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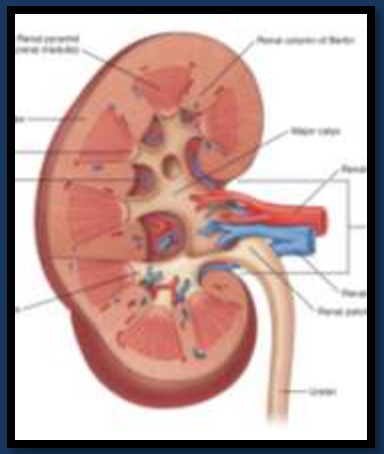

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دراسات عليا (جامعة دمشق) – البورد العربي

Urologic Hydatid Disease (ECHINOCOCCOSIS)

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EPIDEMIOLOGY

PREVALENCE:

- **Echinococcus granulosus** (**Tapeworm** cestodes)
- Other species :
  - Echinococcus multilocularis
  - Echinococcus polycystic vogeli

INCIDENCE:

- All Organs
- Liver (60%), Lung (20%), kidneys, brain (1%) and bone (1%), Heart.
- **kidneys (3%)**, bladder, prostate, seminal vesicles, and epididymis.

Etiology

- Definitive host (**Dog**):
  - **Jejunum** (live for 5–20 months)
  - Its eggs pass out with the feces
- Intermediate host (**Sheep** and livestock)
  - **Duodenum**
- In **humans**, the **liver** is principally involved (enter the portal circulation) , but about 3% of infected humans develop echinococcosis of the kidney.
- They often enlarge **1-2 cm** per year.

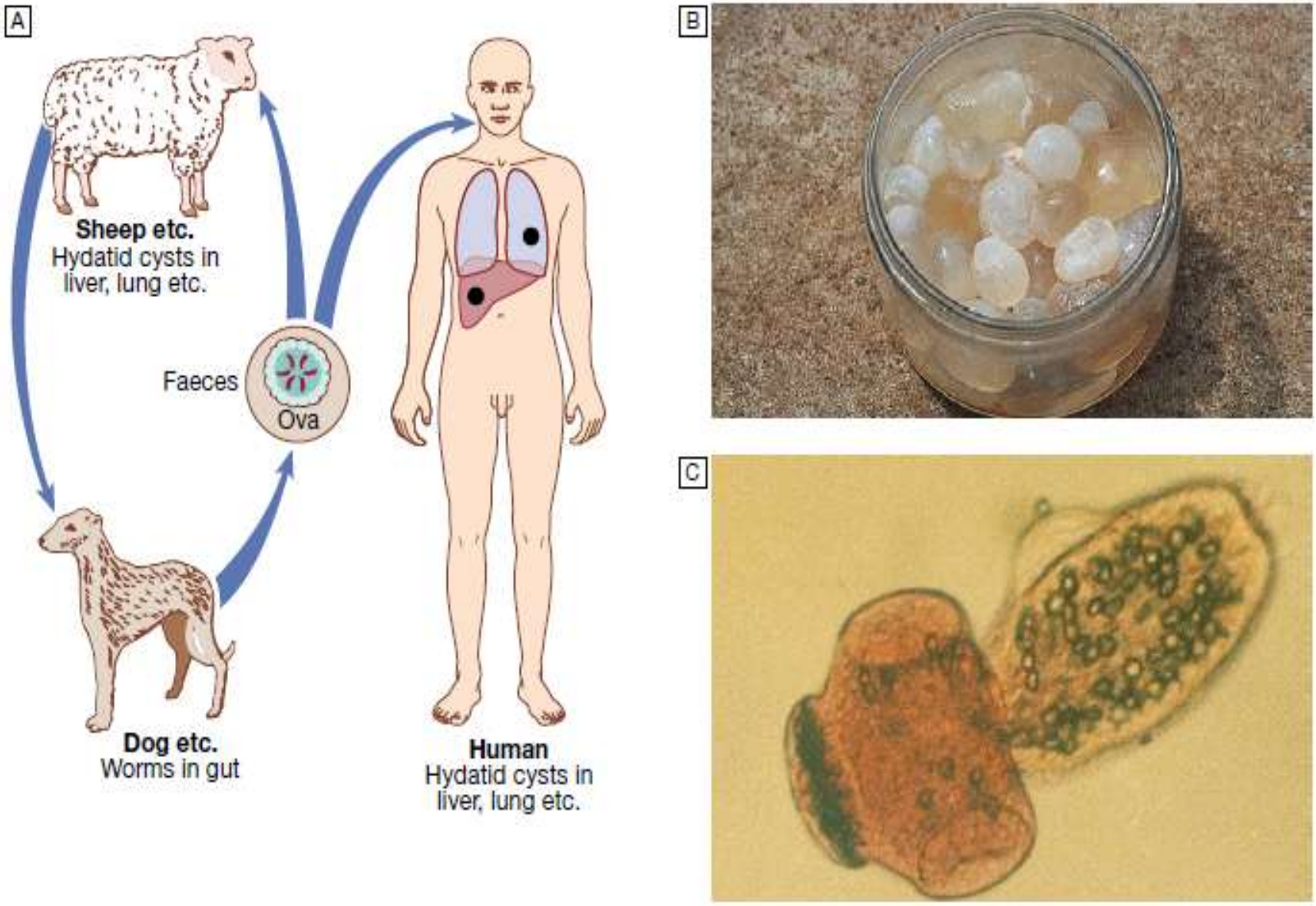


Fig. 13.54 Hydatid disease. A Life cycle of *Echinococcus granulosus*. B Daughter cysts removed at surgery. C Within the daughter cysts are the protoscolices.

