

# WHAT YOU SEE IS WHAT YOU GET?!

Dr. Phebe Debouver  
NICU fellow AZ Sint-Jan Brugge

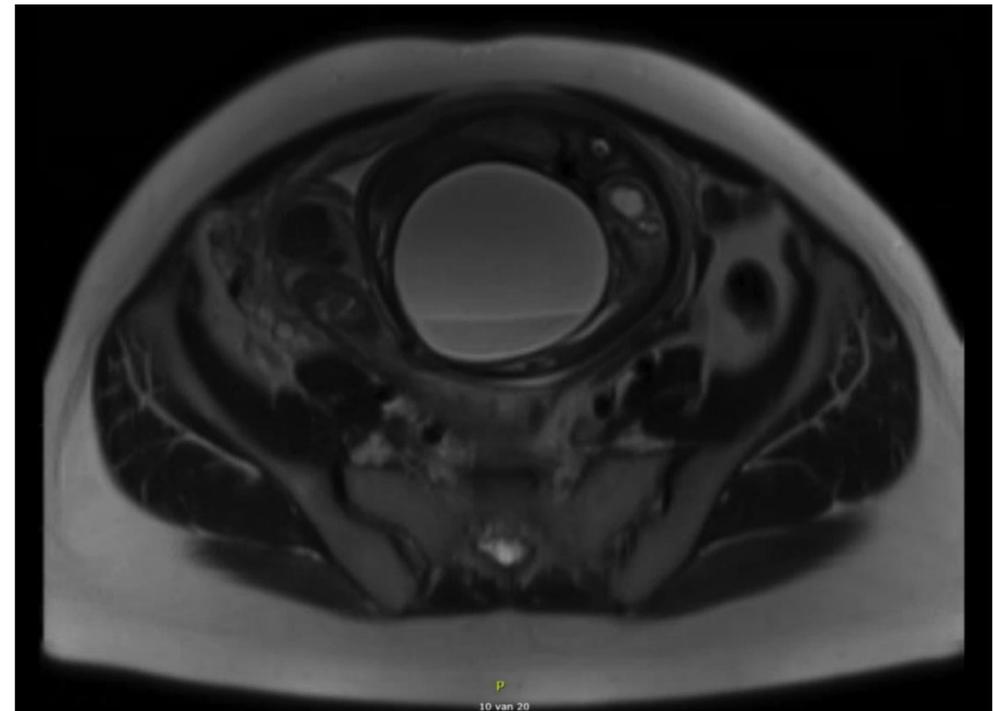
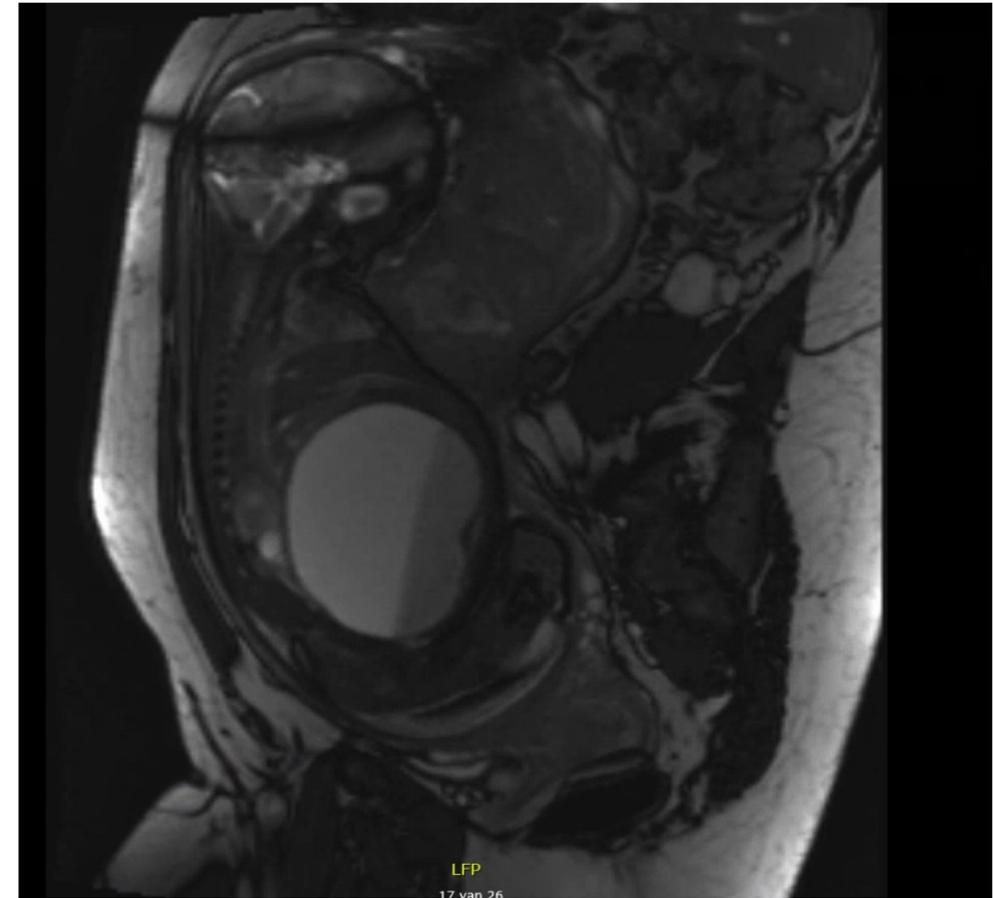
Clinical case NICU UZ Gent '22  
Supervised by Dr. Kris De Coen



