Atelectasis
Pulmonary Interstitial Emphysema (PIE)
One-Lung Ventilation

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ATELECTASIS
Management-(1)

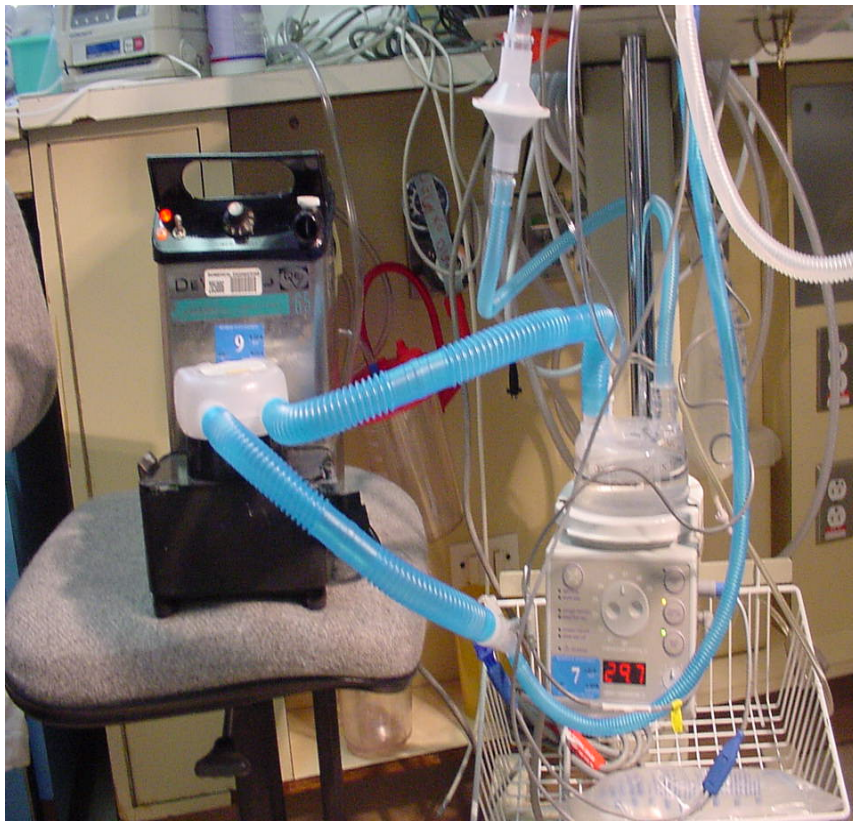
- Positioning atelectatic lung up
- Nebulization (ultrasonic or electronic micropump)
- Chest physiotherapy


DEVILBISS

Ultrasonic Nebulization

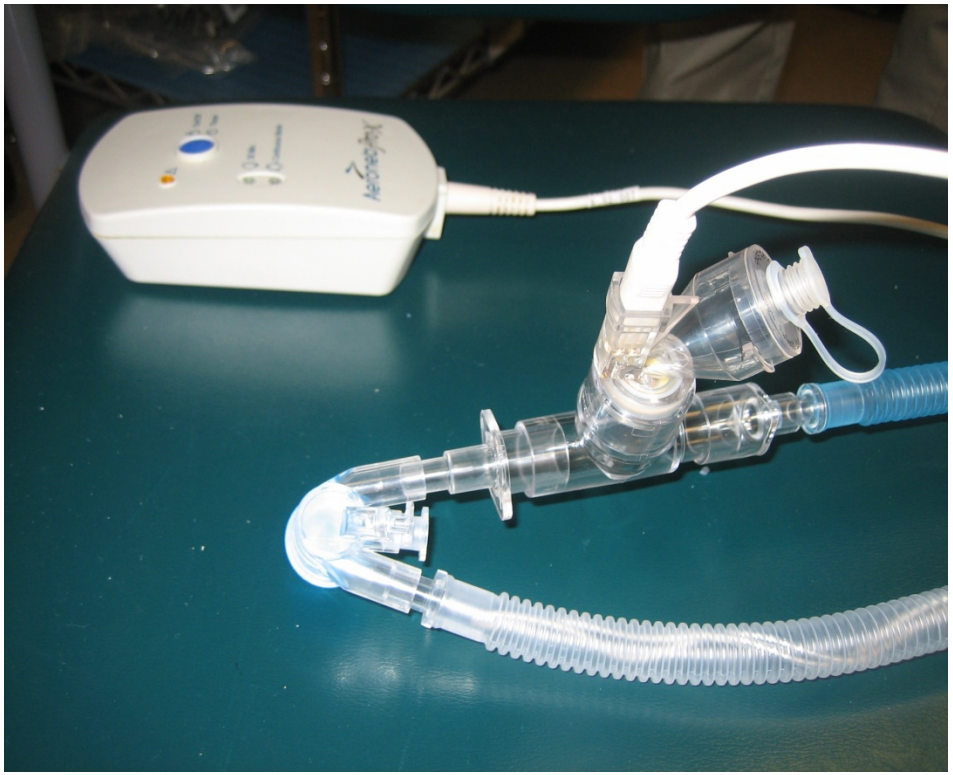
:

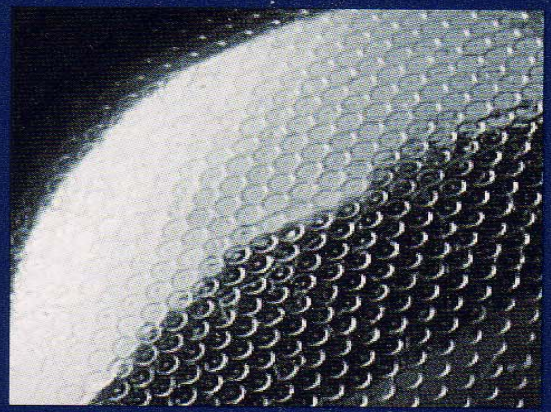
- May need to increase FiO_2 and ventilator settings during treatments,
- Watch for overheat after ultrasonic nebulization.
  - *Decrease temperature on humidifier or even temporarily turn off humidifier during treatment.*



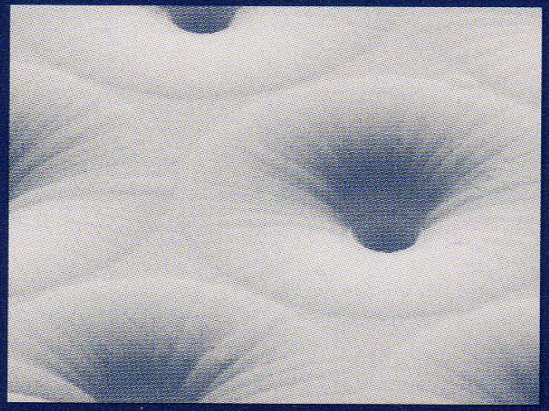
Aeroneb eletronic micropump

- Watch for sensor's sensitivity on PTV ventilator (decreasing sensitivity due to water condensation, e.g. Babylog)



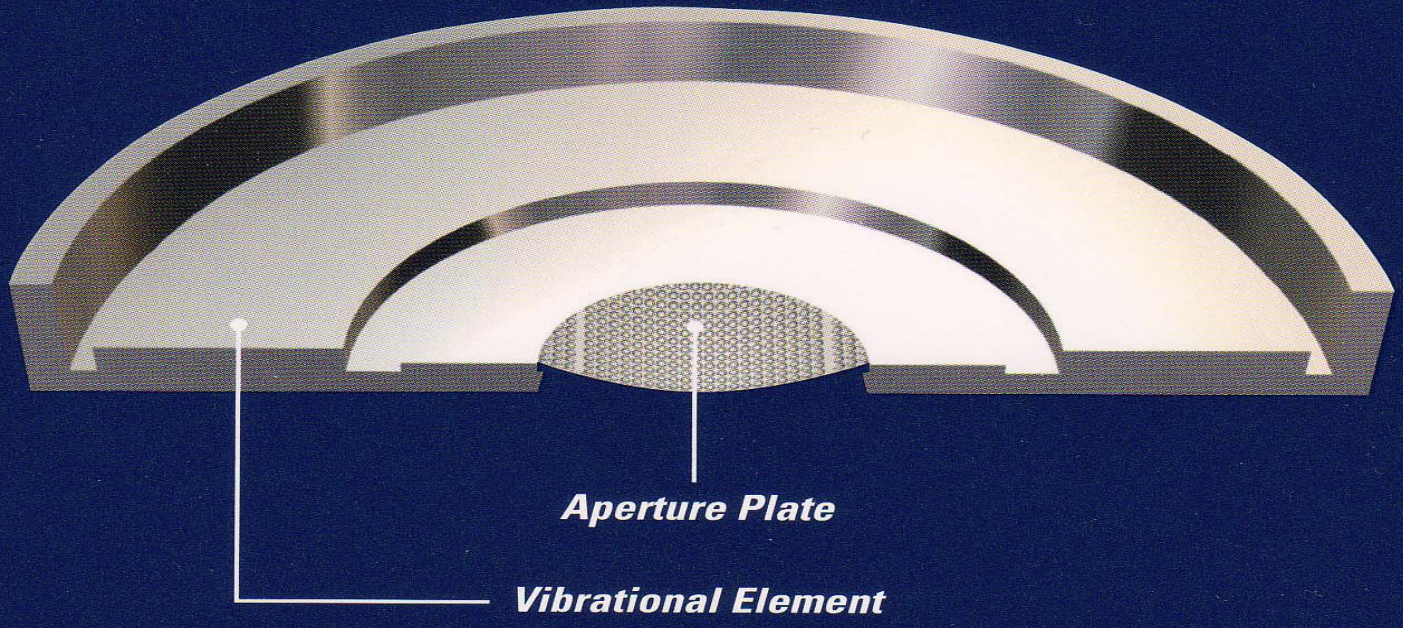


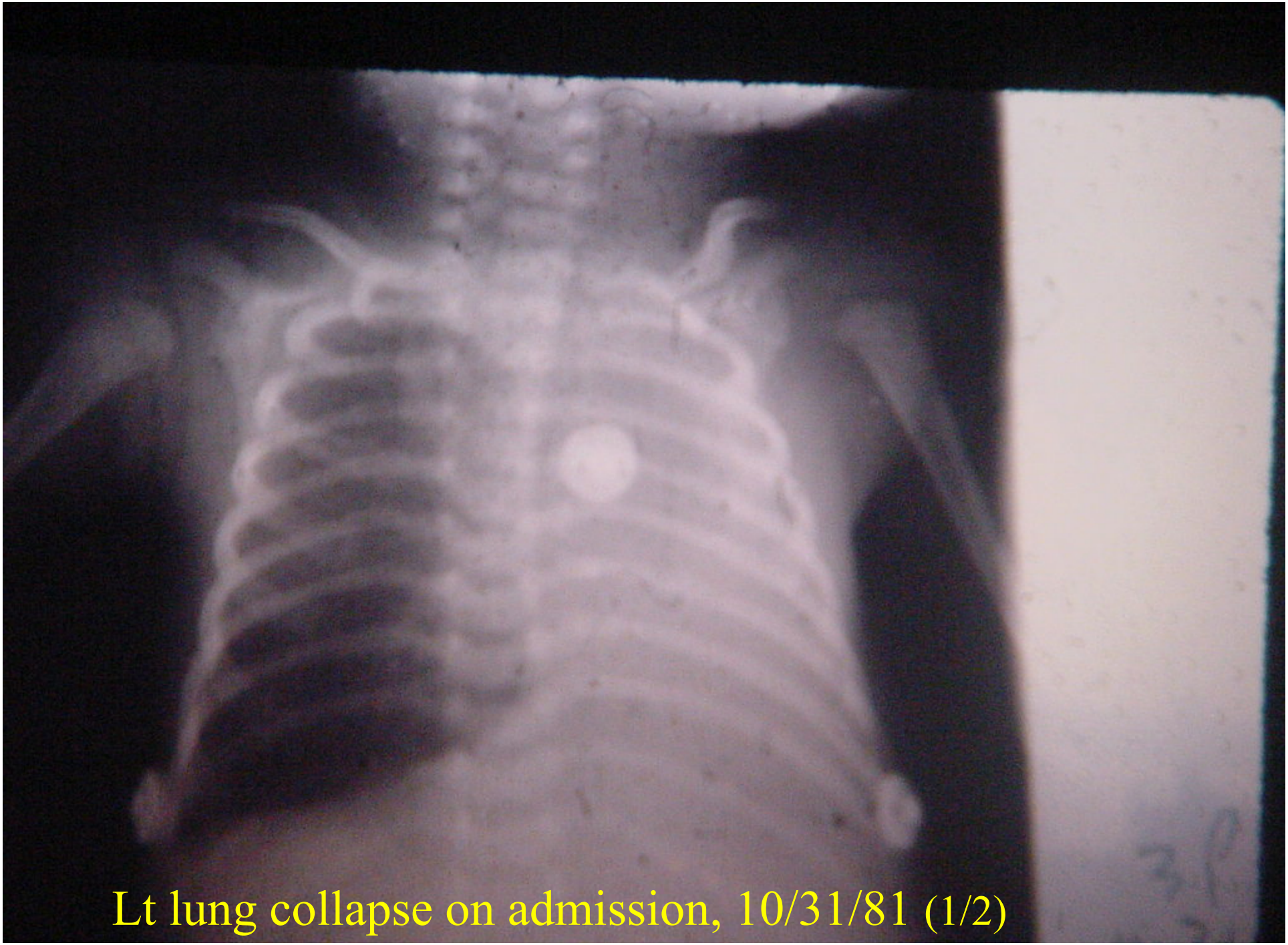
Aperture Plate

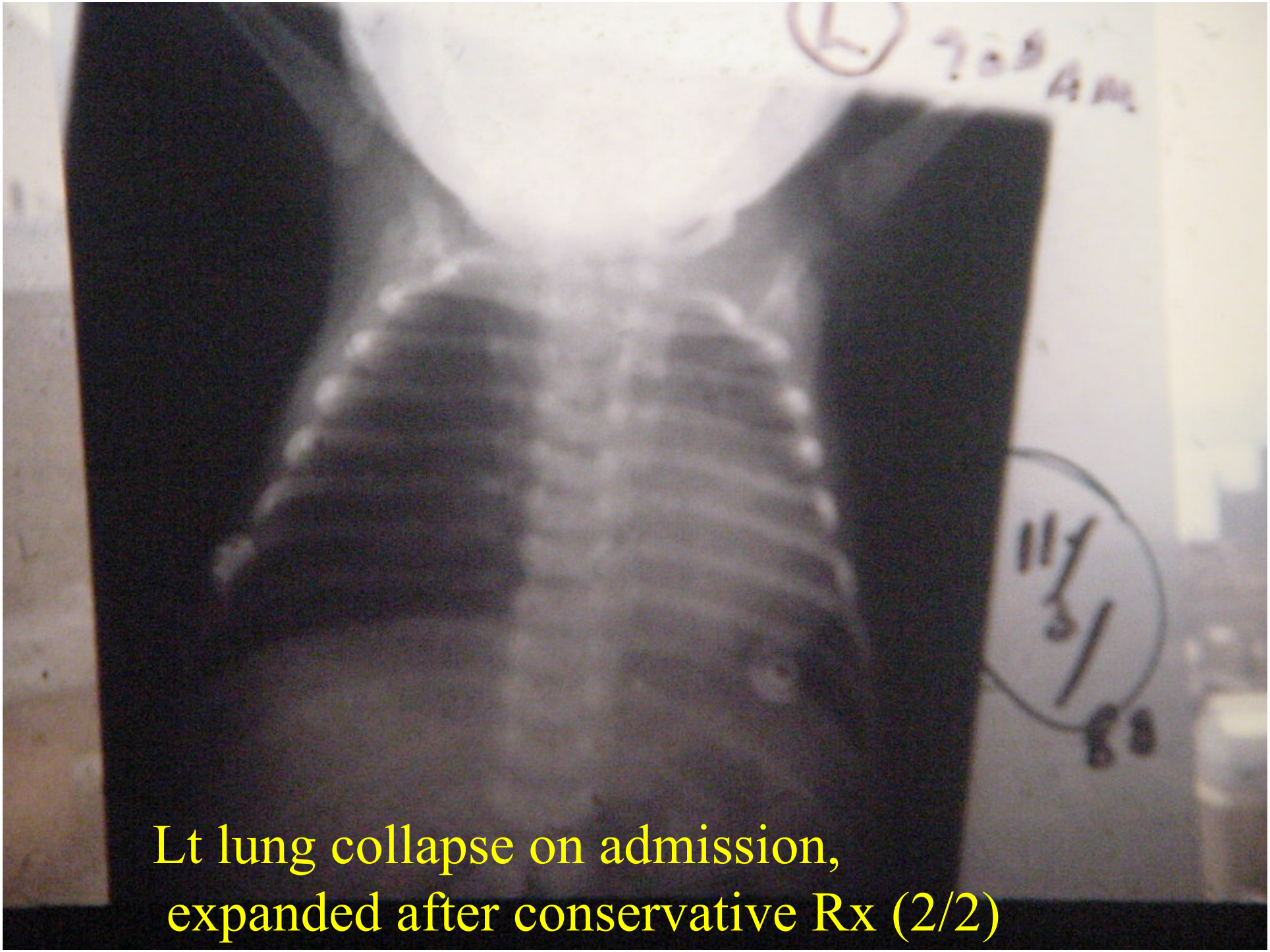


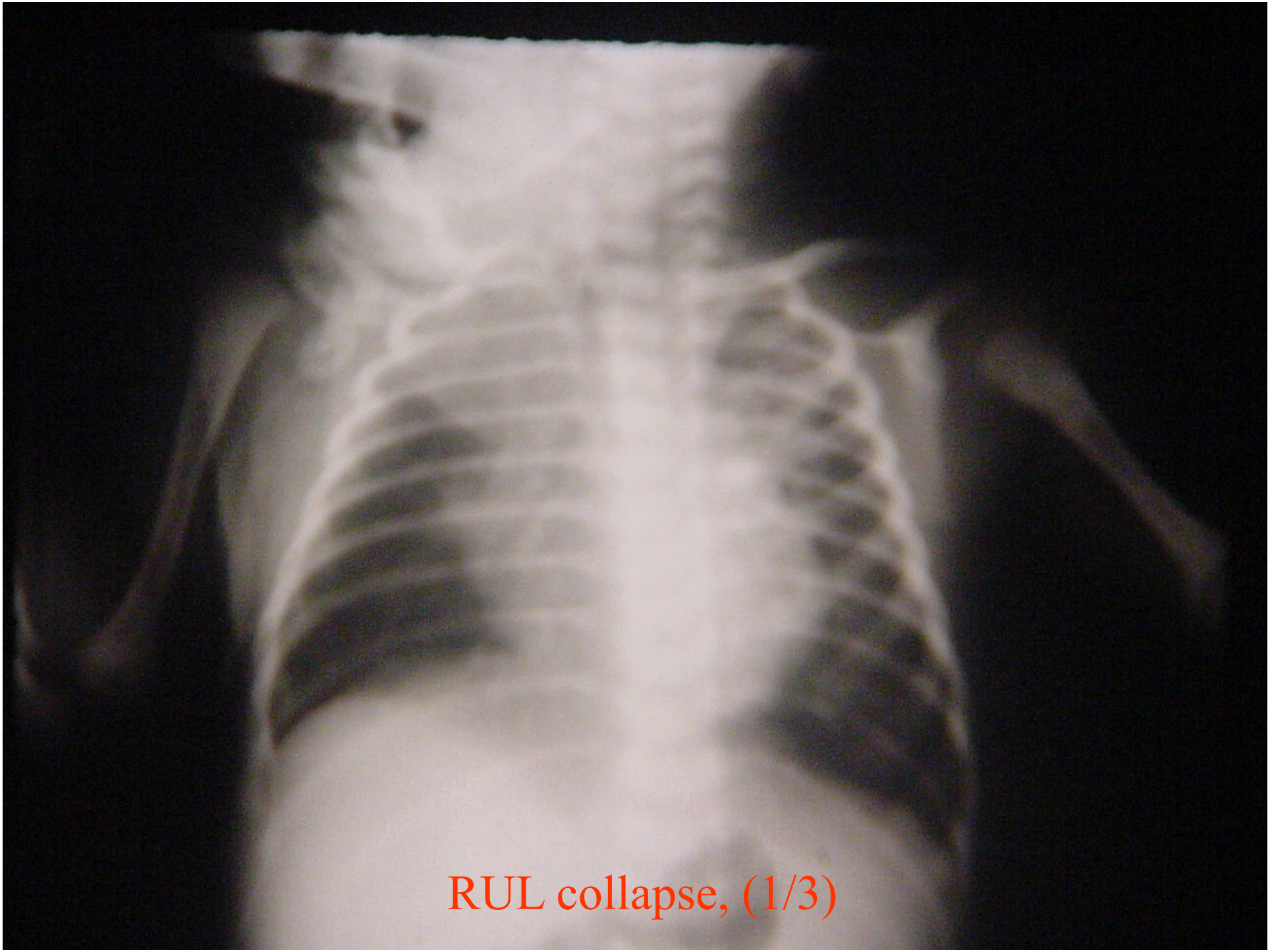
Aperture Plate
(enlarged 250X)

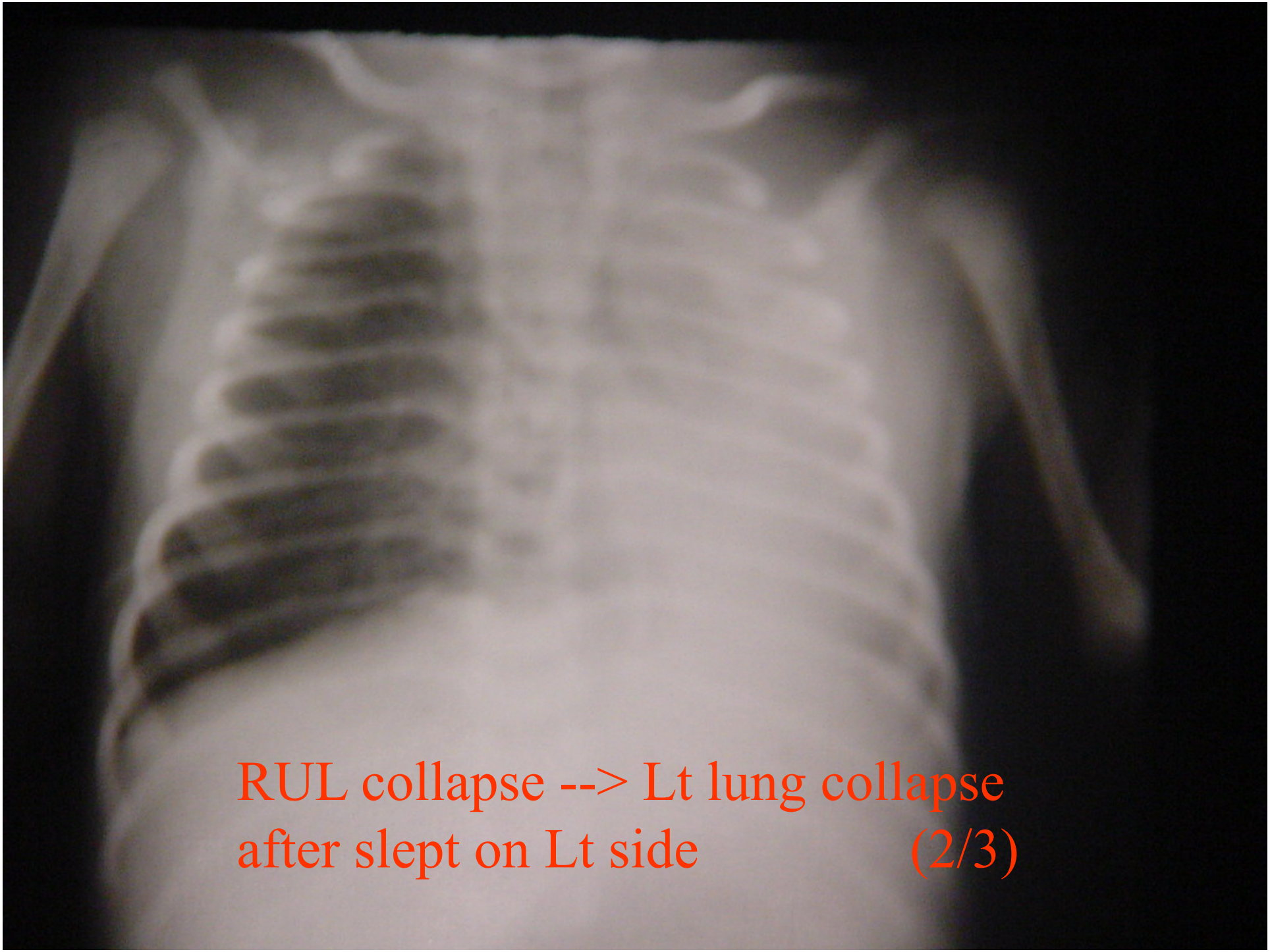
Electronic Micropump
Aerosol Generation

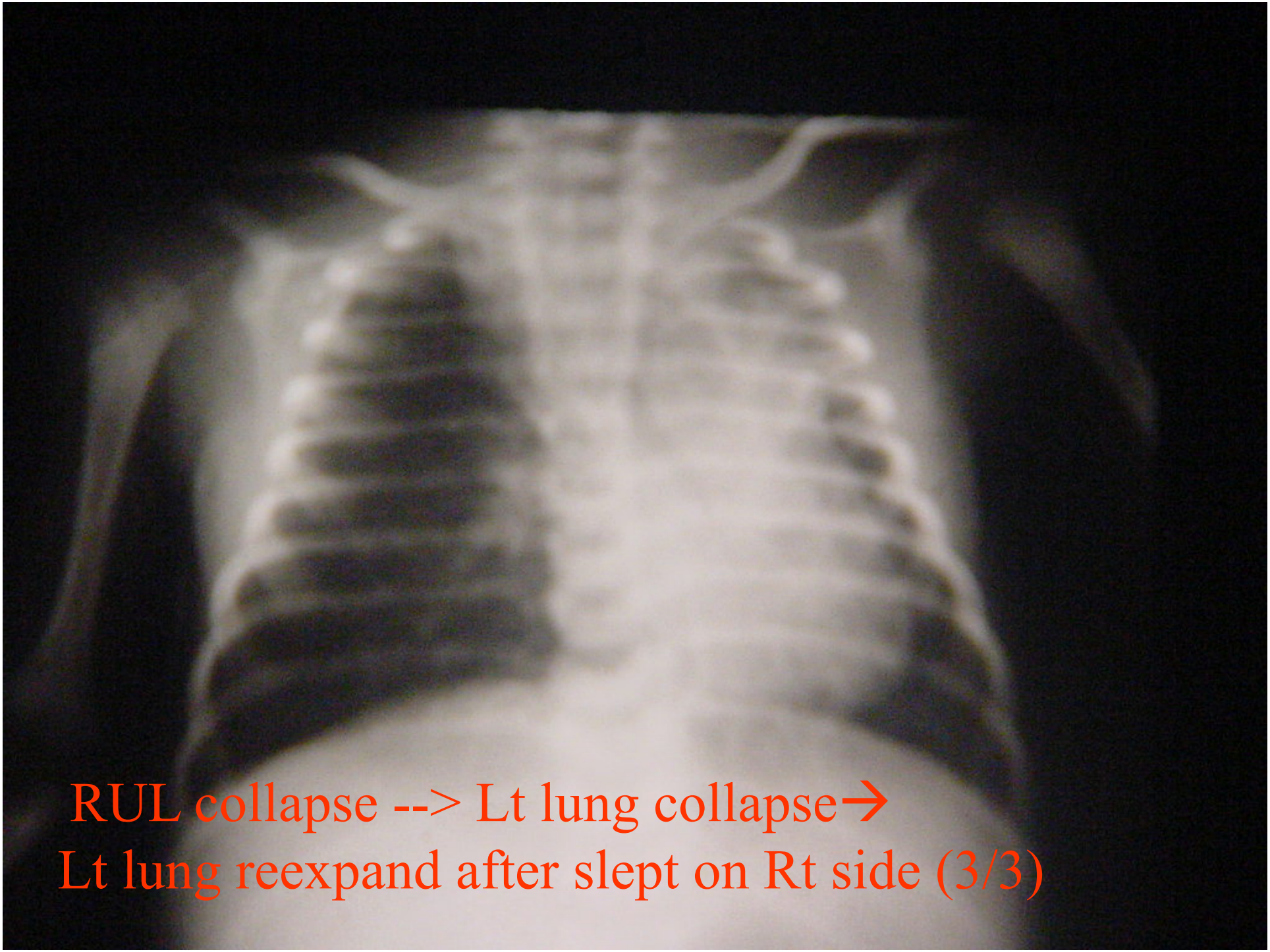


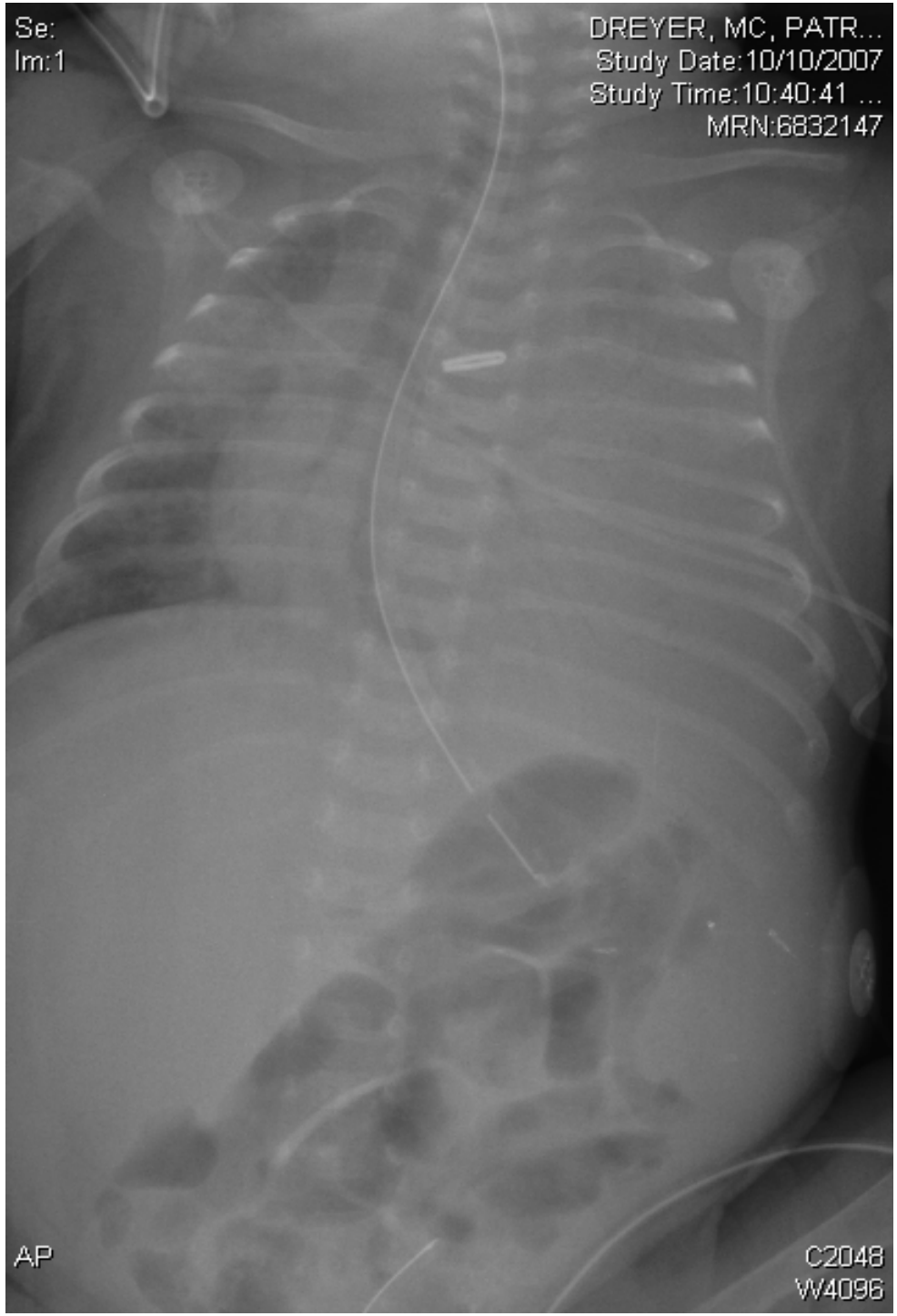

Lt lung collapse on admission, 10/31/81 (1/2)


Lt lung collapse on admission,
expanded after conservative Rx (2/2)


RUL collapse, (1/3)


RUL collapse --> Lt lung collapse
after slept on Lt side (2/3)


