HYDATID CYST TREATMENT

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TREATMENT TARGETS

A. **Alleviating** of patient suffering
B. **Eradicating** of parasite foreign body elements
C. **Prevent** complications : Rupture ,infection , Asphyxia , spreading
D. **Re- extension** of pulmonary tissue and prohibit cavity formation
E. **Preserving well pulmonary function** as priority before surgical intervention to other parts regarding same problem unless cerebral involvement

TREATMENT ALTERNATES

A. Preparing
B. Surgery
C. Medications
D. Rarely conservative bronchoscopy drainage

Preoperative preparation

A. Assessment of other infected organs
B. Antibiotics
C. Postural drainage
D. Supportive arrangements including improve pulmonary function and other systems
E. Anaphylaxis treatment if happened

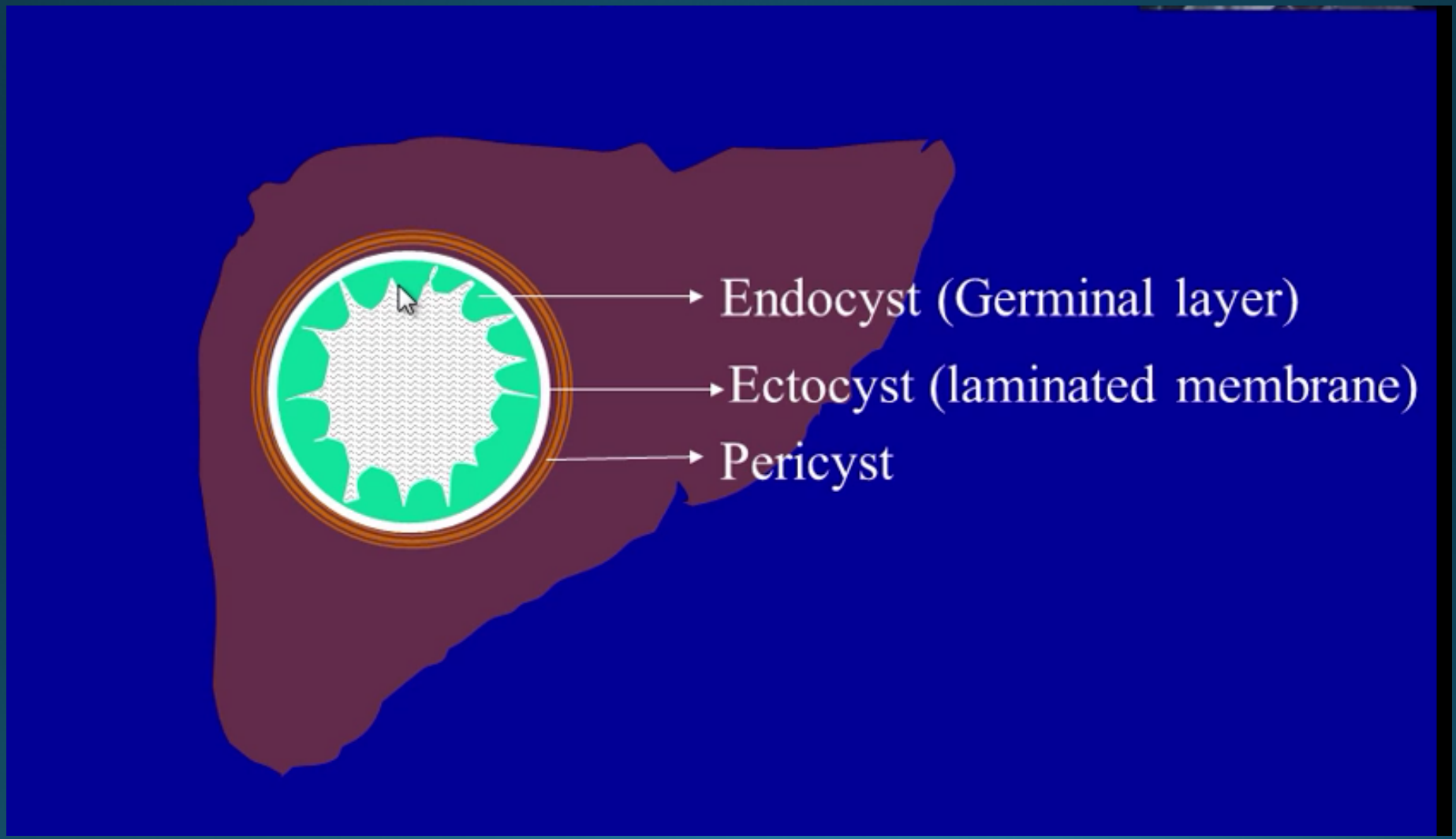
SURGERY OPTIONS

A. Bilateral pulmonary involvement need two separate interval thoracotomy
B. Ruptured , infected , has the priority to be solved
C. Large , central , has the priority to be solved
D. Pleural implication by cyst rupture need drainage first then need decortication at operation time
E. If there is one side ruptured cyst and other side big intact cyst we do thoracotomy to the intact cyst
F. **Ideal surgery** demand cyst ***ENUCLEATION*** , debridement of pericyst membrane known as ***PERICYSTECTOMY*** , cavity arrangement by absorbable plication stitches after direct closure of all bronchial fistula known as ***CAPITONNAGE***

