

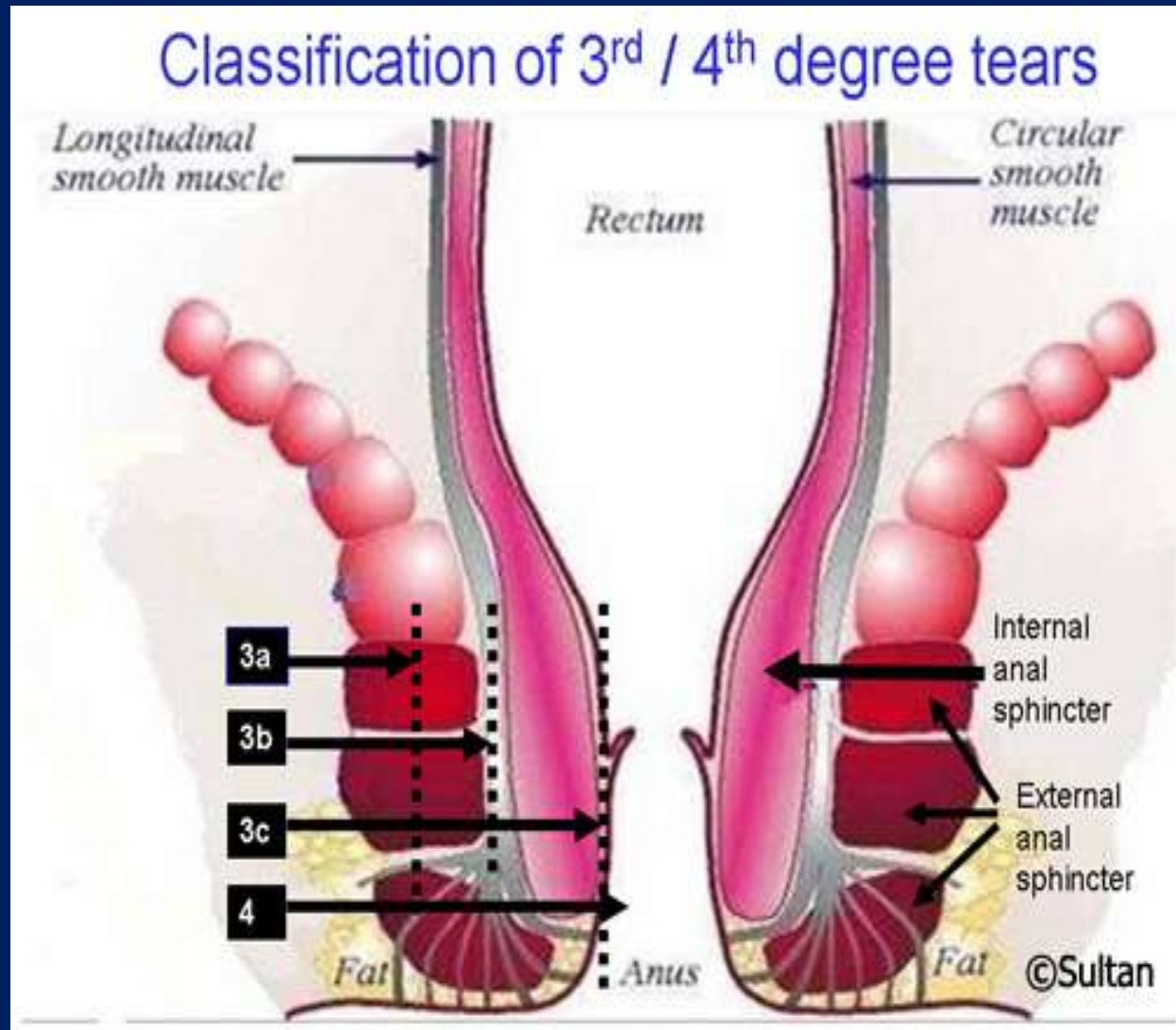


# Transperineal ultrasound in the management of obstetrical anal sphincter injury - OASI

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# OASIS



# Risk factors

**Table 3. Risks factors for OASIS**

Maternal risks factors	OR*
Primiparity <sup>19-24</sup>	3.5 to 9.8
Age (> 35) <sup>24</sup>	1.1
Age (> 27) <sup>23</sup>	1.9
Race <sup>19,23</sup>	1.4 to 2.5
Maternal diabetes <sup>19,23</sup>	1.2 to 1.4
Infibulation <sup>25</sup>	1.8 to 2.7
Delivery risks factors	OR
Operative vaginal delivery†	
Vacuum <sup>19,21,24,26</sup>	1.5 to 3.5
Forceps <sup>19,21,24,26,27</sup>	2.3 to 5.6
Vacuum + forceps <sup>24,28</sup>	8.1
Episiotomy	
Midline <sup>26</sup>	2.3 to 5.5
Mediolateral <sup>26,29</sup>	0.21
Mediolat episiotomy + instrumental <sup>29</sup>	
Vacuum	0.11
Forceps	0.08
Midline episiotomy + instrumental (nulliparous) <sup>30</sup>	
Vacuum	4.5
Forceps	8.6
Unspecified episiotomy + instrumental <sup>31</sup>	
Vacuum	2.9
Forceps	3.9
Epidural <sup>23</sup>	1.1 to 2.2
Second stage >1 h‡	1.5
Shoulder dystocia	2.7 to 3.3
