TAVI during Pregnancy

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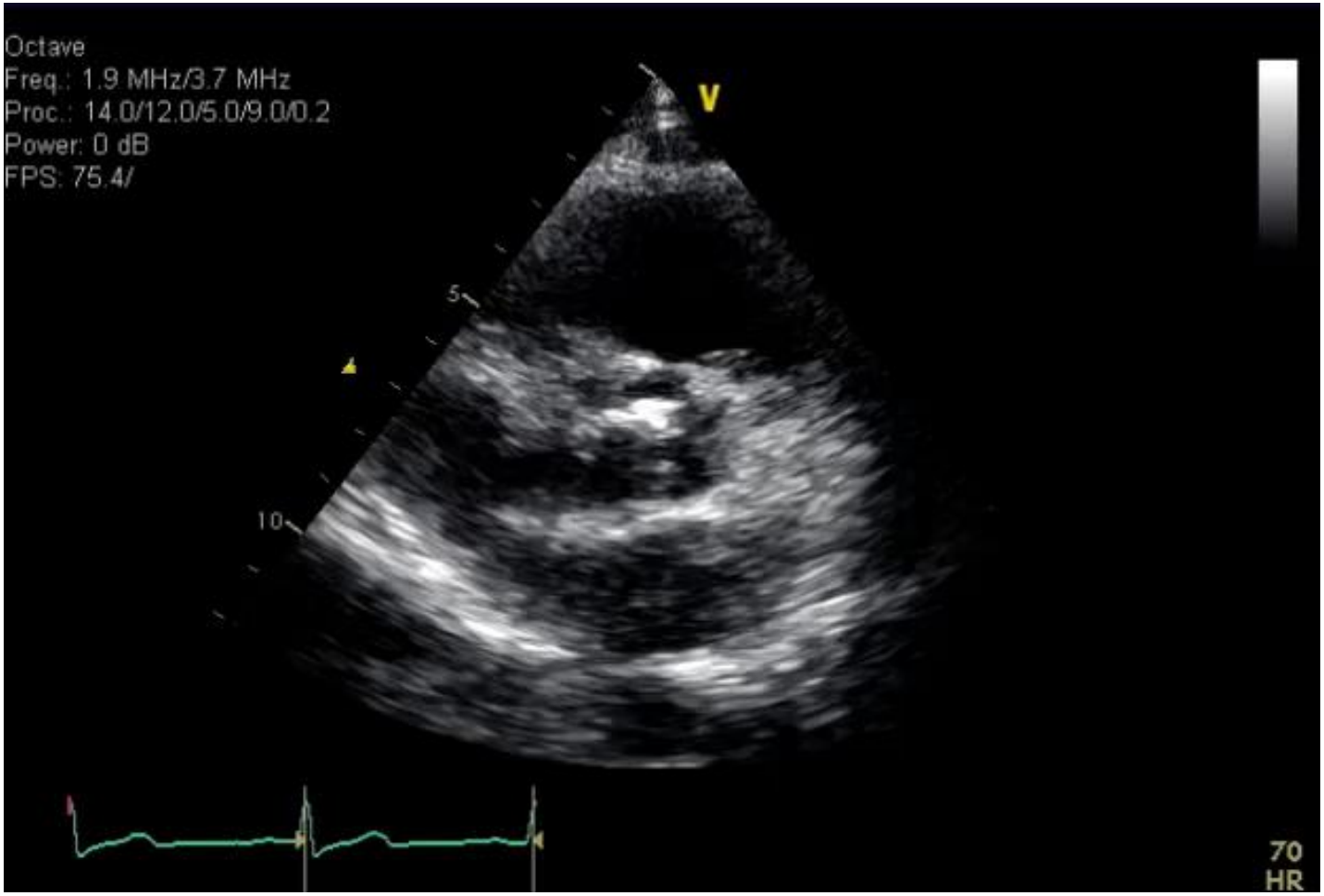
37 year old pregnant