CYST LAYERS TO BE RECOGNISED

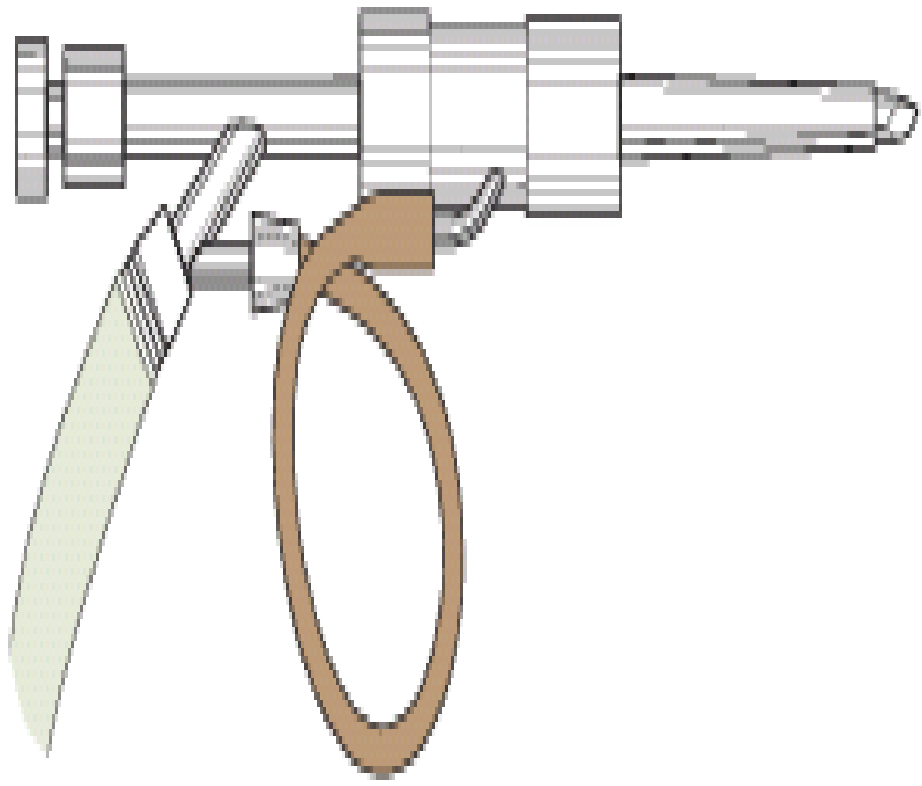
EXTERNAL FIBROUS
MEDIUM LAMINAR
INTERNAL GERMINAL

- External layer (fibrous whitish aspect) (Part A)
- Medium layer (lung parenchyma with small vessels close to the pericystic membrane) (Part B)
- Internal layer (bronchial openings and vessels close to the pericystic membrane) (Part C)

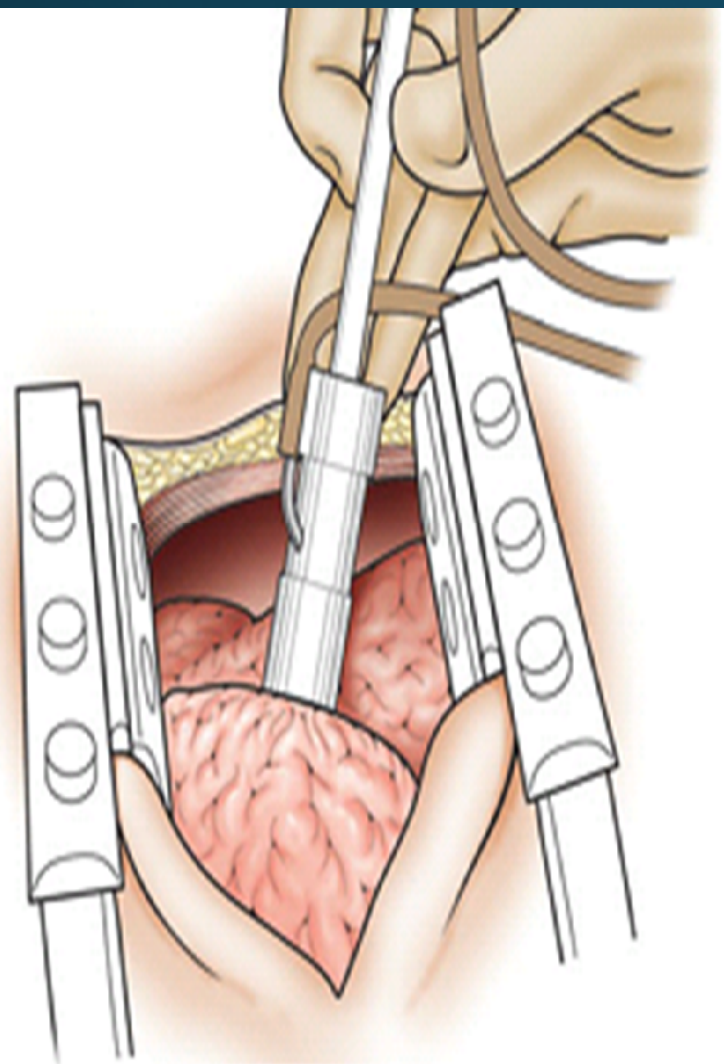

Endocyst (Germinal layer)
Ectocyst (laminated membrane)
Pericyst

ASPIRATION OF THE CYST

4a In our experience, giant cysts (larger than 5 cm) or cysts in a location at risk of rupture are best treated by needle aspiration or by use of a trocar-suction device. The use of the latter instrument prevents the rupture of the cyst, eradicates the parasite, and makes it possible to excise the residual cavity.

