMID: 33138830; PMCID: PMC7607616.