Point of care strain analysis during vaginal delivery and third stage of labor: A case series

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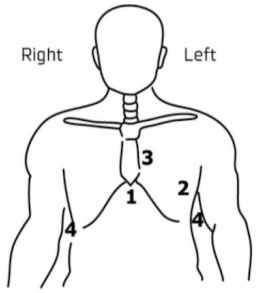
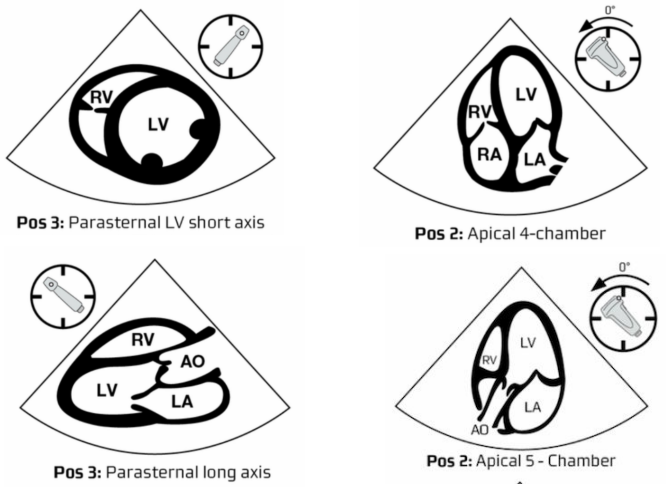
- Emerging evidence that parturients with hypertensive diseases of pregnancy exhibit myocardial strain during early labor[1]
- Signs of potential myocardial injury have been identified in at delivery in otherwise healthy parturients[2]





Early 2nd stage → **Maternal Pushing** → **Post-Infant delivery** → **Post-Placental Delivery**

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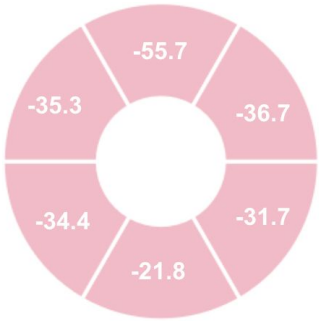
Case Series

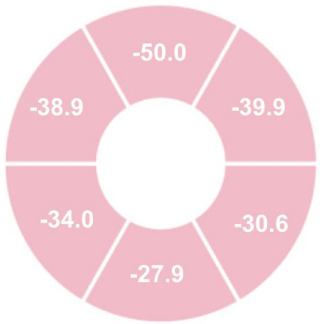
1 37yo G1P0 41w w/ neuraxial

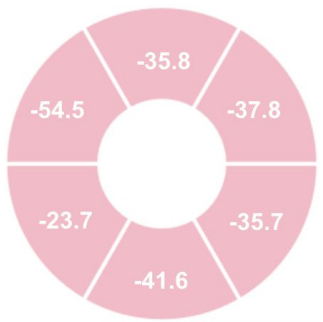
- ✓ Analyzable images **at all time-points**
- Segmental strain analysis **abnormal** in 3 segments post-fetal delivery
- Long second stage, 2 hours of maternal pushing + forceps delivery



2 30yo G2P1 39w w/ neuraxial

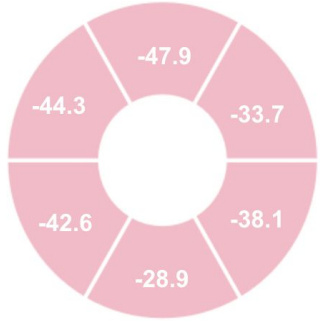
- ✓ Analyzable images **for speckle tracking only;** poor quality A4+5C
- Imaging during maternal pushing limited: **delivered on hands/knees**
- No abnormal strain