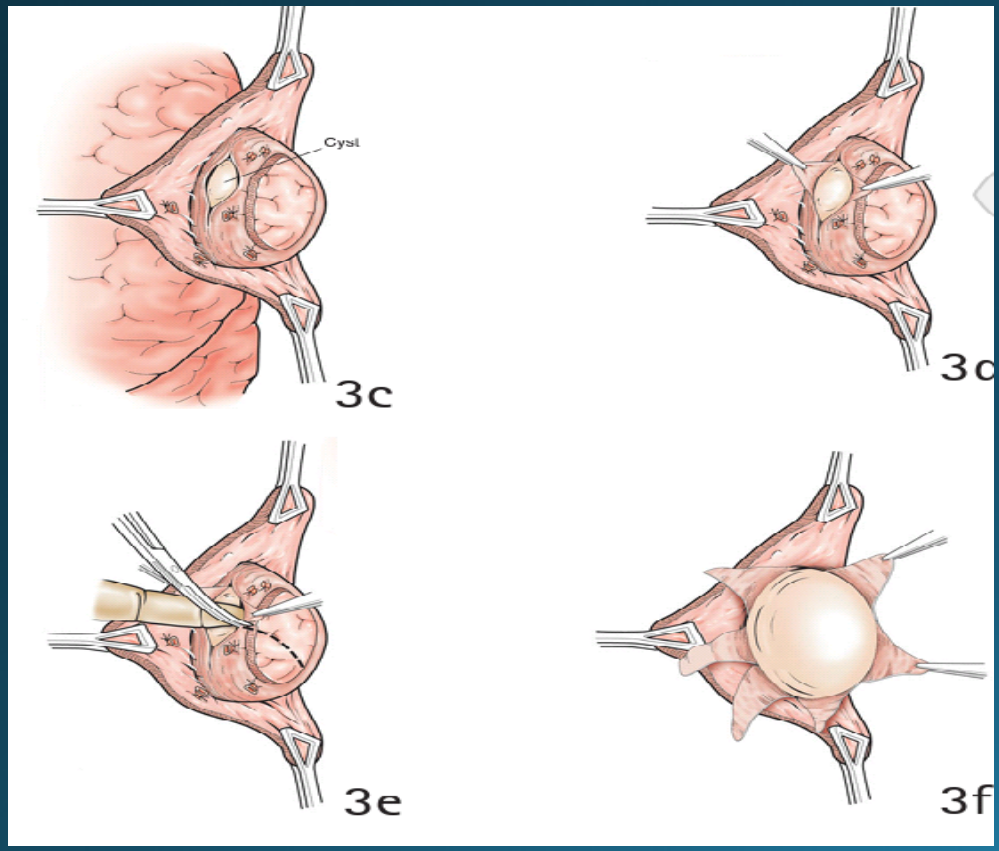


4a

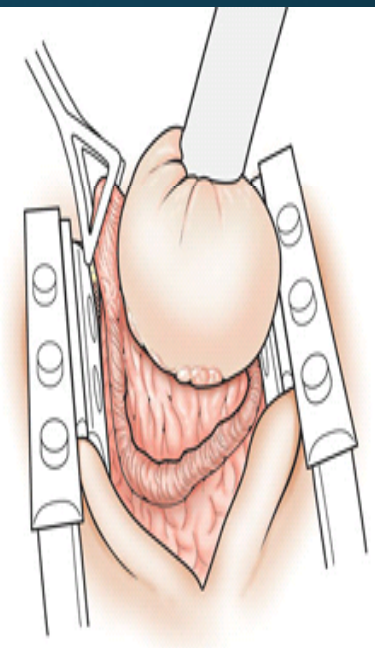


4b This device is composed of a trocar containing needle connected to a system of negative pressure aspiration and surrounded by a suction cup that fits over the convex part of the cyst wall. When the device is applied to the cyst, the negative pressure makes the suction cup adhere hermetically to the cyst wall, which impedes the extravasation of the content as it is suctioned out and eliminates the possibility of intraoperative contamination. The cystic contents are partially aspirated and replaced with the same amount of 3% saline solution. This maneuver is repeated several times with a wait of 3–5 minutes between applications.

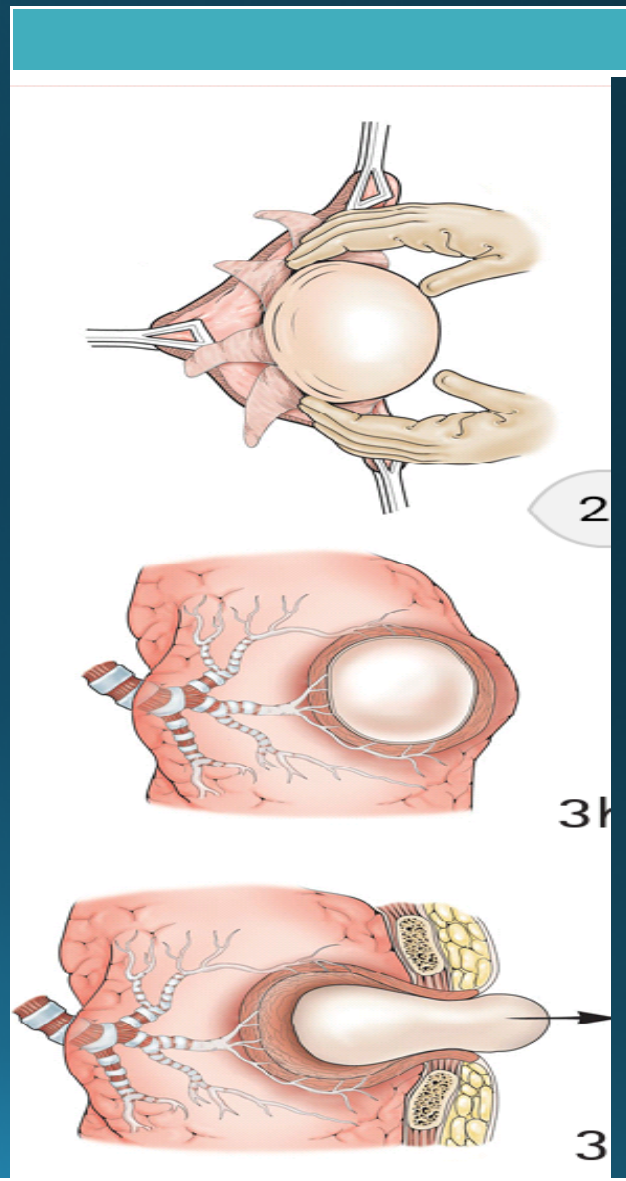
LAYERS DISSECTION AND CYST EXTRACTION



Cystectomy is then performed and the membrane removed.