VBAC <sup>21,32</sup>	1.4 to 5.5
Water birth <sup>27</sup>	1.46
Oxytocin augmentation‡ <sup>33</sup>	1.2
Infant risks factors	OR
Birth weight > 4000 gm <sup>20</sup>	2.2 to 3.0
Malpresentation <sup>23</sup>	2.0
Postmaturity <sup>20,24</sup>	1.1 to 2.5
Fetal distress	1.3
OP§	
SVD <sup>23</sup>	2.0
Instrumental <sup>34,35</sup>	4.7

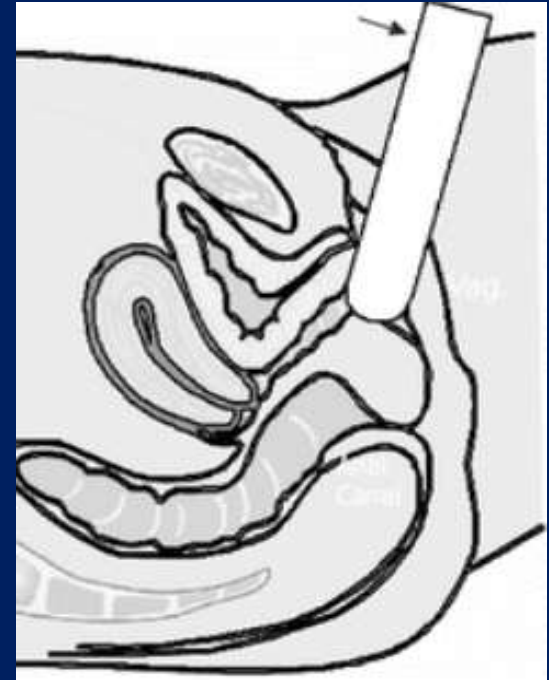
# Patient follow-up

- All women after OASI are seen after delivery
- Workup includes:
  - Interview
  - Urogynaecological examination – 1 mo after delivery
  - Standardized pelvic floor, sexual function, and Cleveland Clinics Incontinence Score (CCIS) questionnaires
  - 2D, 3D, 4D pelvic floor transperineal ultrasound - at 3-4 months after delivery
  - Symptomatic = CCIS  $\geq 4$
- A residual defect is defined as:
  - Any defect in EAS or IAS - four/six slices > 1 hour of the 12 hour clock face or an angle of > 30°
- Volumes can be stored for later offline analysis
- All are referred for pelvic floor physiotherapy
- Additional visits:
  - After 6 months
  - Every pregnancy after 20 weeks gestation