RUL collapse --> Lt lung collapse→
Lt lung reexpand after slept on Rt side (3/3)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Study Date:10/10/2007
Study Time:10:40:41 ...
MRN:6832147
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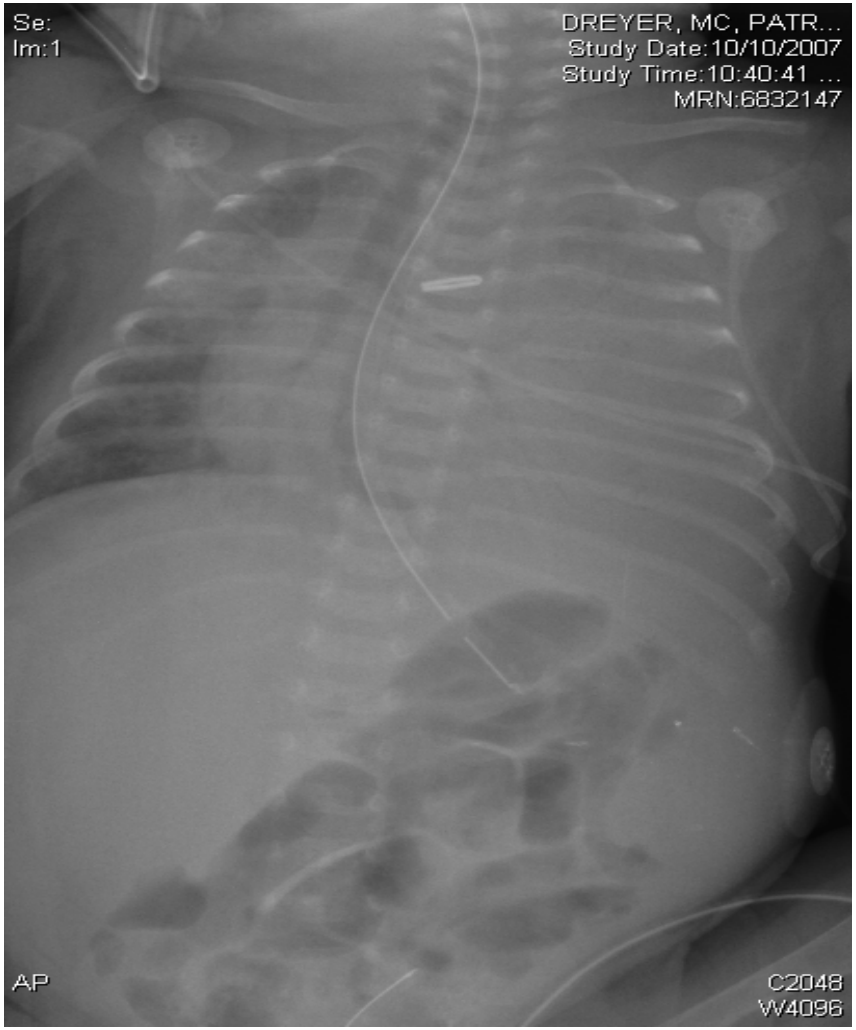
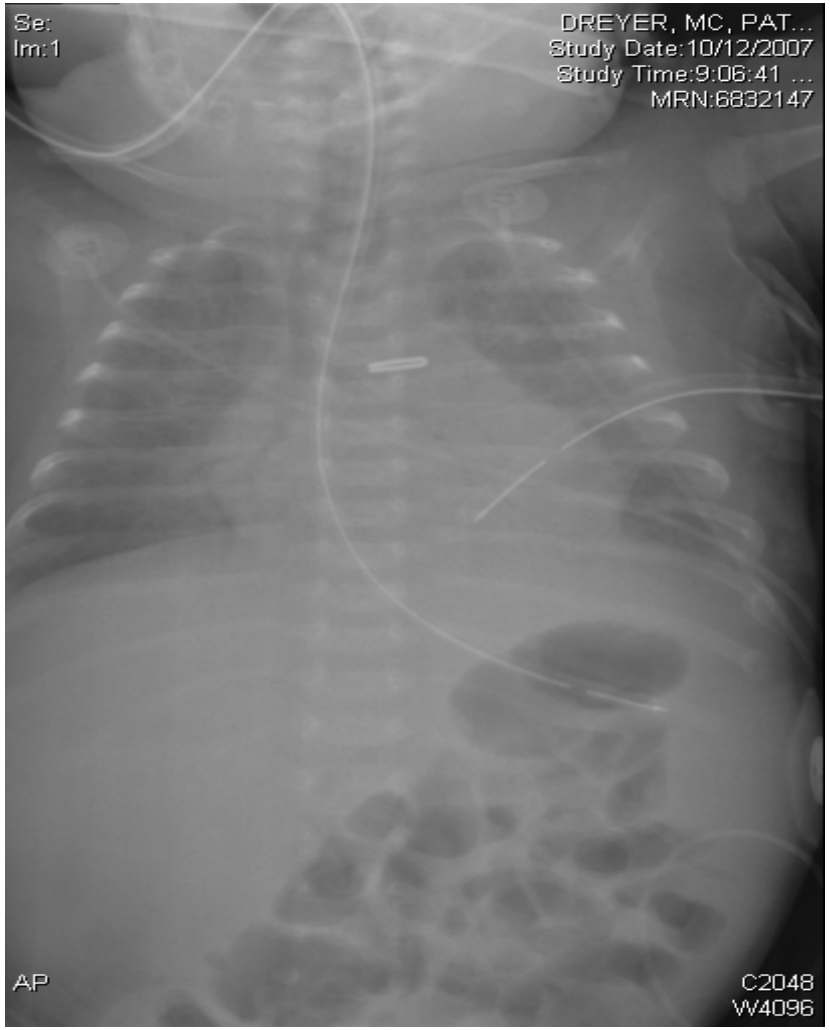
C2048
W4096

Lt. pleural effusion



Lt. chest clear after chest tube drainging 40 ml effusion

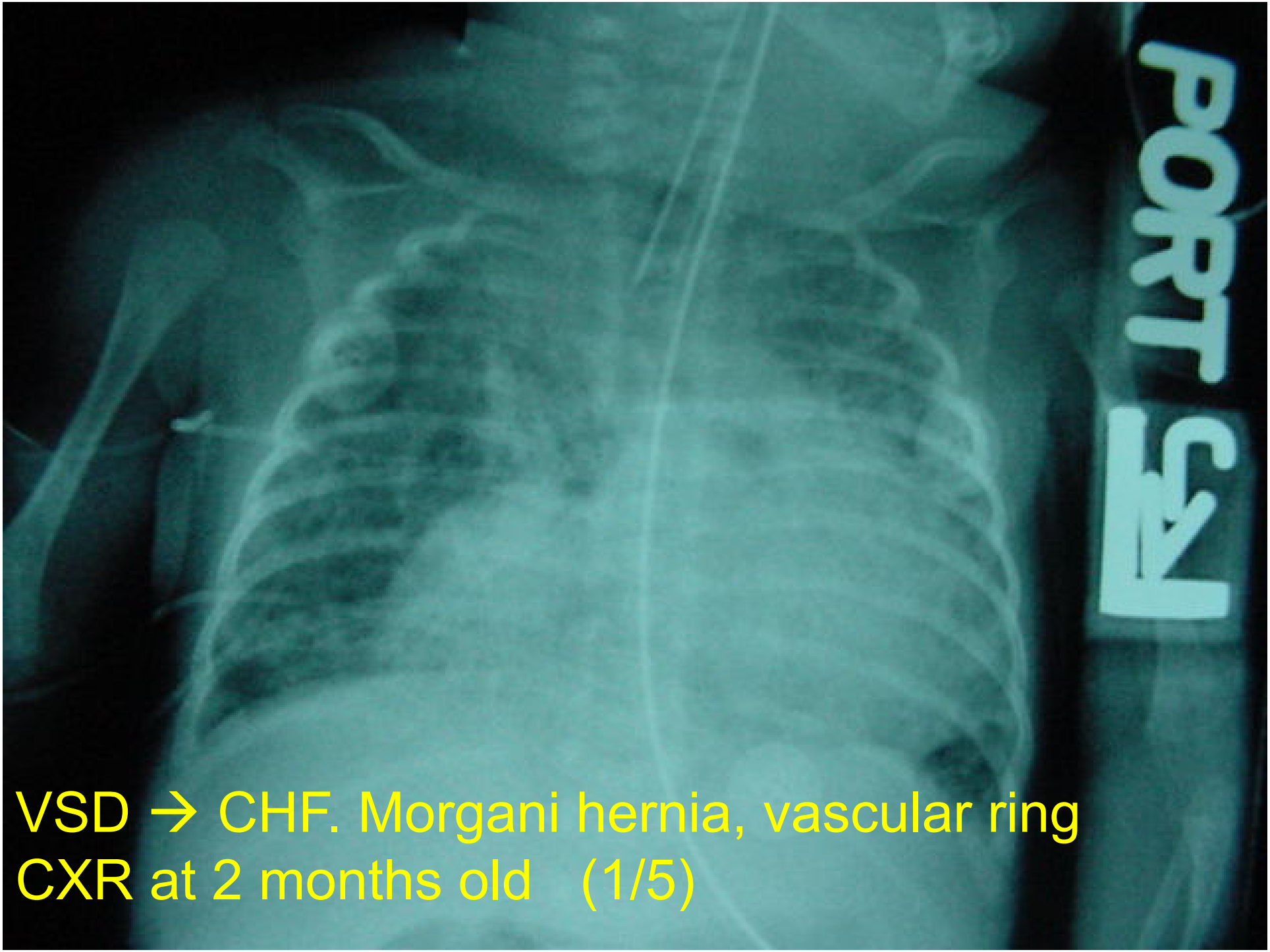


ATELECTASIS
Management - (2)

- Endotracheal intubation
- Low ventilator settings
- Nebulization (ultrasonic or electonic micropump) for 10-15 minutes followed by chest physiotherapy and endotracheal tube suction every 2-3 hours or before feeding
- Position atelectatic lung up

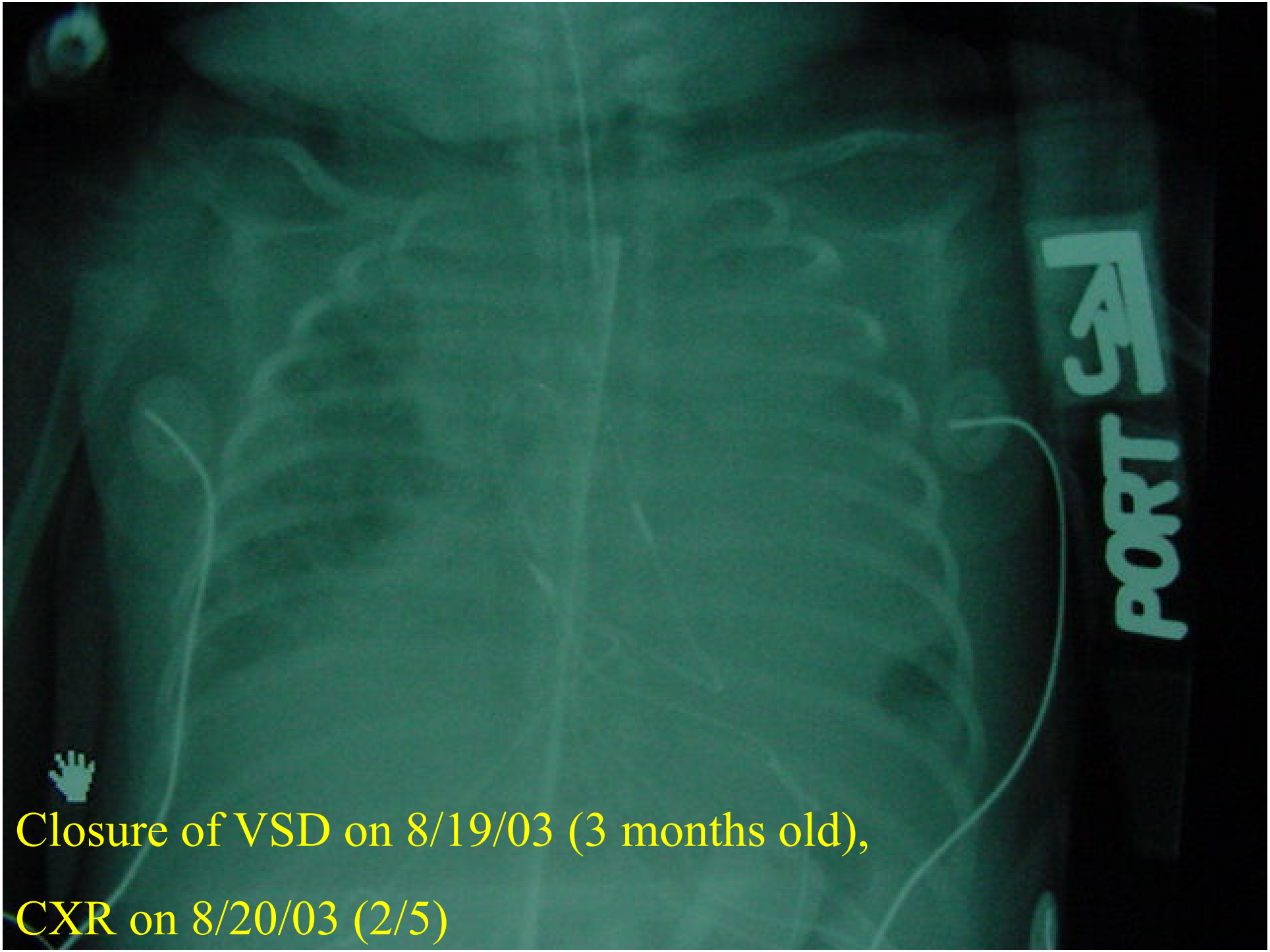
ATELECTASIS
Management - (3)

- High frequency ventilation
- Surfactant to atelectatic lung
- One-lung ventilation
- Intermittent one-lung ventilation
- Separate two-lung ventilation



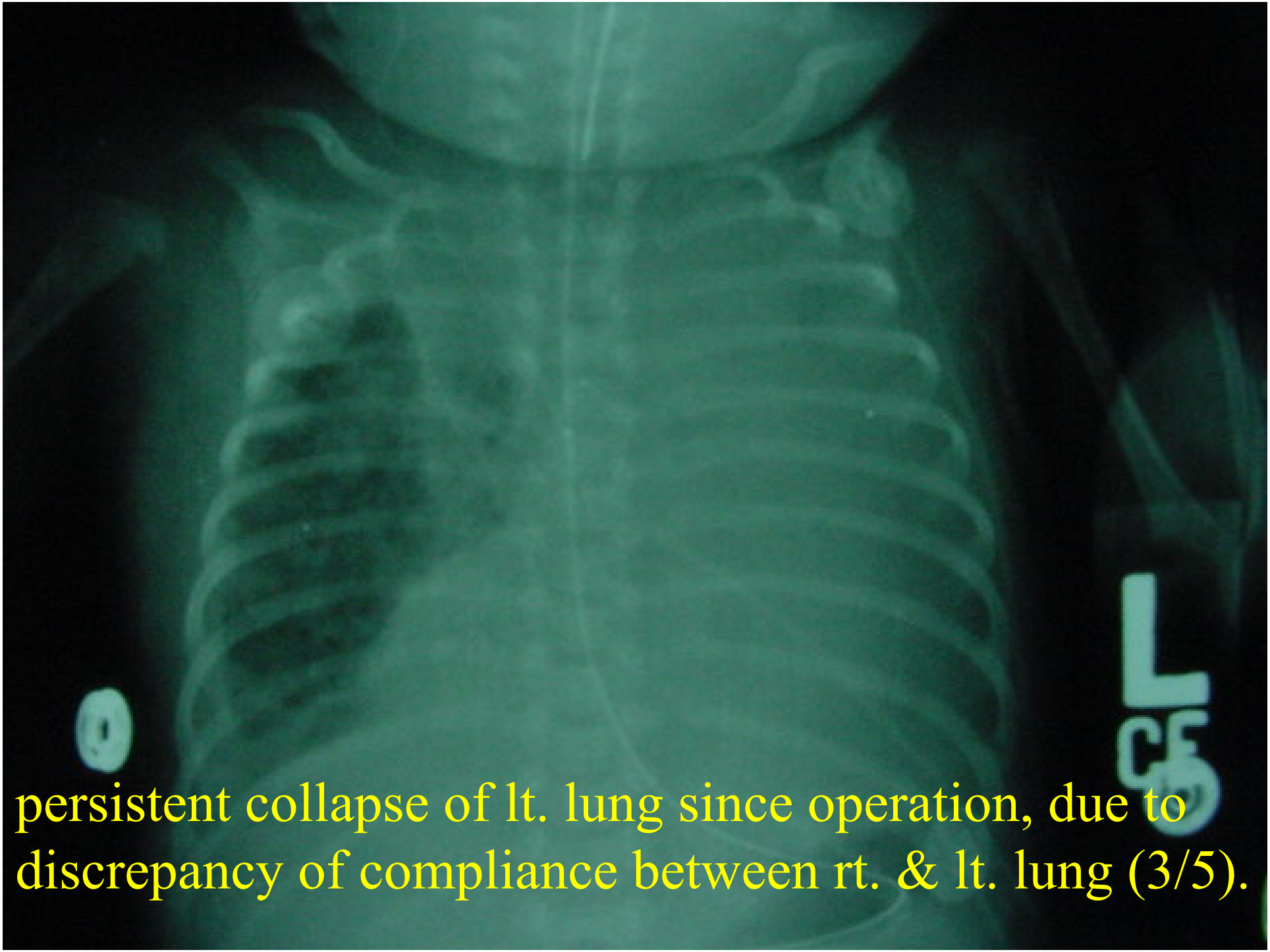
VSD → CHF. Morgani hernia, vascular ring

CXR at 2 months old (1/5)

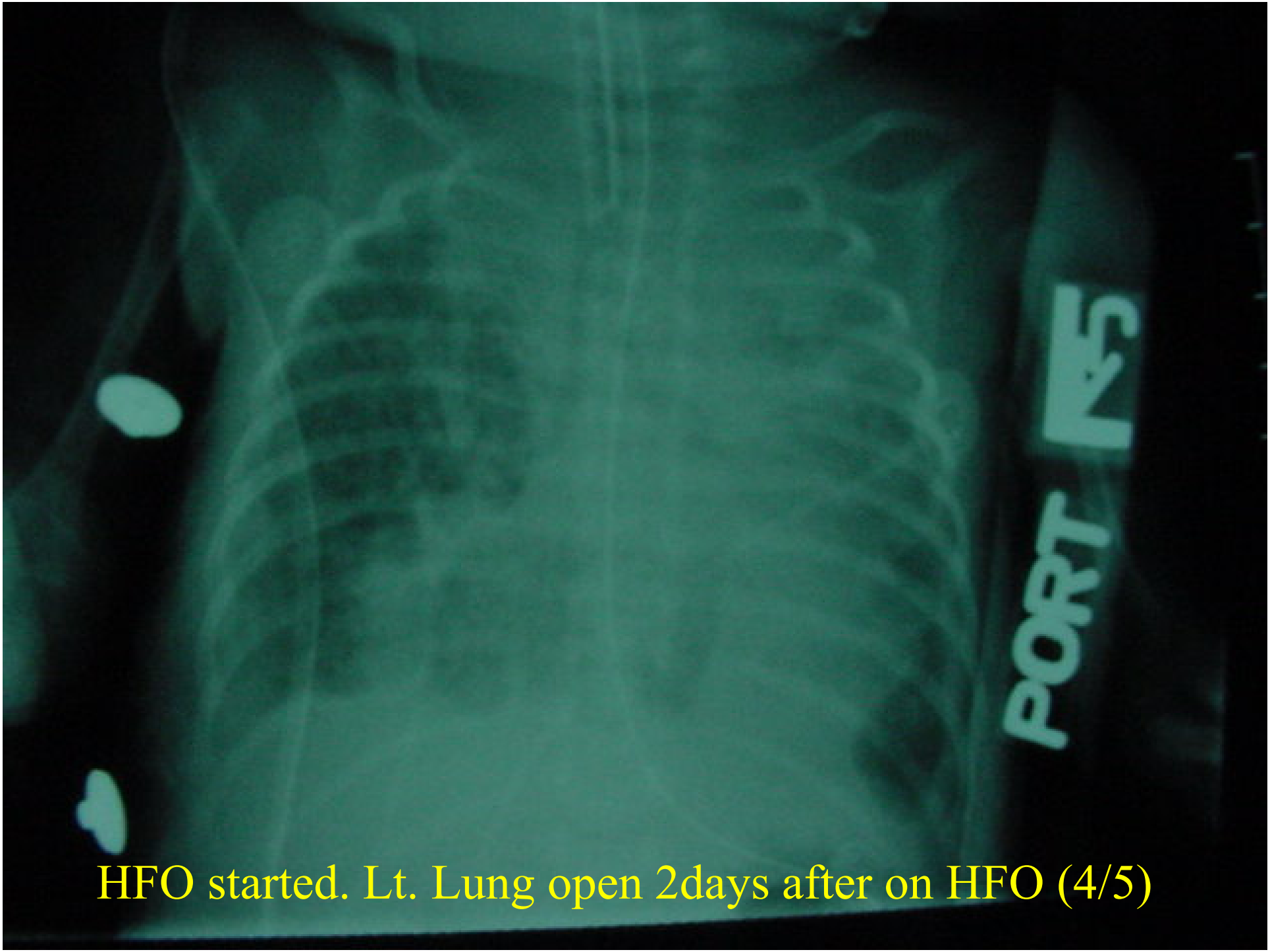


Closure of VSD on 8/19/03 (3 months old),

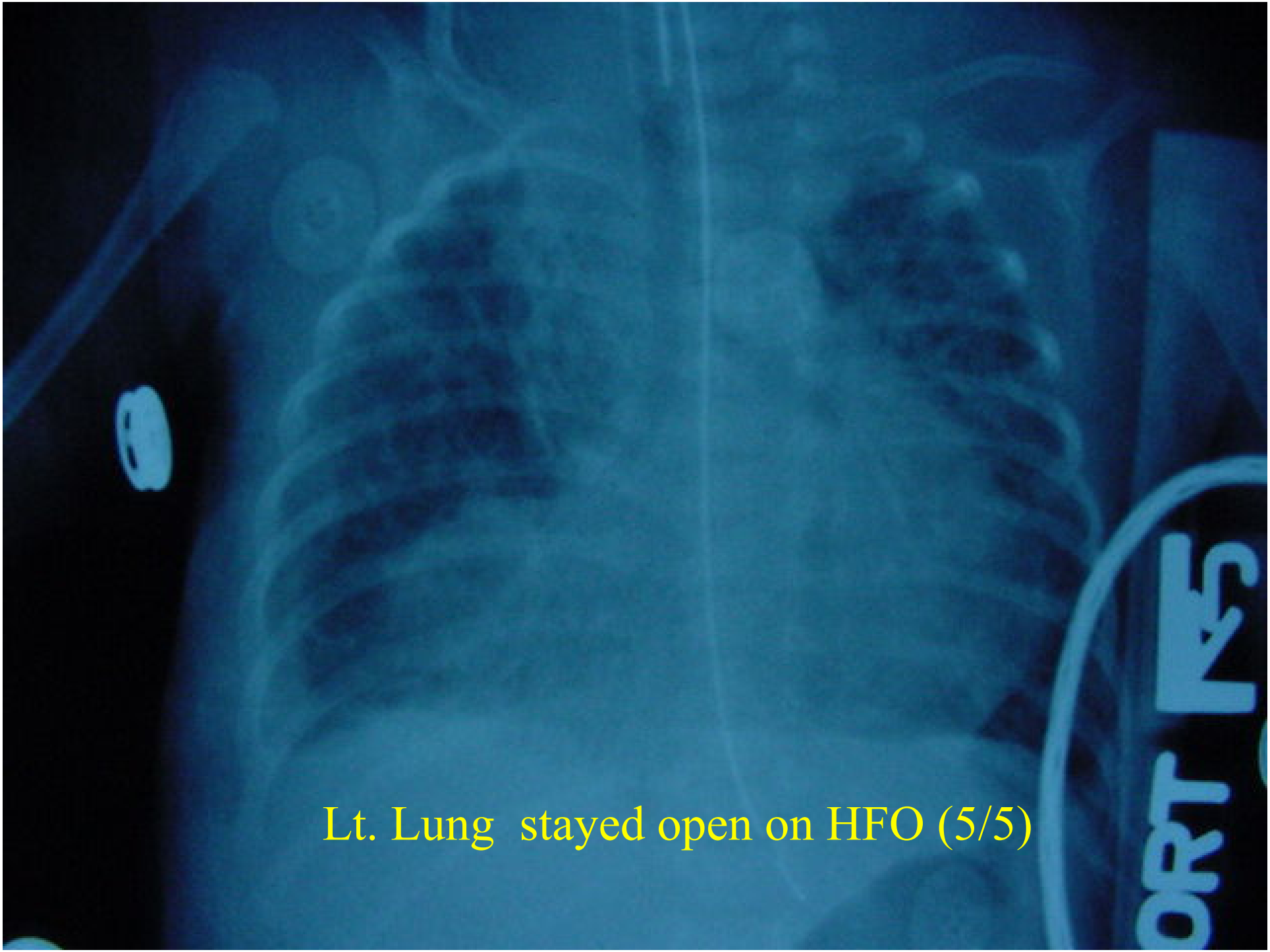
CXR on 8/20/03 (2/5)



persistent collapse of lt. lung since operation, due to discrepancy of compliance between rt. & lt. lung (3/5).



HFO started. Lt. Lung open 2days after on HFO (4/5)


Lt. Lung stayed open on HFO (5/5)

ATELECTASIS
Management - (3)

- High frequency ventilation
- Surfactant to atelectatic lung ?
- One-lung ventilation
- Intermittent one-lung ventilation
- Separate two-lung ventilation

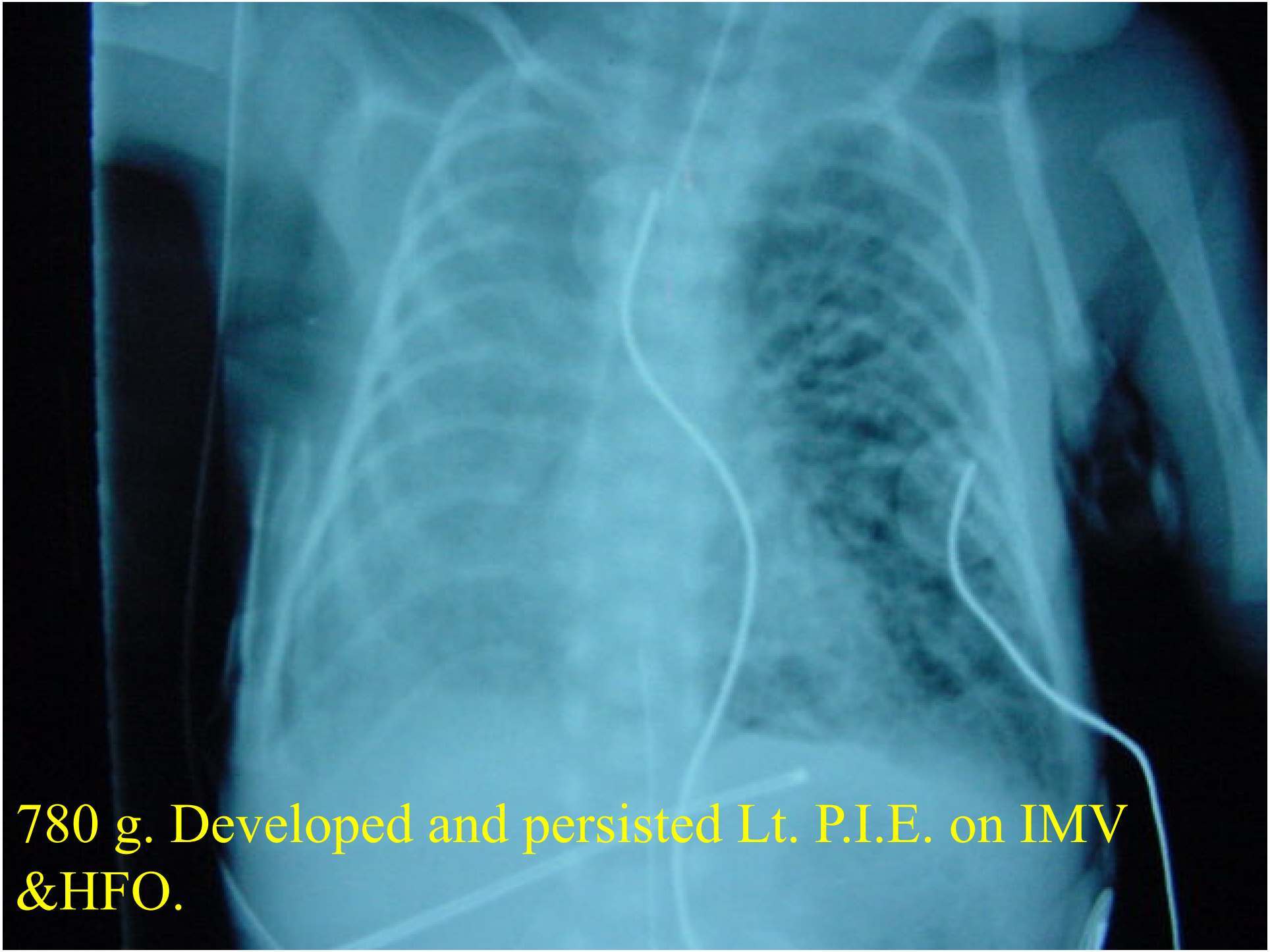
ATELECTASIS
Management - (3)

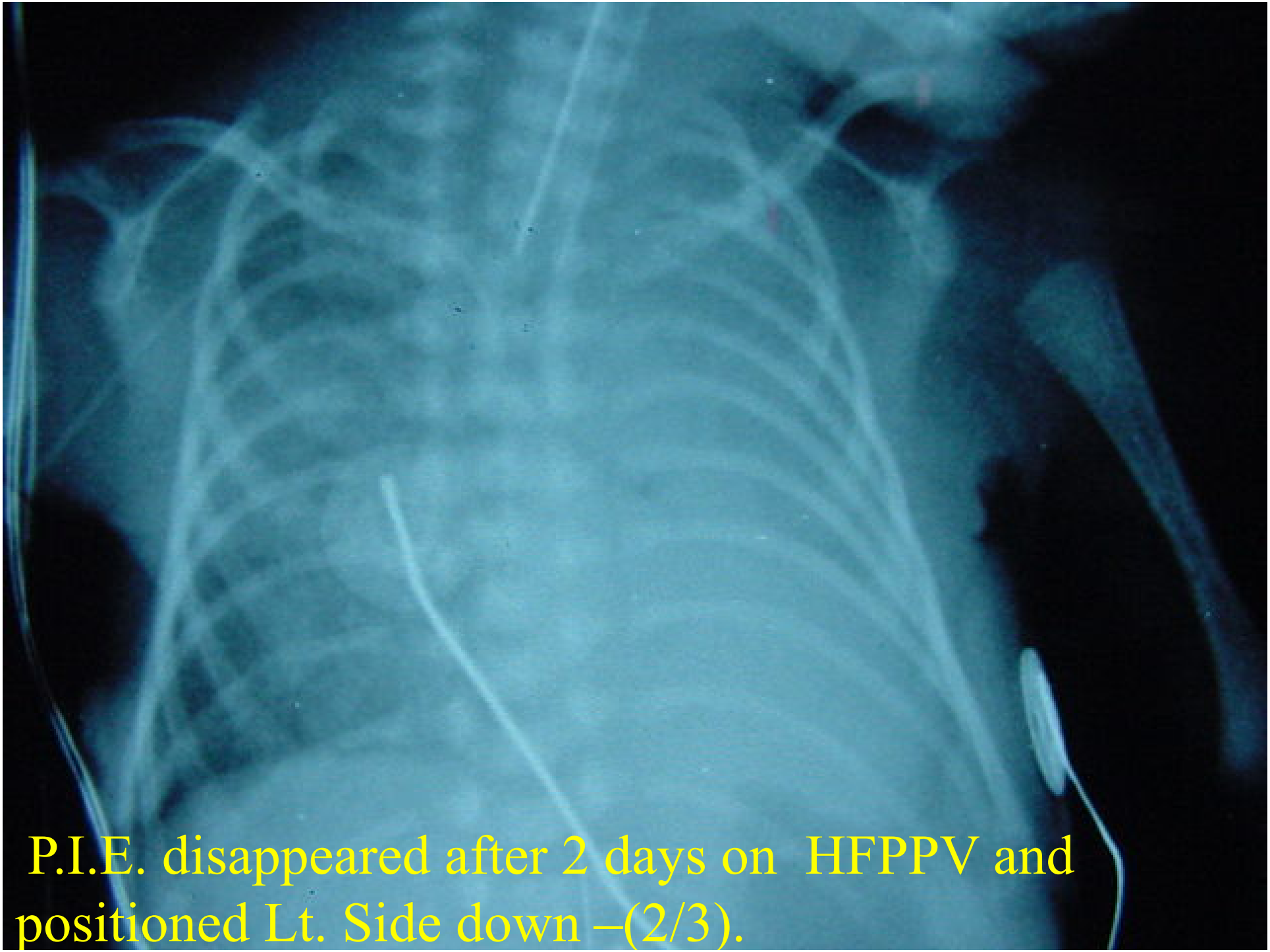
- High frequency ventilation
- Surfactant to atelectatic lung ?
- One-lung ventilation
- Intermittent one-lung ventilation
- Separate two-lung ventilation

Pulmonary Interstitial Emphysema (PIE)

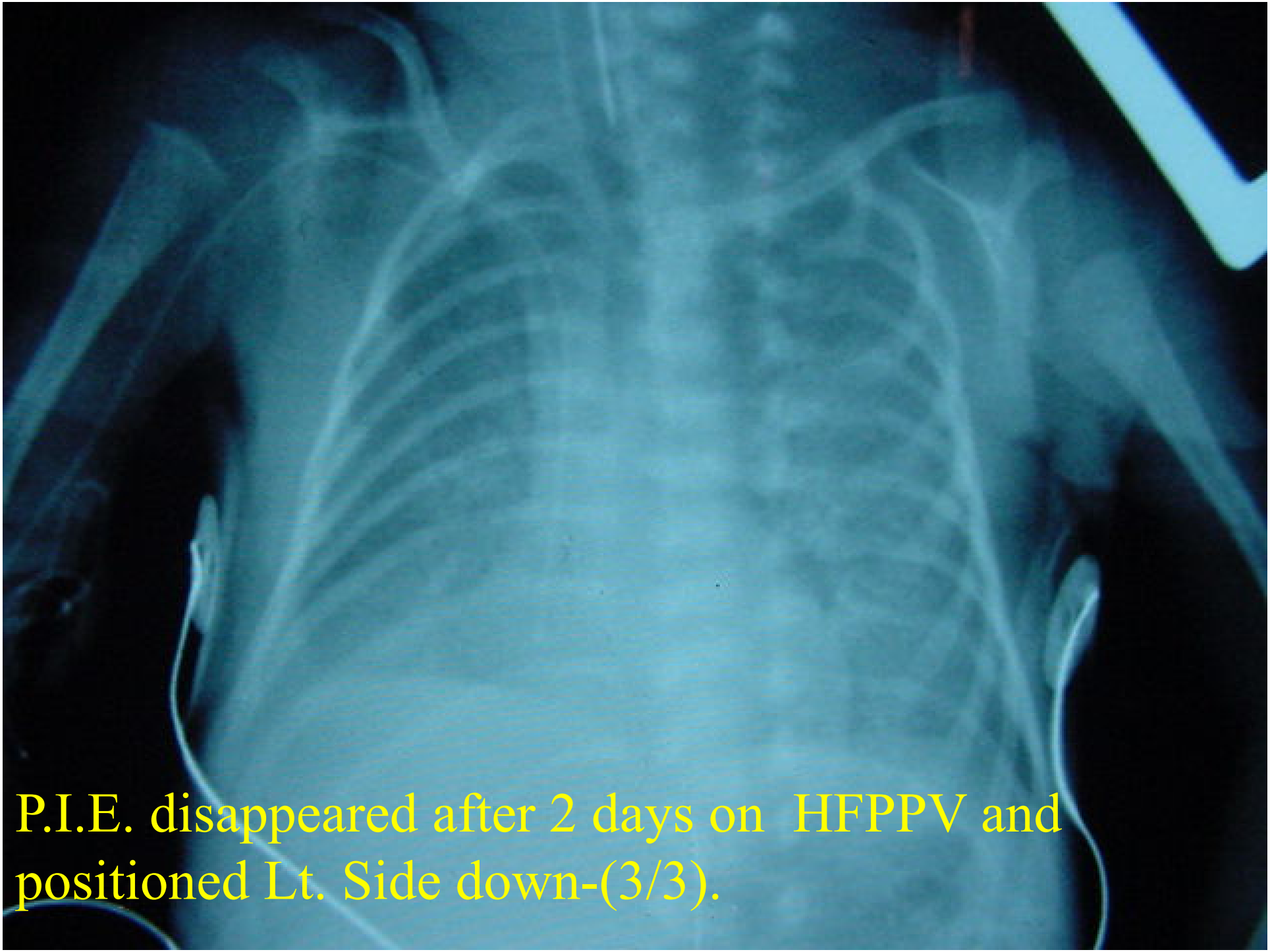
Management

- Positioning PIE side down
- Nebulization (ultrasonic or Aeroneb)
- Chest physiotherapy
- High Frequency Ventilation (HFPPV, HFJV, HFO)


780 g. Developed and persisted Lt. P.I.E. on IMV
&HFO.



P.I.E. disappeared after 2 days on HFPPV and positioned Lt. Side down –(2/3).


P.I.E. disappeared after 2 days on HFPPV and
positioned Lt. Side down-(3/3).