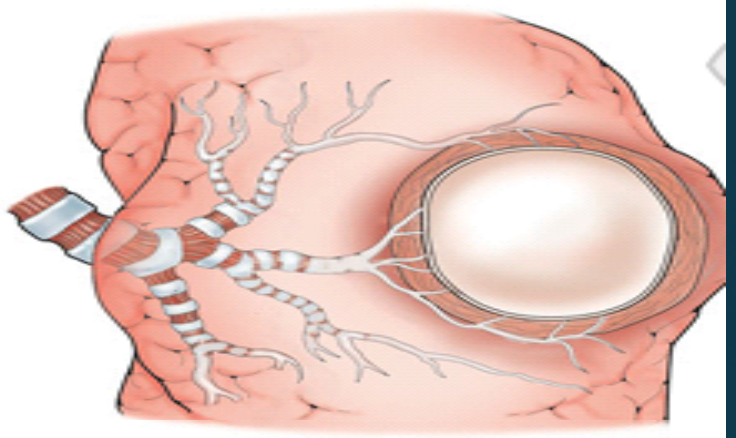


- **ENUCLEATION**



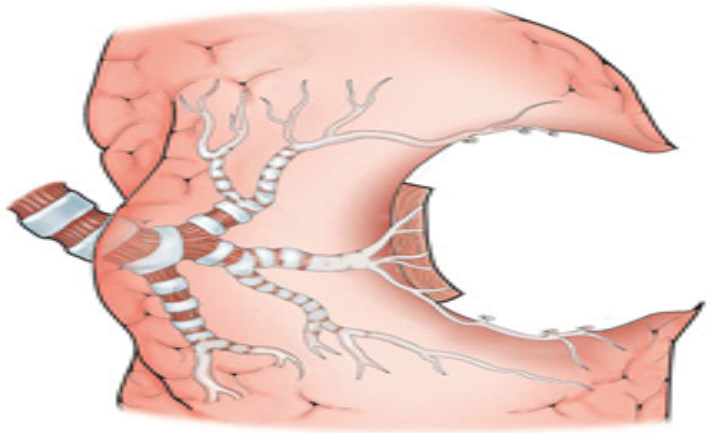
MANAGEMENT OF THE RESIDUAL CAVITY

Management of the residual cavity involves the partial resection of the pericystic layer and capitonnage.



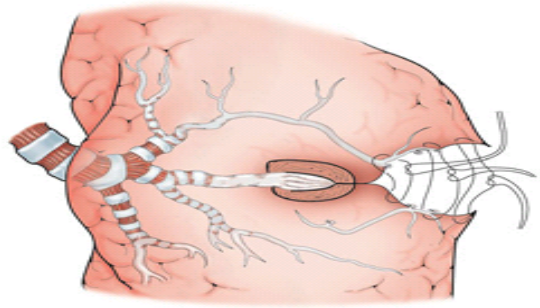
5a

5a, b The partial pericystectomy leaves intact the internal layer. The bronchial openings should be closed with individual sutures, and the free portion of the pericystic membrane should be resected.

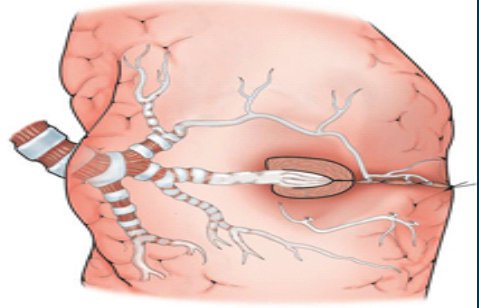


CAPITONNAGE

5c, d The capitonnage is the obliteration of the residual space by placement of concentric rows of sutures.

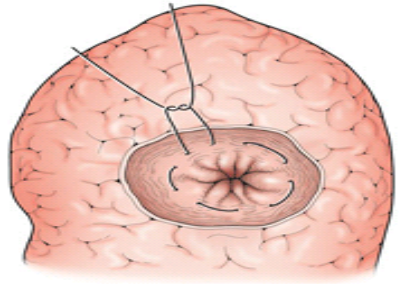


5c



5d

5e, f The visceral pleura is sewn over the incision.



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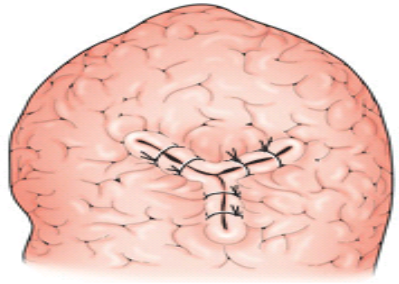