2022 BVN/GBN AUTUMN MEETING

# CASE PRESENTATION

- Female infant, GA 37+1 wks, 2500 g
- Prenatal US: oligohydramnios at 30 wks with abdominal mass
- Anhydramnios at 32 wks
- Fetal NMR: suggestive of hydro-hematocolpos



# CASE PRESENTATION

Bradycardic, pale, hypotonic, not breathing

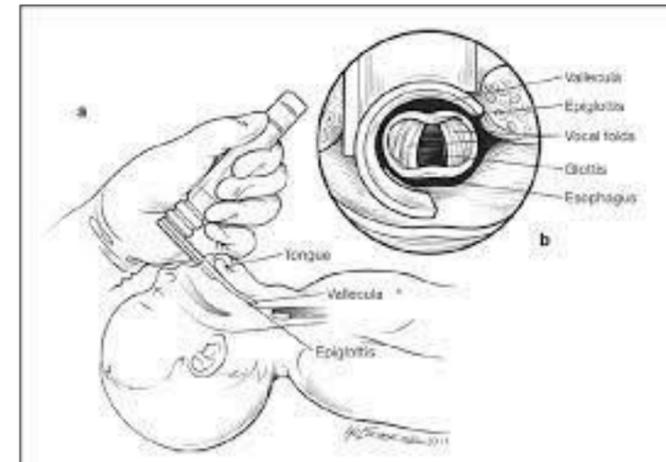


5 inflation breaths: no effect

Repeat inflation breaths: no effect



Intubation after mucus plug removal but...  
no effect