Rt. PIE treated with HFJV
3/30/09 →4/7/09

ONE-LUNG VENTILATION

Indications

- Persistent unilateral lung collapse
- Persistent unilateral Pulmonary Interstitial Emphysema (PIE)
- Unilateral cystic lung disease (acquired)
- Broncho-pleural fistula
- Lung abcess

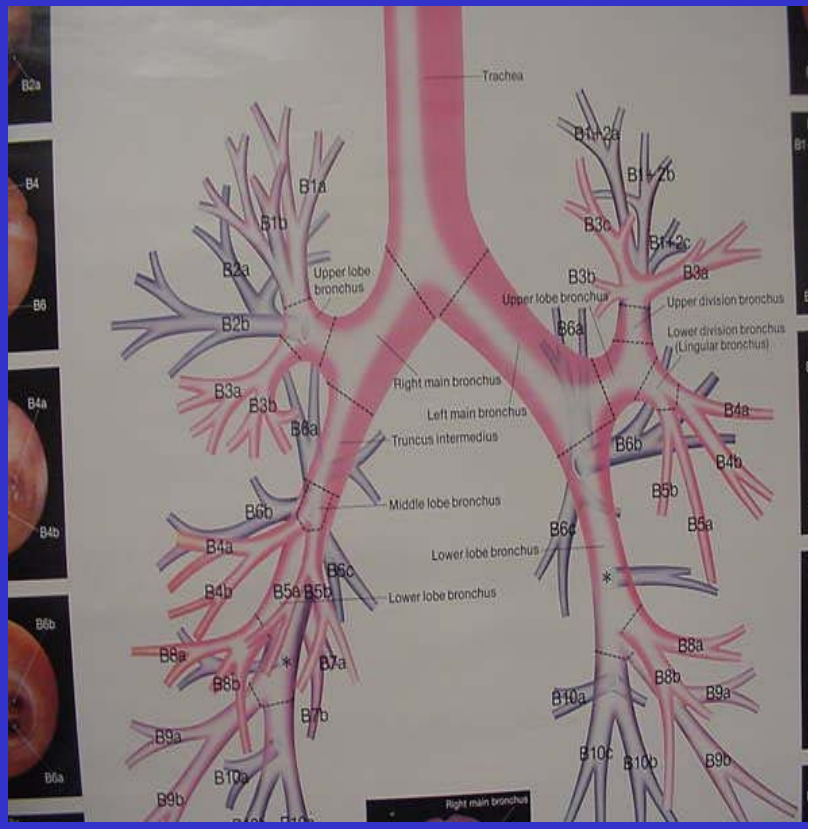
ONE-LUNG VENTILATION
Lung Collapse

FOR RIGHT LUNG:

- Selective bronchial block (SBB) of left main bronchus

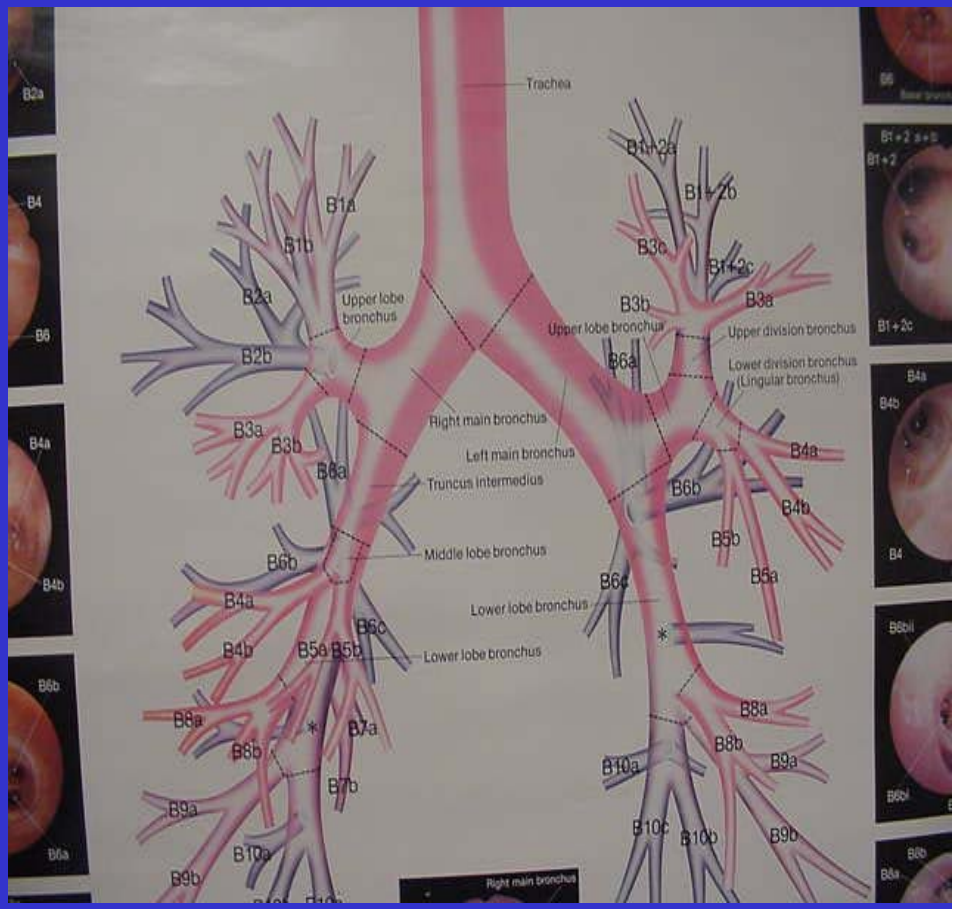
FOR LEFT LUNG:

- Selective bronchial intubation (SBI) of left main bronchus or
- Selective bronchial block of right truncus intermedius



ONE-LUNG VENTILATION

- Difficult to spare right upper lobe in SBI or SBB of right lung
- In SBI, may not prevent ventilation of opposite lung



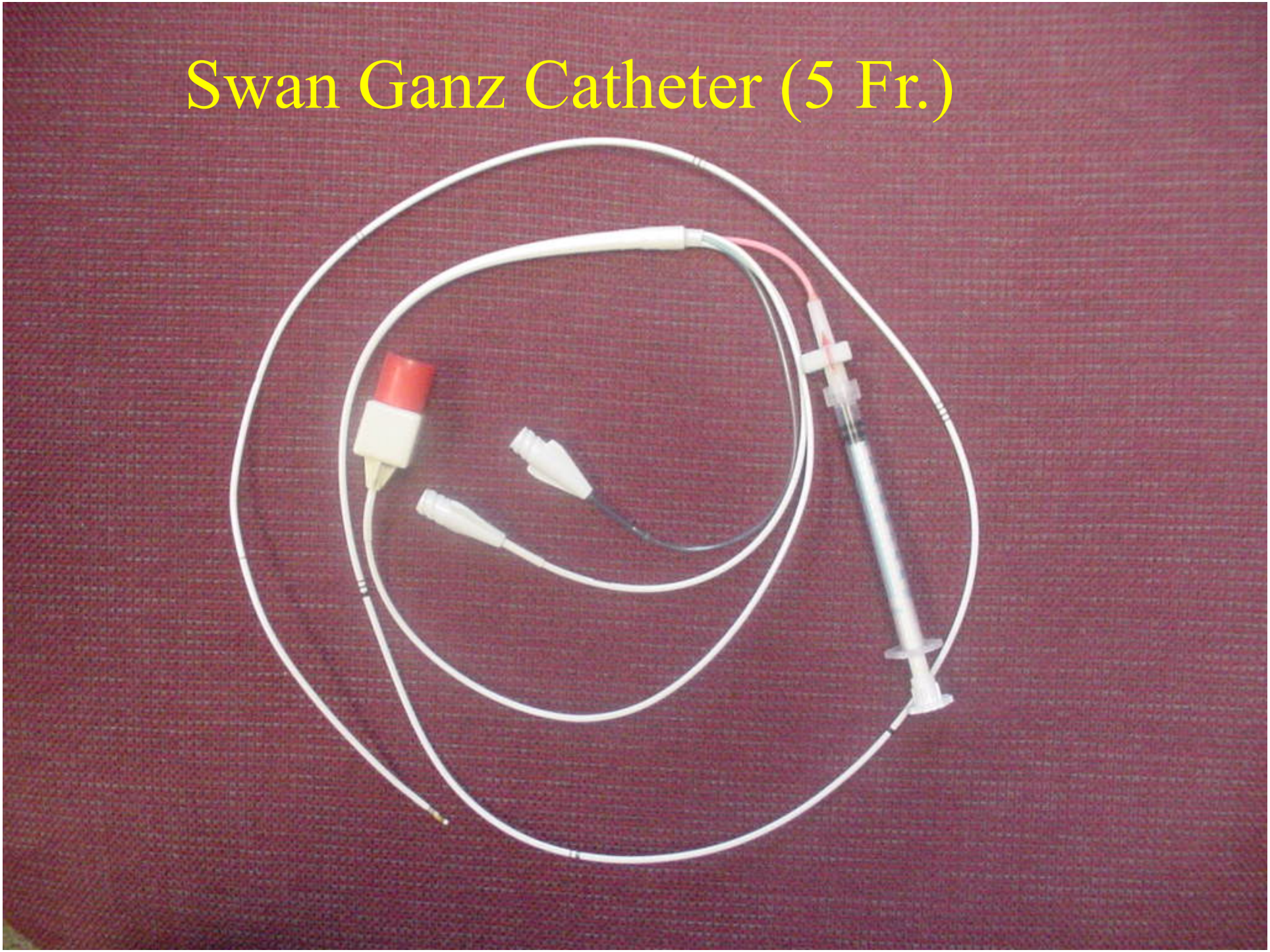
ONE-LUNG VENTILATION

Selective bronchial block

(SBB)

Using Swan-Ganz Catheter (5Fr)

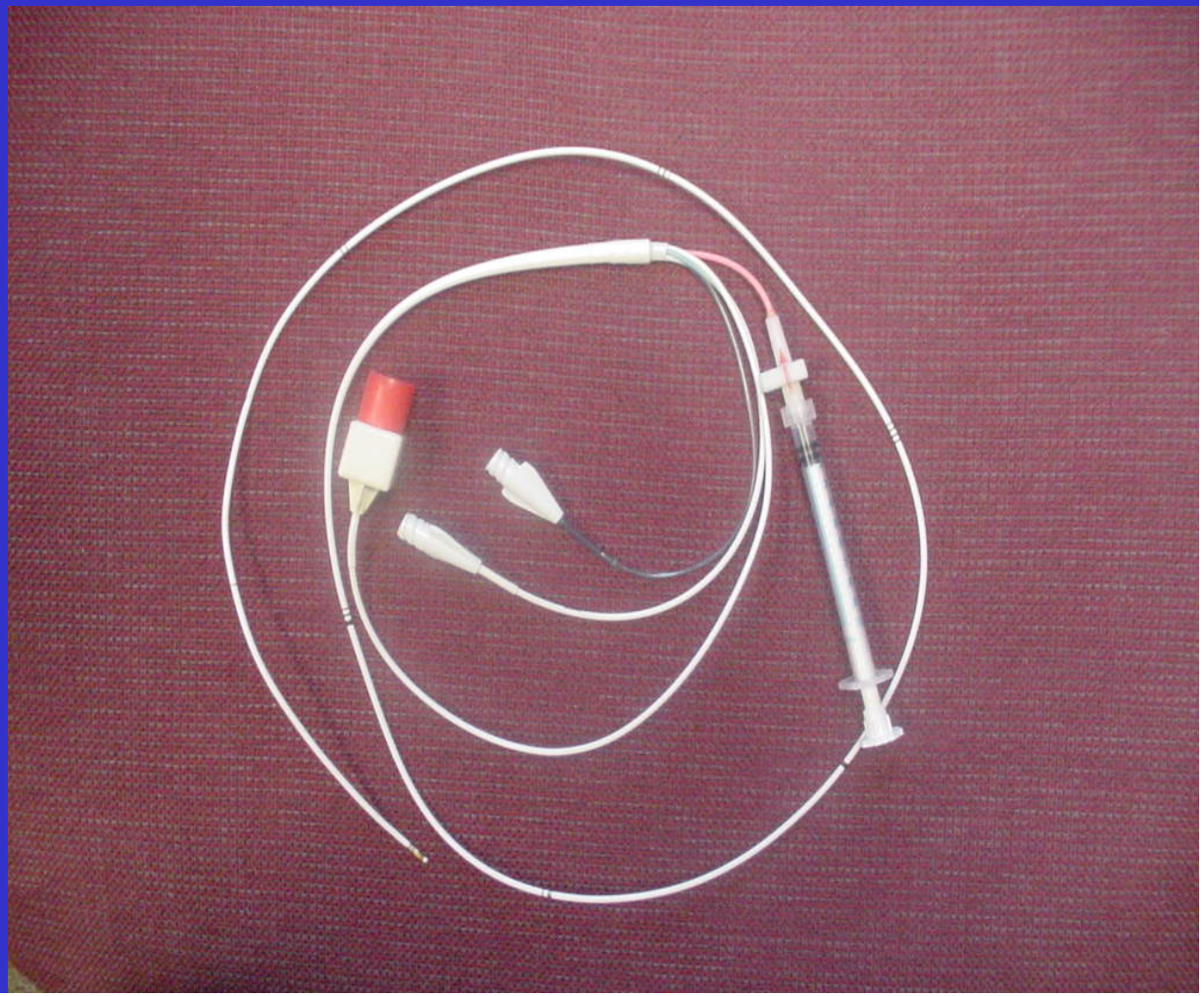
Swan Ganz Catheter (5 Fr.)



ONE-LUNG VENTILATION

Placement of Swan-Ganz Catheter (1)

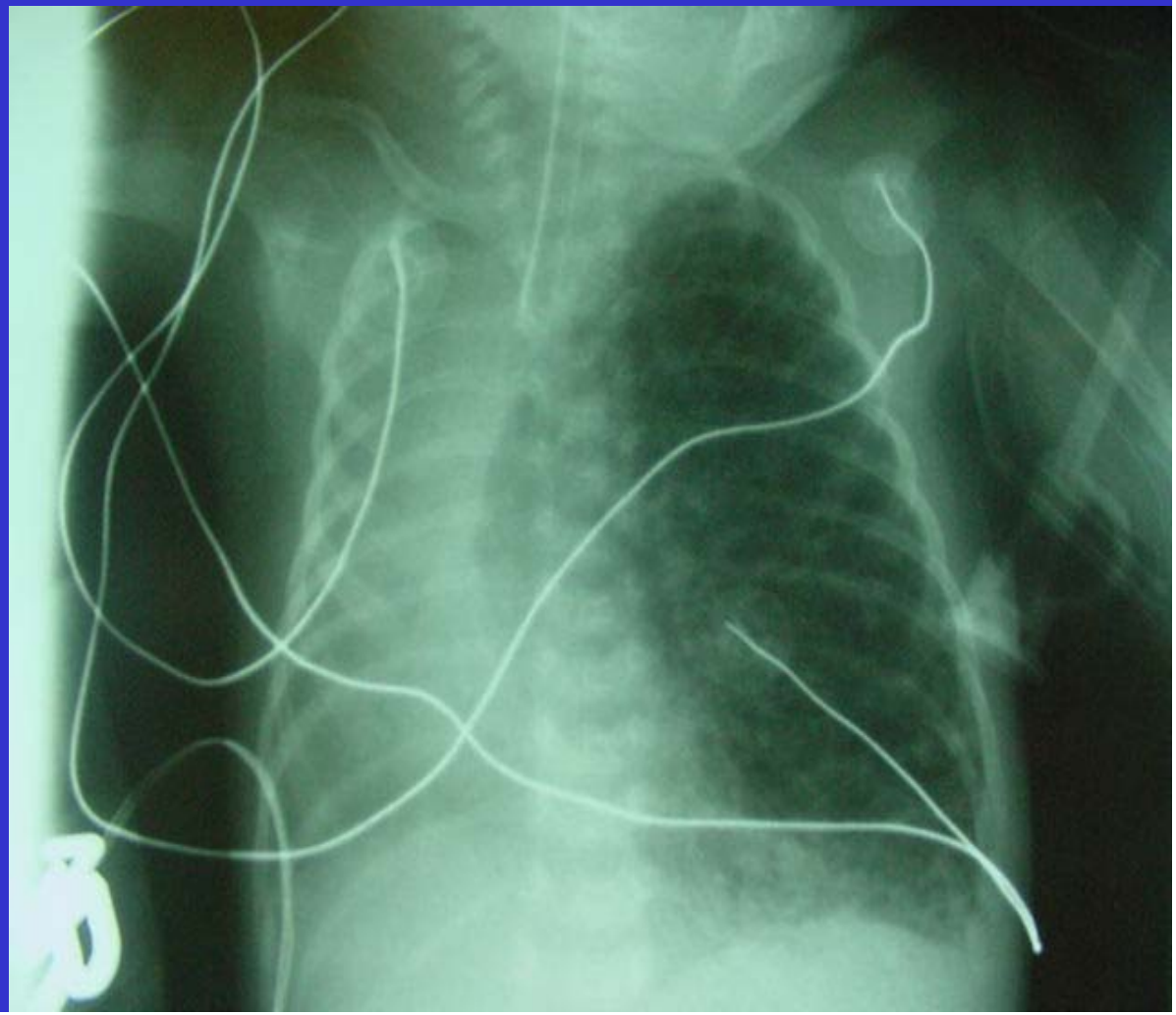
- Pre-test balloon for volume of air required (usually 0.6cc or 1cc)



ONE-LUNG VENTILATION

Placement of Swan-Ganz Catheter (2)

- Estimate the length of insertion from the chest X-ray film



ONE-LUNG VENTILATION

Placement of Swan-Ganz Catheter (3)

- Insert SGC through nares
- Direct SGC under direct laryngoscopy into the trachea alongside of ET tube
- If difficult, pull the ET tube out to pharynx, insert SGC, then re-intubate

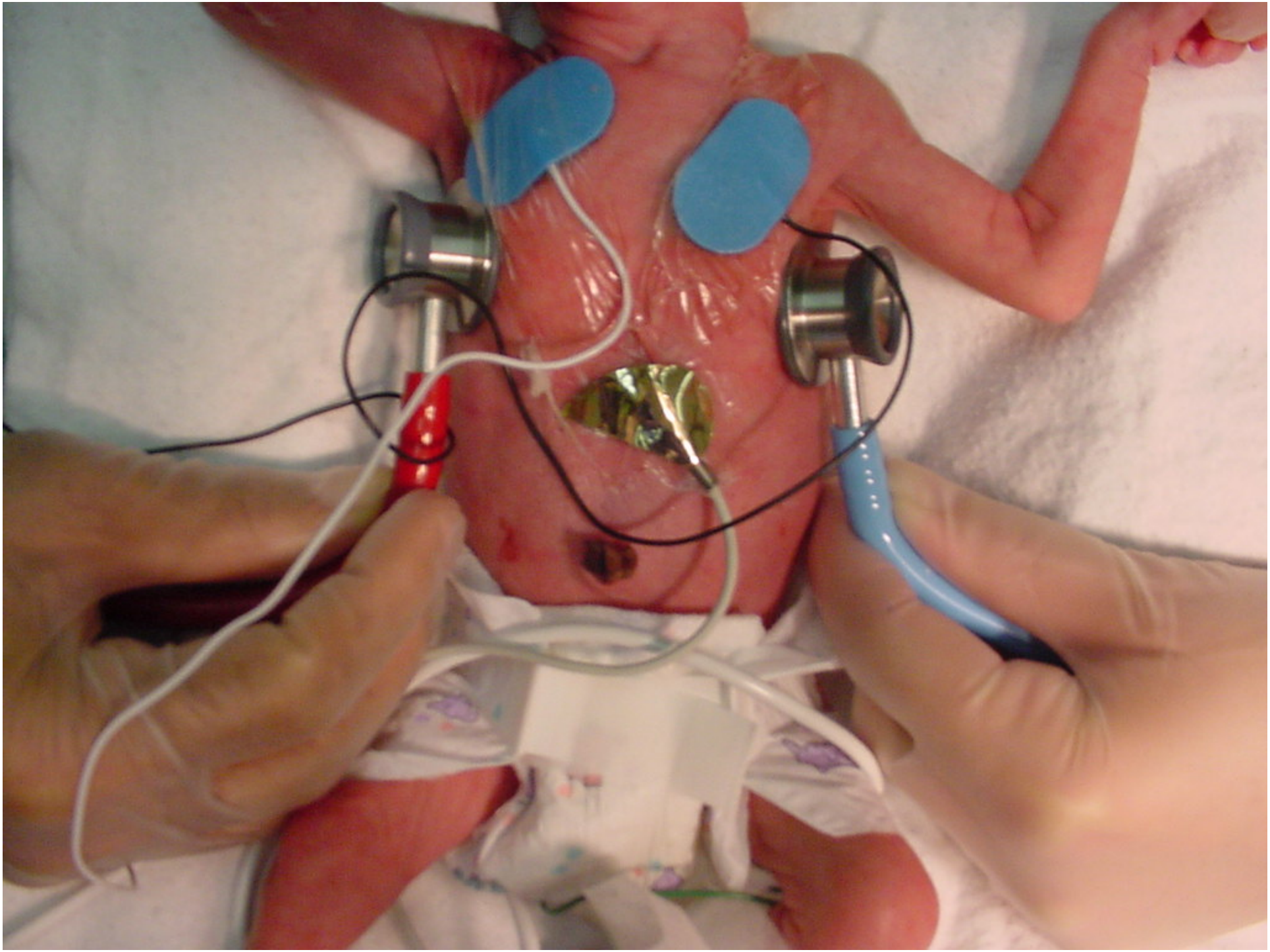
ONE-LUNG VENTILATION

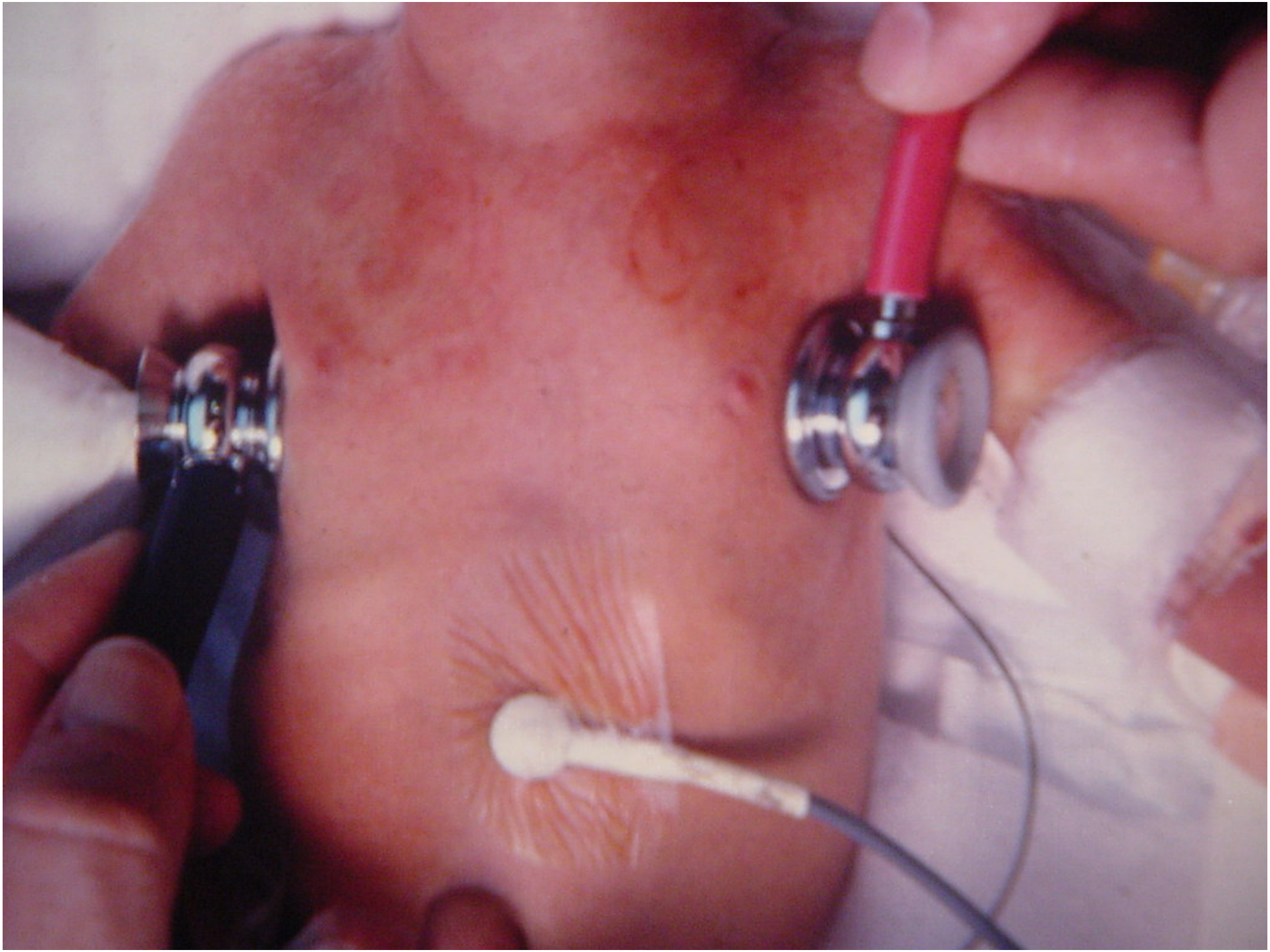
Placement of Swan-Ganz Catheter (4)

- For insertion into left main bronchus, extend the head toward the right side
- Conversely, for the right main bronchus
- Advance SGC to the pre-determined length

ONE-LUNG VENTILATION
Placement of Swan-Ganz Catheter (5)

- Check SGC tip position by rapidly injecting air through the SGC (end hole, not the balloon side port) while two assistants simultaneously auscultate gurgling sounds over each axillae
- Confirm SGC position by chest X-ray





ONE-LUNG VENTILATION

Placement of Swan-Ganz Catheter(6)

If SGC keeps entering the wrong side, advance ET tube to the main bronchus (the wrong side) and then advance SGC. This may increase chance for SGC to enter the correct side. Pull ET tube back to trachea.

Placement of Swan-Ganz Catheter (7)

- Secure ET tube and SGC
- Inflate SGC balloon with pre-determine air volume
- Closely observe vital signs and oxygenation
- Adjust ventilator settings if necessar

ONE-LUNG VENTILATION

Placement of Swan-Ganz Catheter (8)

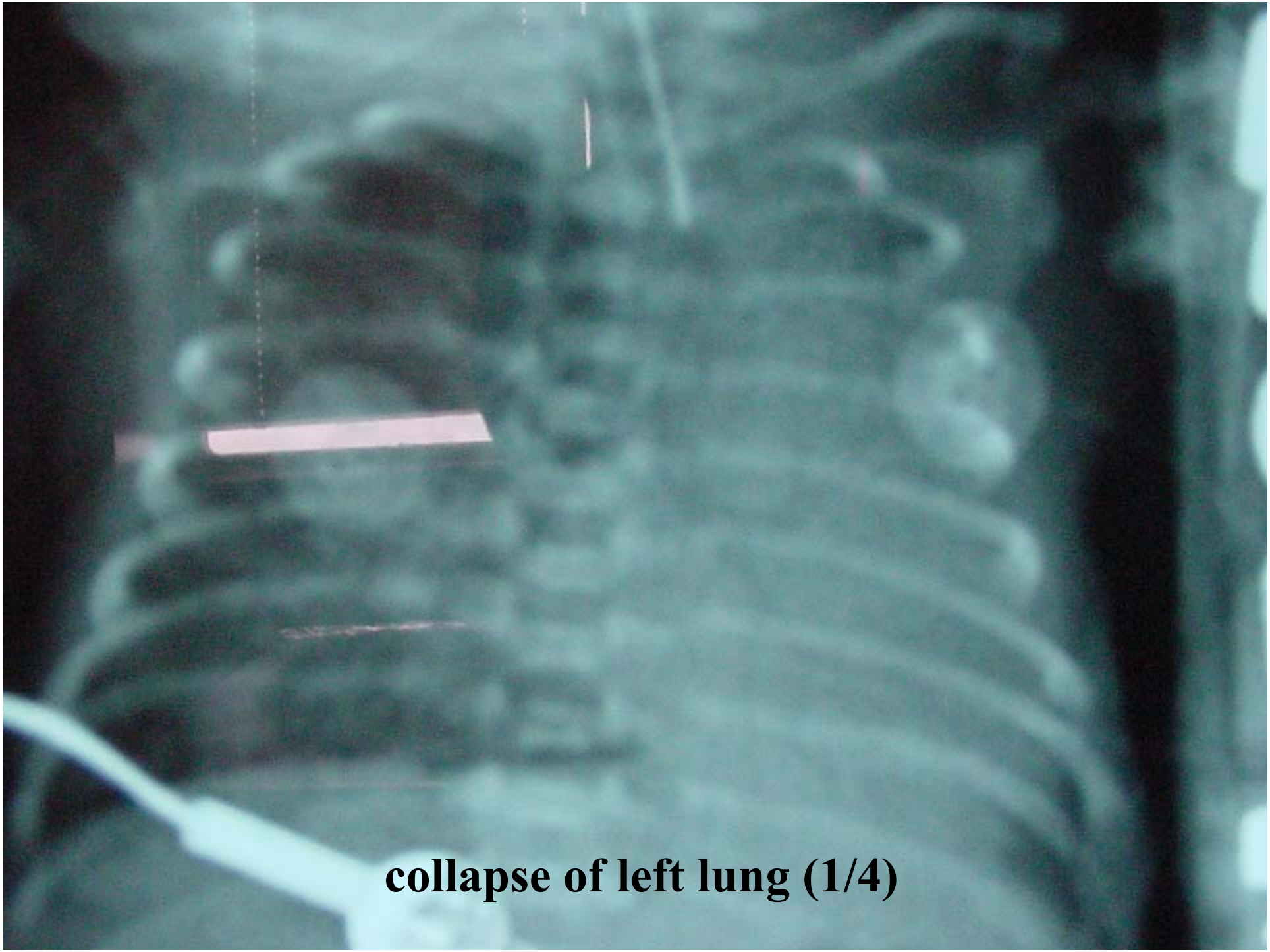
- Completely deflate and re-inflate the balloon every hour on the hour
- Daily chest x-ray or prn
- Leave the SGC in place until problem is resolved (usually 3-5 days)
- Deflate the balloon and leave the SGC in place for an additional 24 hours

ONE-LUNG VENTILATION
Placement of Swan-Ganz Catheter (9)

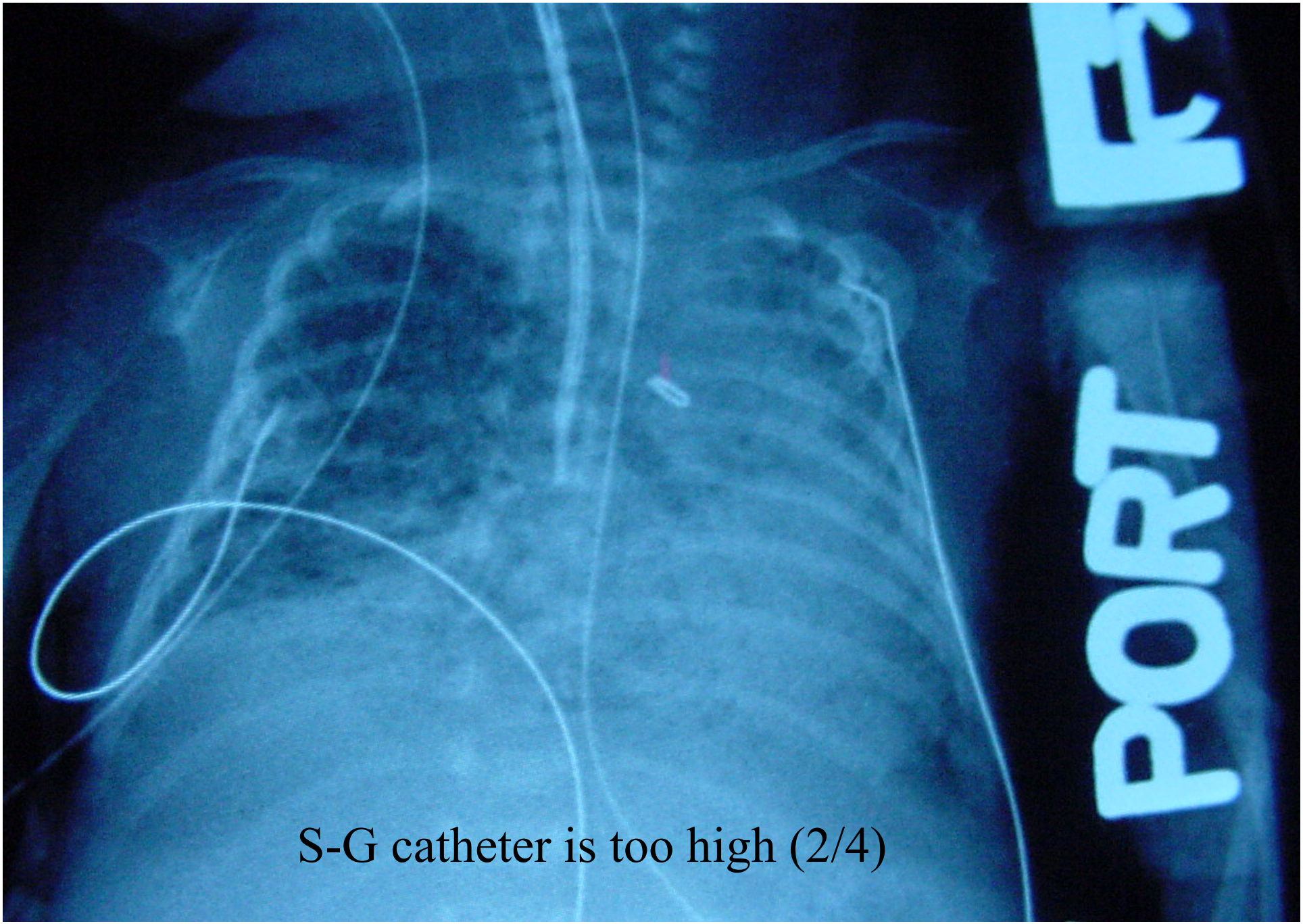
- If no recurrence on chest X-ray, then remove SGC
- Follow up chest X-ray