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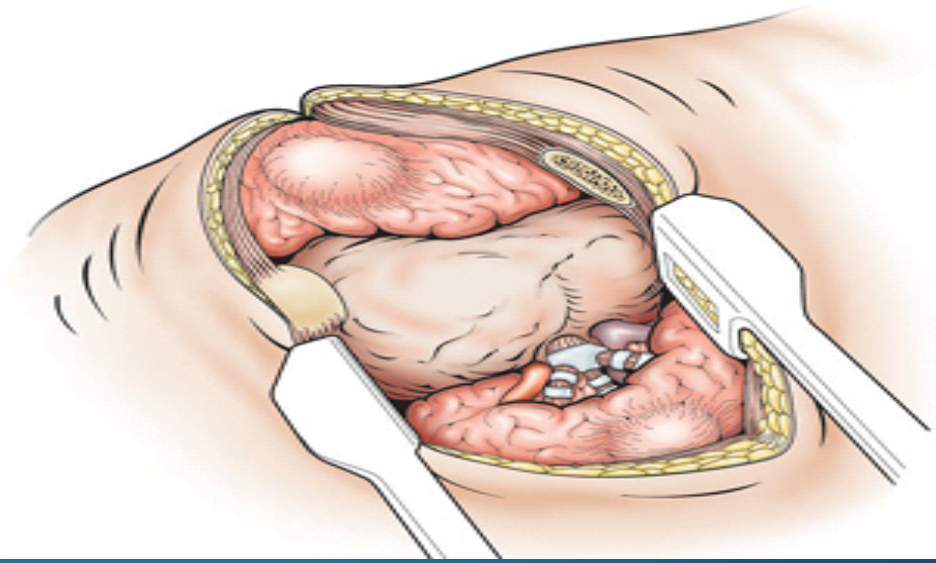
Bilateral cysts – one or two stages: Indications for two-stage operations are (1) larger number of cysts, (2) requirement for lobectomy, (3) cardiopulmonary reserve limitations, and (4) uncompensated chronic conditions. In two-stage operations, the lung with larger cyst or having numerous cysts should be operated first. Contralateral lesion can be resected 2–4 weeks after the first operation. One-stage resection of bilateral cysts with bilateral thoracotomies or median sternotomy is also advocated by numerous of researchers in uncomplicated cysts and healthy individuals [10, 11] (Fig. 11.4).

Bilateral cysts

6 A bilateral 'clamshell' thoracosternotomy is used when dealing with cysts in both lungs. This is the approach of choice for cysts that involve both the heart and lungs.

A median sternotomy is usually sufficient when the cysts are not located in the left lower lobe.



Complicated cysts

Rupture of the cyst prior to the operation can be a serious complication. Precautions to be taken include maintenance of the airway free of secretions and cystic contents by appropriate bronchoscopy suction. Anaphylaxis may occur during induction of the anesthesia or during the operation, due to communication of the cyst into the bronchi or the pleural space. If this situation occurs, the cyst is opened, the contents are evacuated, and the cavity is thoroughly irrigated with 3% saline solution. The bronchial openings are closed, and the residual cavity is closed by partial resection of the pericystic layer and capitonnage. Pulmonary lobectomy is a safer treatment when the cyst is associated with severe pulmonary changes such as abscess, atelectasia, or fibrosis.

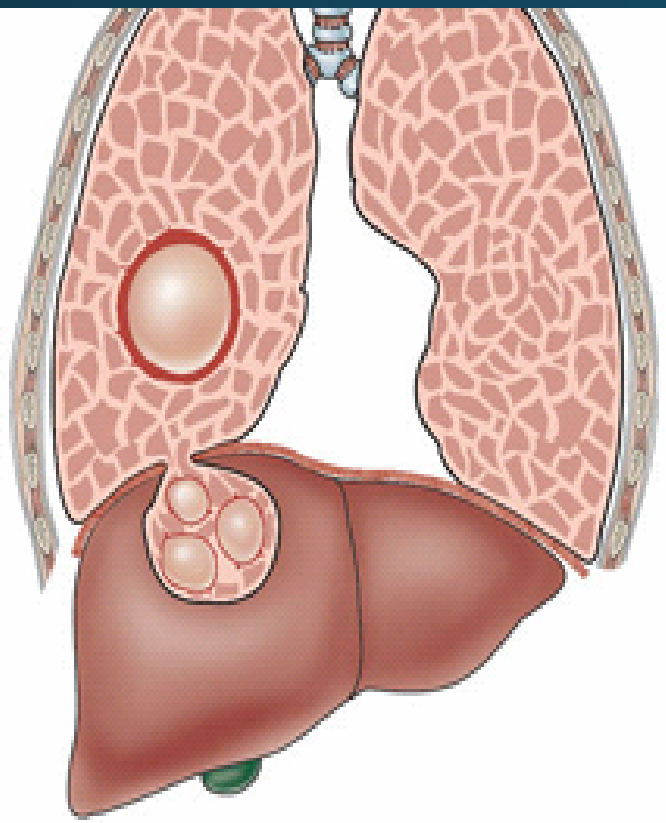
Cystic rupture

Happen **spontaneously or duo to trauma or antihelminthic medications.**

Rupture **: can be inside the pericystic membrane or into the pleura ,**
adjacent organ ,
bronchus , or vessels.

This complication has different ***clinical consequences*** like :

- **Anaphylactic shock**
- **Spread of the disease**
- **Infection of the cyst OR CHEMICAL PNEUMONIA**
- **Asphyxia**
- **Hemoptysis**