- P/C: Exertional shortness of breath, chest discomfort at 14 weeks of gestation

- Background
  - Congenital bicuspid Aortic stenosis- moderate severity in 2010
  - Early miscarriage 2012
  - Normal vaginal delivery in 2013
  - Echocardiogram 2019- severe Aortic stenosis with preserved LV function
  - BMI 21

Echocardiogram

- Normal LV function with LVEF 60%
- Bicuspid Aortic valve with raphe seen between the right and non coronary cusps
- Aortic flow velocity 5.1m/s, an aortic valve mean gradient 0f 64.5mmHG, an aortic valve area of 0.55cm^2, mild aortic regurgitation, DI 0.23
- The ascending aorta was mildly enlarged 3.9cm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FPS: 75.4/
V
5
10
70
HR

Treatment options

1. Balloon aortic valvuloplasty not favoured due to
   1. Uncertain reduction of AS gradient
   2. Uncertain duration of BAV benefit
   3. Higher risk of Aortic regurgitation necessitating TAVI immediately
2. Surgery with tissue AVR – 30% risk of foetal demise and 2.9% maternal mortality due to bypass[1]
3. TAVI- offered high level of success, lowest risk and safely bridge to delivery[2]

1. Weiss BM, von Segesser LK, MI. Outcome of cardiovascular surgery and pregnancy: a systematic review of the period 1984-1996. *Am J Obstet Gynecol*. 1998;179