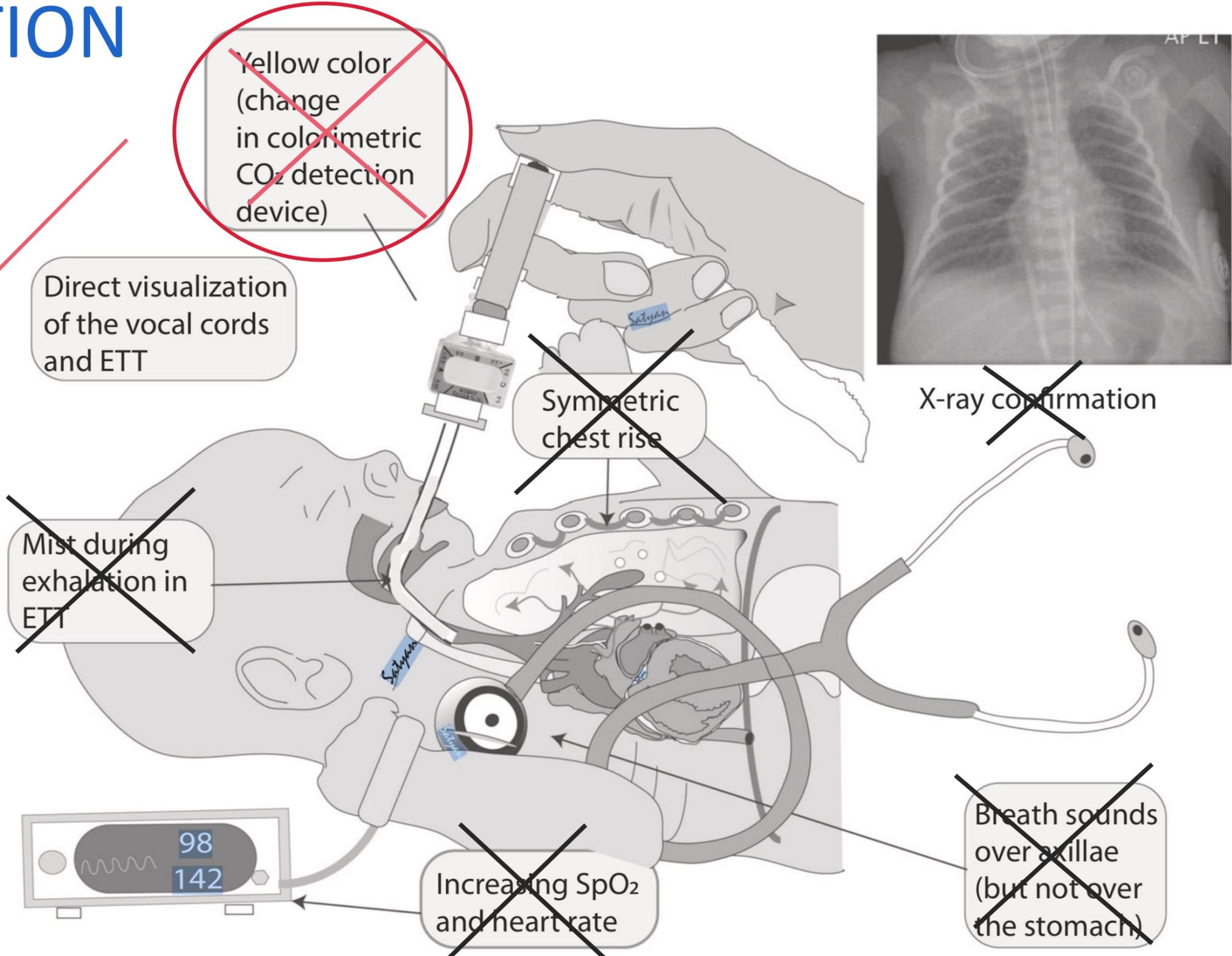


# CASE PRESENTATION

## TECHNIQUES TO ASCERTAIN TUBE POSITION?



Discoloration with high CO<sub>2</sub> in exhaled gas (4-5%) (vs. low esophageal CO<sub>2</sub>; 0.03-0.04%)



Sankaran D, Zeinali L, Iqbal S, Chandrasekharan P, Lakshminrusimha S. Correction to: Non-invasive carbon dioxide monitoring in neonates: methods, benefits, and pitfalls. J Perinatol. 2021 Nov;41(11):2694.

# CASE PRESENTATION

HYPOTHESIS?

ESOPHAGEAL INTUBATION!