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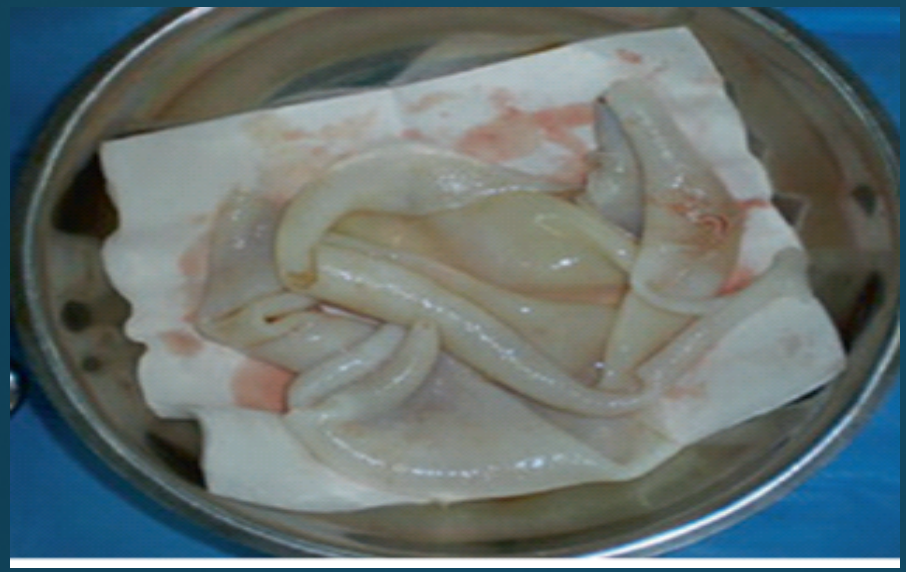
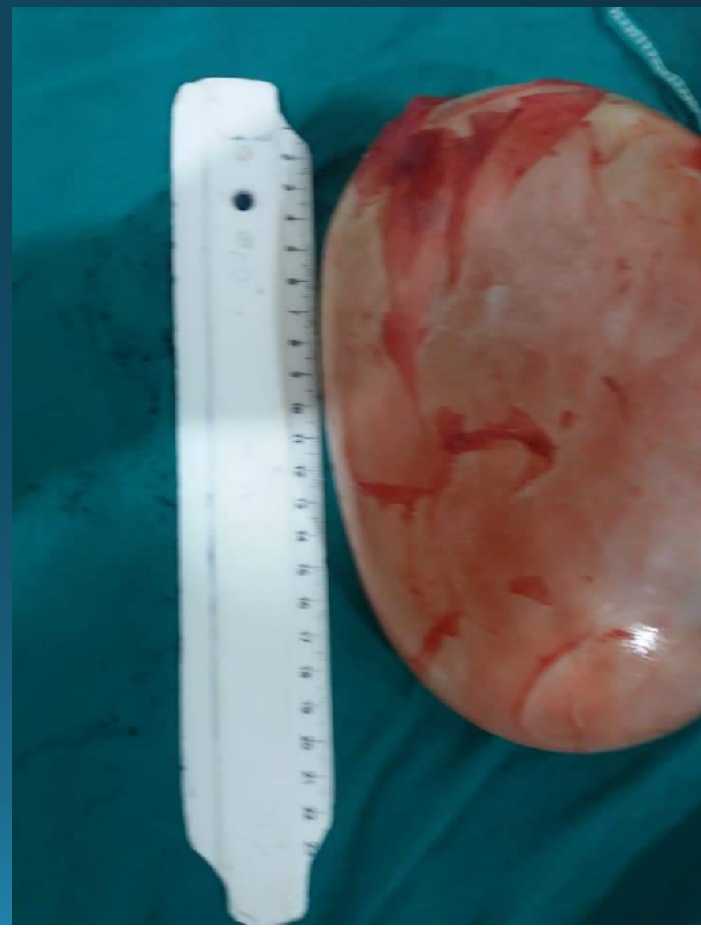
Hepatic and lung cysts

7 The decision as to which cysts should be removed first is based on the size, location, and risk of rupture. With apical liver cysts and cysts of the right lower lobe, the best approach is a lateral seventh to eighth intercostal thoracotomy that goes through the diaphragm with simultaneous resection of all cysts.

Occasionally, involvement of the bile duct may mandate extension of the thoracotomy to a laparotomy for placement of a T tube.

CYST MEMBRANE





SPECIAL SURGICAL EXPOSURES

Median sternotomy
Double clamshell thoracotomy
VATS
Segmentectomy
Lobectomy
Bilateral thoracotomy
Double thoracotomy
Thoracoabdominal
Thoracotomy with diaphragm incision

Prognosis and surgery complications

Atelectasis rare
Suture line infection
Pleuritis
Hemoptysis
Contamination
Pneumonia
Prolonged Air leak and trapped lung
Recurrence
Death

CHEMOTHERAPY IN HYDATID CYST INFECTION

ANTIHELMINTICS

PRIMARY MODALITY OR ADJUNCT TO SURGERY

BENZIMIDAZOLE : Albendazole , mebendazole

Its effect by blocking glucose intake and ATP production and finally worm death in intestine

ALBENDAZOLE : Administered orally for one month (10-15 mg/kg/d) separated by 14 –day intervals and given to 3-6 month .

Monitoring must be done every 2 weeks the first 3 months then monthly and include CBC - LIVER FUNCTION TEST

MEBENDAZOLE : Also orally (40-50 mg/kg/d) with same intervals and same lab monitoring with possibility to measure serum levels to both med and its desirable.

TREMATODICIDES : Praziquantel (isoquinoline derivative),.

Increases cell membrane permeability in susceptible worms leads at last to worm death. Given (25-40 mg/kg/d) limited data about weekly monitoring

PRIMARY MEDICAL THERAPY

A. Patients with primary inoperable liver or lung cysts because of location or medical condition.
B. Management of multiple liver cysts less than 5 C.M especially deep in liver
C. Peritoneal cysts.
D. Multiple organs infection with poor medical condition.
E. No contraindication to medical therapy.