2. Cheung A, Ree R. Transcatheter aortic valve replacement. *Anesthesiology Clin*. 2008; 26:465–479.

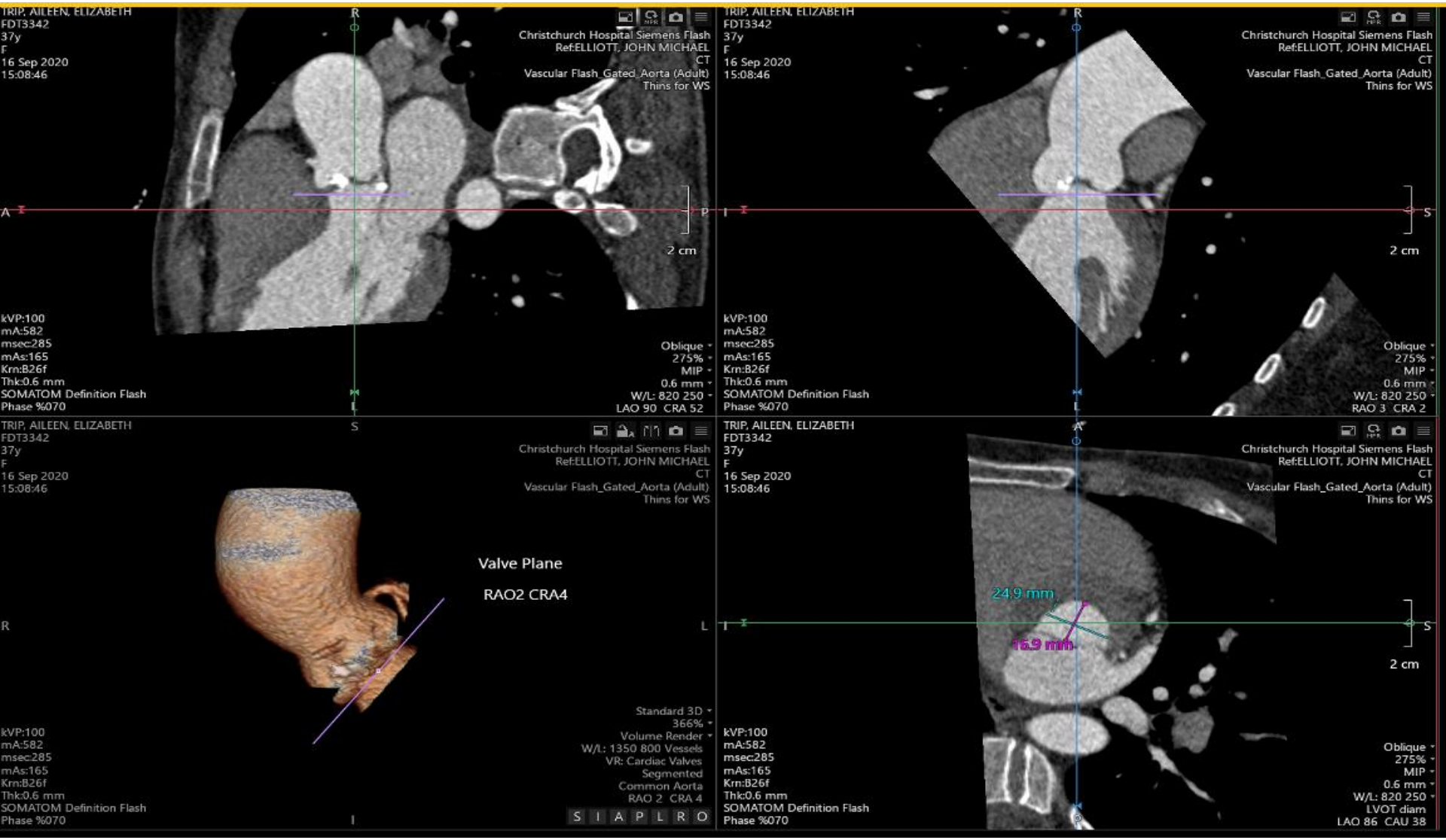
TAVI- Pre procedural planning

- TAVI is not definitive treatment
- Patient will require definitive treatment in future like Bentalls procedure
- Radiation dose
- Contrast
- Foetal monitoring
- Cardiothoracic back up

Various modalities to reduce Radiation dose

- TAVI CT scan limited to aortic valve
- Ultrasound was used to assess the femoral artery and access
- Avoid fluoroscope imaging below diaphragm
- Cine angiography should be avoided
- LV pacing
- Radiographer