- Kidney: Usually single and located in **cortex**
- The wall of the hydatid cyst has three zones:
  - **External** membrane (Peripheral zone):
    - Fibroblasts derived from tissues of the **host** becomes the adventitia and may calcify
  - Intermediate layer becomes hyaline
  - **Inner** layer that is composed of nucleated epithelium (called the **germinal layer**).
    - The germinal layer gives rise to brood capsules that increase in number, become vacuolated, and remain attached to the germinal membrane by a pedicle.

CLINICAL PRESENTATION

- Incidentally: AXR or US study
- Chronic dull flank or lower back discomfort from cystic pressure
  - Affect renal function
- **Closed** Renal hydatid disease, there may be no symptoms until a mass is found
- **Communicating**: **Cystitis**, **renal colic**, fever, pruritus, **urticaria**, eosinophilia, and anaphylaxis
- **Retroperitoneal** (perivesical) cysts:
  - Cystitis, or Acute urinary retention
  - Suprapubic mass
  - Hydatiduria (rupture into the bladder)
- **Other Organs** Involvement

Diagnosis

- AXR: **Calcified wall** = dead cysts and low risk of seeding
- US: Floating membrane or ‘‘water lily’’ sign is pathognomonic
- IVP: reveal changes typical of a space-occupying lesion
- **CT**:
  - Honeycomb, **No Enhancement**
  - Mainstays of diagnosis
  - Amebic abscesses?
- Serologic testing:
  - Sensitivity only 60% to 90%
  - **Indirect hemagglutination and ELISA**
  - Casoni (intradermal skin) and Weinberg (complement fixation)
  - ✖ eosinophilia (20-50%)
- Positron emission tomography (PET): follow Up?

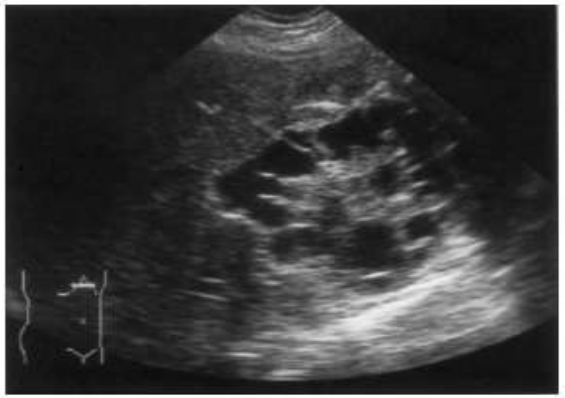


Figure 4.6 Hydatid cyst demonstrating surrounding daughter cysts.

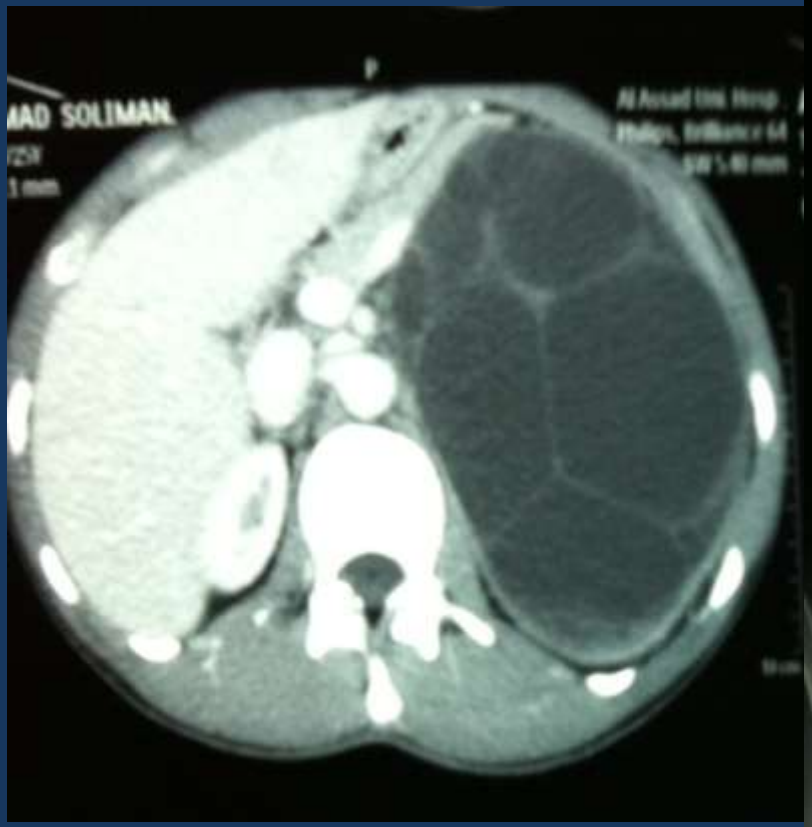
Drake RL, Vogl W, Mitchell AWM. Gray’s anatomy for students. Philadelphia: Elsevier;2005.p.323

Table 1: Sonographic classification of hydatid cysts

Gharbi Type	WHO Type	Cyst Morphology	
I	CE 1	Unilocular anechoic lesion with double line sign	Active
III	CE 2	Multiseptated rosette like honeycomb cyst	Active
II	CE 3A	Cyst with detached membranes (water-lily sign)	Transitional
III	CE 3B	Cyst with daughter cysts in solid matrix	Inactive
IV	CE 4	Cyst with hetrogenous hypoechoic/ hyperechoic contents. No daughter cysts	Inactive
V	CE 5	Solid plus calcified wall	