ONE-LUNG VENTILATION
Complications

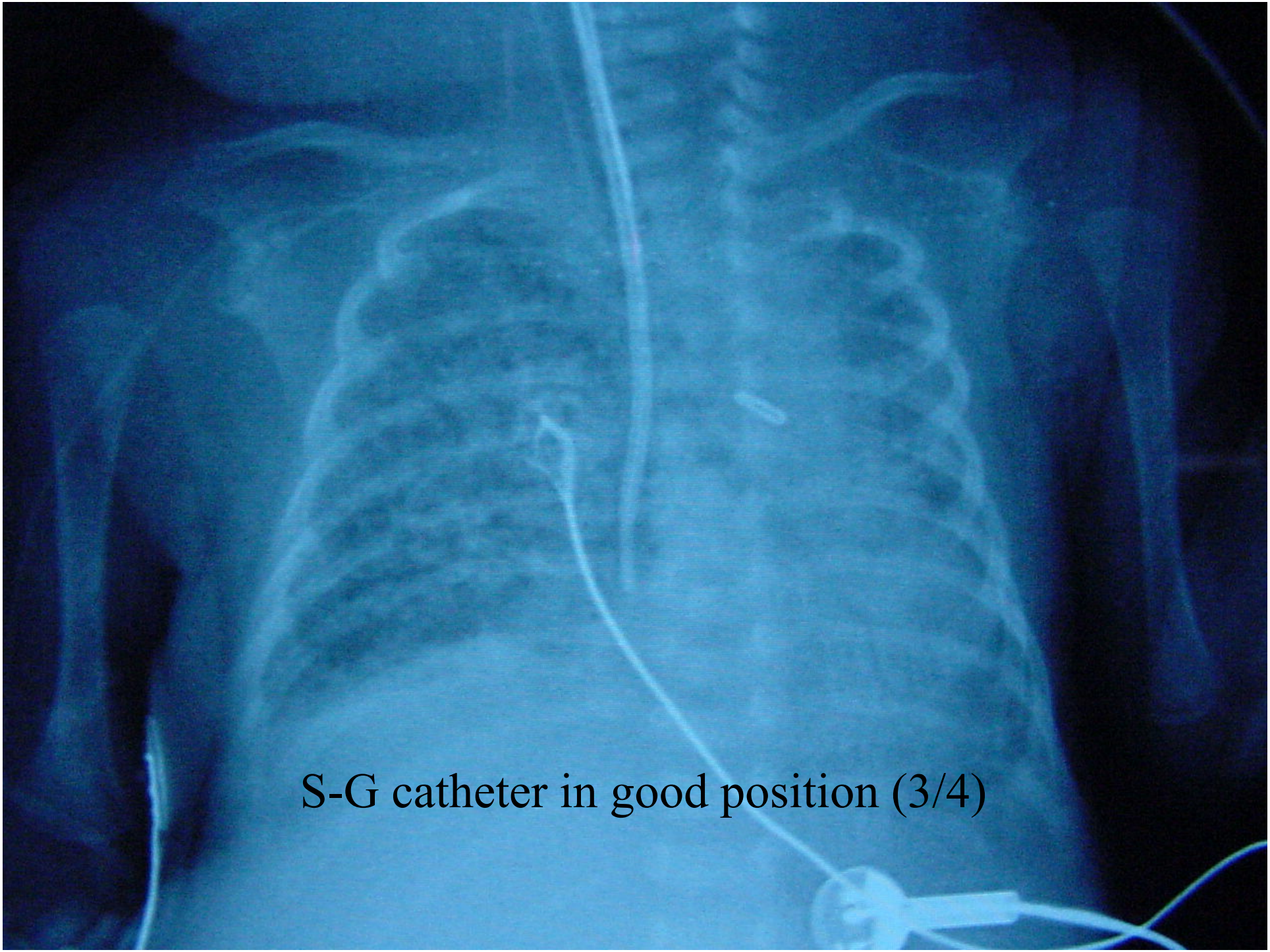
- Hypoxemia
- Bradycardia
- Right upper lobe collapse (during SBI of right lung)
- Pneumothorax (partial occlusion, ball valve effect)
- Sudden severe deterioration (inflated balloon slips up into trachea)
- Pneumonia
- Pressure necrosis at balloon site



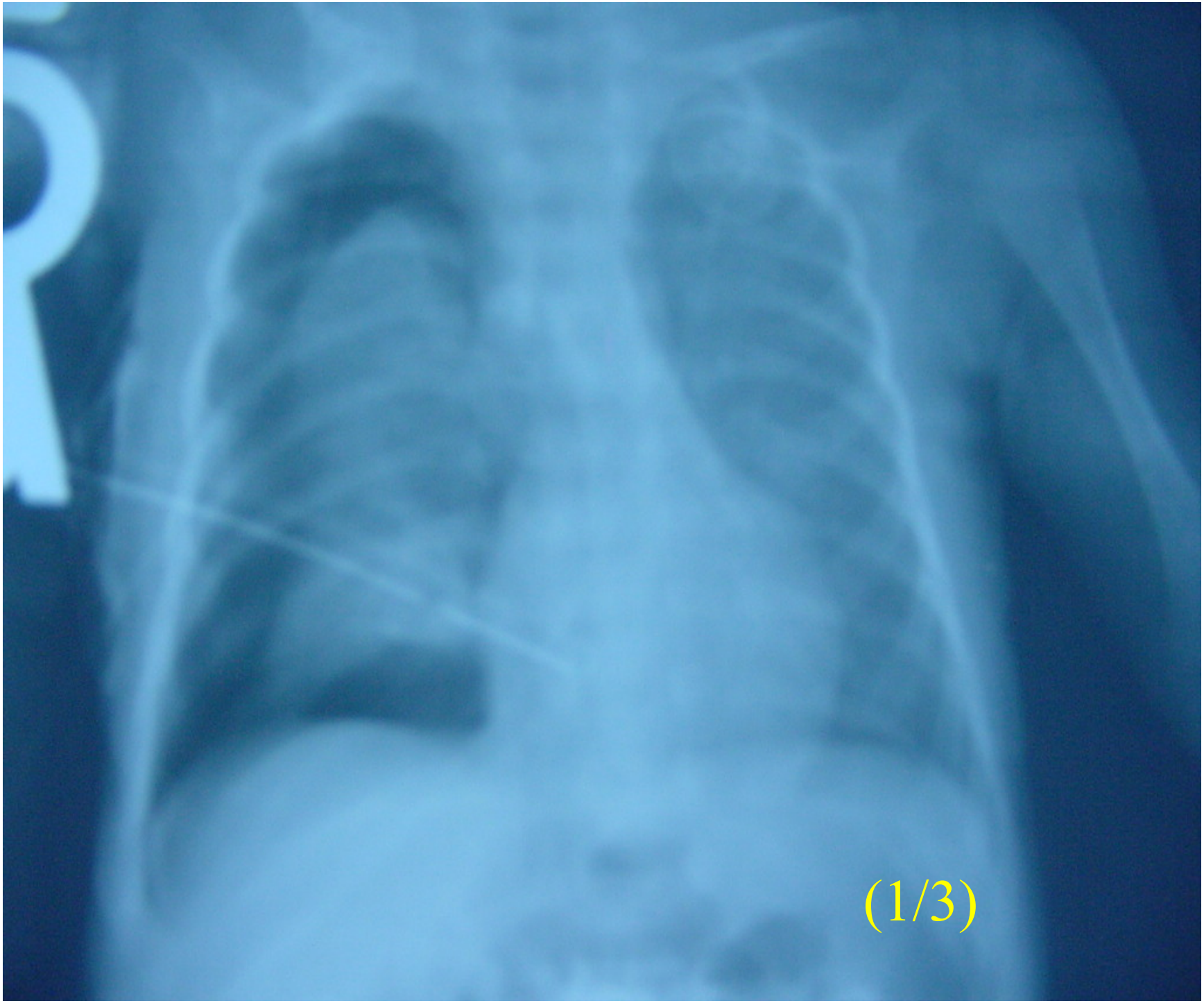
collapse of left lung (1/4)



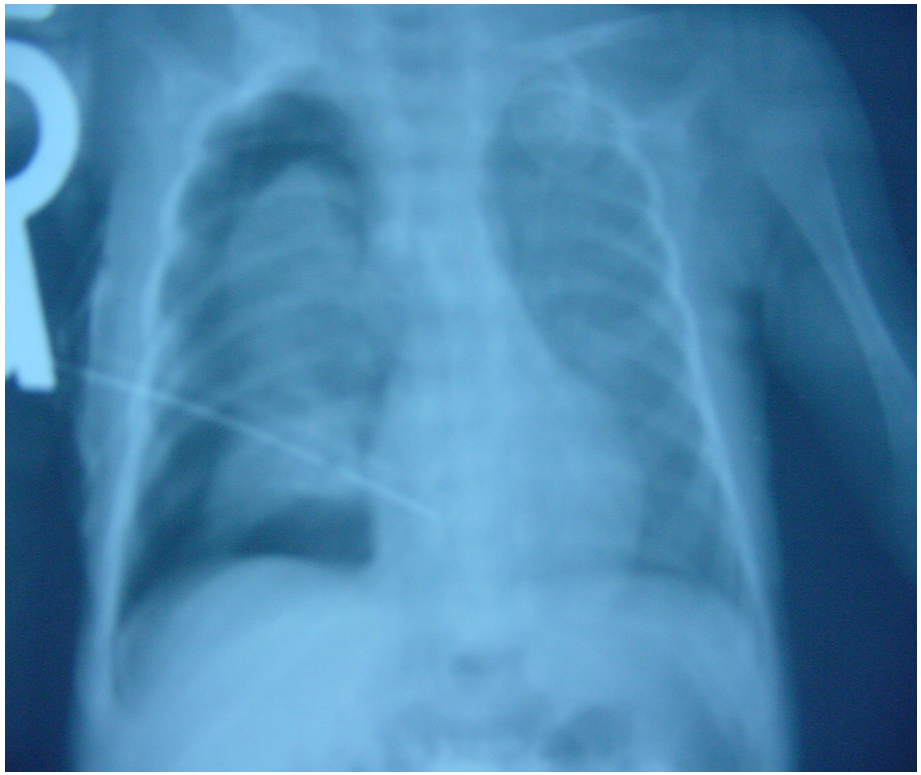
S-G catheter is too high (2/4)


S-G catheter in good position (3/4)

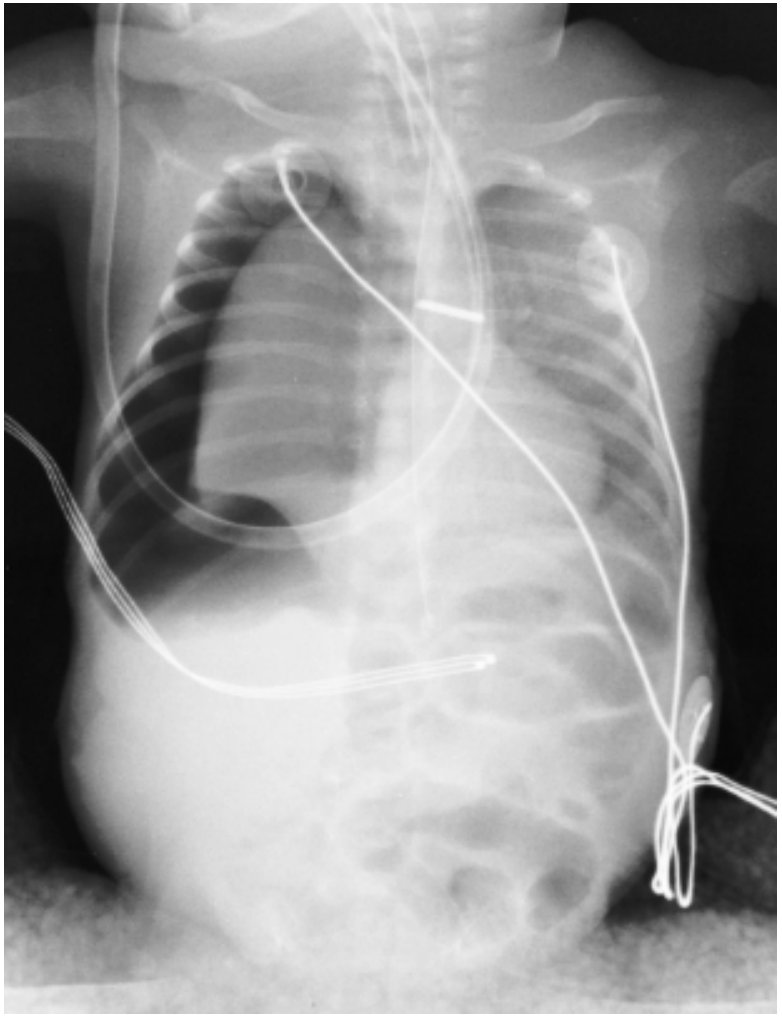
S-G catheter in place (4/4)

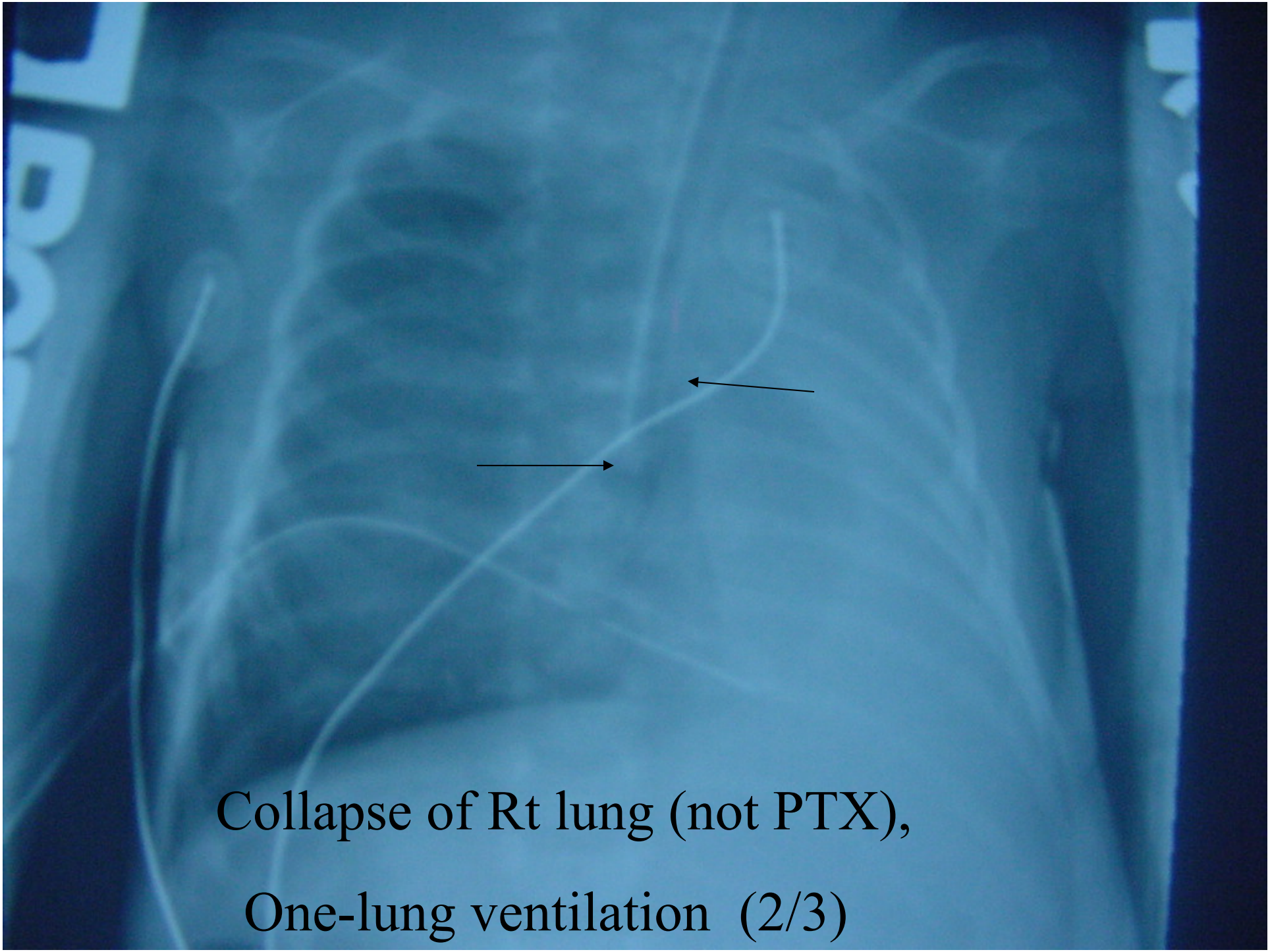

(1/3)

Collapsed rt. Lung



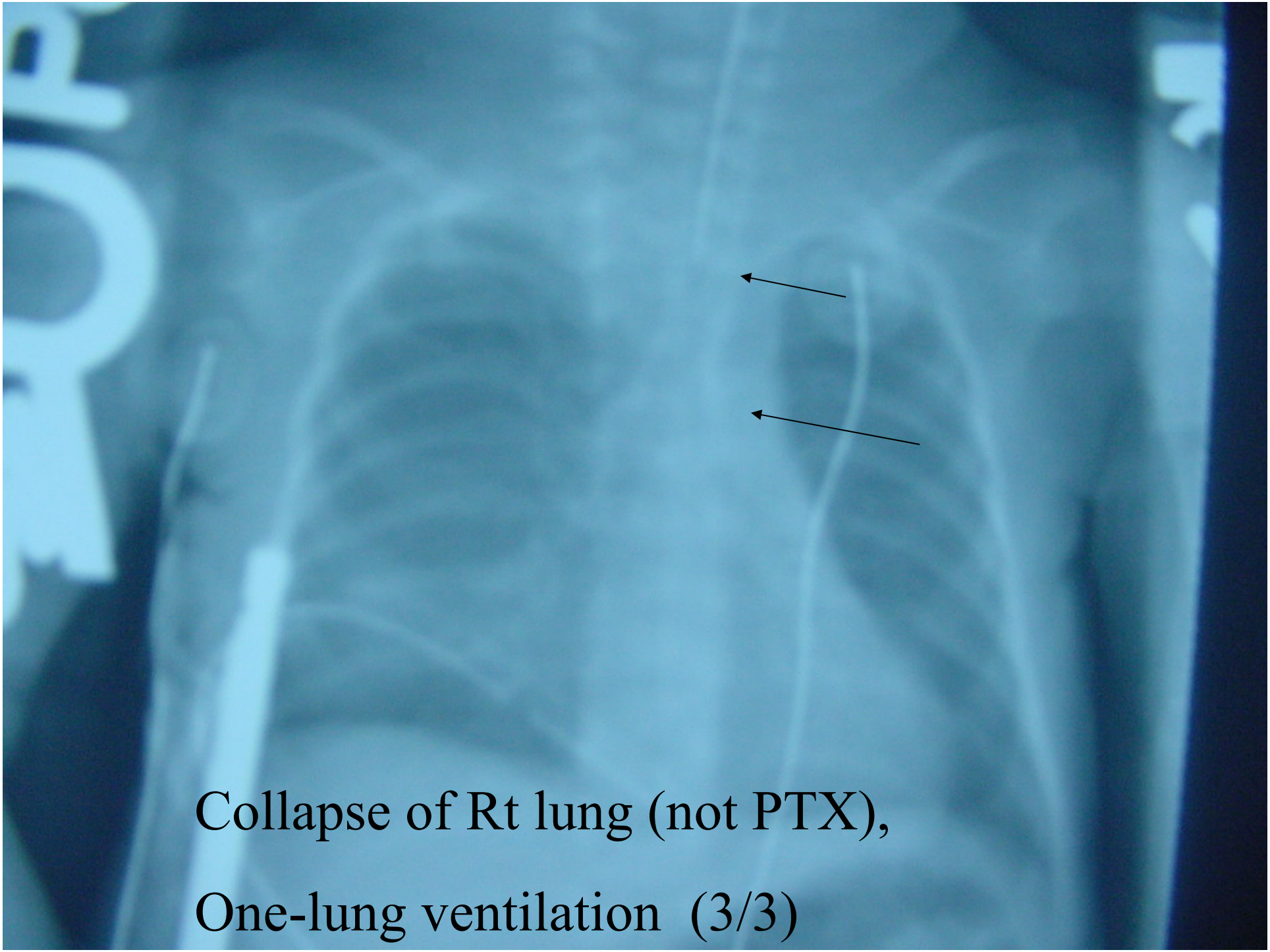
rt. pneumothorax





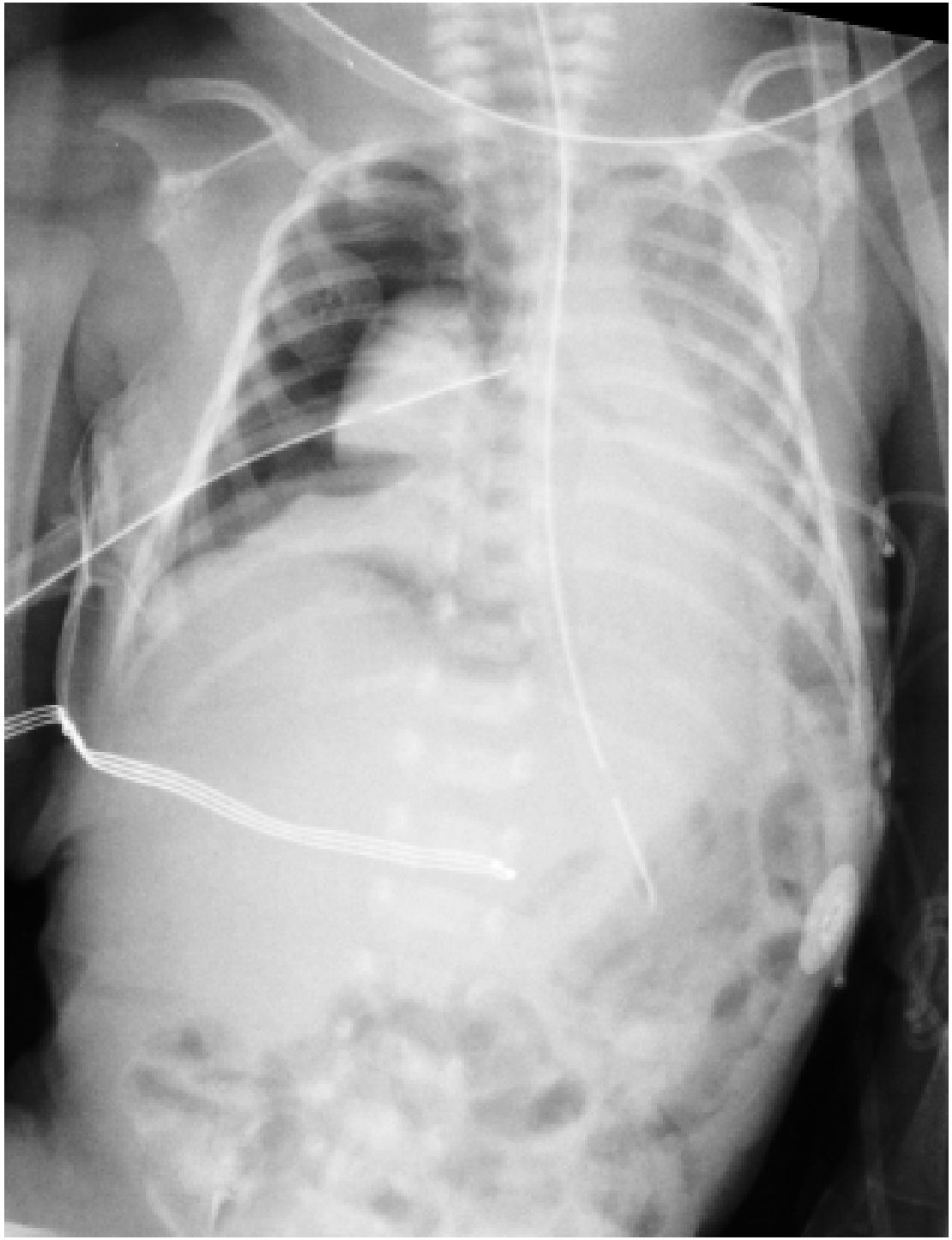
Collapse of Rt lung (not PTX),

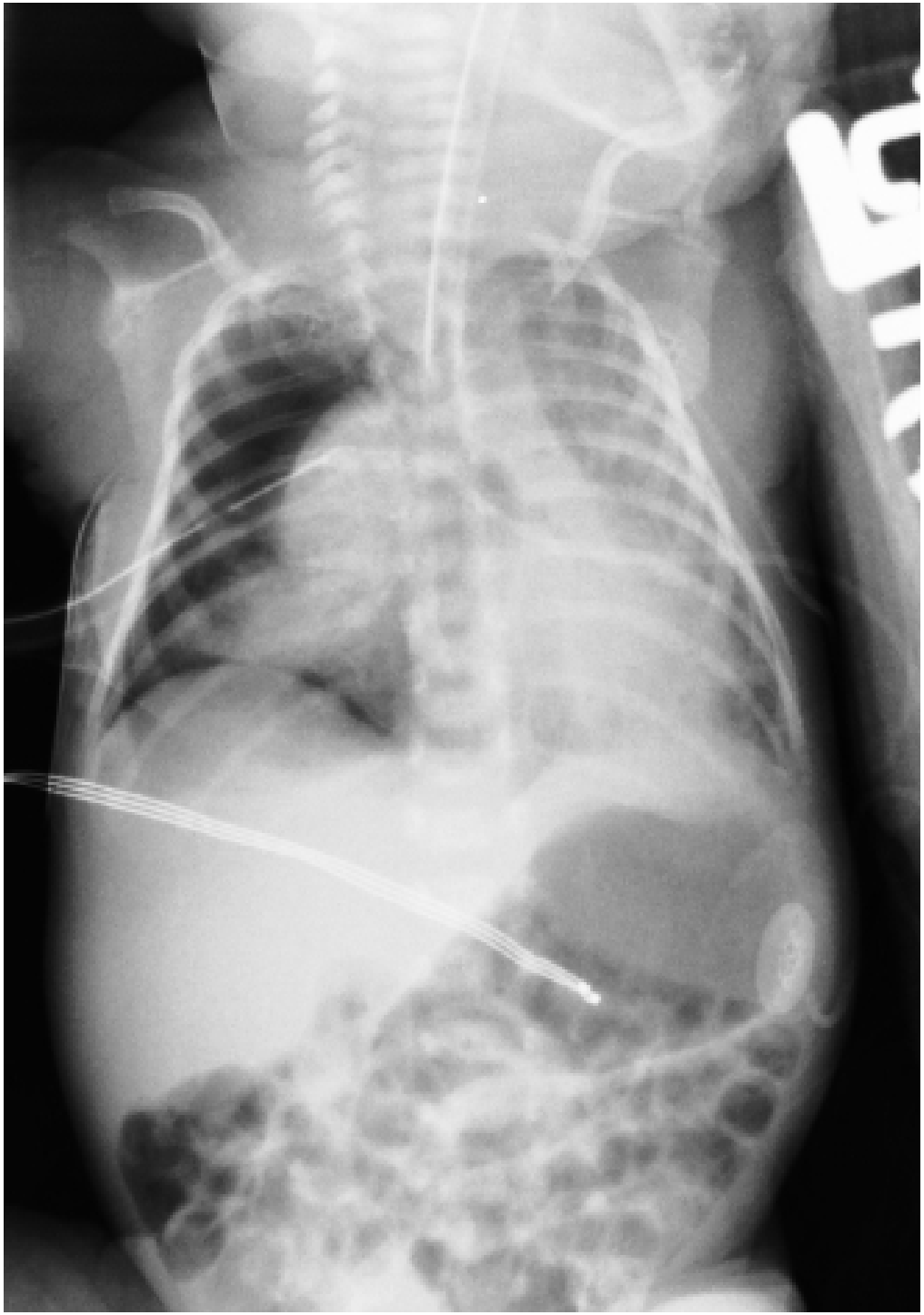
One-lung ventilation (2/3)

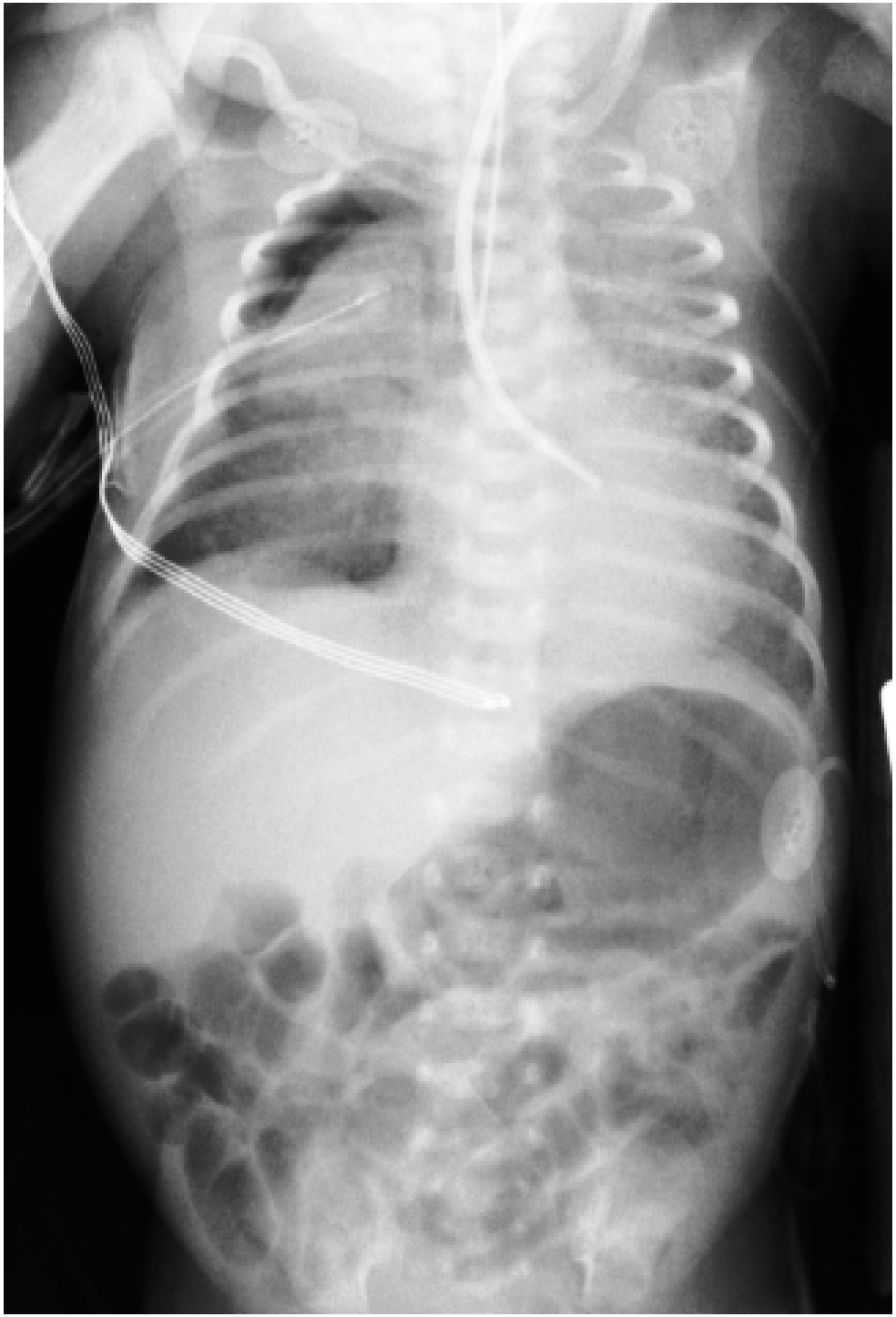


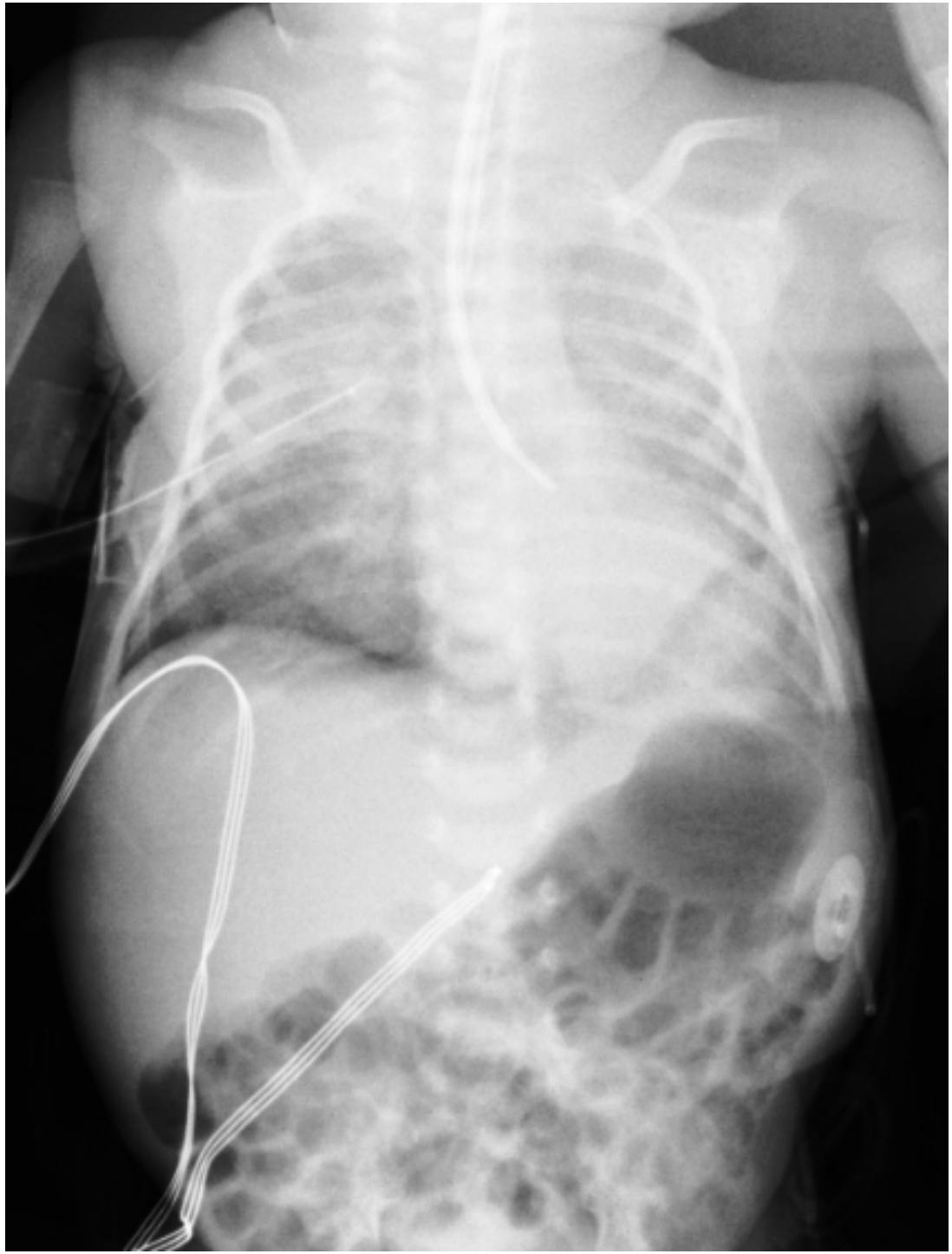
Collapse of Rt lung (not PTX),

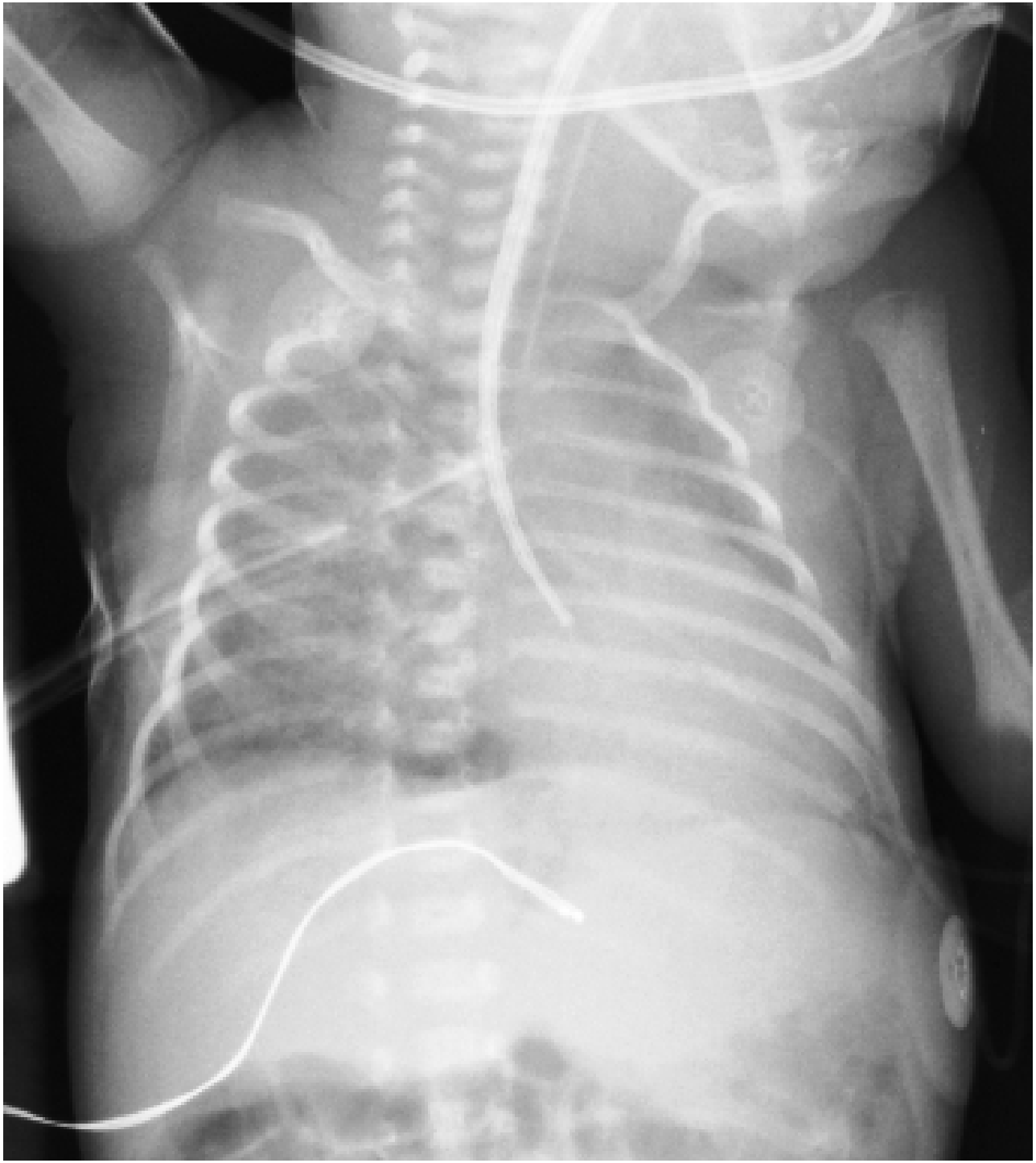
One-lung ventilation (3/3)