# Anal sphincter assessment



**Transabdominal probe**



**Transvaginal probe**

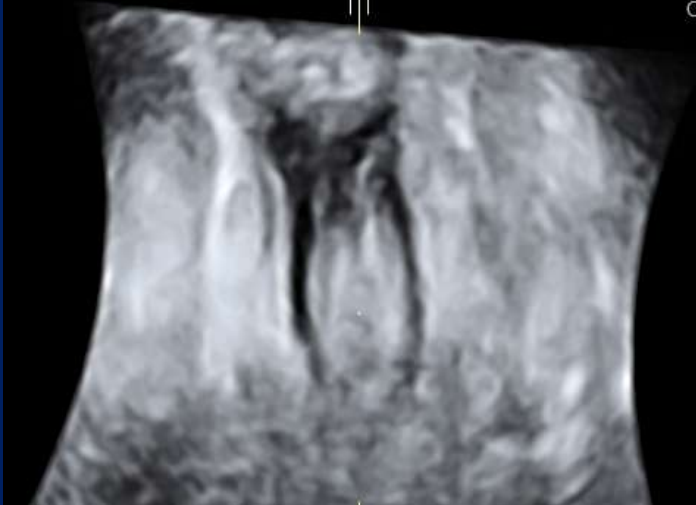


# 3D - Volume imaging

Transverse



Axial



Mid  
sagittal

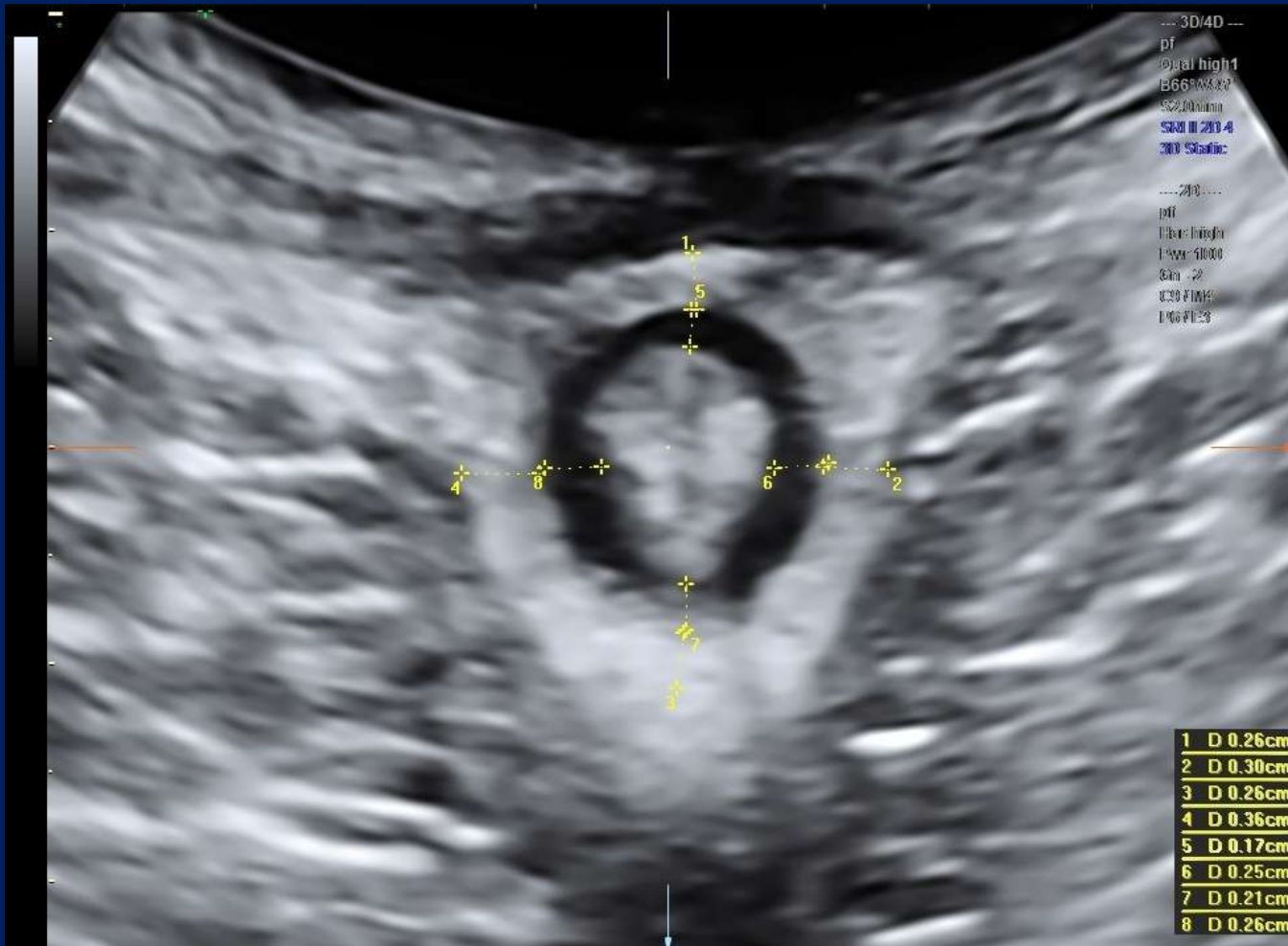


--- 3D/4D ---  
PF  
Qual high1  
B62°/V85°  
S2.0mm  
SRI II 2D 3  
3D Static

--- 2D ---  
pfl  
Hlat:nnid  
Pwr:100  
Gn:2  
C38 / M4  