Gharbi's Classification

- **Type I** : pure cystic fluid Collection (spherical-oval, thick-walled)
- **Type II** : fluid Collection with membrane separation
- **Type III** : Fluid collection with septa
- **TypeIV:** heterogeneous (hypoechoic-hyperechoic-intermediate) pattern
- **Type V:** completely calcified (Reflecting) walls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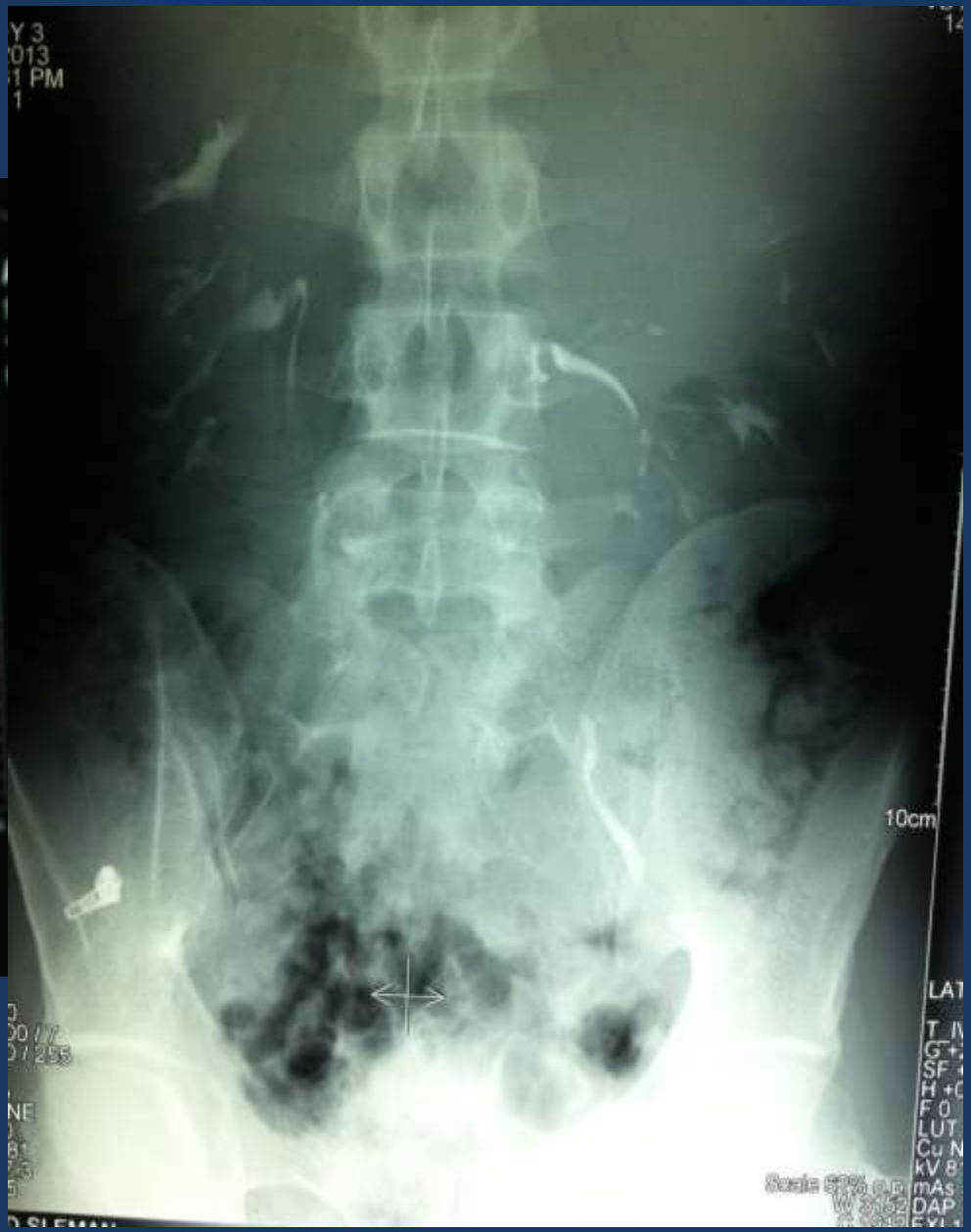