2<sup>nd</sup> intubation: no discoloration CCDD

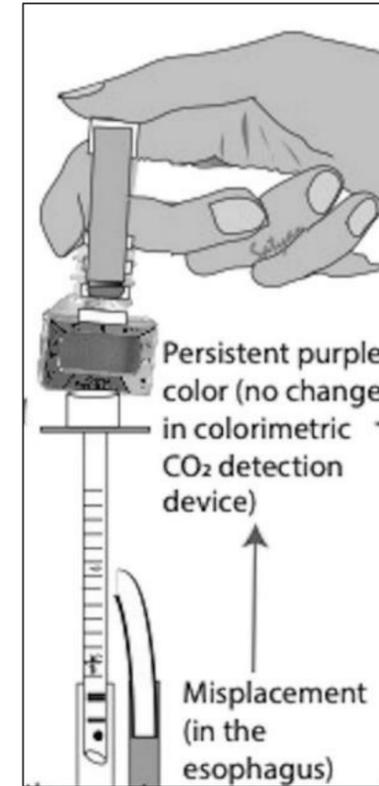
*Equipment failure? No difference new CCDD*



3<sup>rd</sup> intubation: no discoloration CCDD

Position check by 2 neonatologists

*Tube aspiration: still no gas exchange*



# CASE PRESENTATION

Bradycardia <60 bpm

Start chest compressions



Umbilical catheter placement: adrenalin administration (3 gifts /4 min) and fluid bolus 10 ml/kg

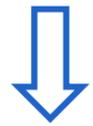
SUGGESTIONS?



# CASE PRESENTATION

Back to physiologic basics!

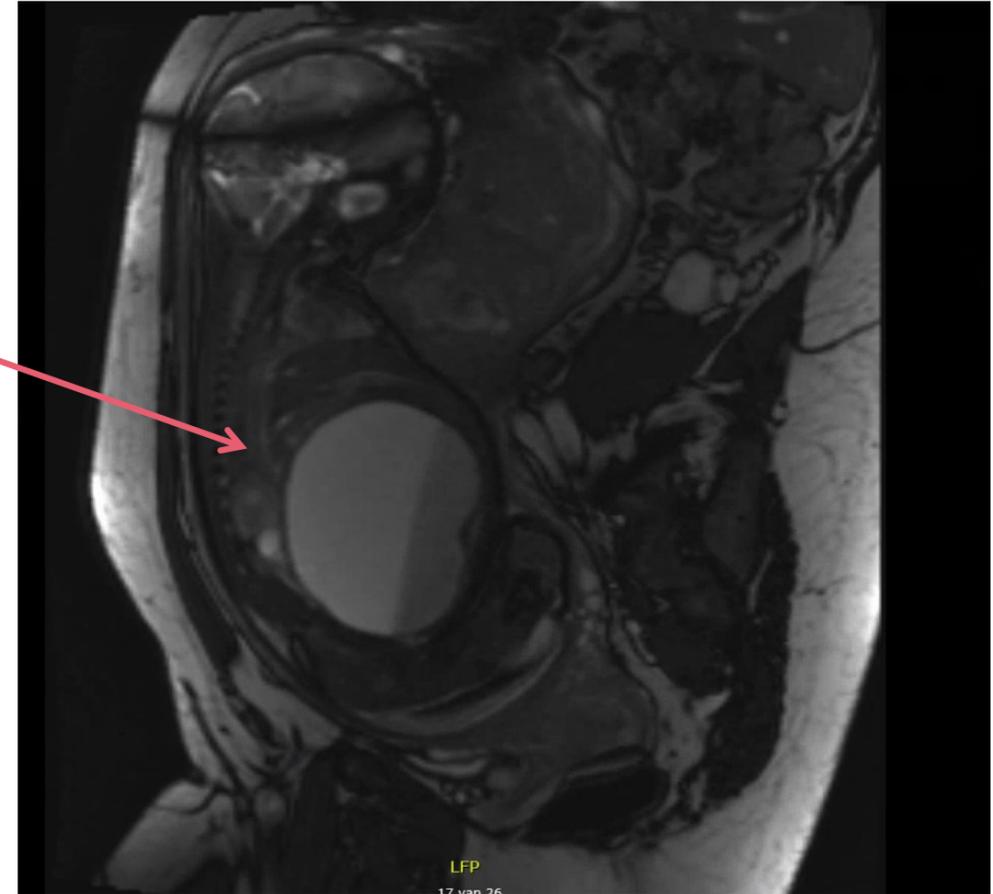
Hypothesis: severely impaired lung expansion limits gas exchange