TAVI CT scan


TRIP, AILEEN, ELIZABETH
FDT3342
37y
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16 Sep 2020
15:08:46
Christchurch Hospital Siemens Flash
Ref:ELLIOTT, JOHN MICHAEL
CT
Vascular Flash_Gated_Aorta (Adult)
Thins for WS
2 cm
kVP:100
mA:582
msec:285
mAs:165
Krn:B26f
Thk:0.6 mm
SOMATOM Definition Flash
Phase %070
Oblique
275%
MIP
0.6 mm
W/L: 820 250
LAO 90 CRA 52
RAO 3 CRA 2
Valve Plane
RAO2 CRA4
Standard 3D
366%
Volume Render
W/L: 1350 800 Vessels
VR: Cardiac Valves
Segmented
Common Aorta
RAO 2 CRA 4
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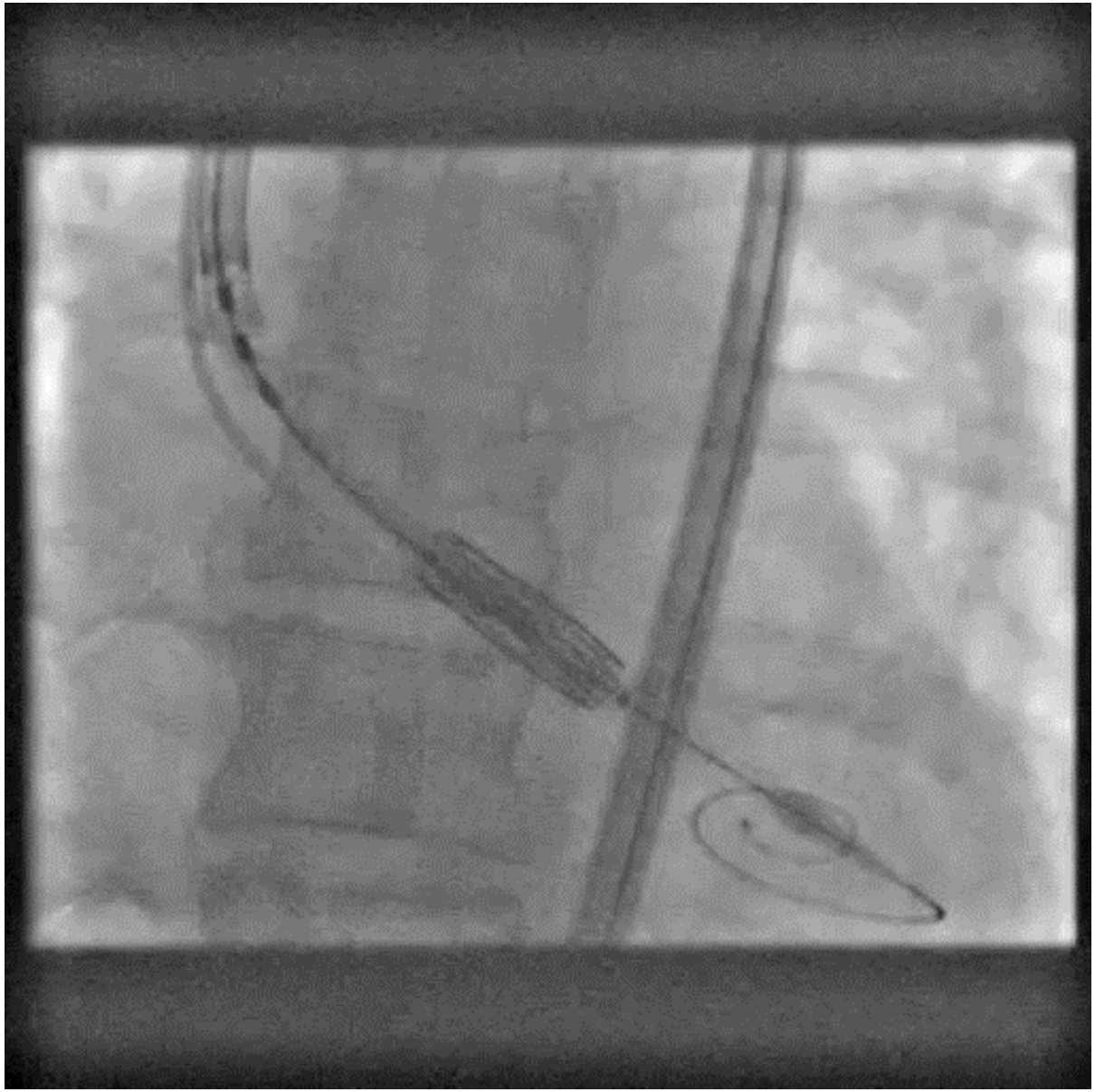
16.9 mm
LVOT diam
LAO 86 CAU 38

23mm Edwards Sapien 3 Ultra valve



TAVI post procedure

- Clinically improved
- Echocardiogram- normal functioning TAVI valve and hyper dynamic LV systolic function
- Fetal monitoring did not reveal any distress
- Radiation exposure: 3.5 mins of fluoroscopy, 10.5mGy and fetal exposure <0.001mGy
- 52 ml of contrast

Few case reports..

World's first TAVI procedure on pregnant patient

For just a moment, put yourself in Sarah Sayle's shoes.

You're a busy mom of two even busier girls, both under the age of two. Juggling the daily demands of an infant and a toddler, you learn there's one more on the way. This time, a baby boy. Life's about to get a whole lot busier.

Clinical Dilemmas in Interventional Cardiology

Transcatheter Aortic Valve Replacement During Pregnancy

Robert Hodson, MD; Eric Kirker, MD; Jeffrey Swanson, MD; Craig Walsh, MD, MPH;
Ethan C. Korngold, MD; Sarah Ramelli, MS

Conclusion

- Complex case- TAVI in pregnant patient is possible
- Heart team approach
- Pre procedural planning
- Various modalities to reduce radiation dose