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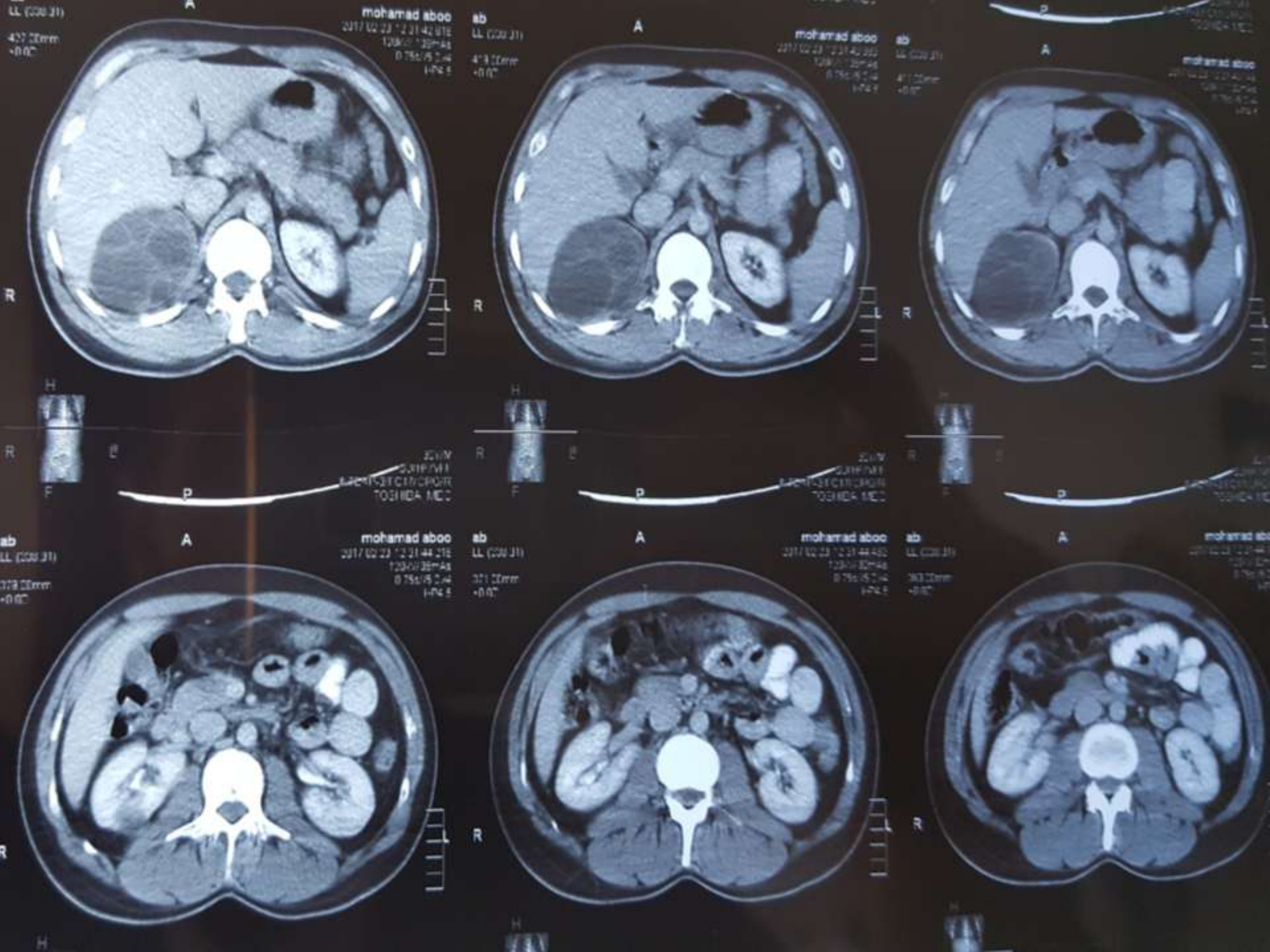
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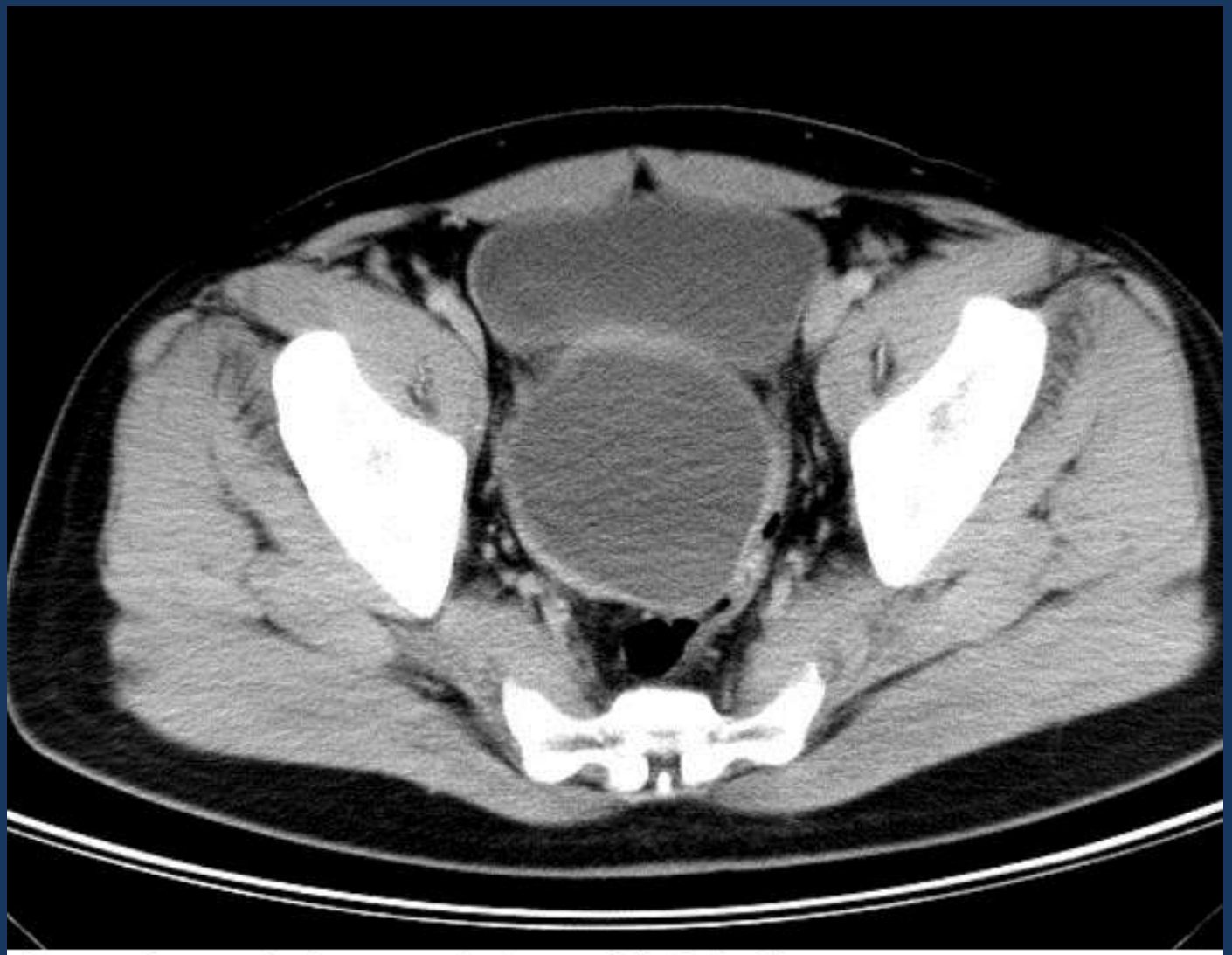
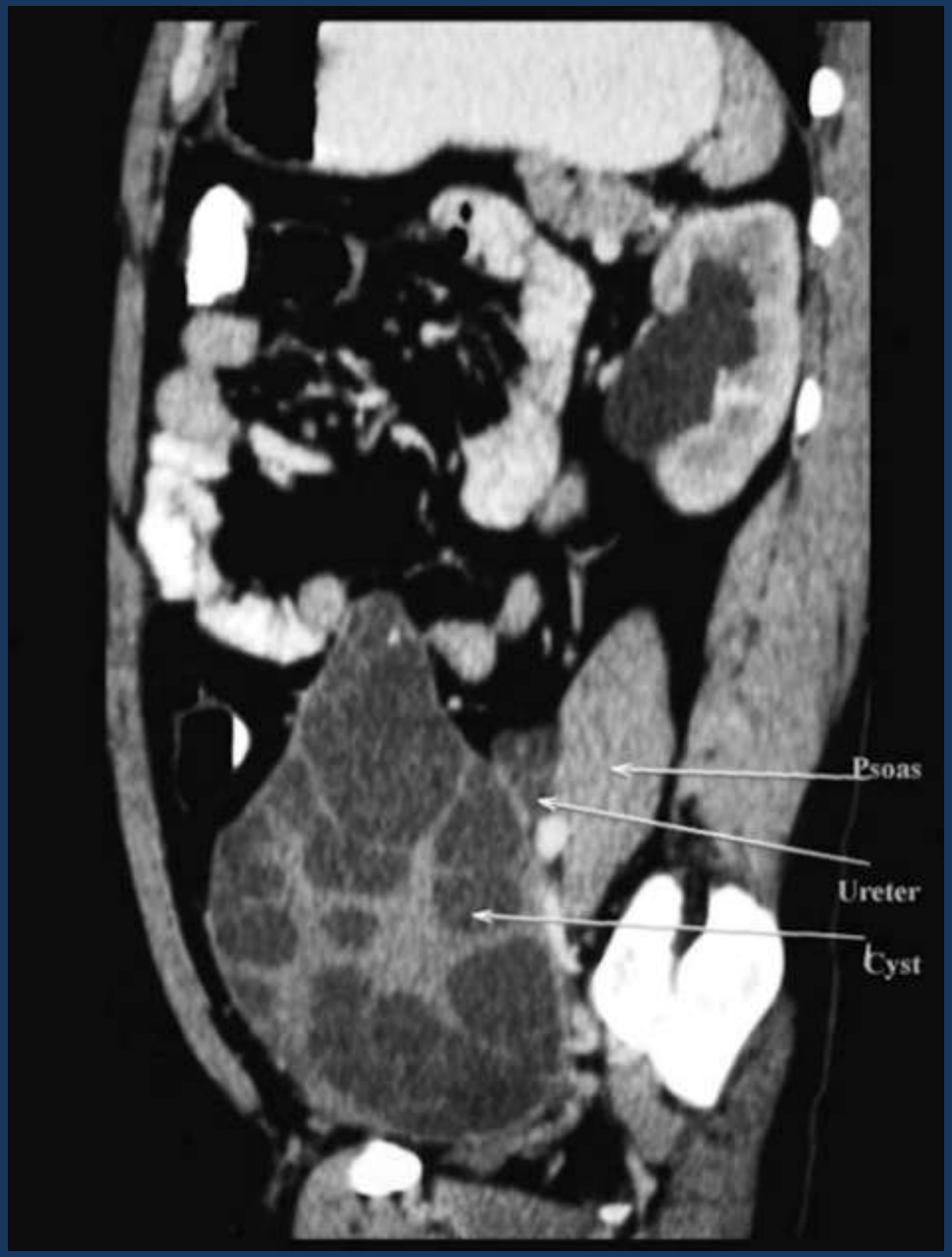