Ultrasound guided puncture: evacuation of 400 ml fluid



ROSC WITH CCDD DISCOLORATION



# DISCUSSION

## **European Resuscitation Council Guidelines 2021: Newborn resuscitation and support of transition of infants at birth**



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American Academy of Pediatrics  
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Guidelines: ‘Exhaled CO<sub>2</sub> detection should be used when undertaking intubation to confirm tube placement in the airway.’

# DISCUSSION

CCDD: faster and more accurate recognition of tracheal intubation

Non-detection of CO<sub>2</sub> strongly suggests esophageal intubation or tube dislocation

In literature false negative results in case of

- cardiac arrest
- very low tidal volumes
- tube obstruction
- low PIP pressures



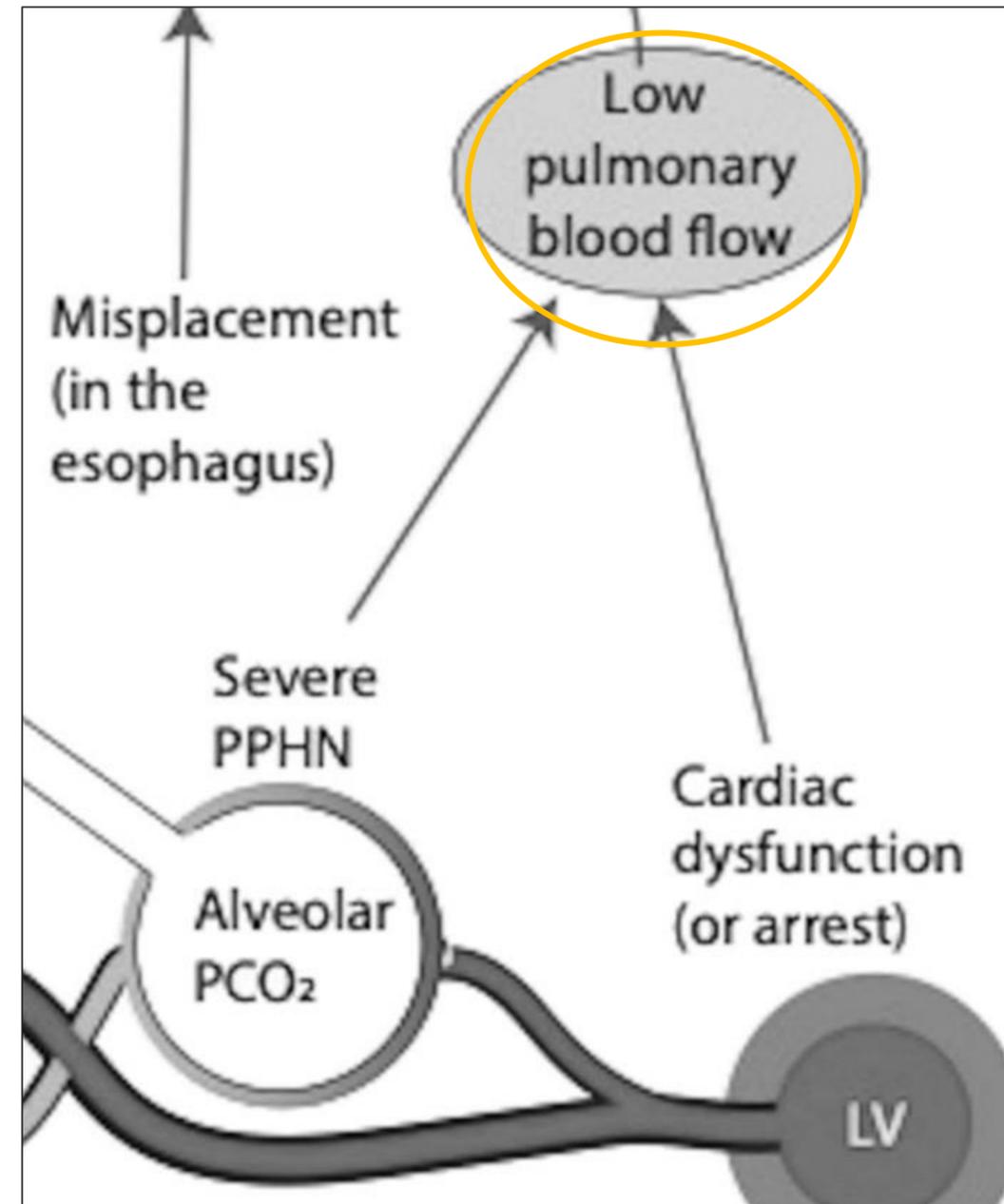
In absence of CO<sub>2</sub> detection despite correct position, tube position needs to be verified by means of direct laryngoscopy