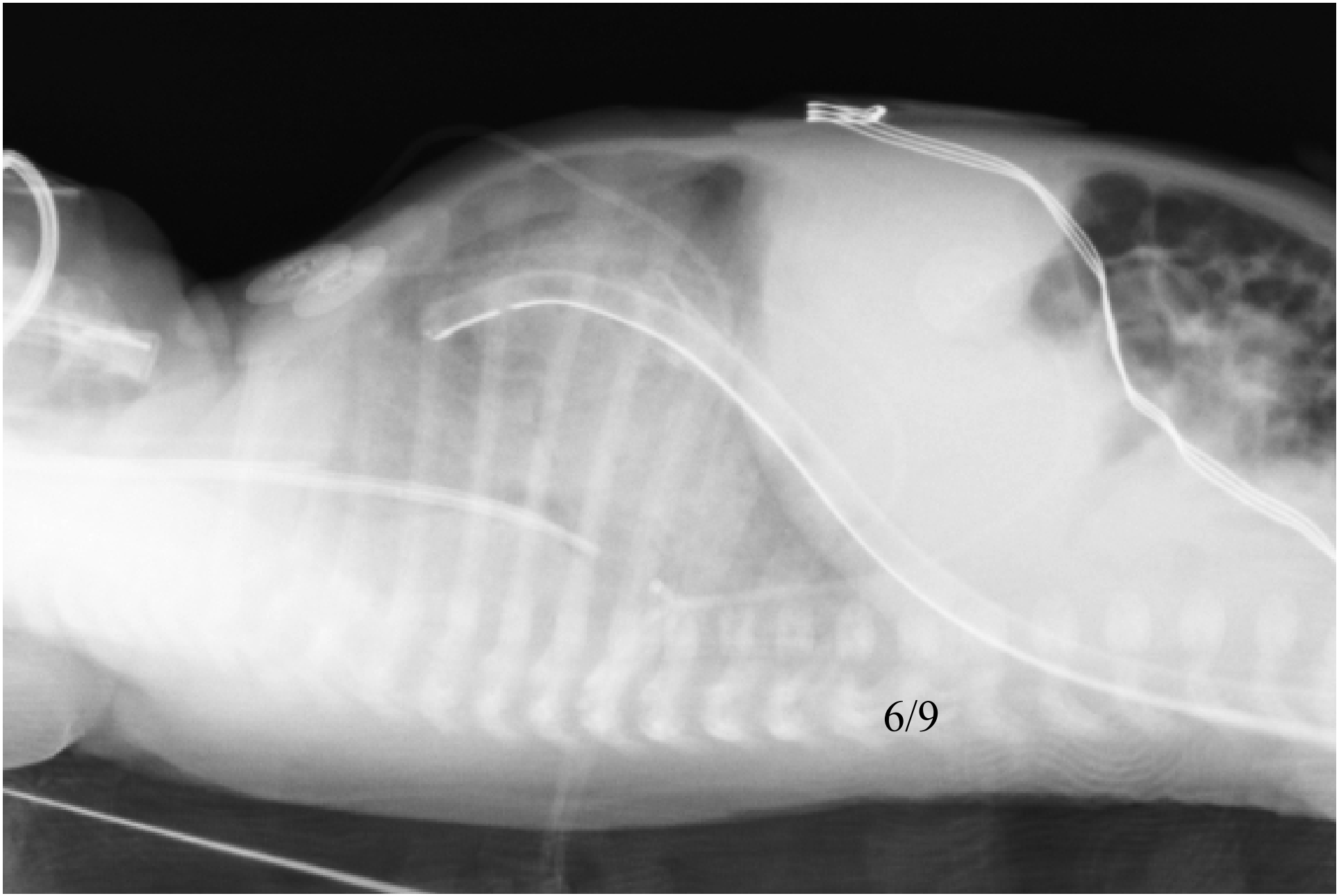


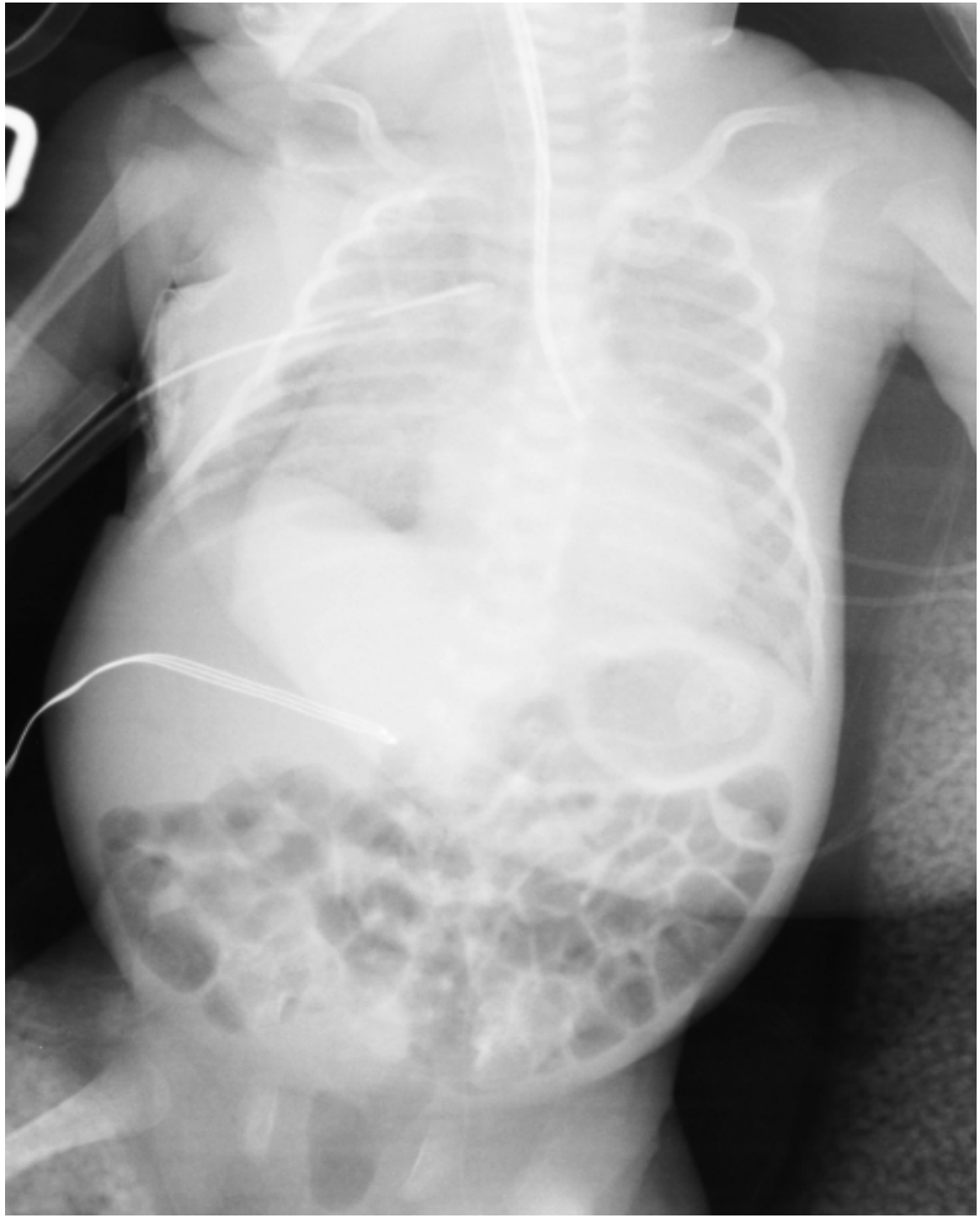


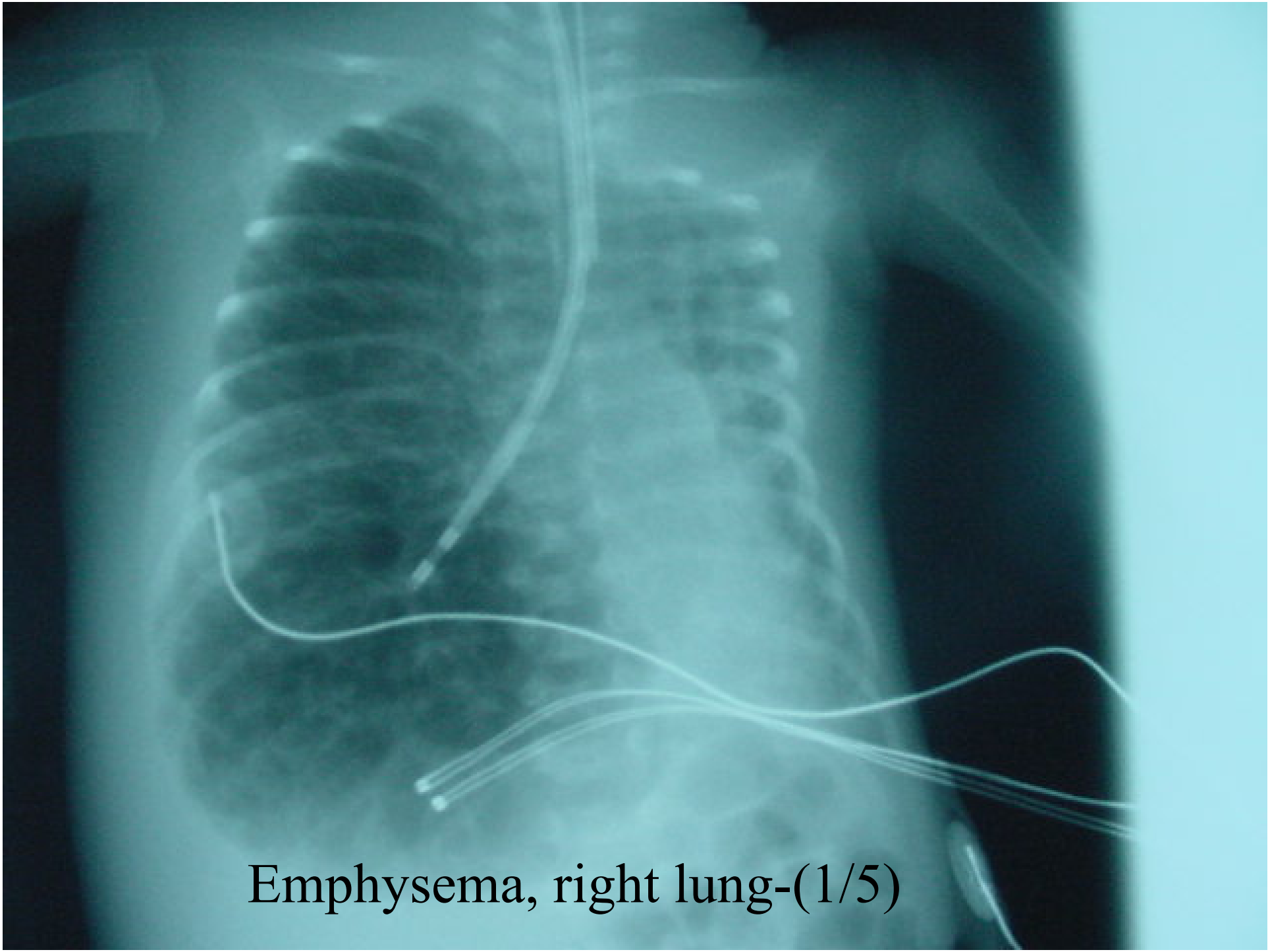




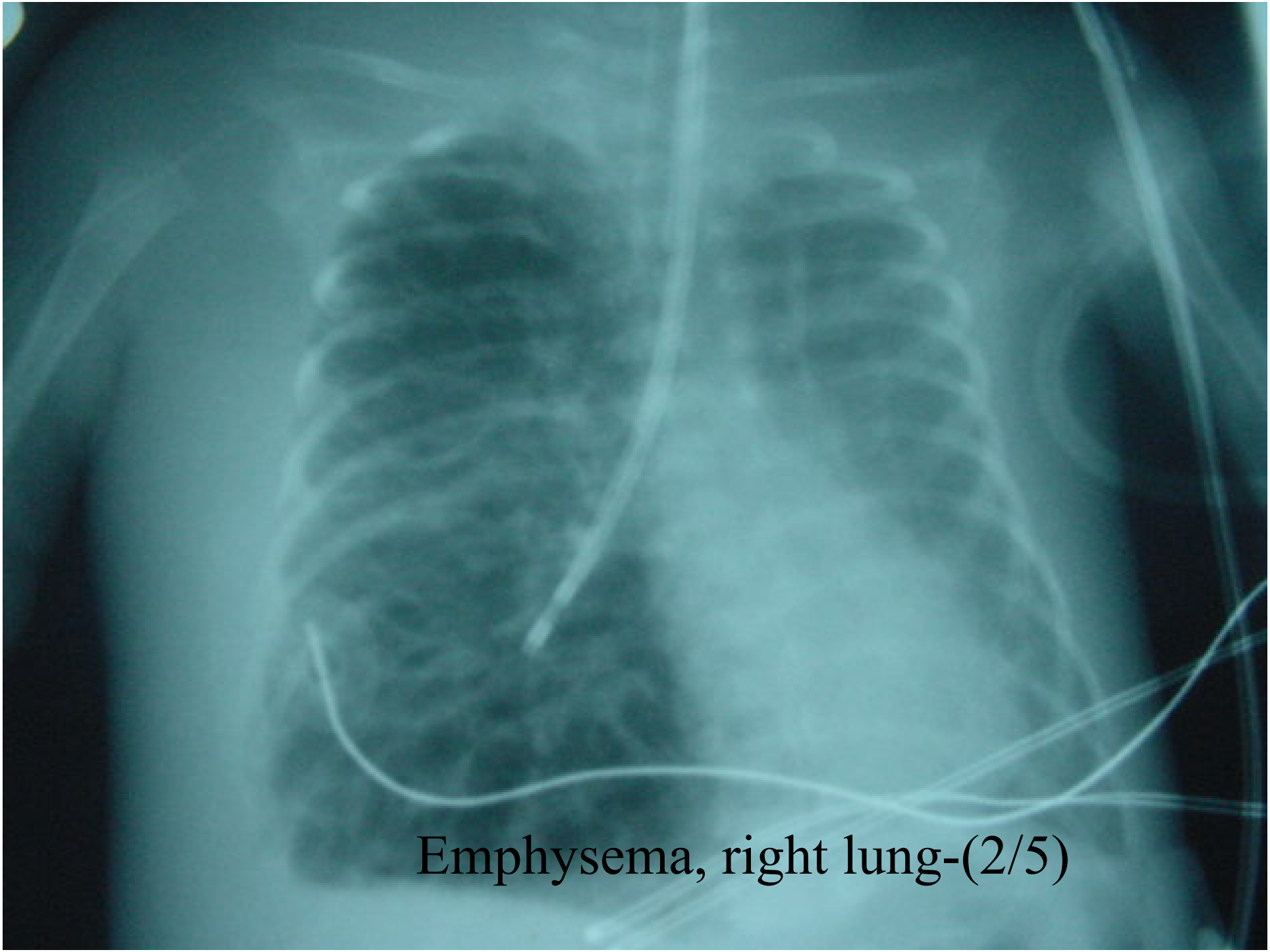




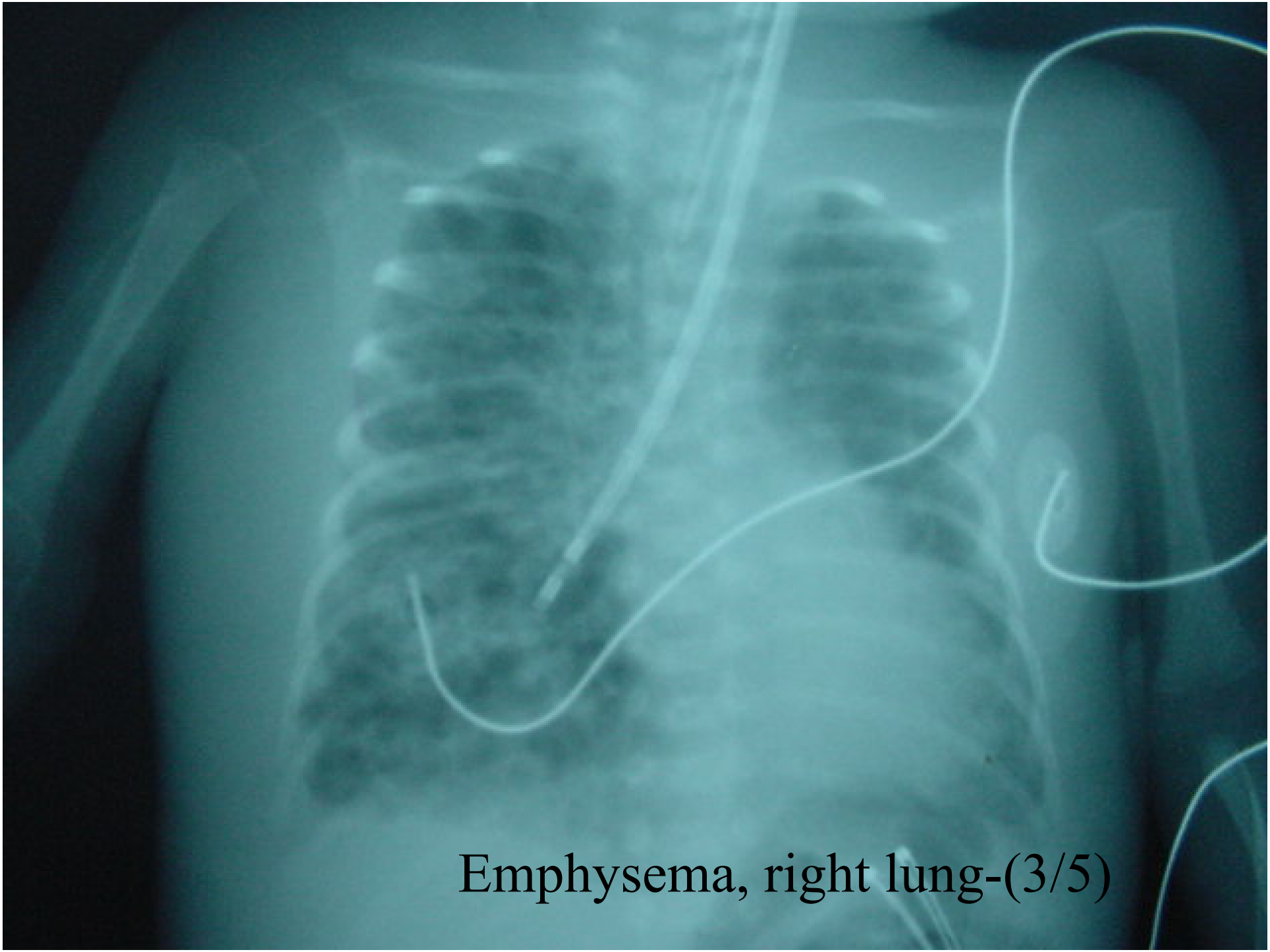


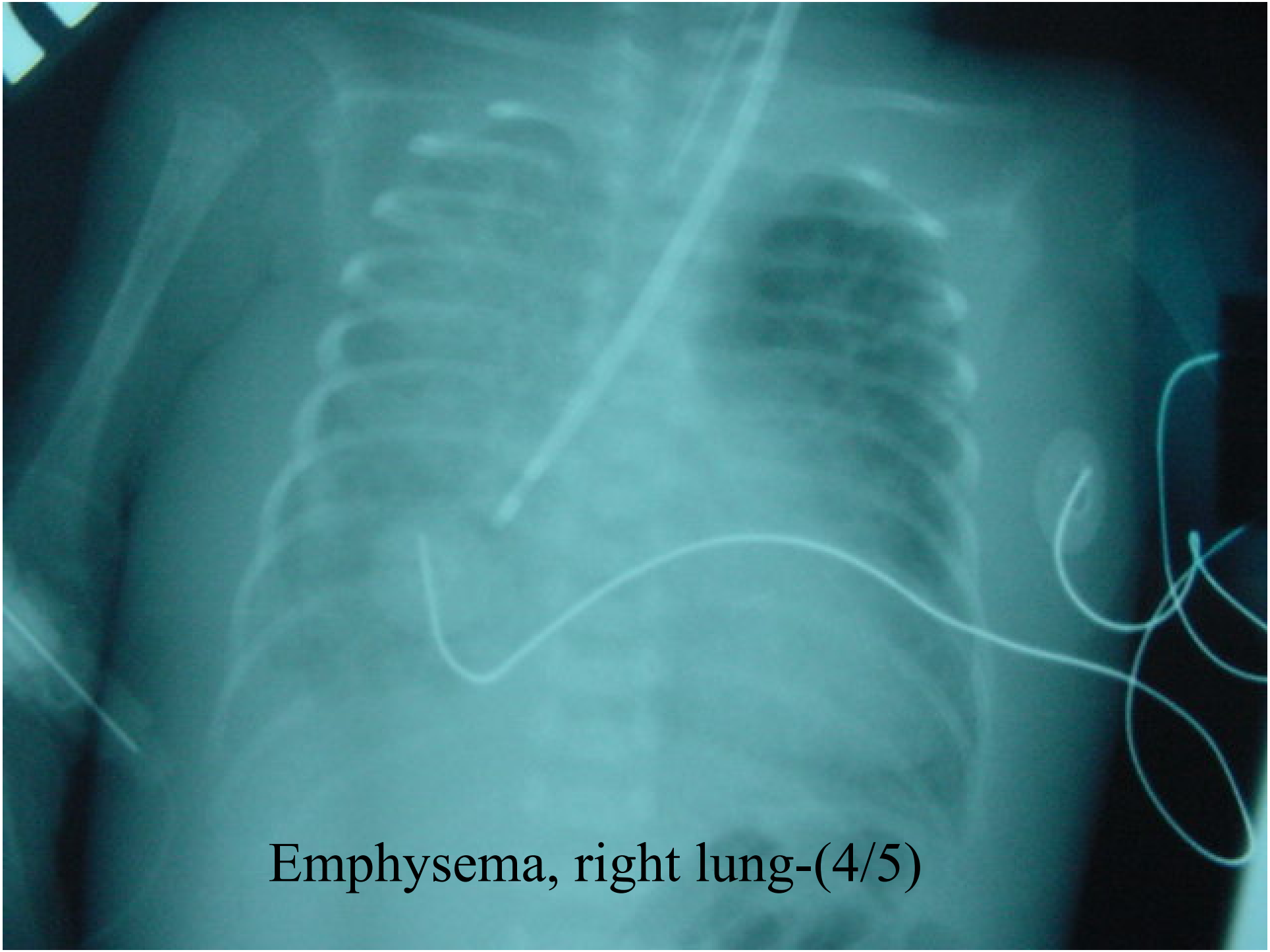


Emphysema, right lung-(1/5)

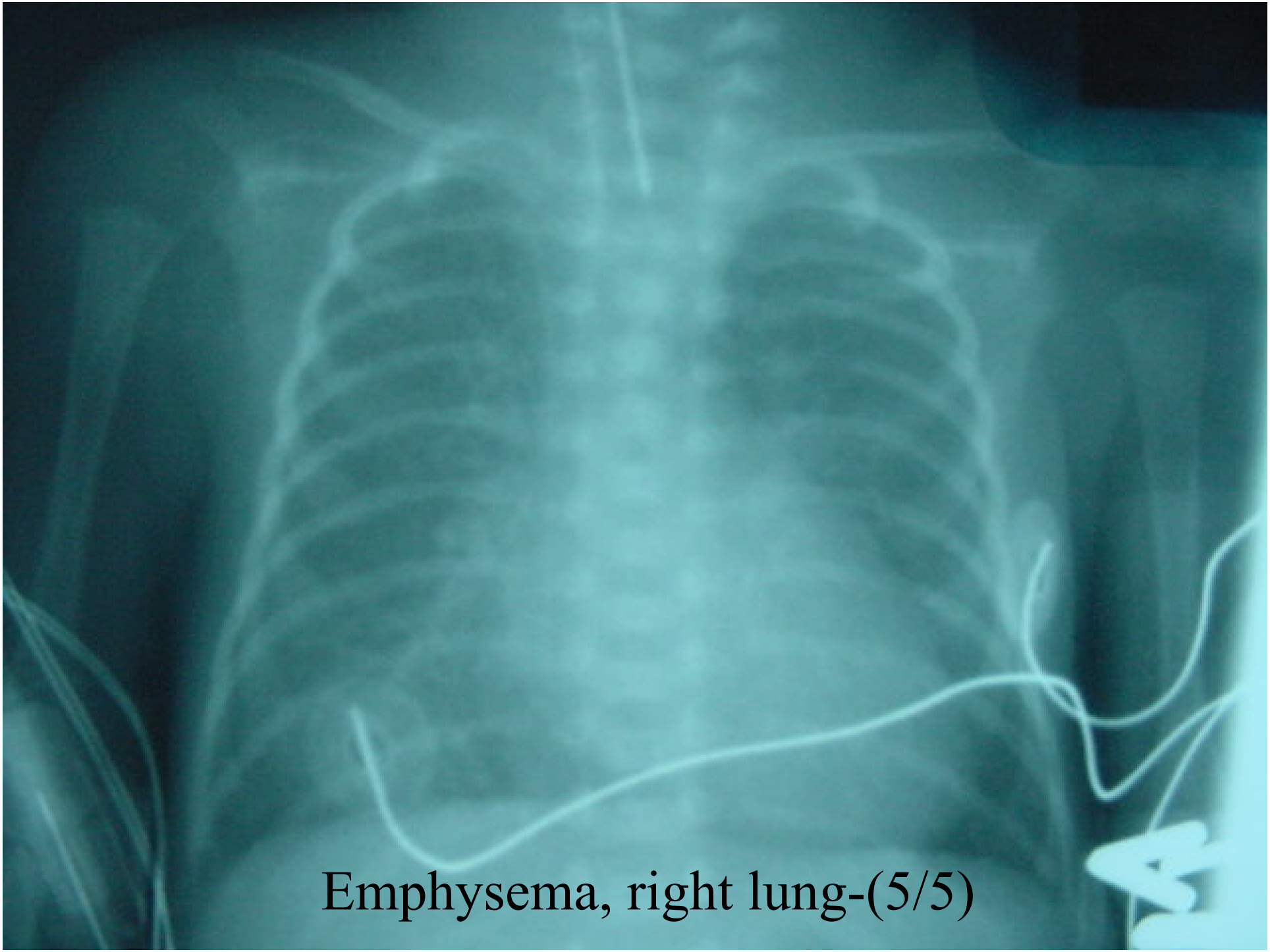


Emphysema, right lung-(2/5)

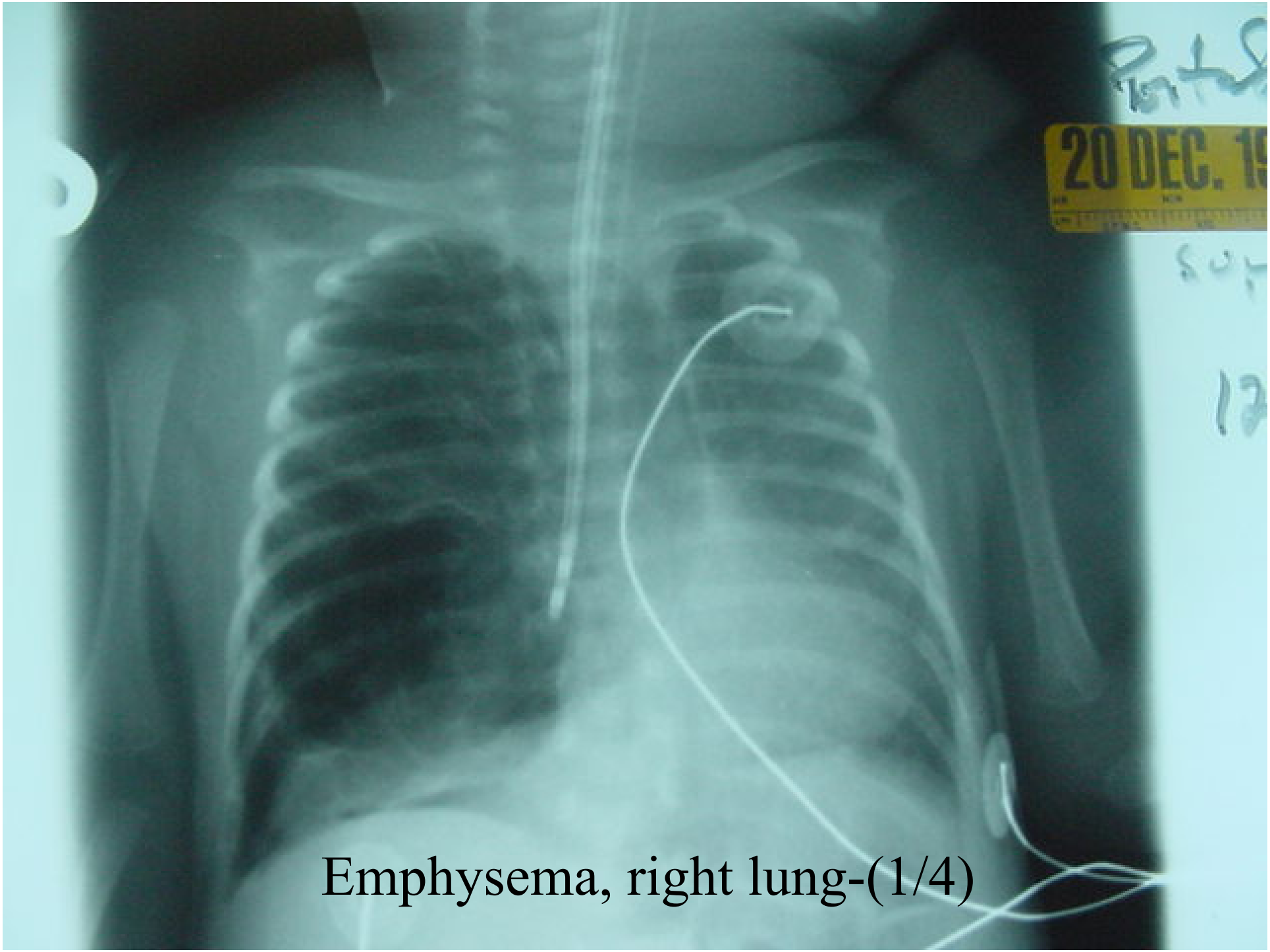

Emphysema, right lung-(3/5)



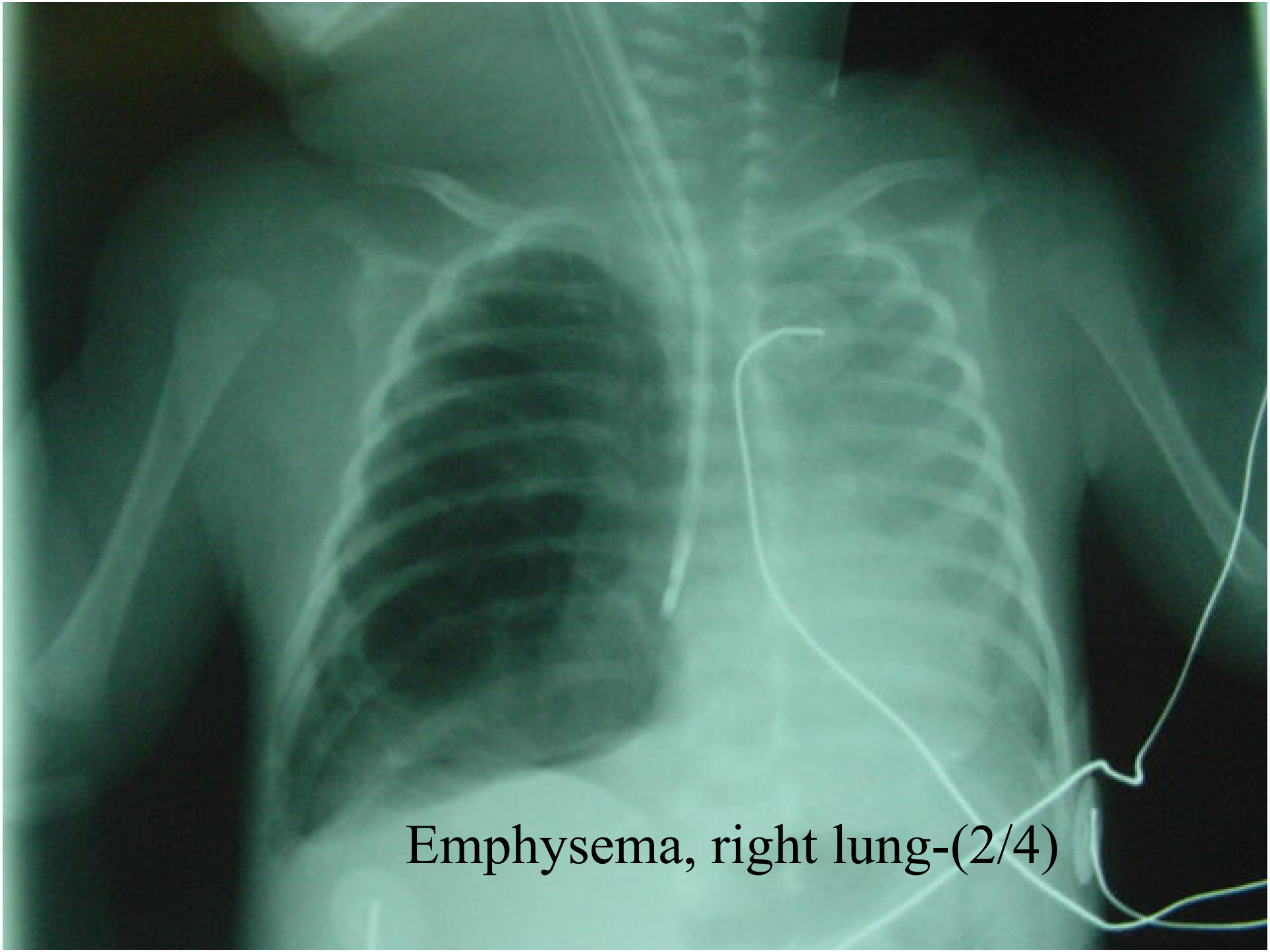
Emphysema, right lung-(4/5)