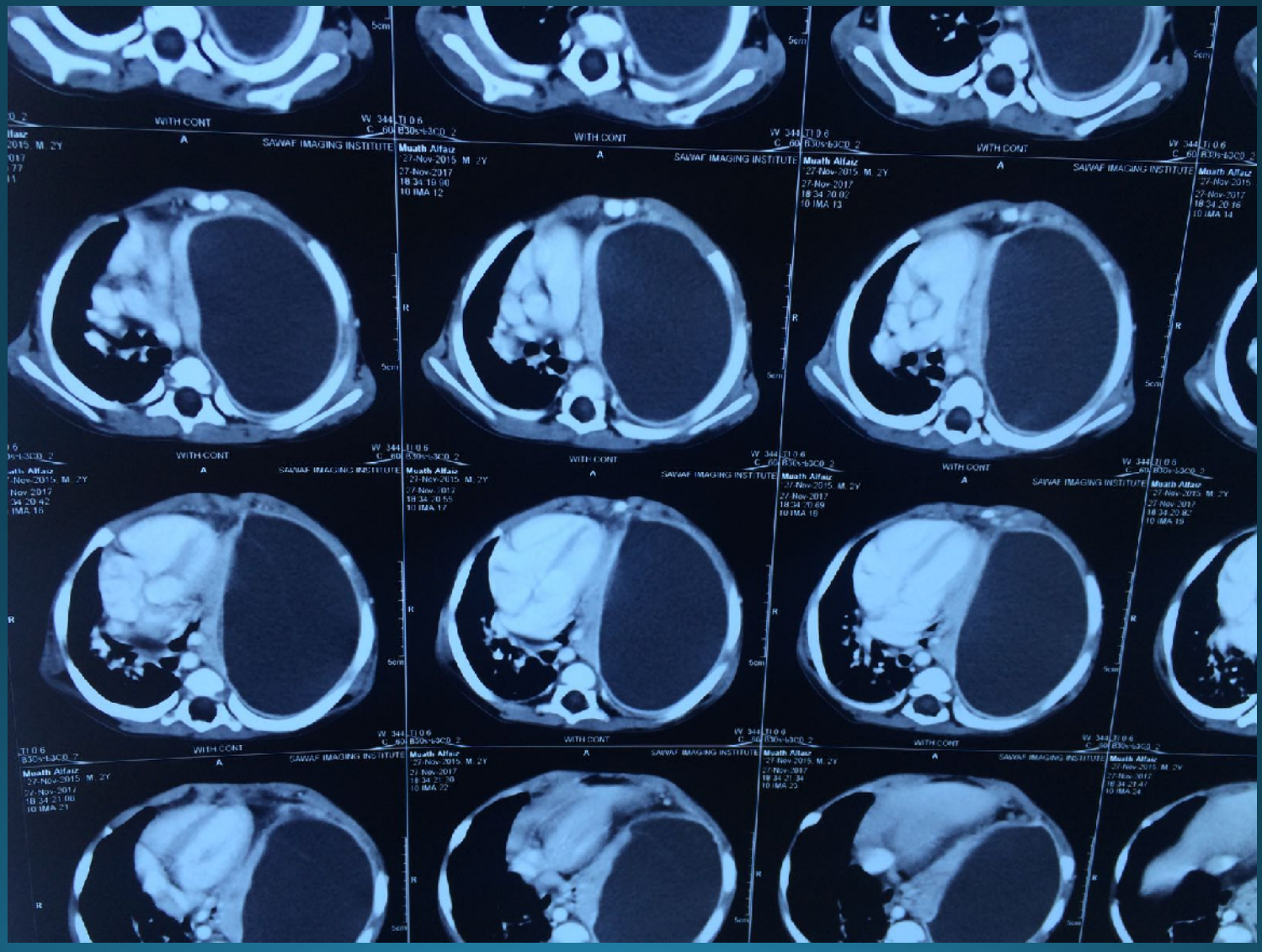
ADJUNCTIVE TREATMENT

A. Useful treatment after surgical and percutaneous small peripheral liver cysts.
B. Reduces the risk of recurrent disease by inactivating protoscolices.
C. Softens the cyst.
D. Facilitating removal.
E. Initiated at least 4-5 days prior to surgery (WHO suggests 4-30 days preoperatively).
F. Appropriate following spontaneous cyst rupture to reduce the risk of secondary echinococcosis from seeding of protoscolices in the abdominal cavity for one month for ALBENDAZOL or three months for MEBENDAZOL.

