# Anesthetic Management of a Cesarean with Severe Mitral Stenosis and Pulmonary Hypertension

Coleman Harber, MD; Evan Birmingham, MD; Melinda Eshelman, MD; James Damron, MD; Jon Holzberger, MD

## Background

- Mitral stenosis is the most common valvular lesion affecting pregnant patients
  - Rheumatic heart disease
- Cardiovascular changes in pregnancy can exacerbate MS manifestations
  - Increased HR and volume during pregnancy
- Pulmonary hypertension risk
  - Volume overload exacerbates stress on RV

### Severity Grading of Mitral Stenosis

| | Mild | Moderate | Severe |
|---|---|---|---|
| Valve area ($cm^2$) | >1.5 | 1–1.5 | <1 |
| Mean gradient (mmHg) | <5 | 5–10 | >10 |
| Pulmonary artery pressure (mmHg) | <20 | 30–50 | >50 |

Adapted from Vahanian[9]

Source: https://bjcardio.co.uk/2016/03/heart-valve-disease-module-4-diagnosis-2/6/

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## Case

- 36-year-old G8P3134 presenting for repeat CS
  - PMH: rheumatic heart disease with severe mitral stenosis, moderate mitral regurgitation, moderate tricuspid regurgitation, severe pulmonary hypertension, COPD with daily inhaler use
  - OBHx: 3 prior SVD, 4 prior CS, pre-eclampsia in prior pregnancy
  - Symptomatic on exam with significant shortness of breath and lower extremity edema
- TTE: Mean MV gradient of 14 with severe LA dilation, RVSP 78, LVEF 60-65%, moderate MR, moderate TR
- Anesthetic Plan:
  - Pre-operative beta-blockade and volume optimization with diuresis, and Duo-Neb prior to rolling to OR
  - Lumbar epidural anesthesia with gentle dosing of 2% lidocaine with 1:200,000 epinephrine to obtain a T6 level
  - Radial arterial line placed prior to dosing epidural
  - Right IJ 7 French triple lumen CVC
  - 16G and 18G peripheral IV's placed
  - Goal to avoid tachycardia and maintain systemic vascular resistance
  - Very slow infusion of oxytocin was utilized for post-partum hemorrhage prevention along with TXA
- Outcome
  - Delivery of healthy neonate
  - Patient transported in hemodynamically stable condition on modest amount vasopressor directly to ICU for immediate post-operative care

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# Teaching Points

- Carefully titrated neuraxial is an excellent anesthetic technique for a parturient with mitral stenosis
- Cesarean delivery is preferred if severe heart failure or pulmonary hypertension is present but requires extensive multidisciplinary planning
  - Delivery timing should be picked carefully
  - Must optimize heart rate control and volume status pre-operatively
- Intra-operative management:
  - Avoid drastic hemodynamic swings
  - Avoid tachycardia
  - Maintain SVR
  - Judicious fluid administration

References

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