Figure: Computerized tomography image of the hydatid cyst.

Khadra MH, Pickard RS, Charlton M, et al. (2000). A prospective analysis of 1,930 patients with hematuria to evaluate current diagnostic practice. J Urol 163: 524–527



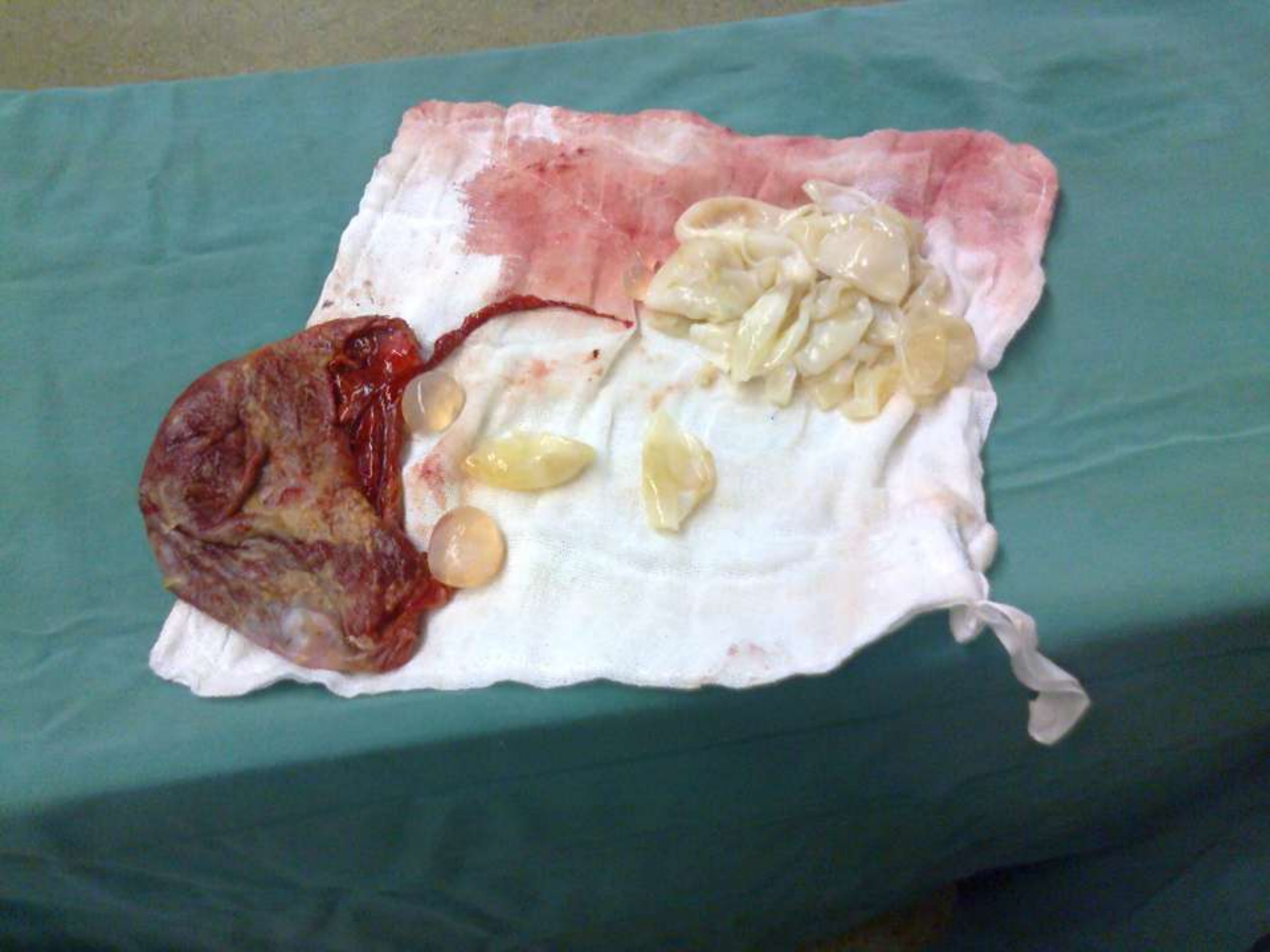
Khadra MH, Pickard RS, Charlton M, et al. (2000). A prospective analysis of 1,930 patients with hematuria to evaluate current diagnostic practice. J Urol 163: 524–527