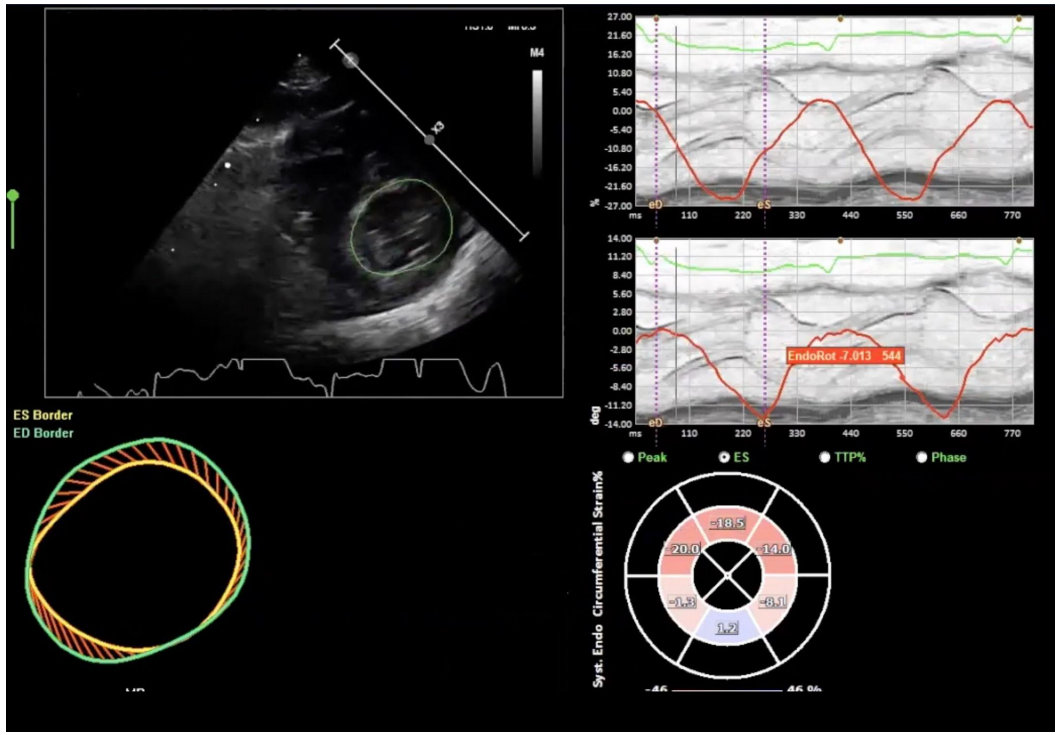
3 30yo G8P6016 36w w/ neuraxial

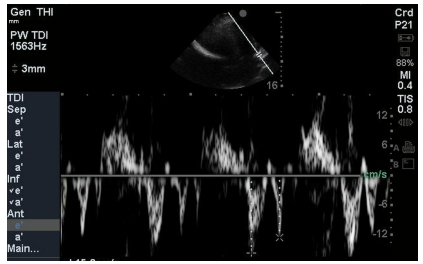
- ✓ Analyzable images **at two time-points**
- Segmental strain analysis and diastology was **abnormal** in one segment during delivery
- Precipitous delivery: only 3 full sets of images obtained

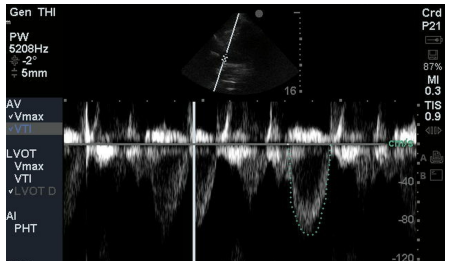


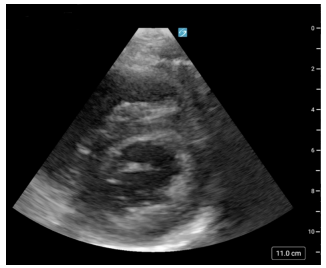
Discussion

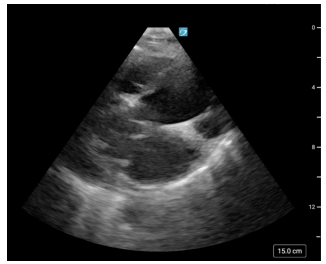
- **Novel use** of serial TTE exams during parturition
- Strain analysis during vaginal delivery **is feasible**
- Limited by positioning and rapid progression of labor
- Future directions:
  - Characterize strain patterns in women with hypertensive diseases of pregnancy
  - Compare strain patterns **within subjects** at different time points
  - Determine normative strain values

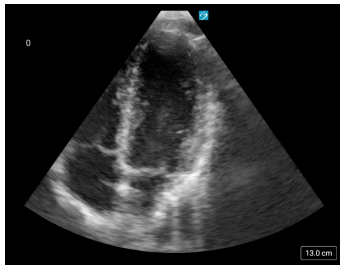












1:Suntharalingam, P., Hickerson, L.C., (2021). Echocardiography during active labor. SOAP Annual Meeting.
2: Kumaresan, A., Shapeton, A. D., Yuan, H. M., & Hess, P. E. (2020). Transthoracic echocardiographic assessment of the right ventricle before and after caesarean delivery: A preliminary investigation. Anaesthesia and intensive care, 48(2), 143-149