# DISCUSSION

False negative measurement in our patient:

## 1/ Circulatory component



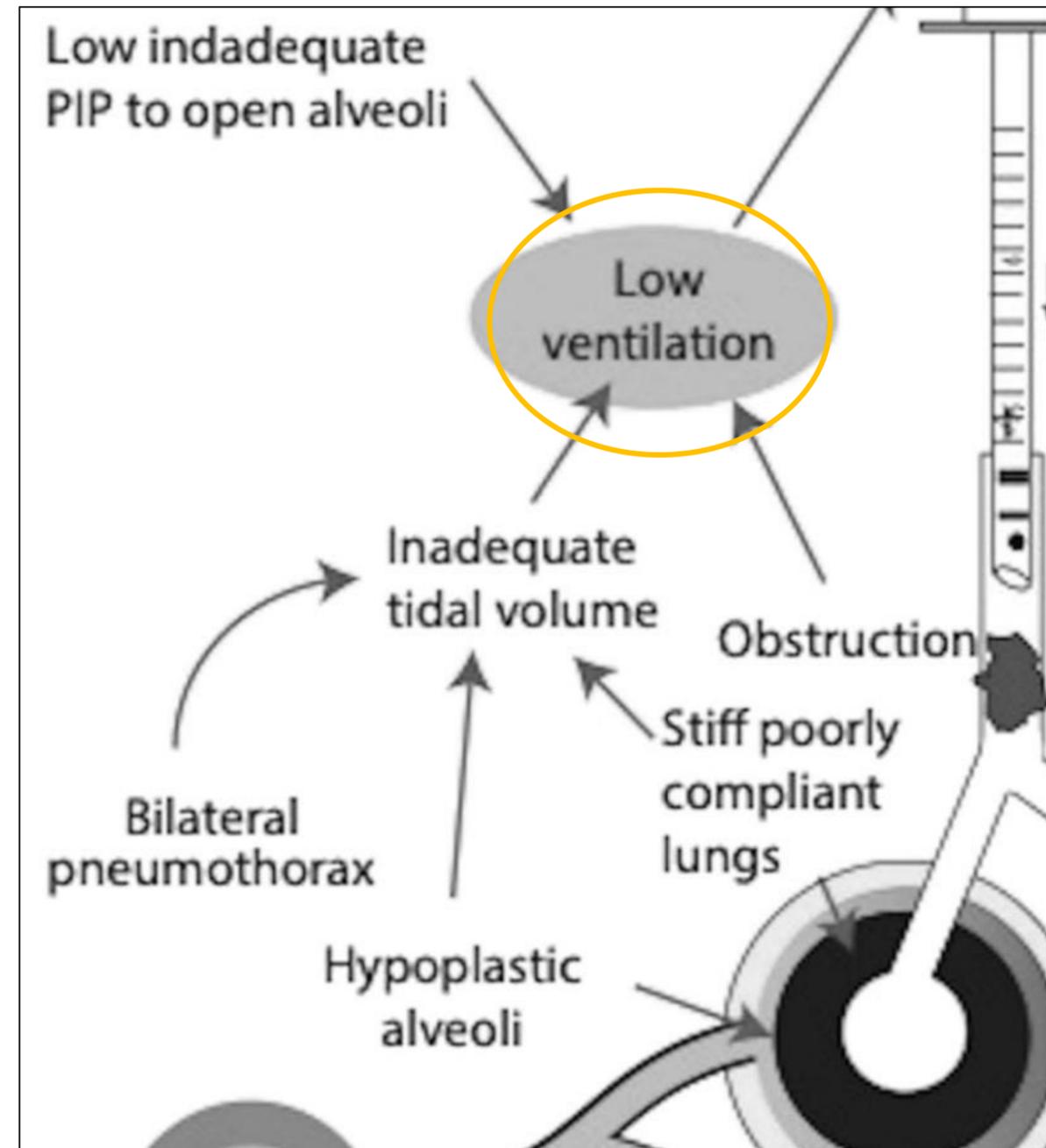
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# DISCUSSION