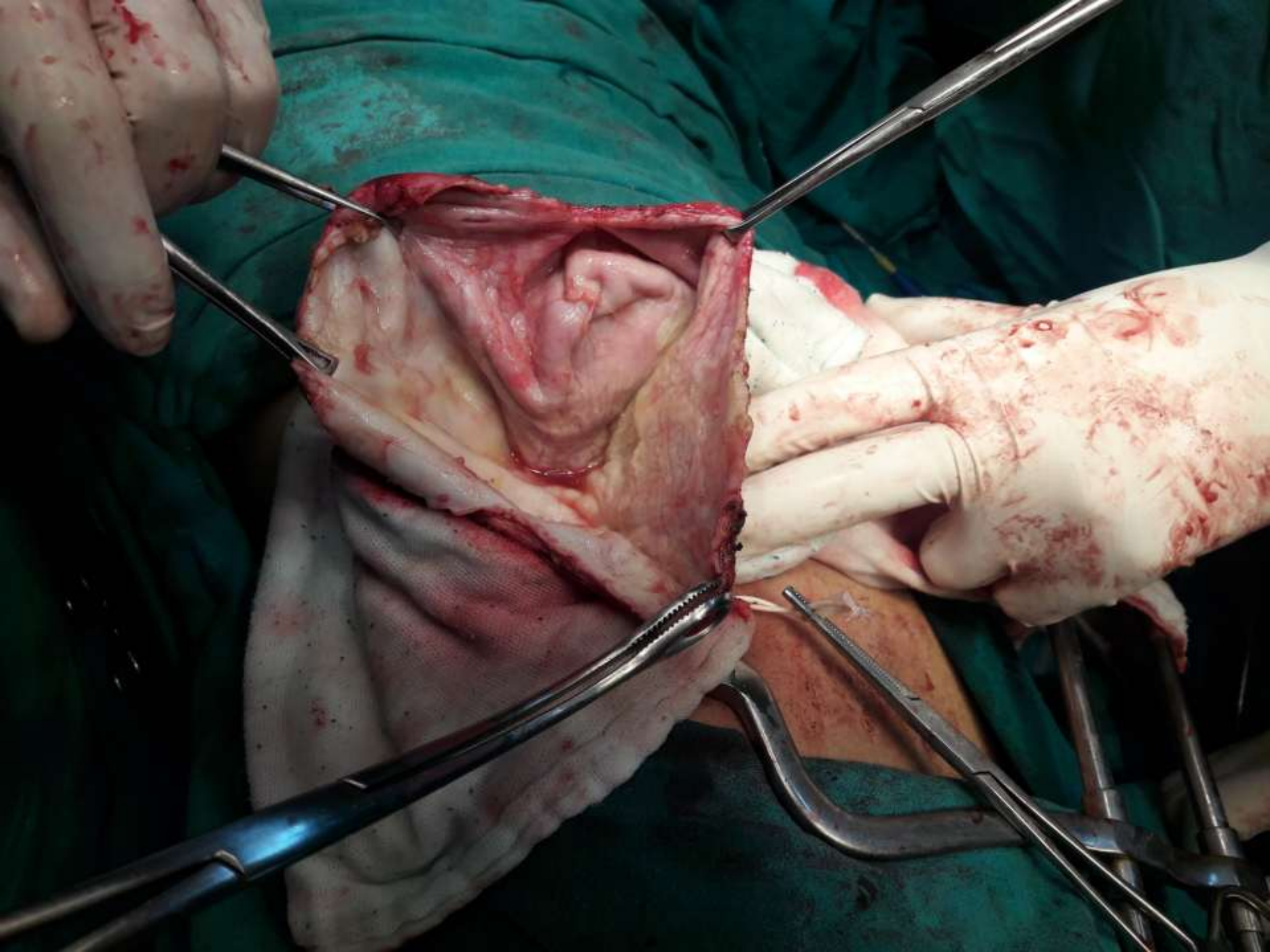
Differential diagnosis

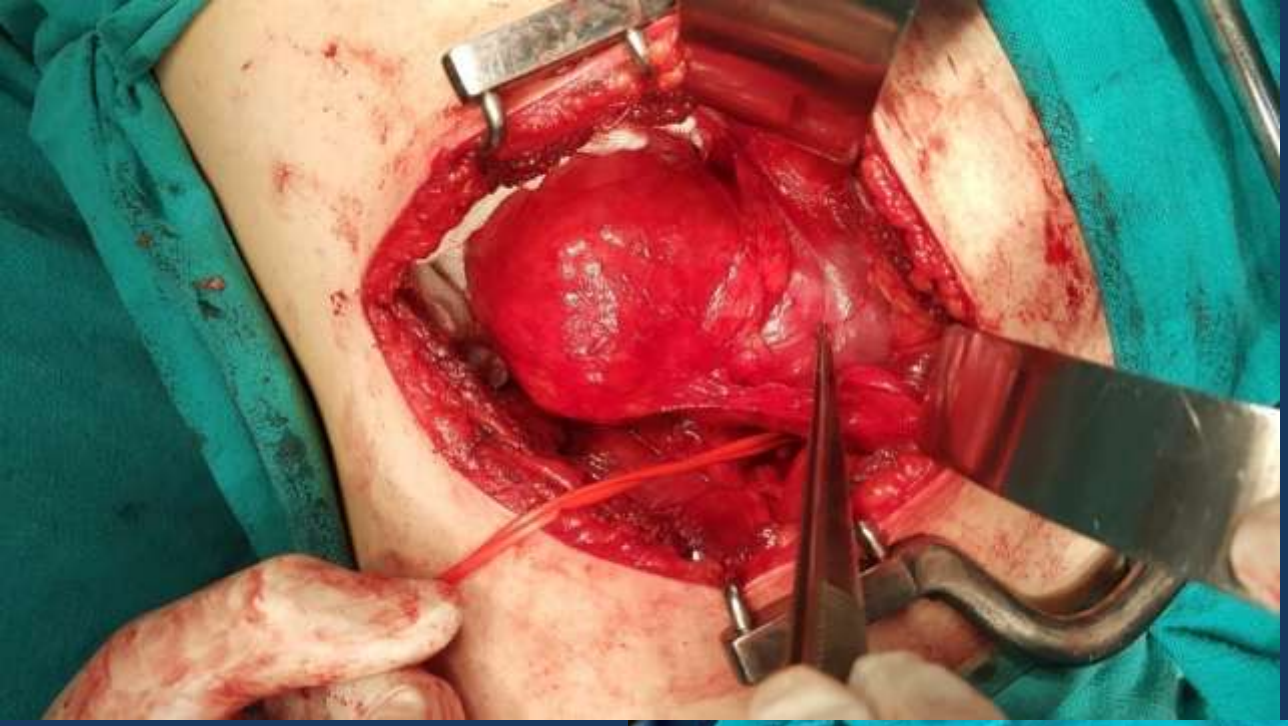
- Complex Renal Cyst
- Cystic RCC
- Duplication
- Abscess
- Emphysematous PN
- PCKD
- XGP