I44 / E1

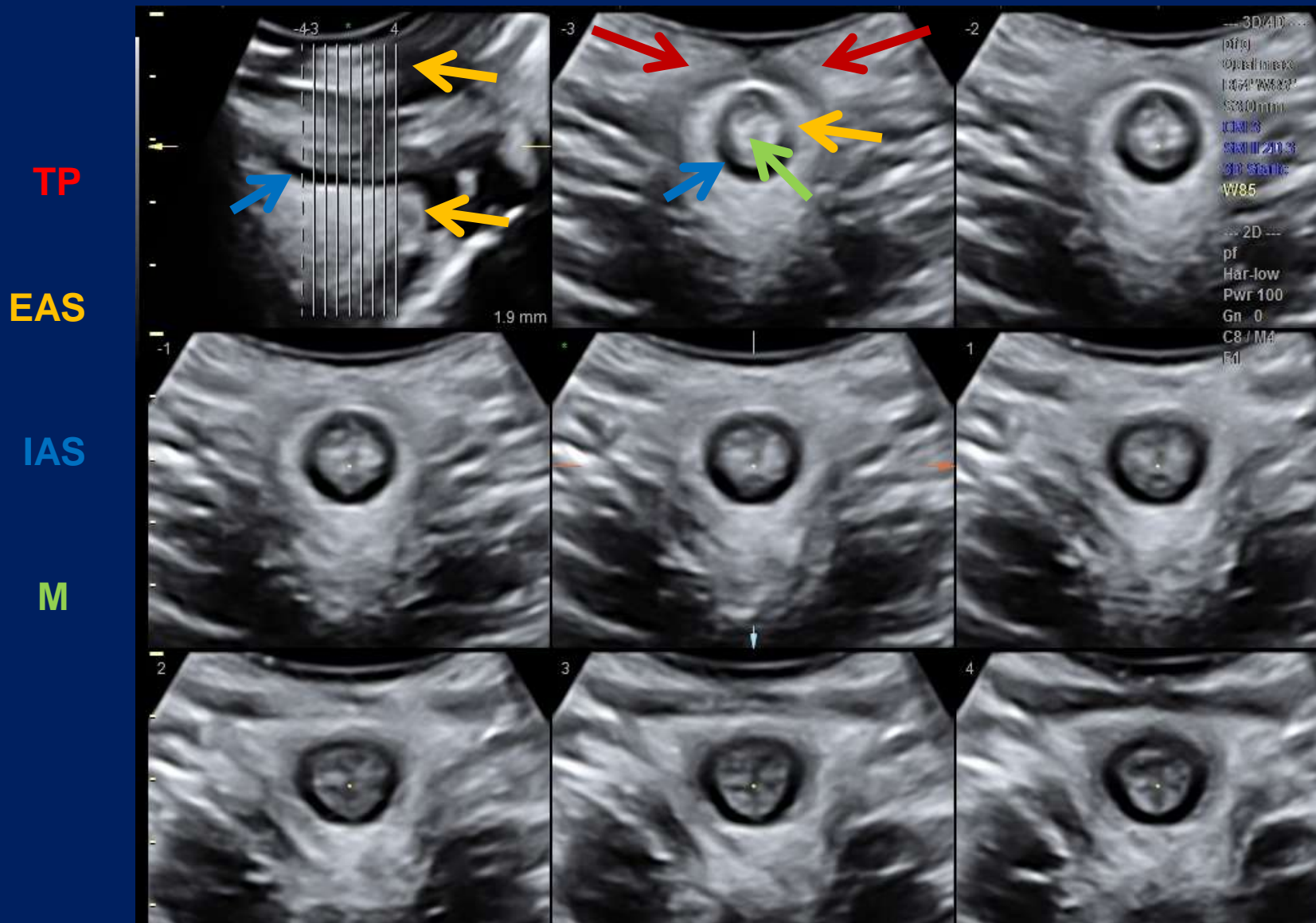


# Anal sphincter measurements

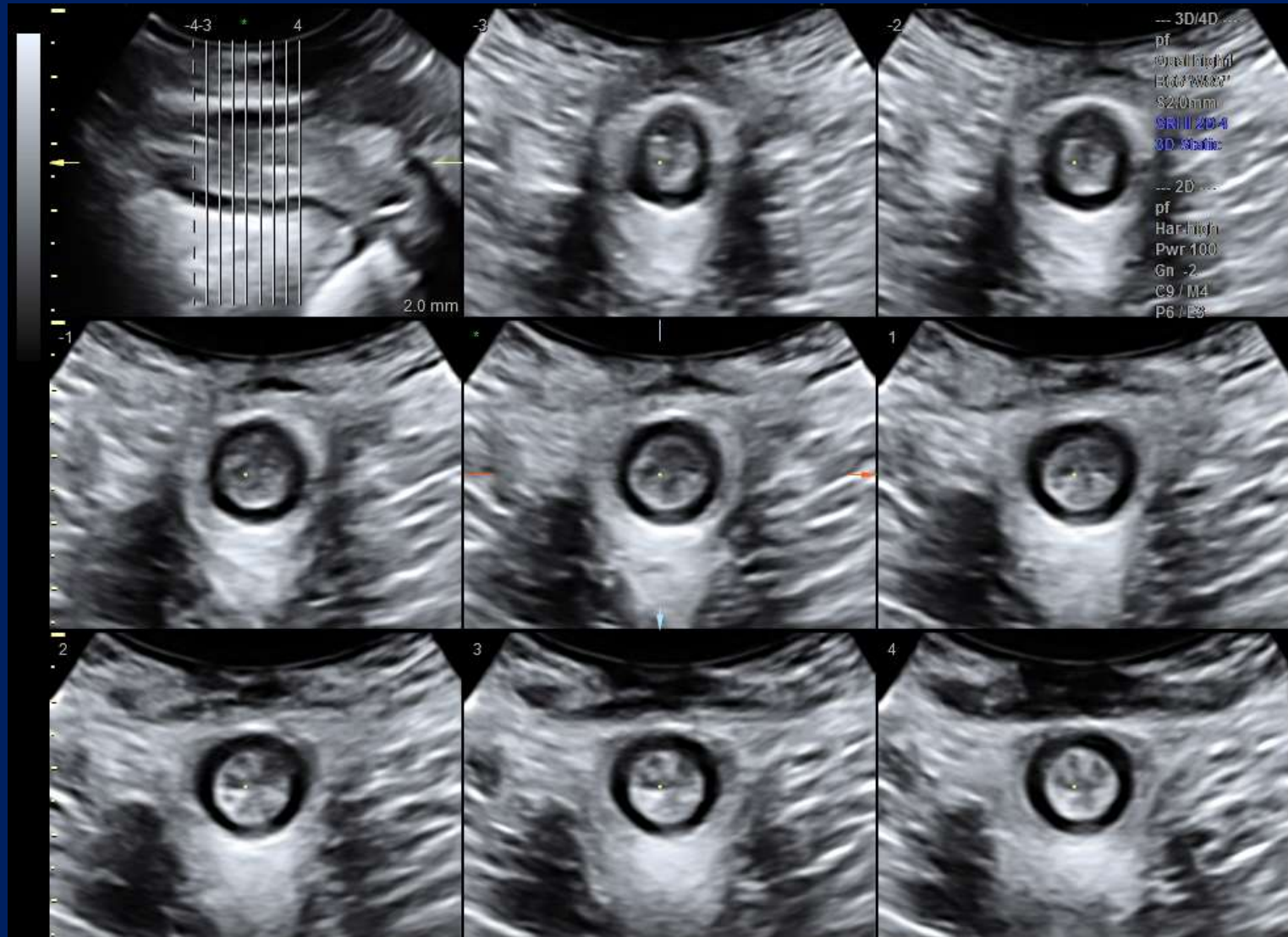




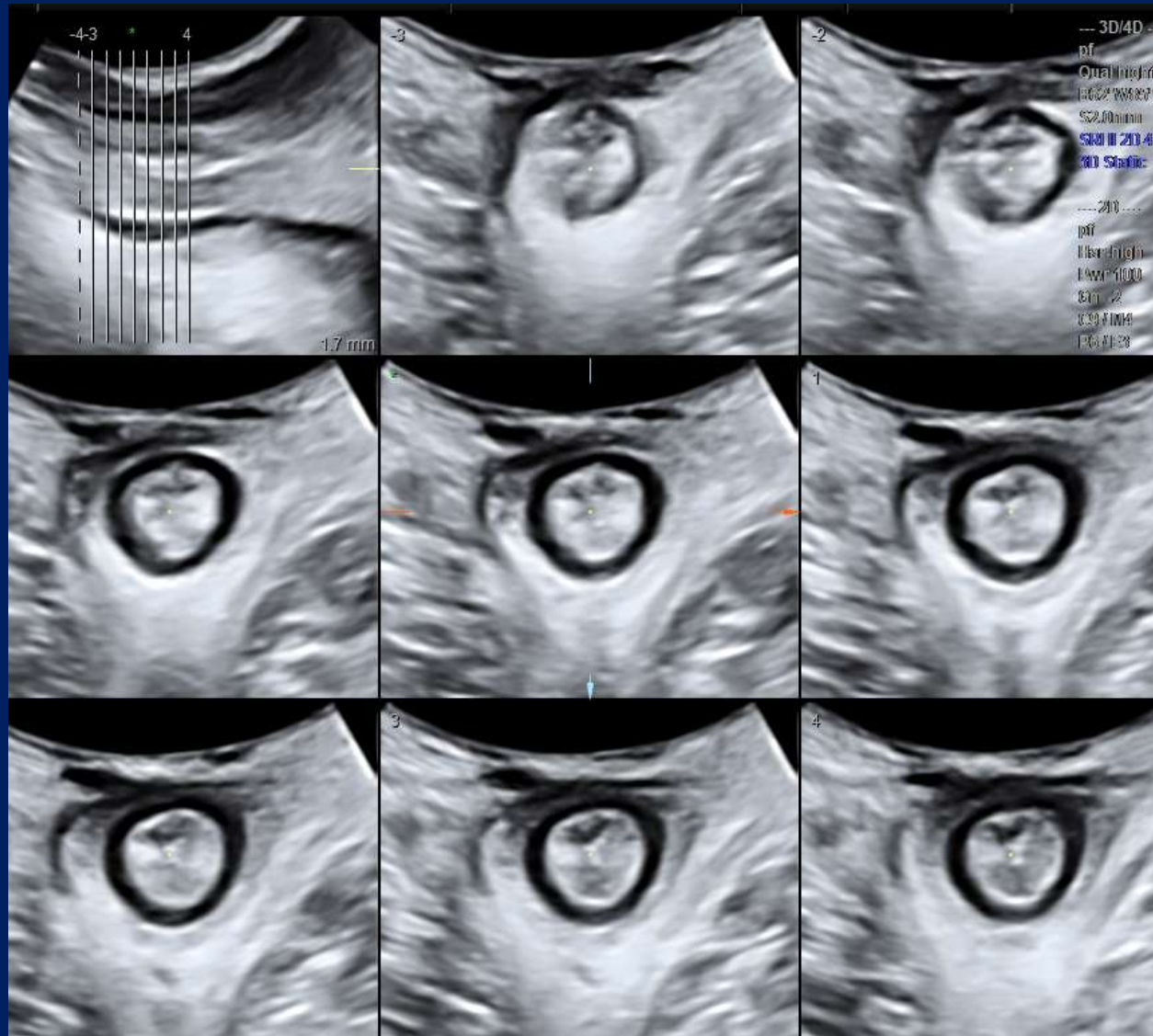
# Tomographic ultrasound imaging - TUI



# OASI 3a

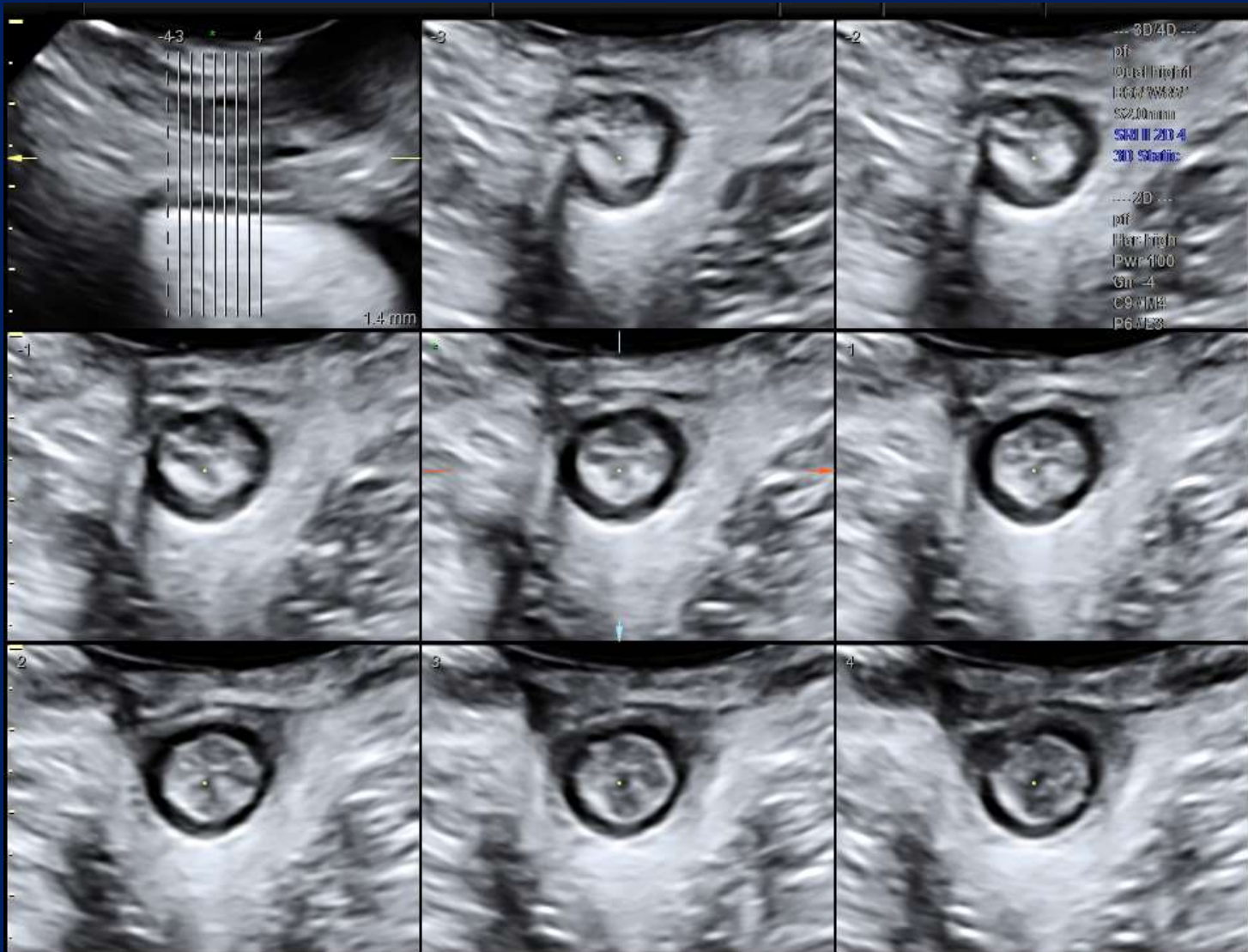


# OASI 3b

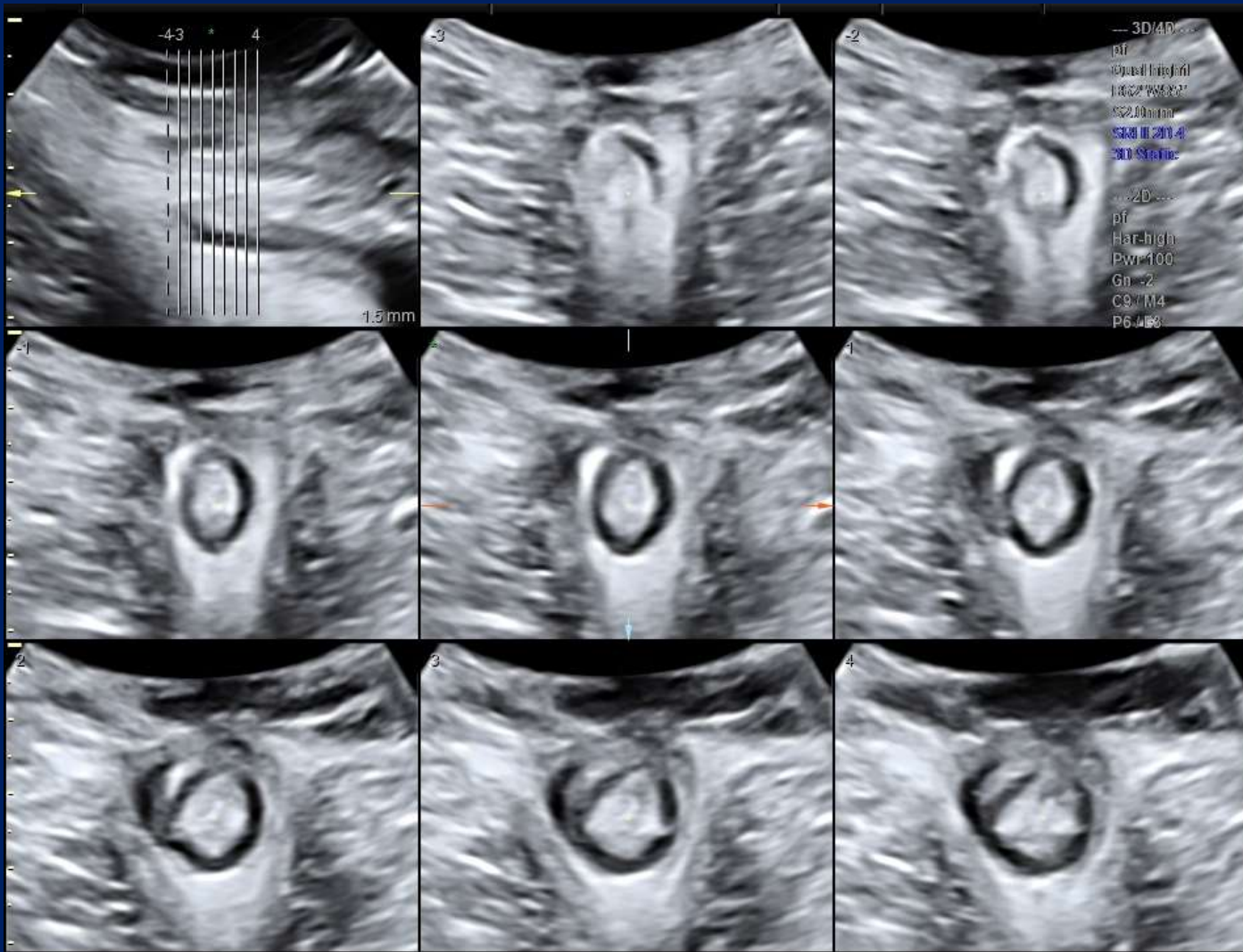