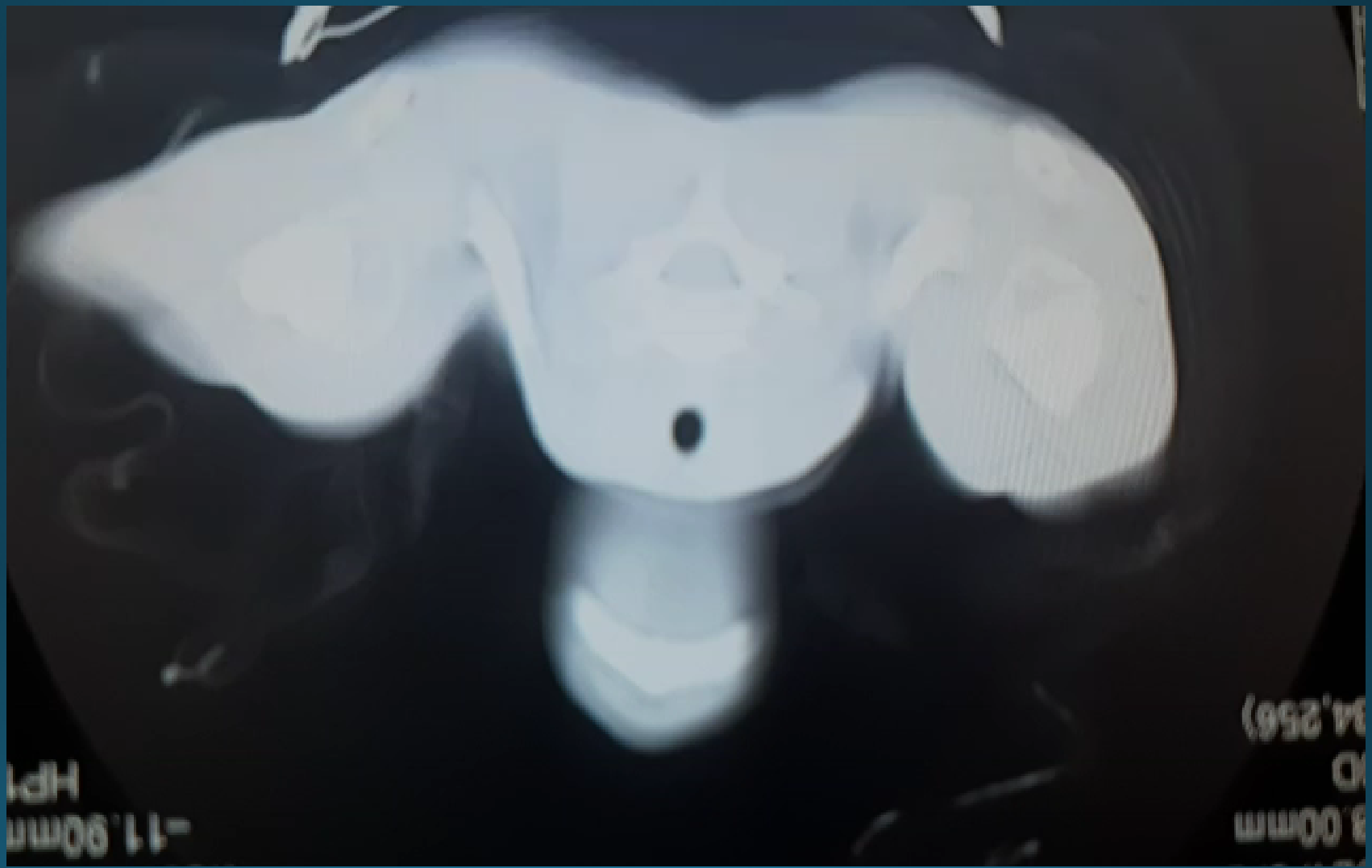
CHEMOTHERAPY CONTRAINDICATION

A. Early pregnancy.
B. Bone marrow suppression.
C. Chronic hepatic disease.
D. Large cysts with the risk of rupture.
E. Inactive or calcified cysts.
F. Relative contraindication is bone cysts because of the significantly decreased response.

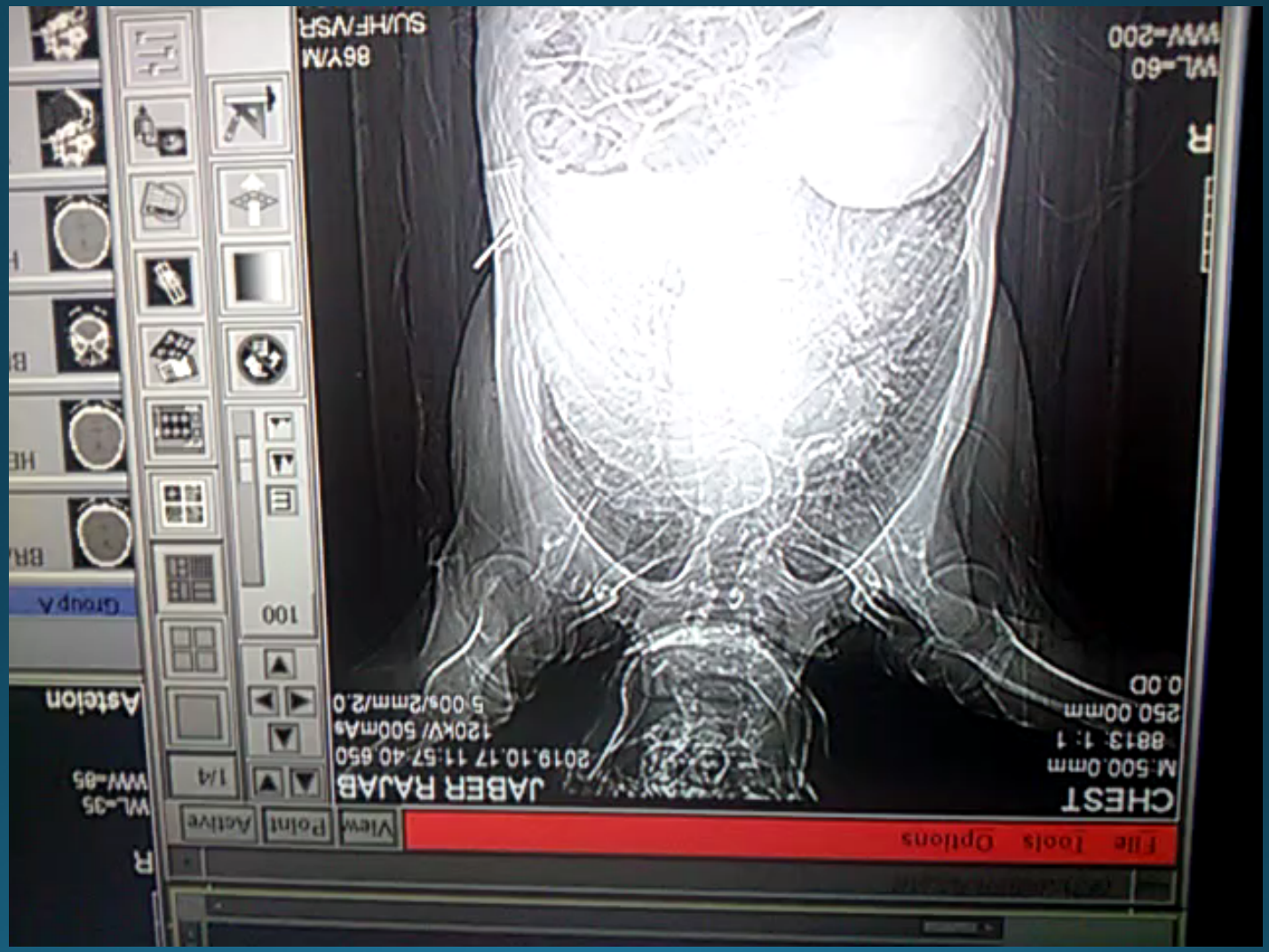
LARGE PULMONARY CYST



LETHAL CYSTS



CONFUSING SURGICAL EXPOSURE



THANKS TO YOU

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