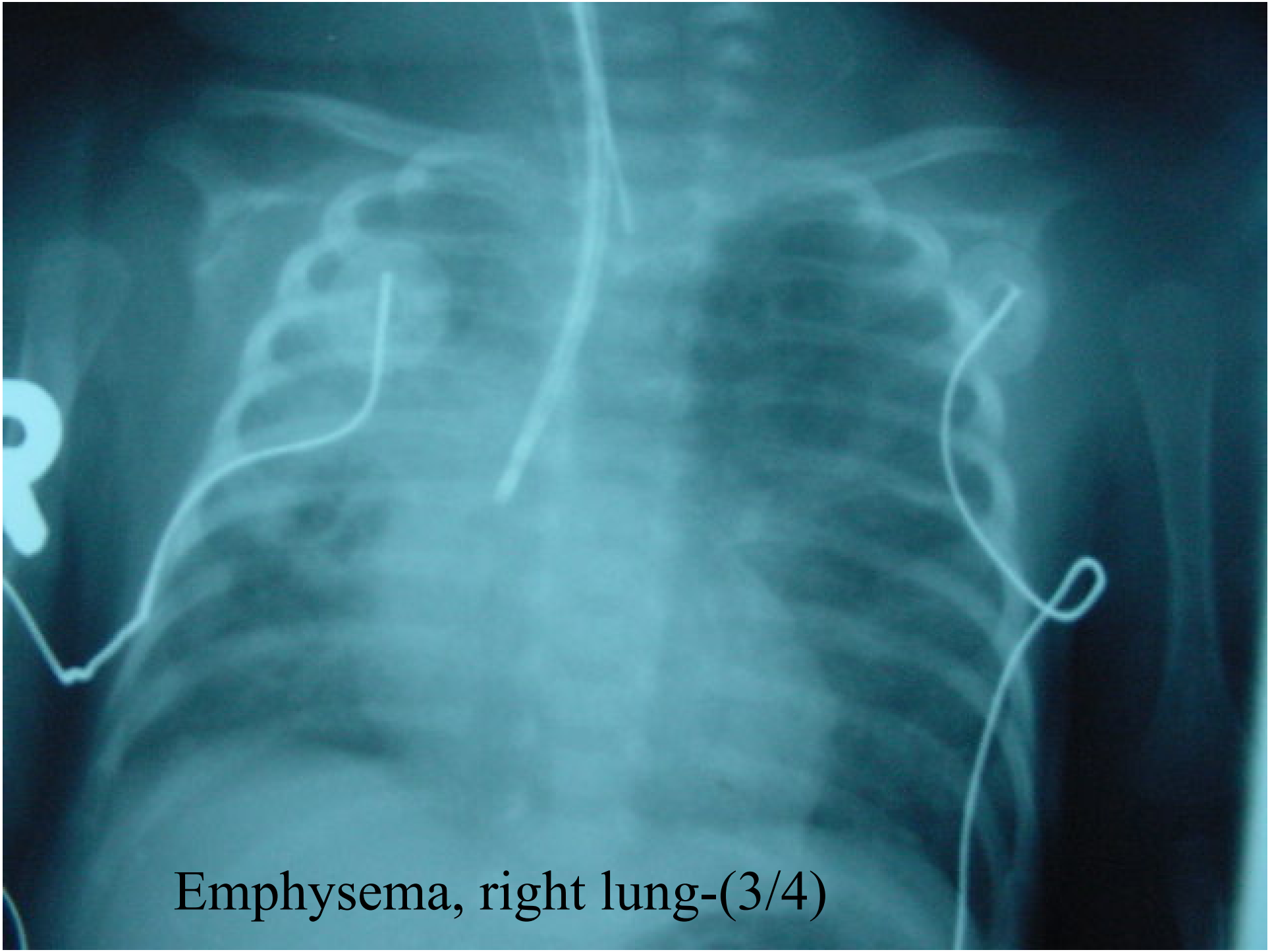


Emphysema, right lung-(5/5)

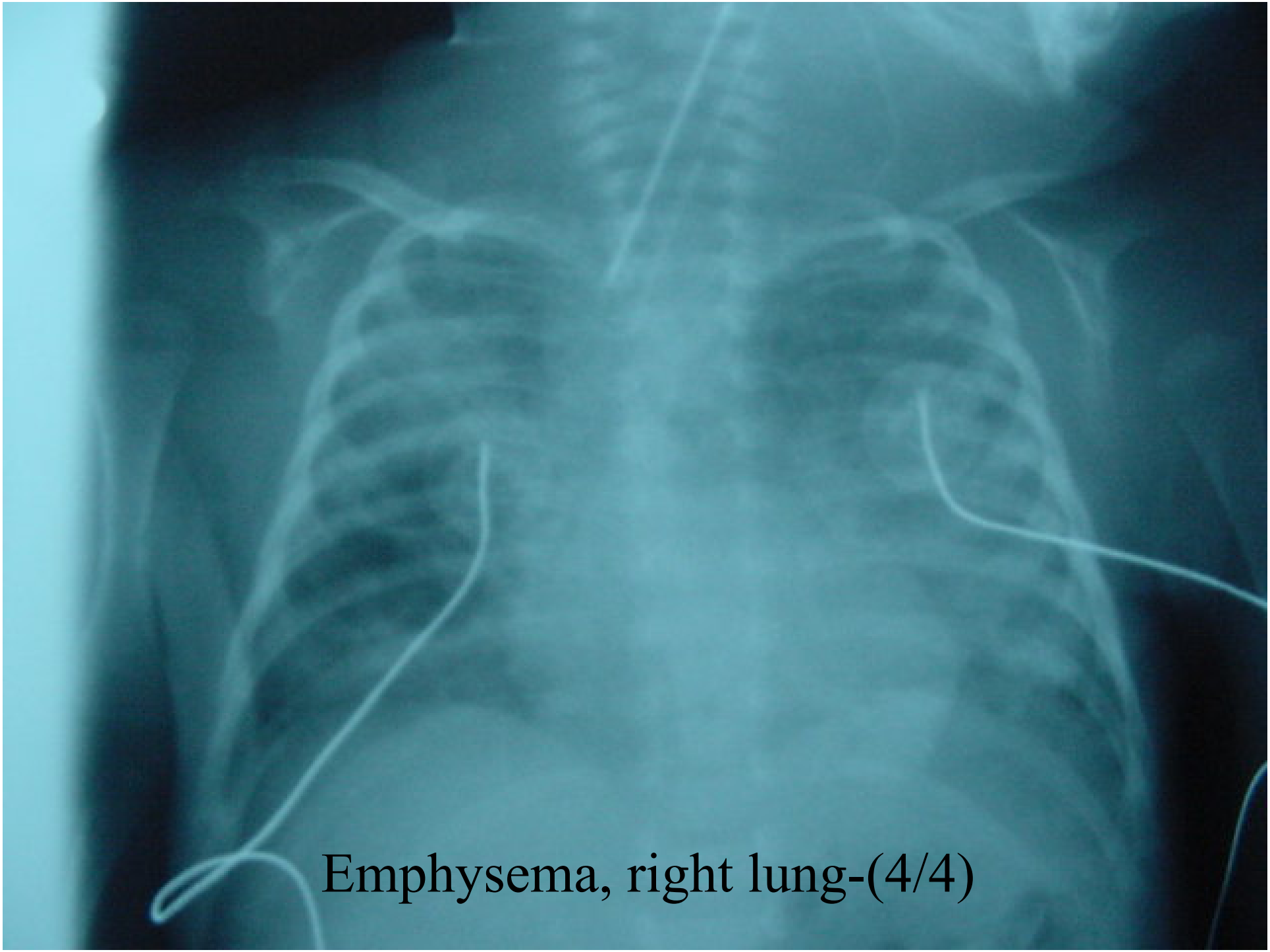


Emphysema, right lung-(1/4)

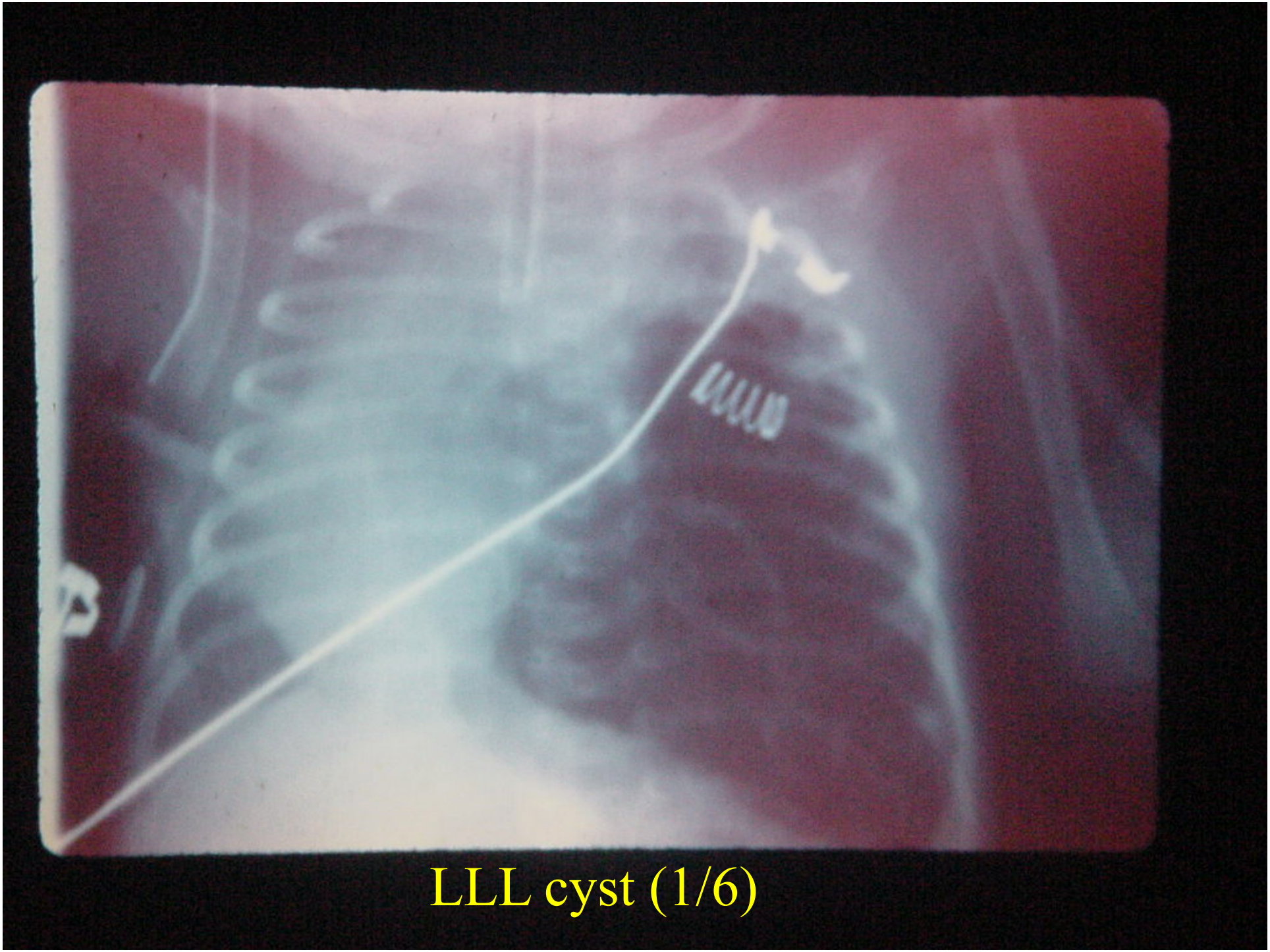

Emphysema, right lung-(2/4)



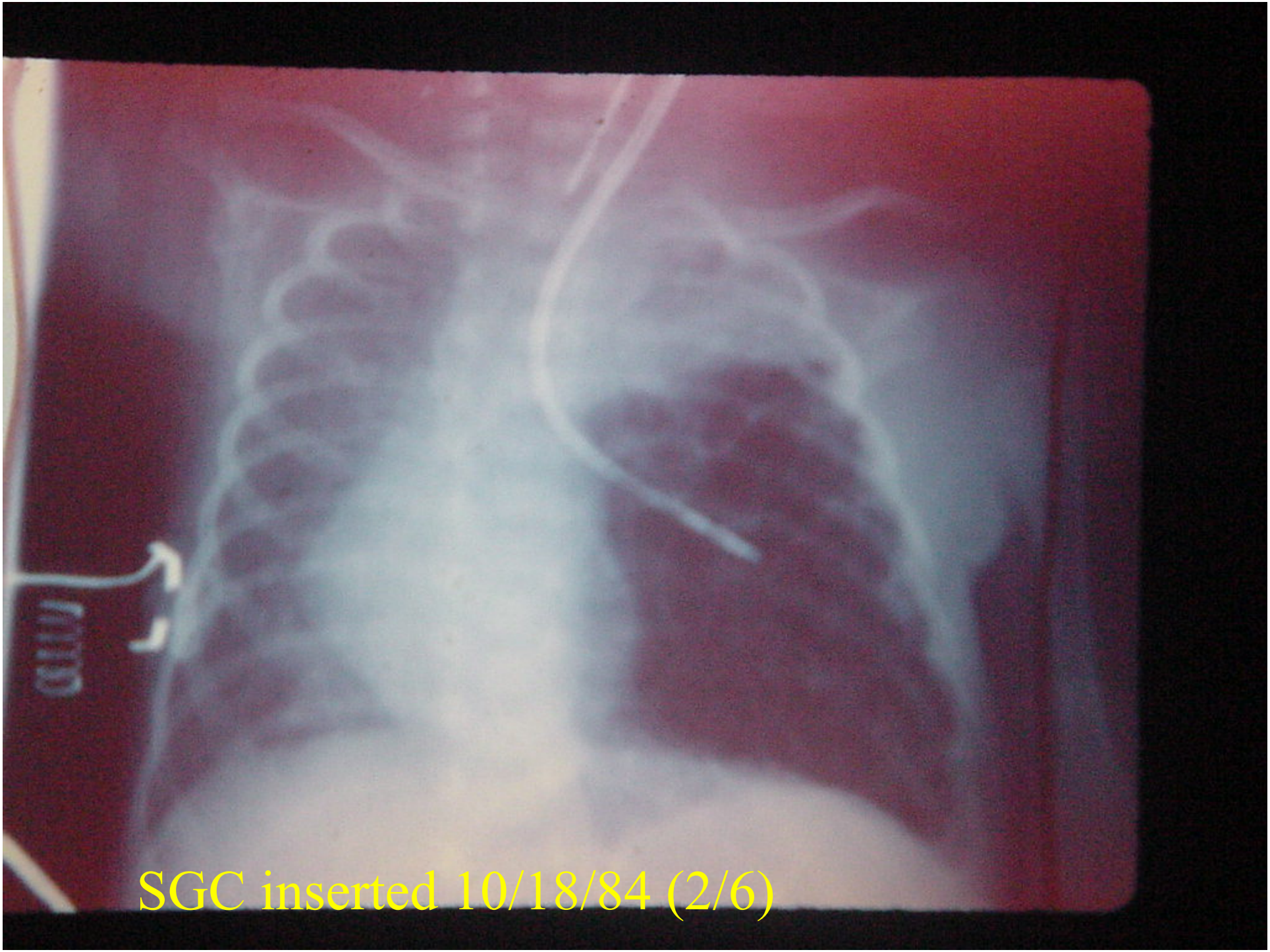
Emphysema, right lung-(3/4)

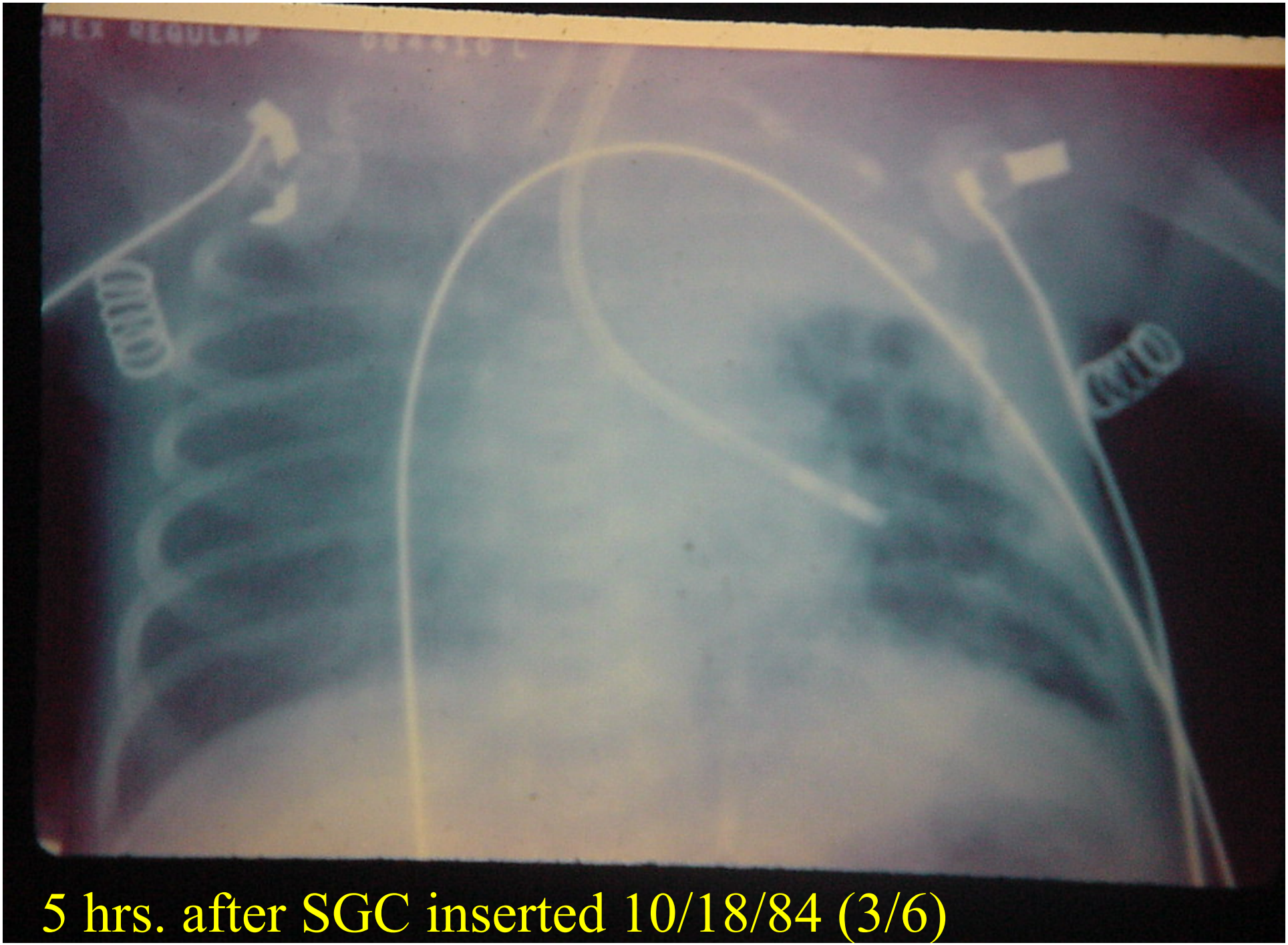


Emphysema, right lung-(4/4)

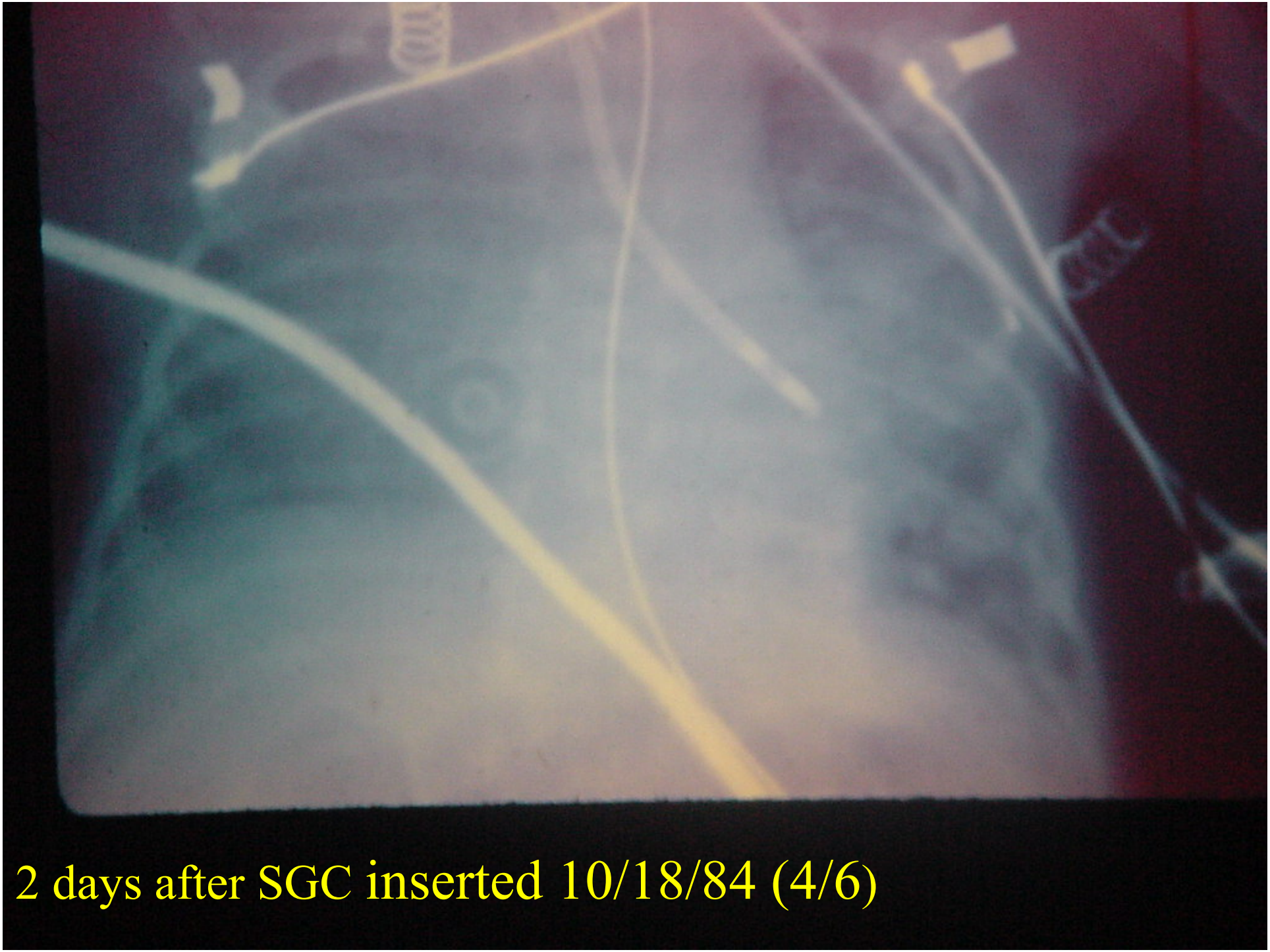


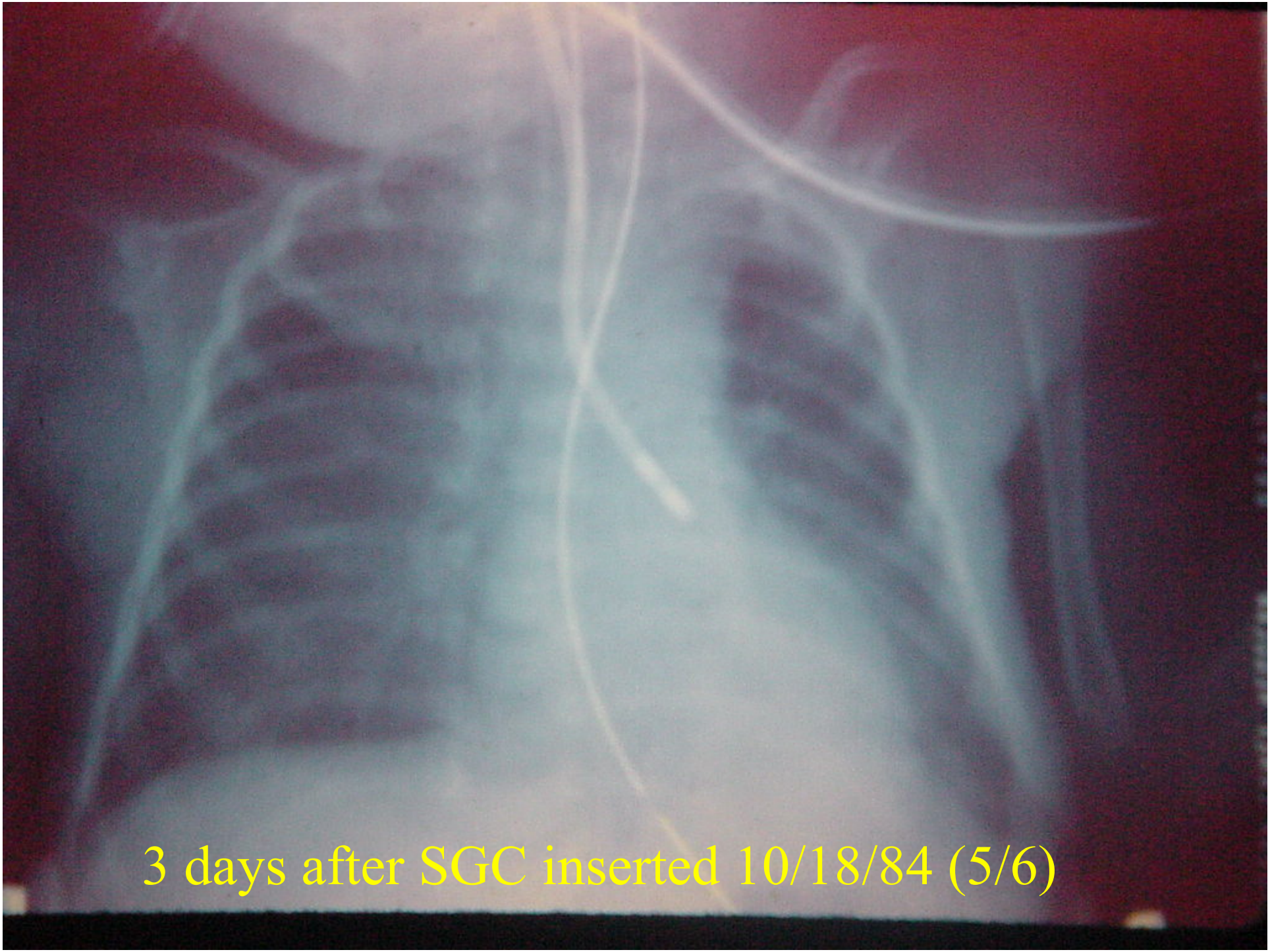
LLL cyst (1/6)

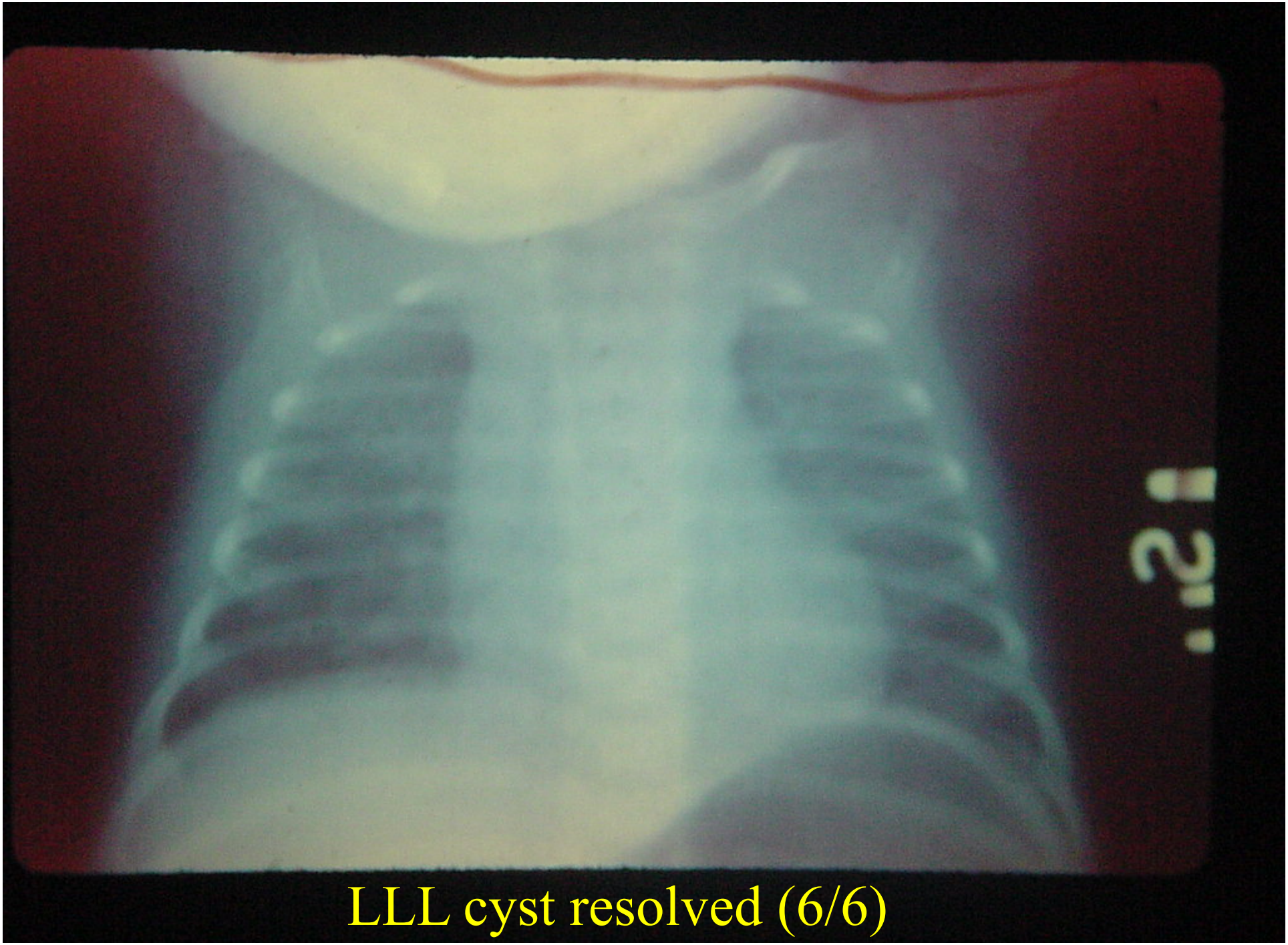

SGC inserted 10/18/84 (2/6)



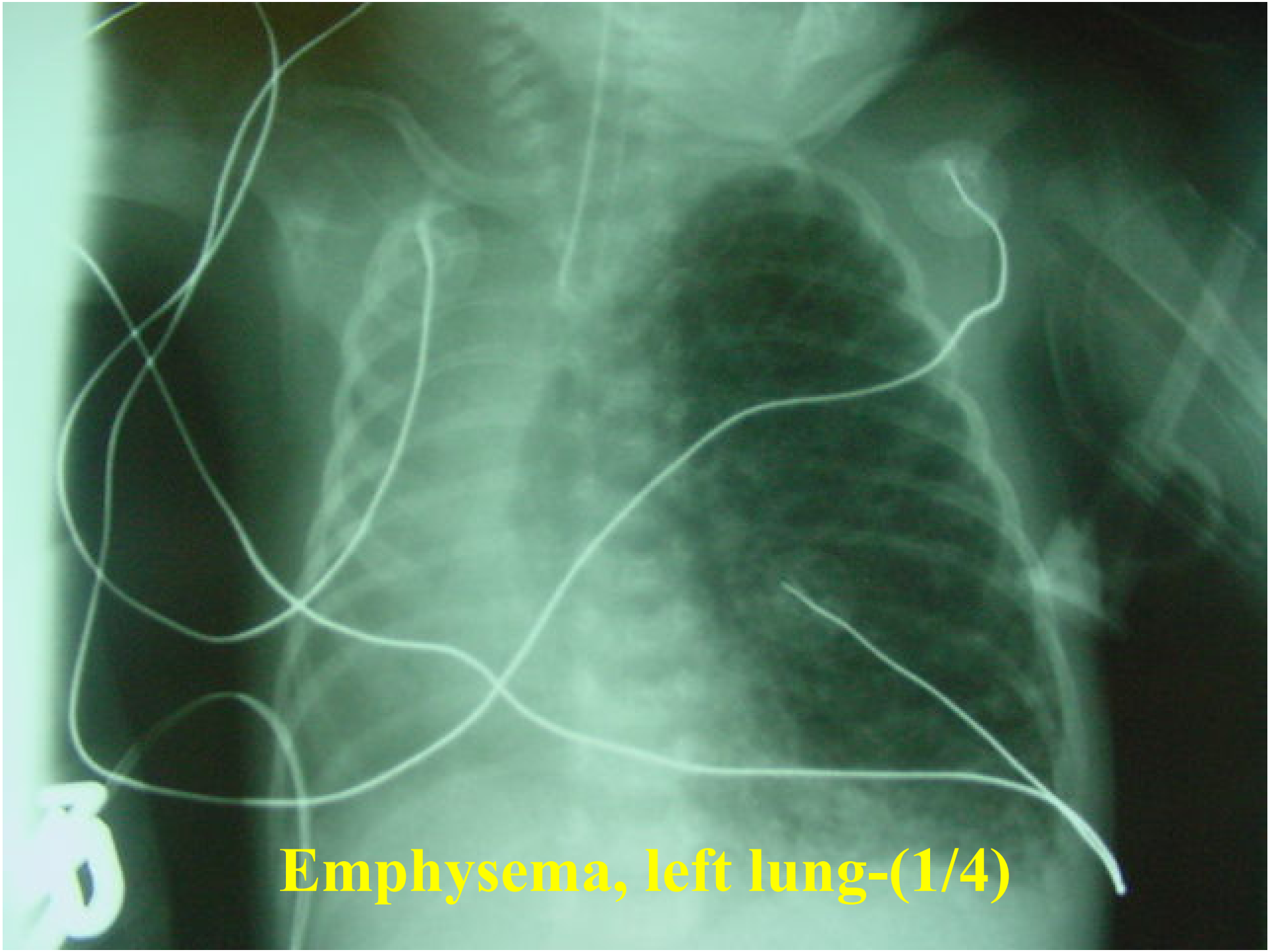
5 hrs. after SGC inserted 10/18/84 (3/6)