# OASI 3c



# OASI 4



# Symptoms in women examined within 1 year from a delivery with OASI

	Study group n=146	Residual defect n=118	No defect n=28	P value
CCIS score	2.4±3 (0-13)	2.8±3.2	0.8±1.4	0.002
Flatus incontinence	72/142 (50.7%)	63/115 (54.8%)	9/27 (32.3%)	0.131
Fecal urgency	43/140 (30.7%)	37/113 (32.7%)	6/27 (22.2%)	0.498
Fecal incontinence	17/142 (12%)	13/99 (16%)	1/27 (3.7%)	0.523
Dyspareunia	45/84 (58.3%)	39/65 (60%)	10/19 (52.8%)	0.642



# Anorectal symptoms and residual sonographic defects by OASI grade classification at delivery

OASI classification at delivery	3A n=103 (52%)	3B n=33 (16.7%)	3C n=25 (12.6%)	4 n=37 (18.7%)	Total n=198	Pearson correlation P value
Any fecal incontinence	4 (4%)	5 (15%)	6 (25%)	10 (28%)	25 (12.6%)	<0.001
Any urgency incontinence	23 (22%)	11 (33%)	9 (36%)	17 (46%)	60 (30%)	0.002
Any flatus incontinence	46 (44.5%)	21 (63.6%)	12 (48%)	27 (73%)	106 (54%)	0.004
Mean CCIS score	1.67 (0-15)	2.48 (0-10)	3.88 (0-20)	4.57 (0-25)	2.63 (0-25)	<0.001
CCIS≥4	32 (31.1%)	17 (51.5%)	11 (44%)	23 (62.2%)	83 (41.2%)	0.001
Residual sonographic defect	80 (78%)	30 (91%)	22 (88%)	37 (100%)	171 (86.4%)	0.005