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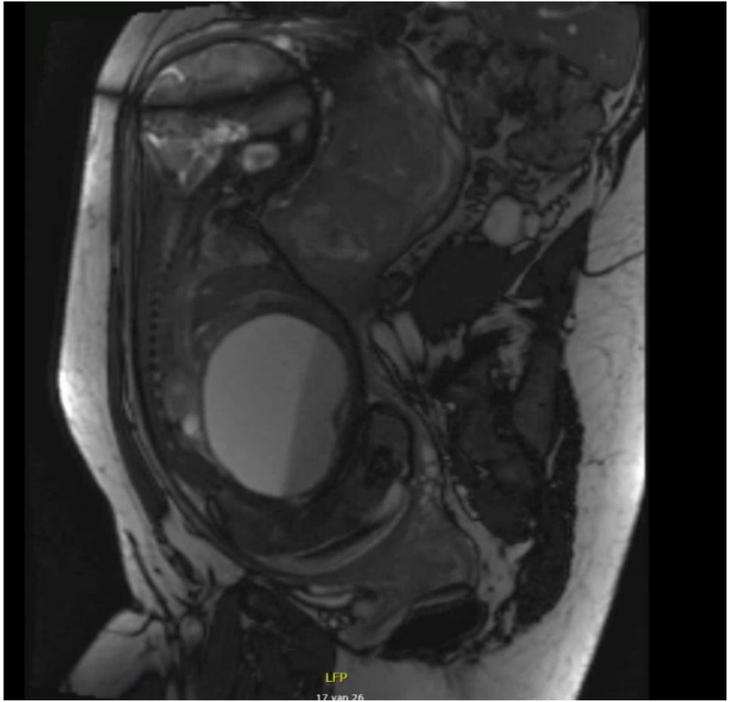
**2/ Pulmonary component:  
combination of lung hypoplasia  
without expansion possibility  
compromising gas exchange**



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# BACK TO OUR PATIENT

Cystic abdominal mass



Mass effect

Obstruction of ureters

Oligohydramnios sequence

Lung hypoplasia

# BACK TO OUR PATIENT

Deceased within 24 hours as a result of cardiorespiratory failure

Pathology and genetics inconclusive

# TAKE HOME MESSAGE

Technology alone cannot replace clinical and physiological thinking and assessment!

And also...

Have a little faith in your trainee



# Thank you for your attention

In case of questions:

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