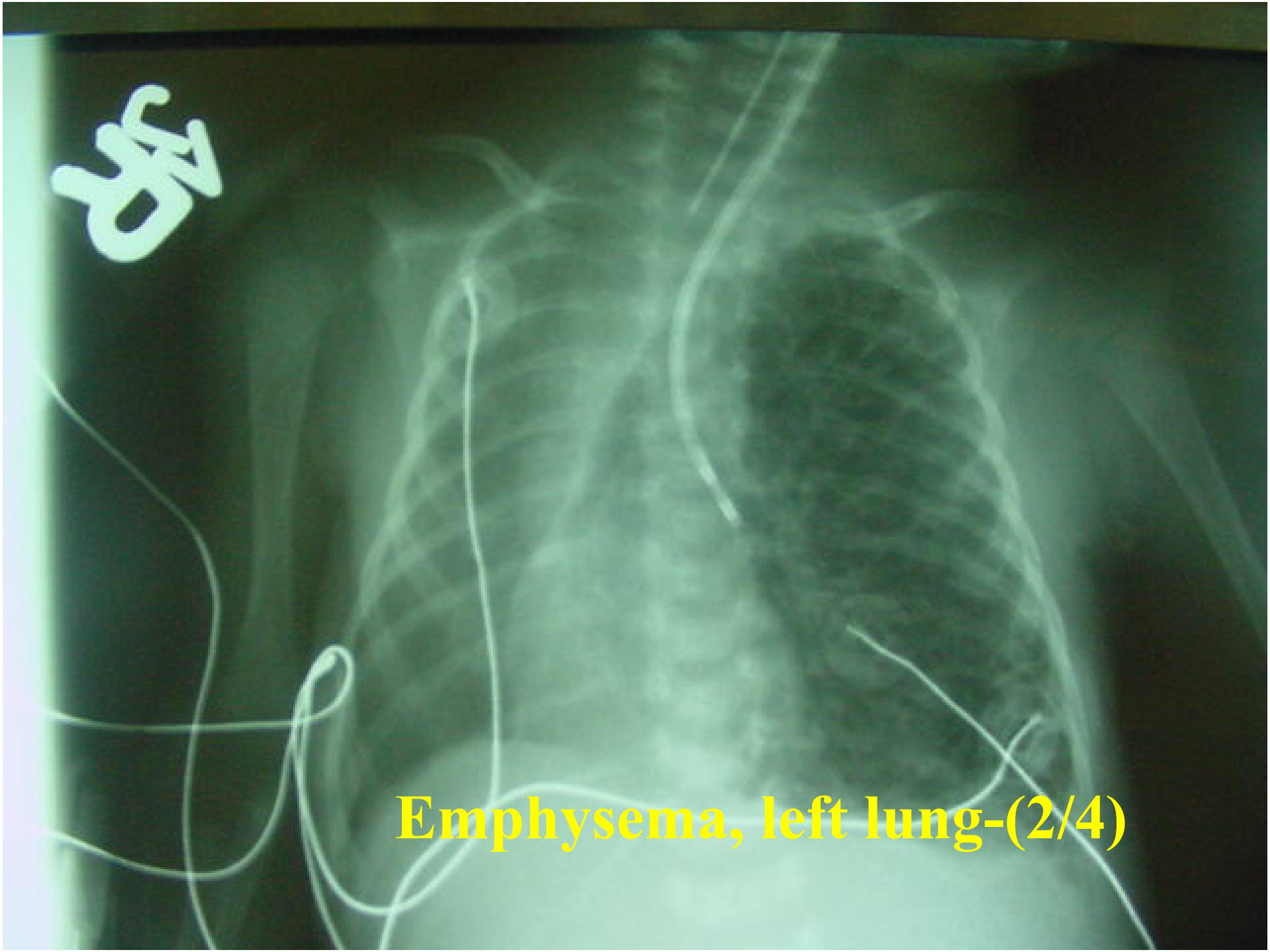

2 days after SGC inserted 10/18/84 (4/6)

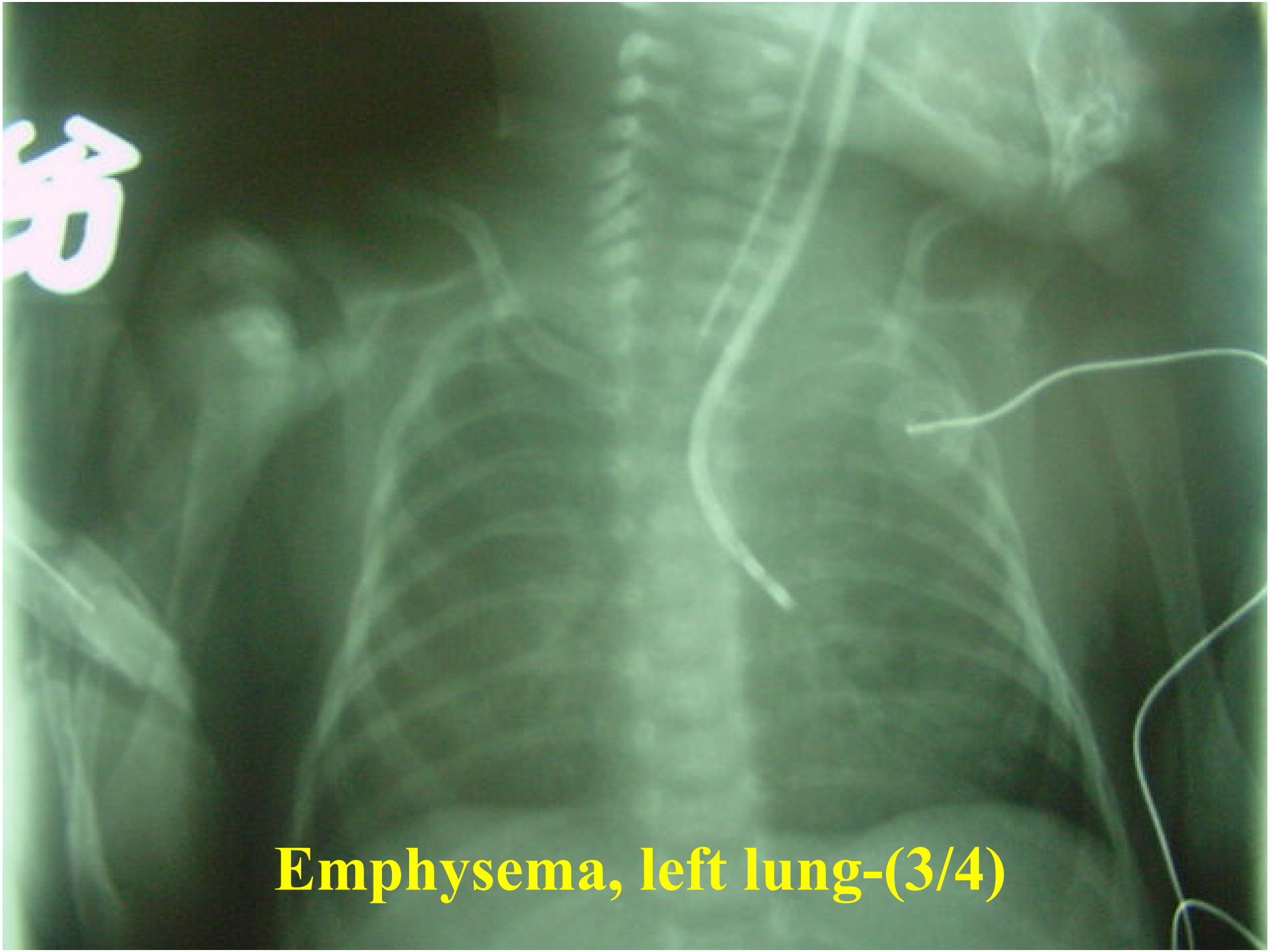

3 days after SGC inserted 10/18/84 (5/6)

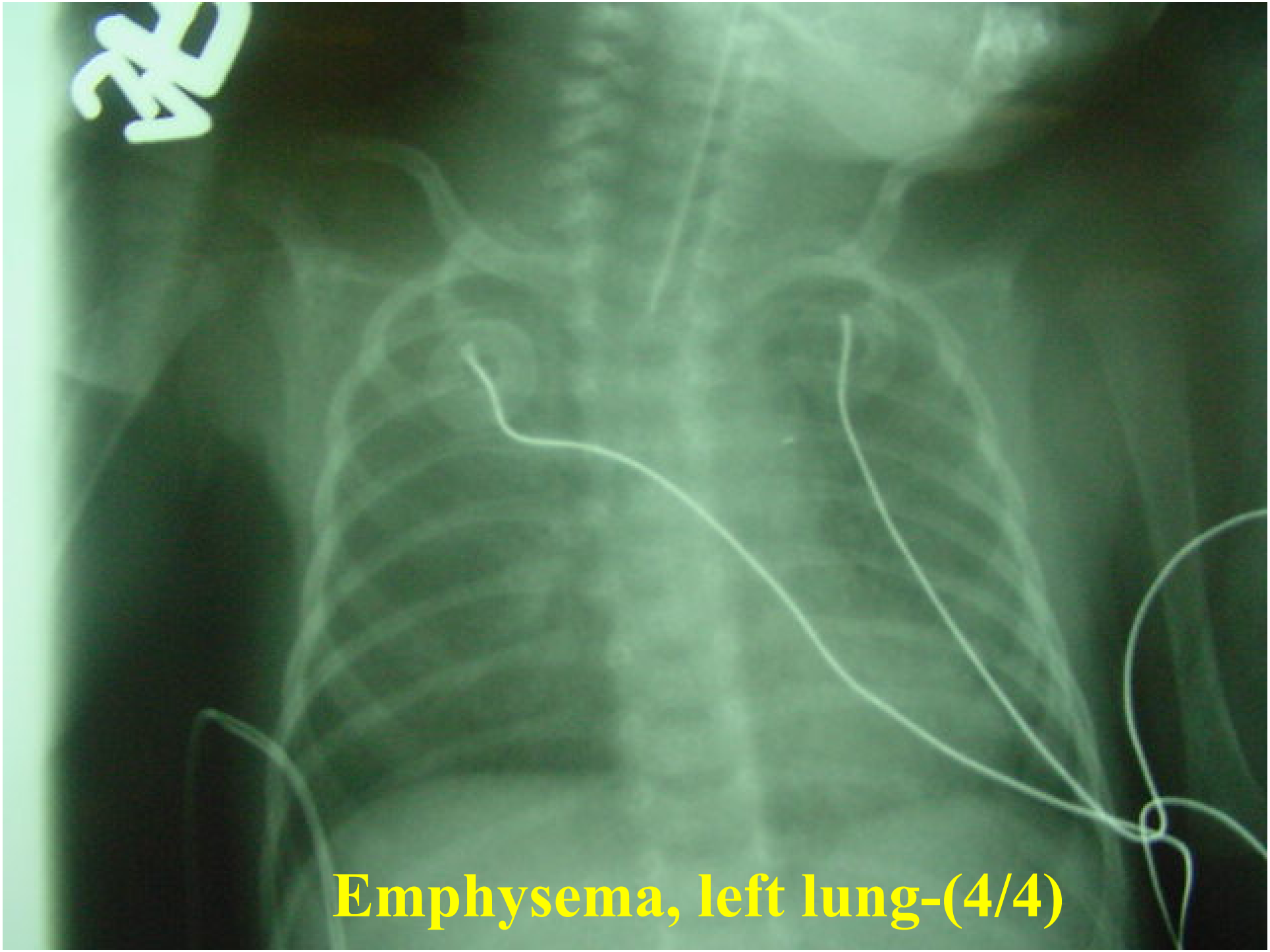


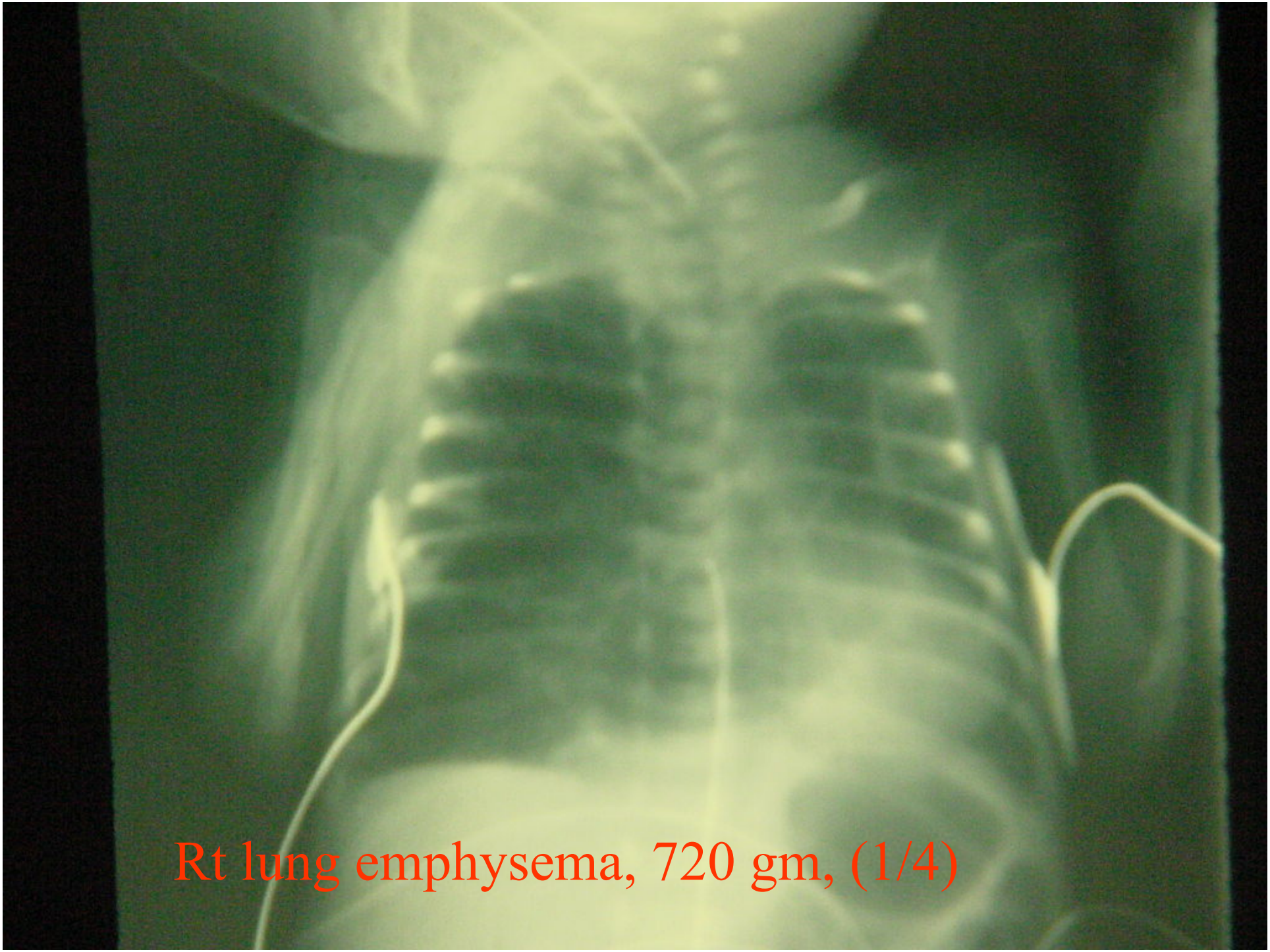
LLL cyst resolved (6/6)

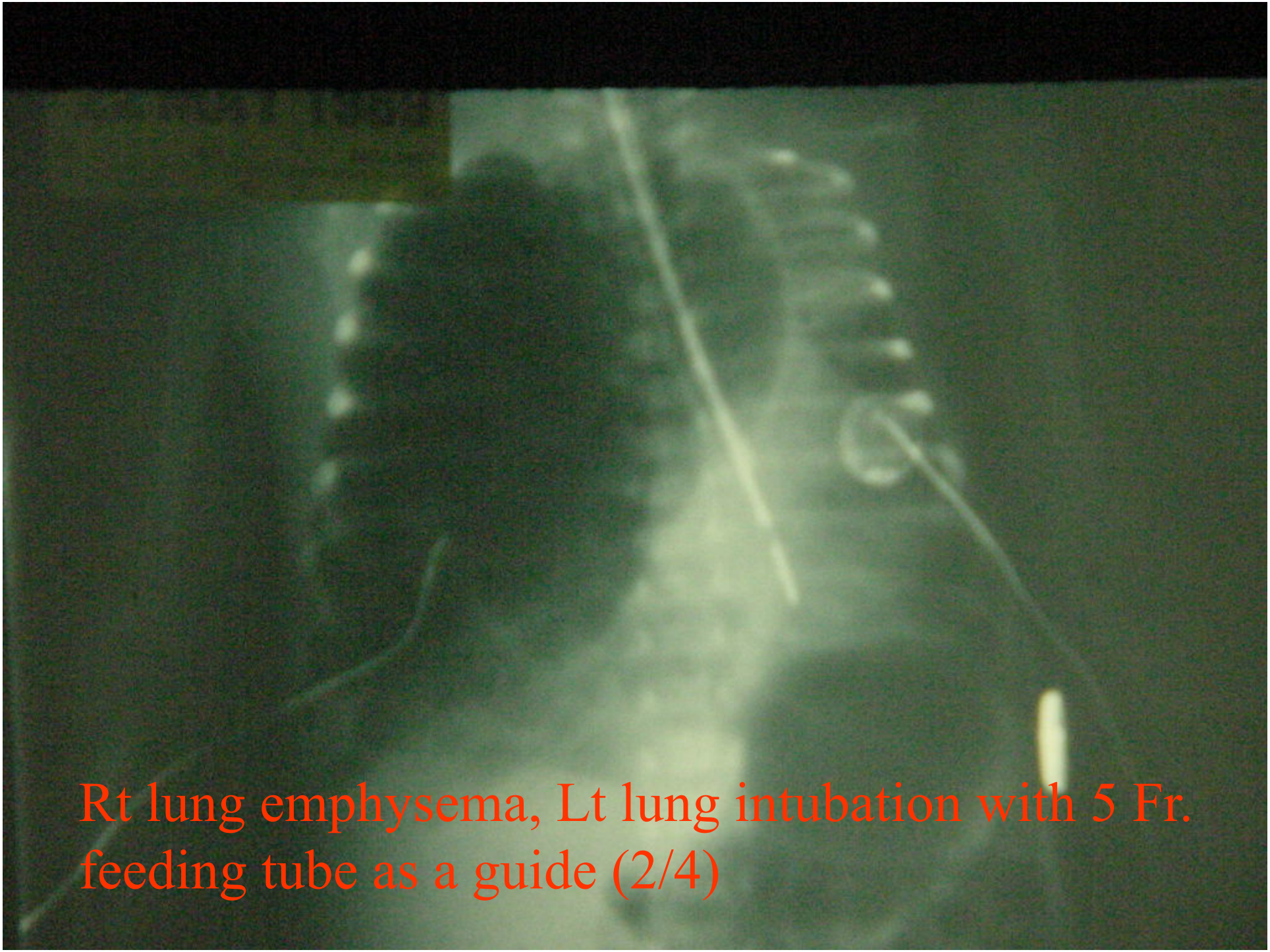

Emphysema, left lung-(1/4)


Emphysema, left lung-(2/4)


Emphysema, left lung-(3/4)

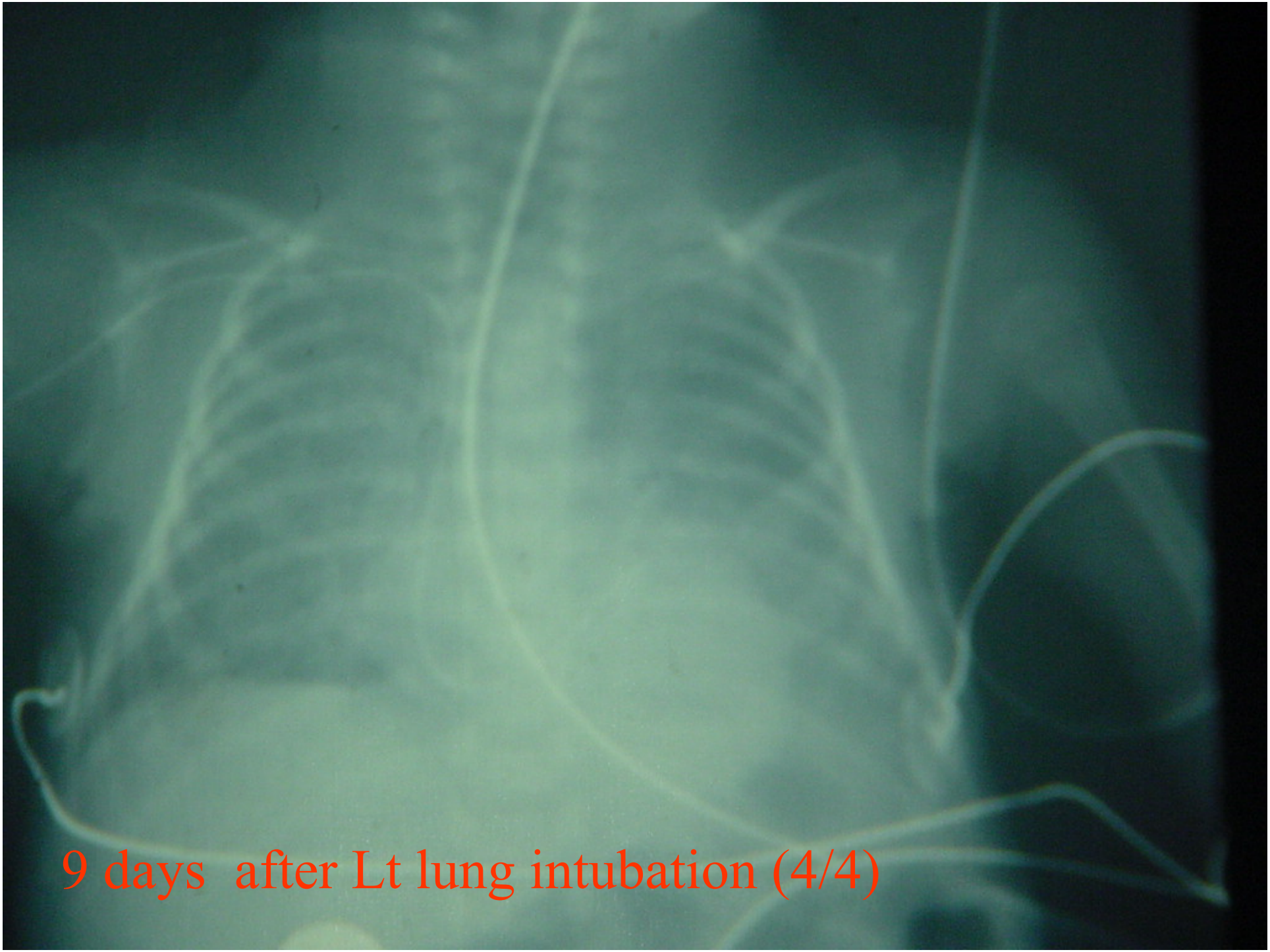

Emphysema, left lung-(4/4)

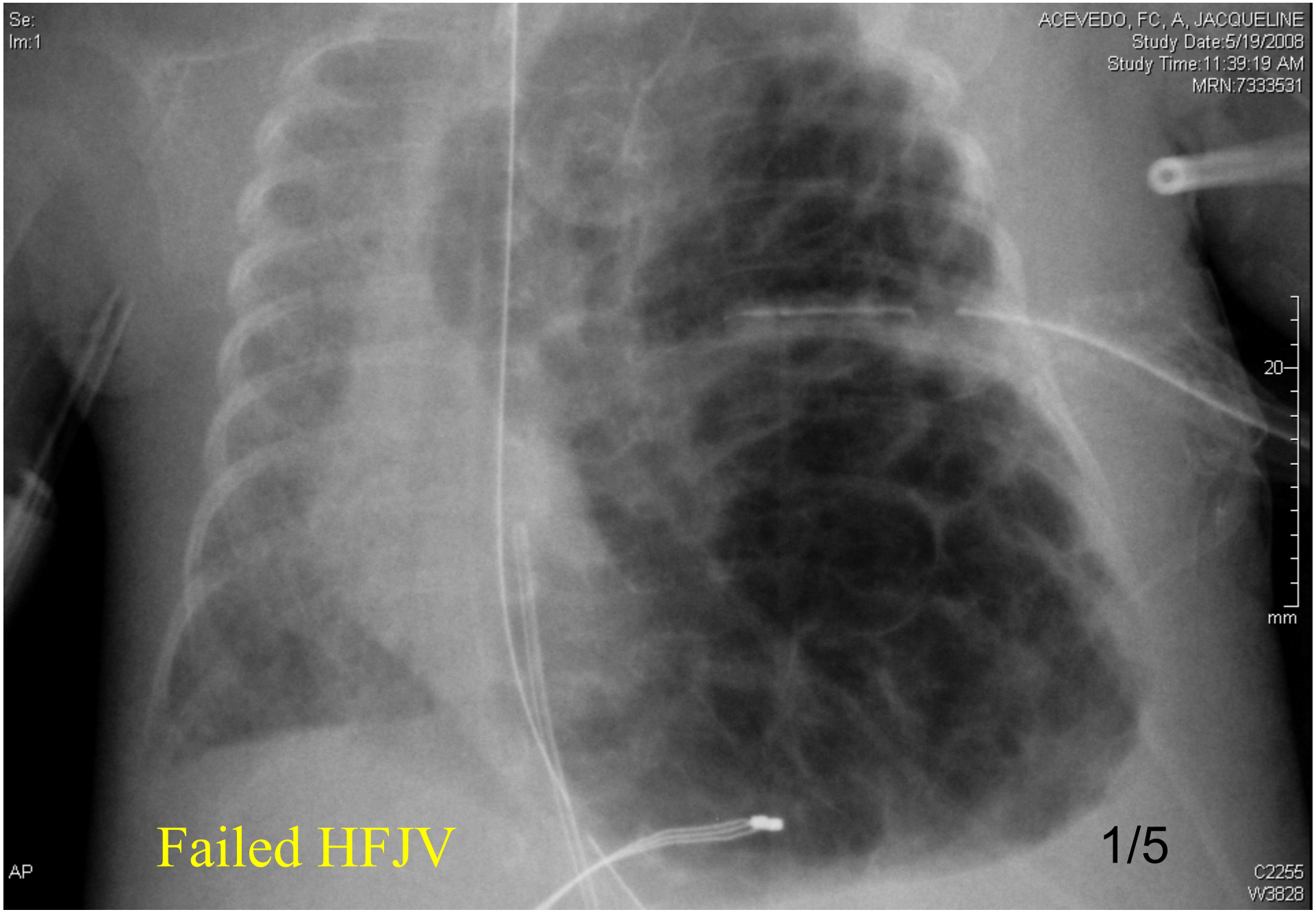

Rt lung emphysema, 720 gm, (1/4)



Rt lung emphysema, Lt lung intubation with 5 Fr. feeding tube as a guide (2/4)

Rt lung emphysema, 4 days after Lt lung intubation (3/4)