# Repeat delivery

- Prospective cohort of 671 women
- 106 - repeat delivery and a repeat visit during the follow-up period, for a median F/U time of 77 months (21-145)
- Median time to first exam, second exam and in between exams was 3, 29, and 21 months respectively
- The original OASIS classification:
  - 24 - 3A tears, 6 – 3B, 5 – 3C, 9 – 4<sup>th</sup> degree tears
  - 62 grade 3 tears in the era before tear sub-classification
- Mean age was  $28.1 \pm 4.4$ , BMI  $23.4 \pm 4.1$ , 80% were primiparous.
- 28 women had a repeat normal vaginal delivery (NVD group) and 78 women had an elective cesarean section (ECS group)
- Two women had more than one repeat NVD, 3 women were scheduled for an ECS but arrived with precipitous labor and were delivered vaginally

# Women with a repeat NVD

Table 2: Sonographic sphincter findings at enrollment and at last follow up visit.

Parameter N=28 NVD	Enrollment visit	Follow-up visit	P value
Perineal body thickness (mm)	6.8±2	7.3±2.5	NS
EAS 12 o'clock (mm)	2.1±1.4	1.6±1.8	NS
IAS 12 o'clock (mm)	2±0.7	1.9±0.8	0.01
EAS defect (percentage)	70.8	60	<0.05
IAS defect (percentage)	8.7	16	0.001
Any residual defect (percentage)	70.4	60.7	NS
Residual defect angle (degrees)	88.6±46.5	92.9±35.7	0.08
CCIS - total score (mean)	1.6±2.2	0.9±1	<0.05
CCIS≥4 (percentage)	20	3.6	<0.05

- ✓ previously 3A – 11, 3B – 2, 3C – 1, 4 – 1, 13 unclassified
- ✓ 1 woman after a previous 3C tear sustained a repeat 3C tear
- ✓ Trend towards thinning of the residual sphincter width with an increase in the defect angle ( $P < 0.05$ )
- ✓ This was not associated with worsening of symptoms

# Repeat delivery

- We did not observe more severe symptoms in women who were preselected for NVD
- Our findings highlight the need for adequate counseling before repeat delivery in women with OASI preferably in a dedicated clinic
- The preferred delivery mode should be tailored based on symptoms, clinical status, ultrasound findings, and patient's needs
- More studies are necessary to draw conclusions

# **The effect of a repeat delivery on long term outcome in women with OASI**

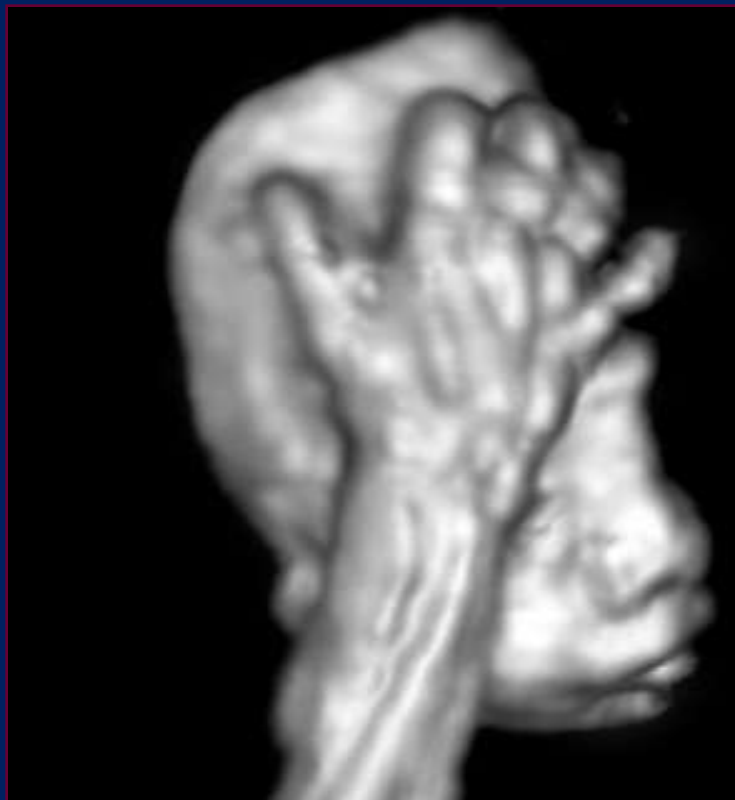
Project Hetz 2017-2018

# Work plan

- IRB extension
- Until March 2018 – expected 800 patients overall
- Evaluate data from repeat deliveries in Sheba
- Call all other women, receive informed consent
- Questionnaires, data supplementation
- Women who have undergone a repeat delivery will be offered an ultrasound exam
- Data analysis
- Goal – 250 repeat deliveries



# Thank you



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