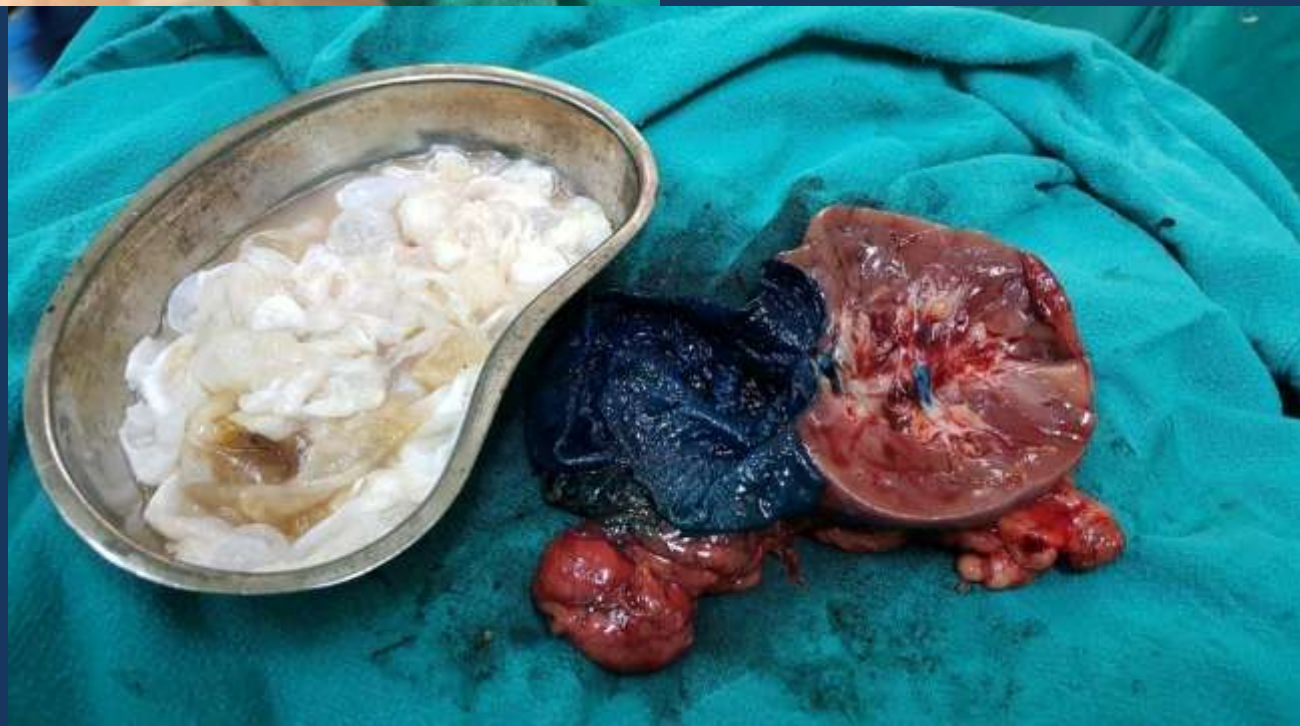
MANAGEMENT

- **Nephrectomy** = Treatment of choice
- Simple excision to Simple nephrectomy (destroyed kidneys)
- **Kidney-sparing surgery** is possible in most cases
- Afterwards, puncture (P) and aspiration (A), then instillation (I) of isotonic saline before reaspiration (R).
  - Cure rate of more than 95%, whereas surgical excision has a cure rate close to 90%
  - **Drainage** may be **prolonged**
- Aspiration of the cyst is unwise; leakage or rupture may occur.
- **Retroperitoneal cysts** are best treated by marsupialization and **curettage**.
- Scolecoidal agent:
  - **30% sodium chloride**
  - 0.5% silver nitrate
  - 2% formalin
  - **1% iodine**
    - For approximately 5 minutes to kill the germinal portions









- Medicine :
  - **Albendazole:**
    - 400 mg twice (60 kg) or 15 mg/kg/day (< 60 kg) with meals daily for **1-6 months**
    - cycle may be repeated 3 times
  - Mebendazole:
    - less effective
    - 50 mg/kg/day PO for at least 3 months
  - Praziquantel (5-10 mg/kg single dose) and albendazole
    - recommended pre-op for **7-10 days** to minimize or prevent secondary seeding by daughter cysts if they accidentally ontaminate the operative field
- Alternative :
  - When cysts are accessible, meta-analysis supports percutaneous aspiration-injection-reaspiration (PAIR) albendazole

Complication

- **Spillage** of cystic products into the peritoneum or the bloodstream may result in metastatic infection
- Rupture of cysts may result in **systemic anaphylaxis**.
- If a cyst of the liver should rupture into the peritoneal cavity, the scoleces (tapeworm heads) may directly invade the **retrovesical tissues**, thus leading to the development of cysts in this area.

Prognosis

- Good
- Recurrence
- Perivesical cysts = Troublesome
- Prevention