9 days after Lt lung intubation (4/4)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Im:1
ACEVEDO, FC, A, JACQUELINE
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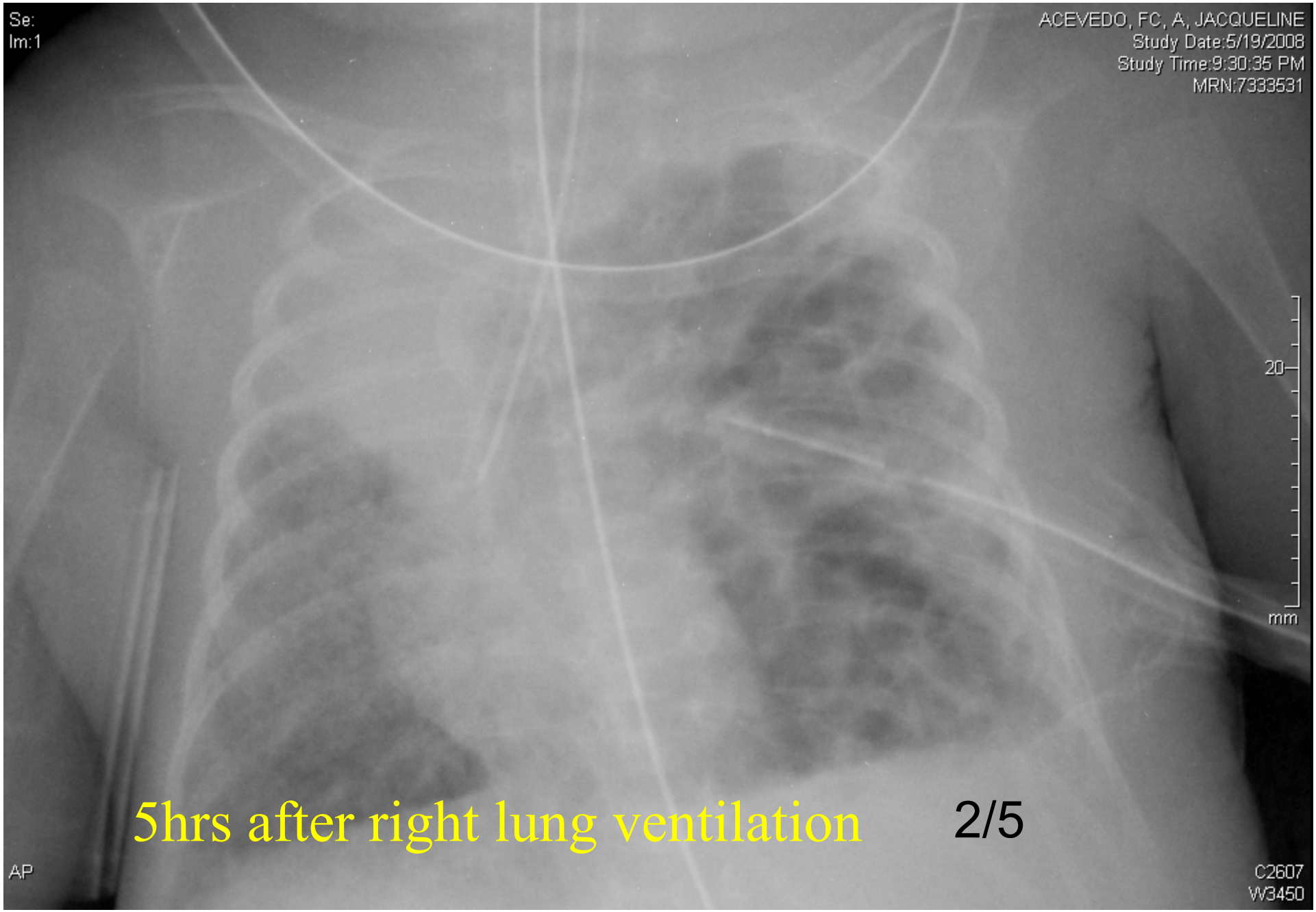
Study Time:11:39:19 AM
MRN:7333531
20
mm
Failed HFJV
1/5
AP
C2255
W3828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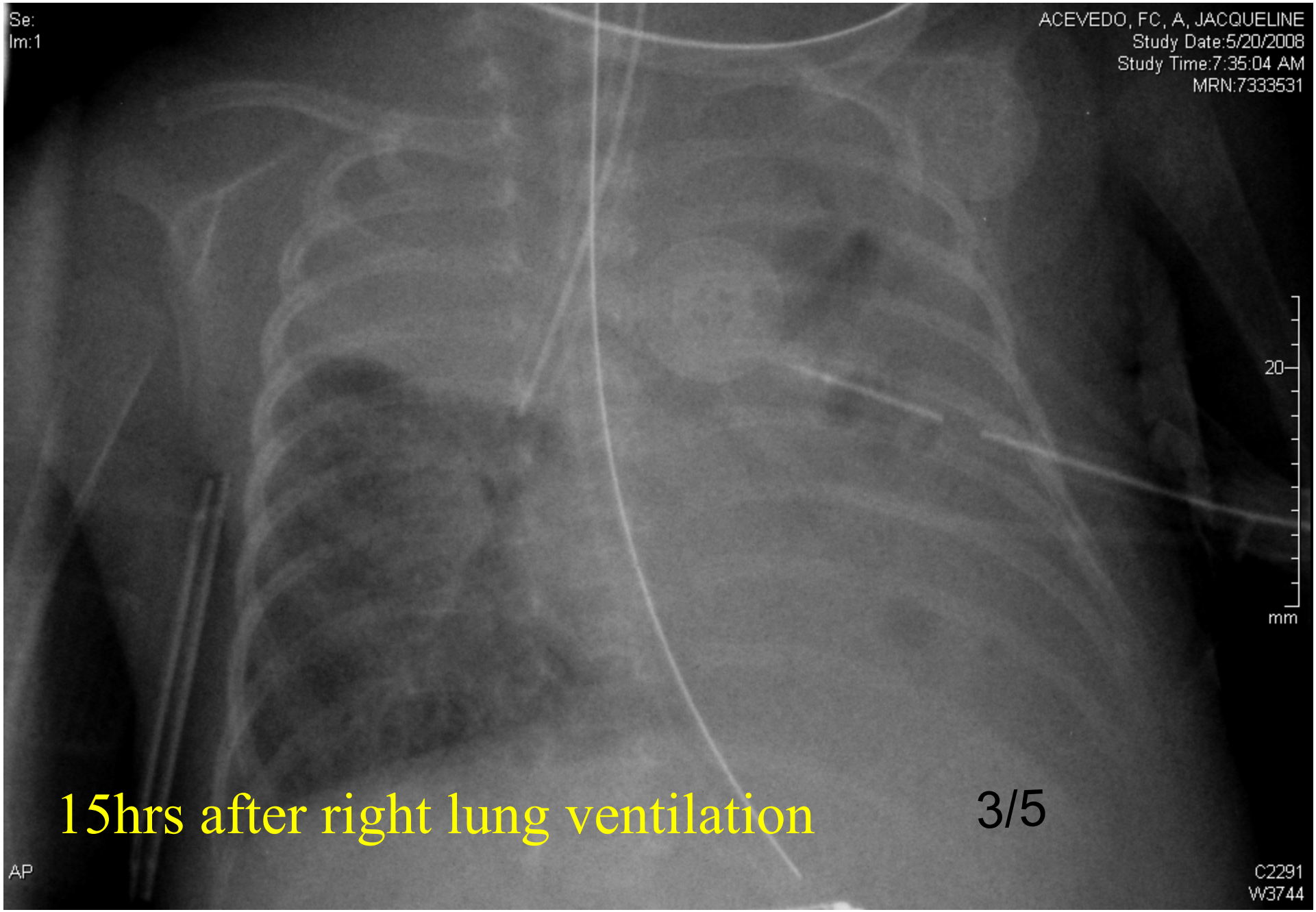
20
mm
5hrs after right lung ventilation
2/5
AP
C2607
W3450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Im:1
ACEVEDO, FC, A, JACQUELINE
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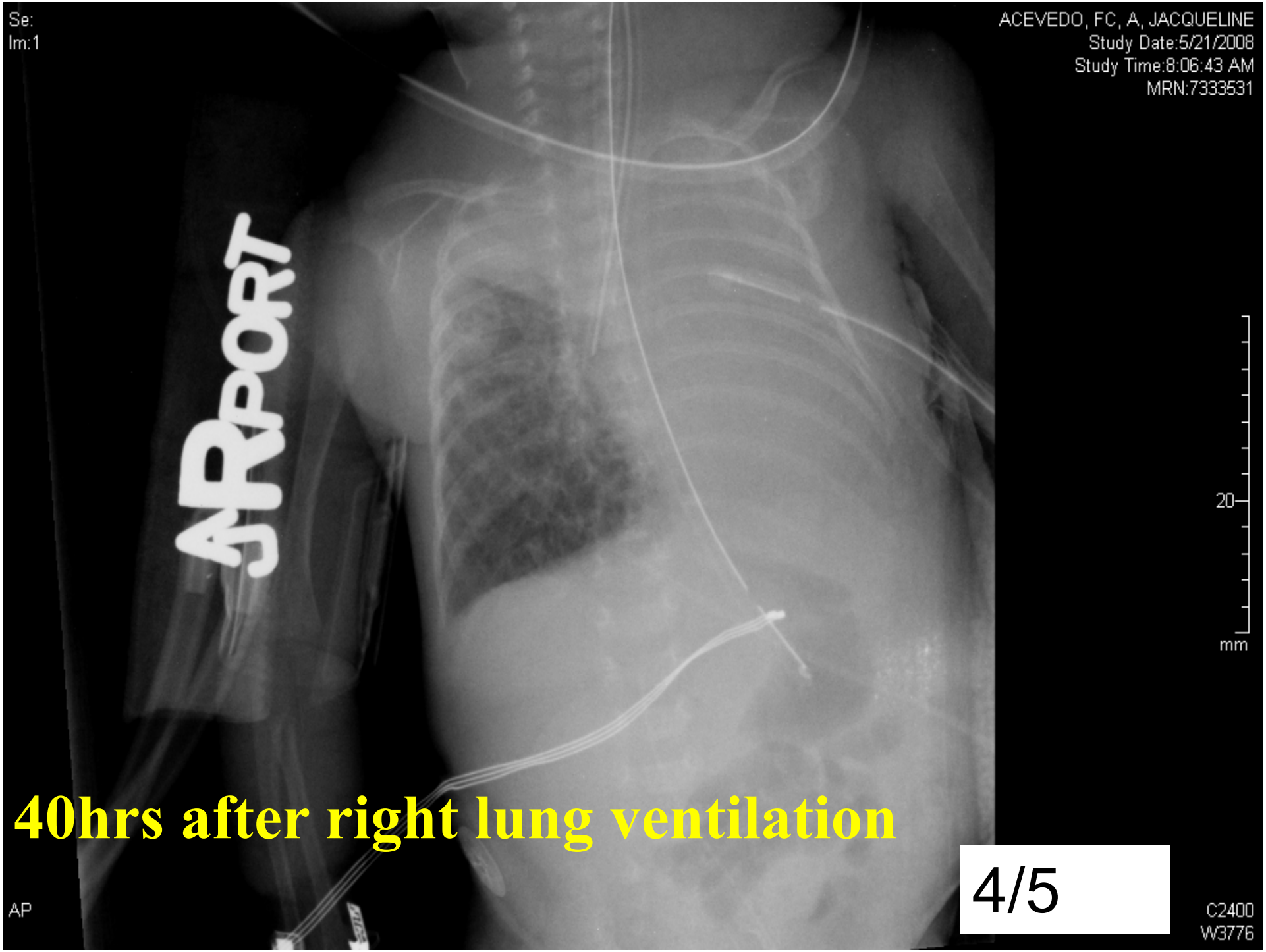
20
mm
15hrs after right lung ventilation
3/5
AP
C2291
W3744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Study Date:5/21/2008
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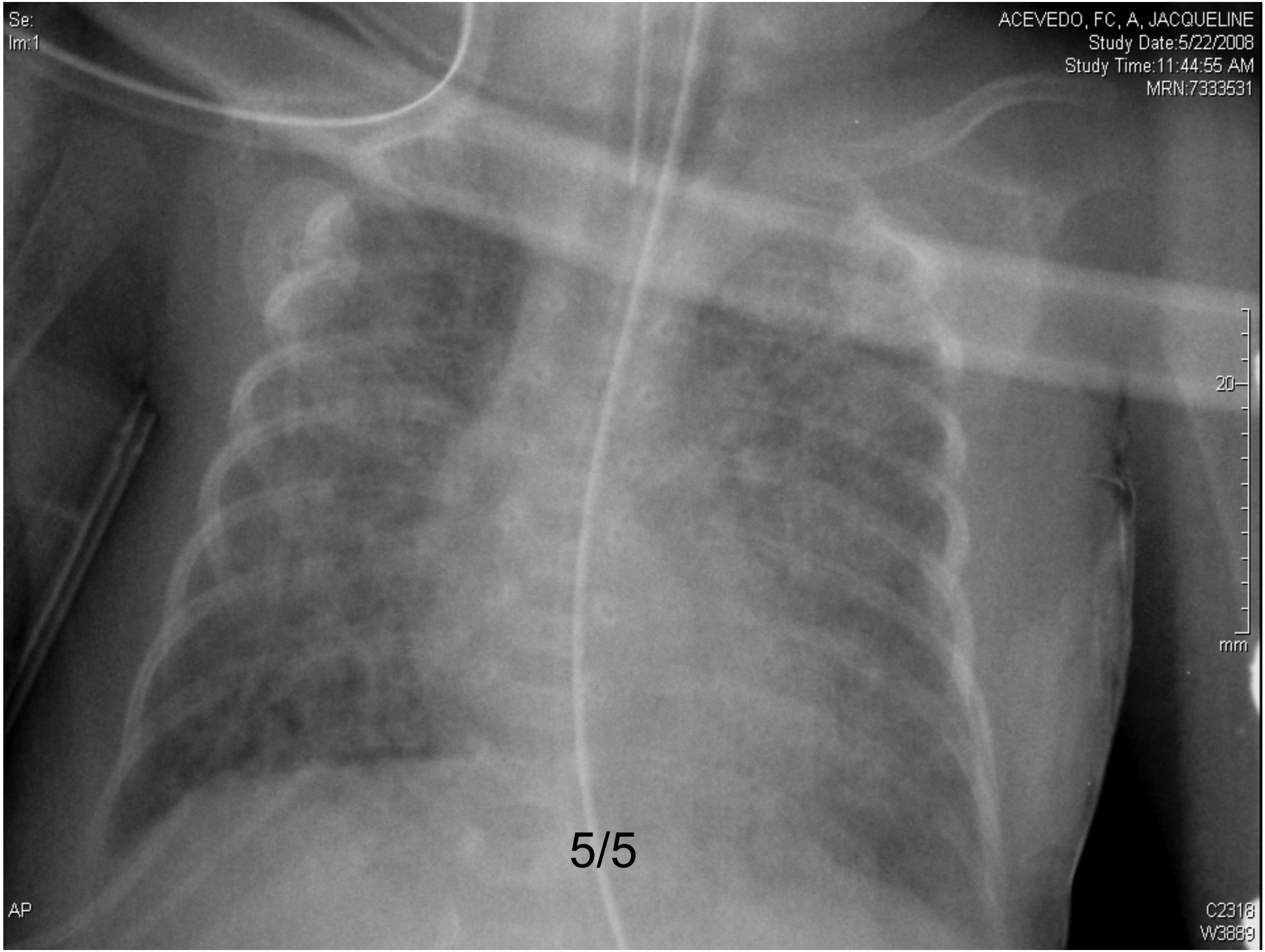
AIRPORT
20
mm
40hrs after right lung ventilation
4/5
AP
C2400
W3776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5/5
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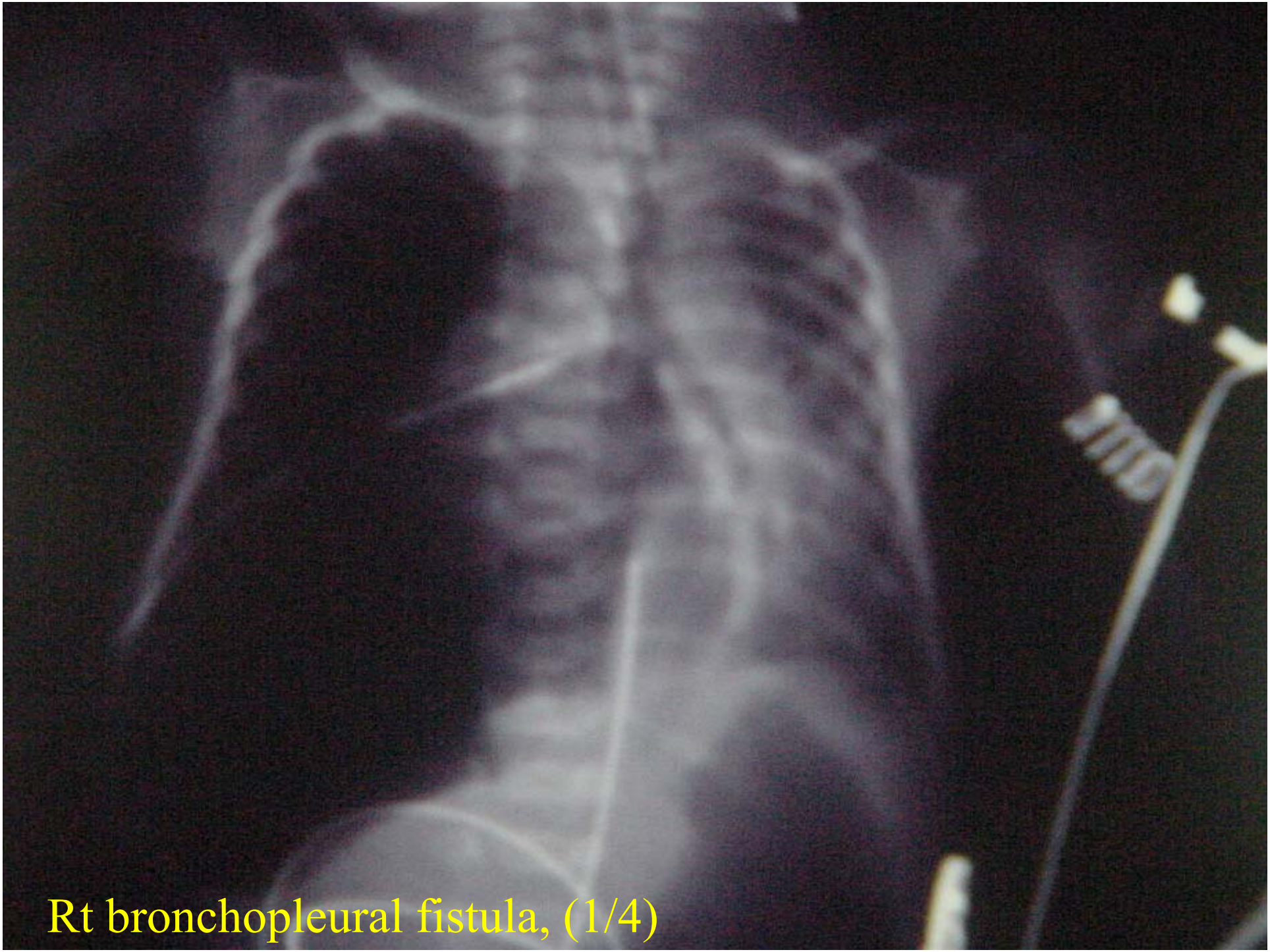
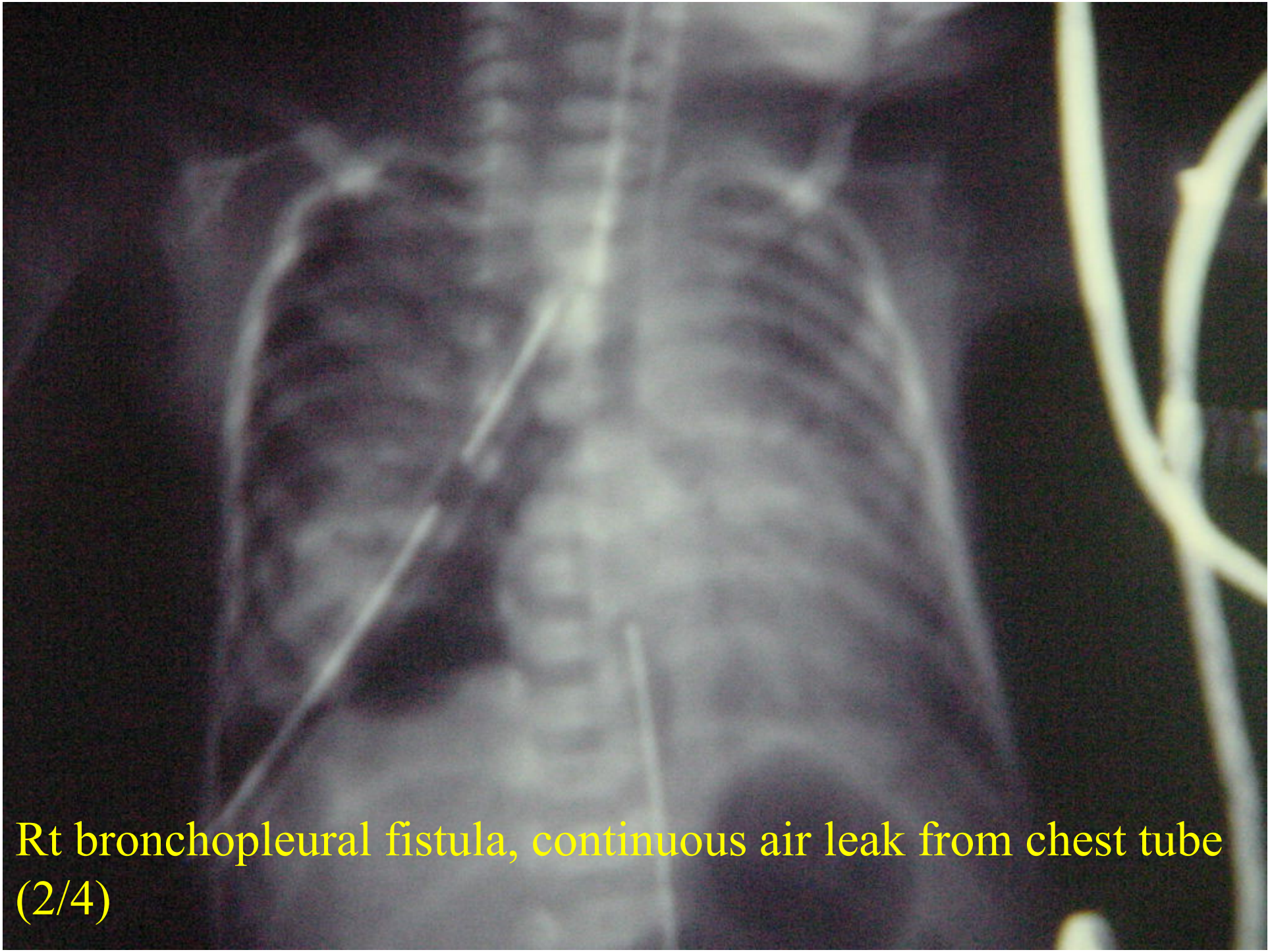
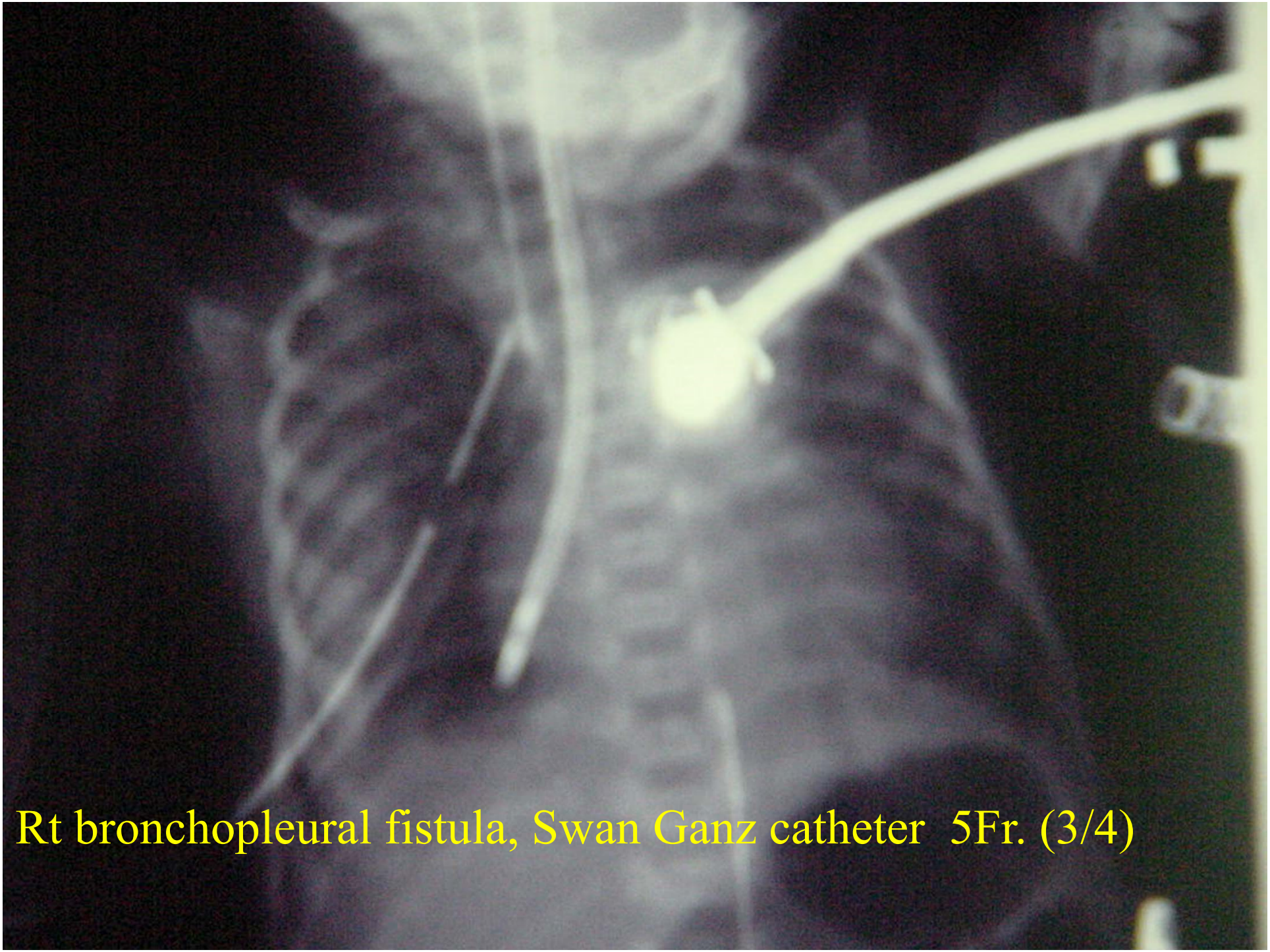
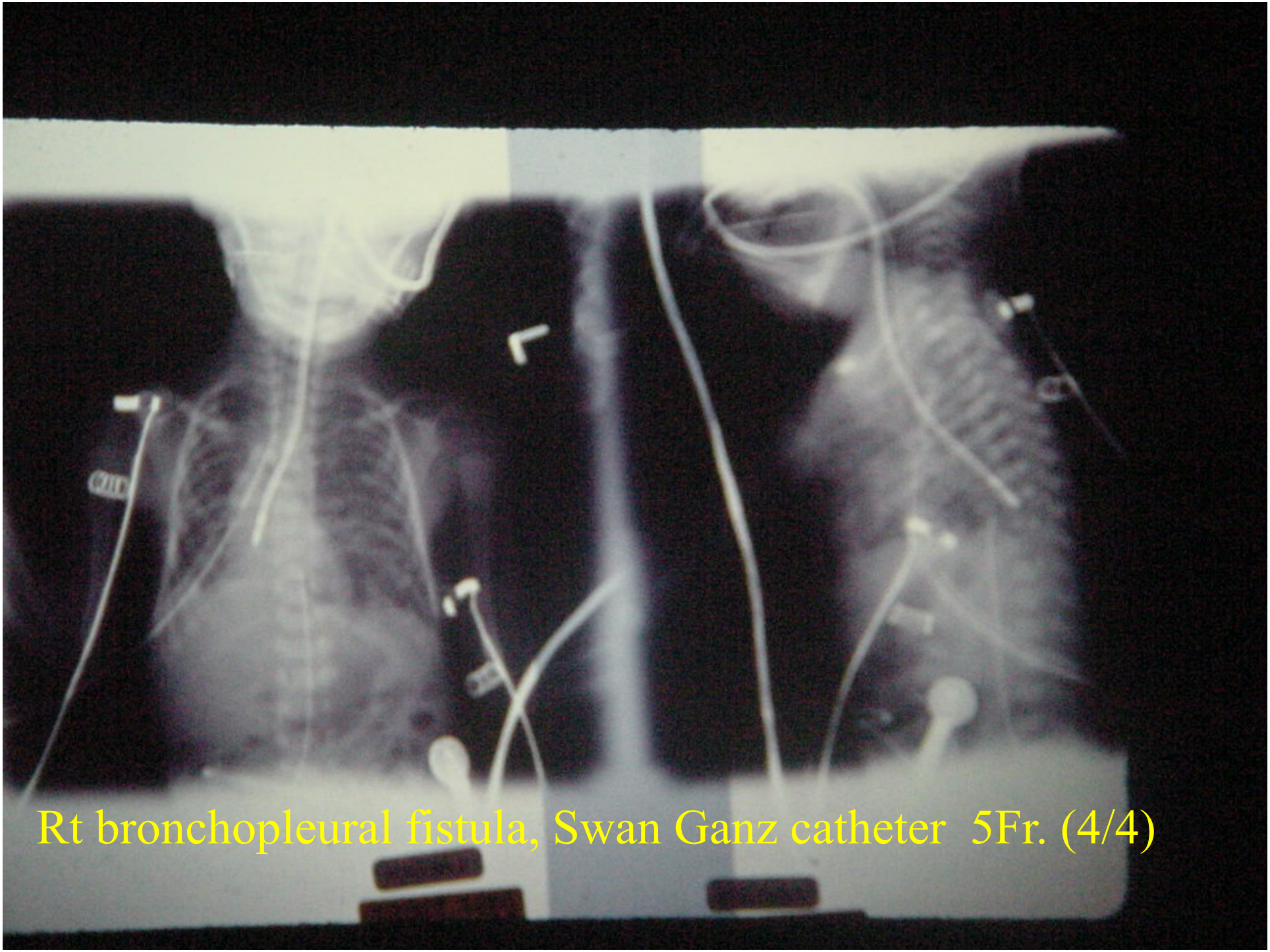
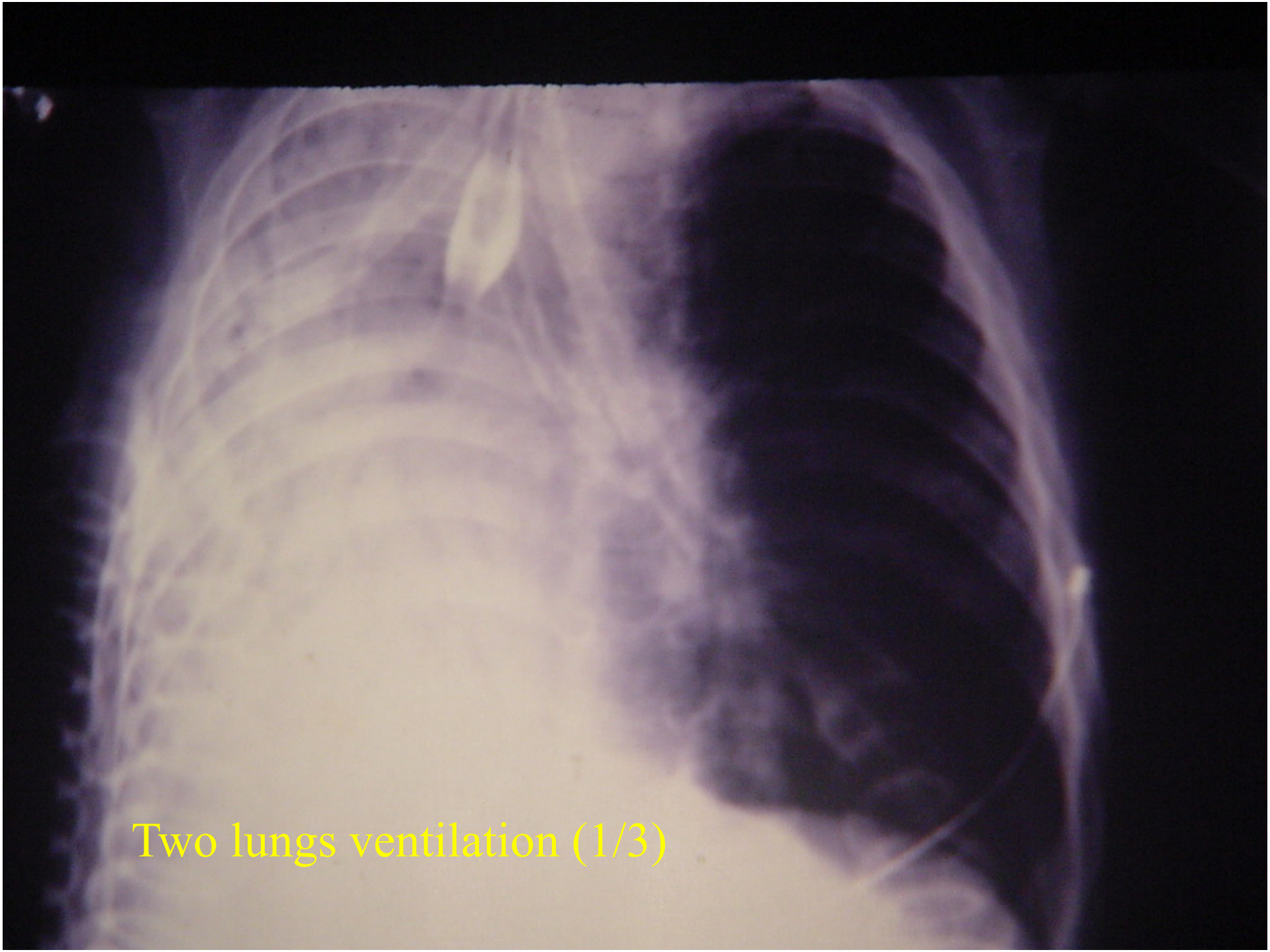

Rt bronchopleural fistula, (1/4)

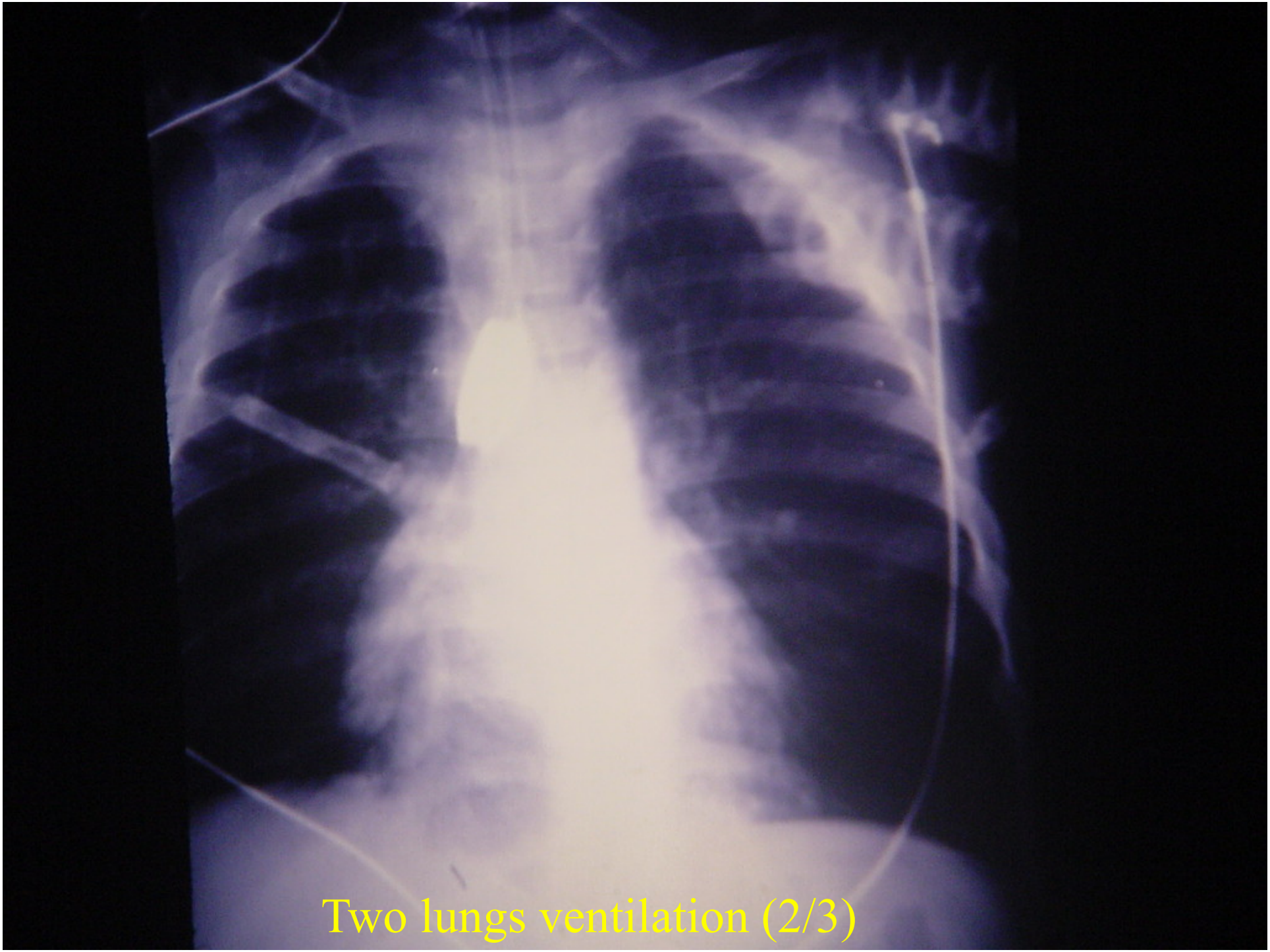


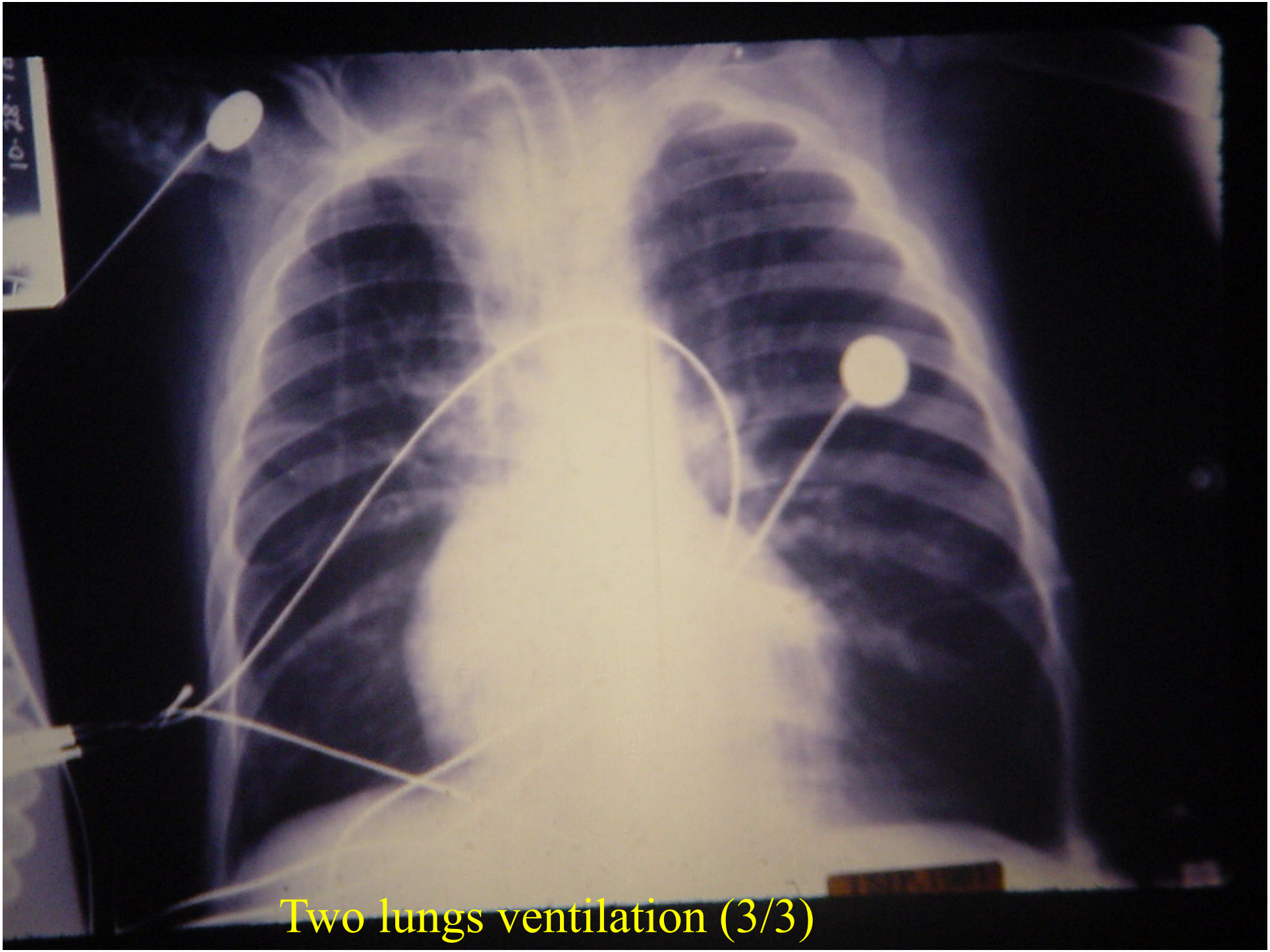
Rt bronchopleural fistula, continuous air leak from chest tube (2/4)


Rt bronchopleural fistula, Swan Ganz catheter 5Fr. (3/4)


Rt bronchopleural fistula, Swan Ganz catheter 5Fr. (4/4)


Two lungs ventilation (1/3)


Two lungs ventilation (2/3)


Two lungs ventilation (3/3)


AMAZING
THINGS
ARE
HAPPENING
HERE