Renal tumours

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EBU Certified Clinic
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Etiology, epidemiology

- Etiology: unknown (genetic background: von Hippel-Lindau disease, familiar predisponation for renal tumours)
- Epidemiology: - frequency: 2 times more frequent in males
  - tipically in the 4.-7. decades
  - 3 % of the malignancies

Symptoms

- 70 % symptomless, accidental finding by US or CT scan
- Haematury (micro~/macroscopic~)
- Flank pain
- Palpable abdominal mass

} Classic triad

- Lab findings (increased sedimentation rate, anaemia)
- Loss of weight, paraneoplastic symptoms
- Pathological fractures, symptoms of brain metastases, etc.
- Varicocele (middle age,+ left)

TNM classification

- T1a <4cm
- T1b<4-7cm
- T2 >7cm
- T3a tumour invades adrenal/perinephric fat
- T3b tumour extends into renal veins/vena cava below diaphragm
- T3c tumour extends vena cava above diaphragm
- T4 Tumour invades beyound Gerota's fascia
- N1 Solitary lymphnode metastasis
- N2 Multiplex lymphnode metastases
- M1 Metastases of other organs

Histological classification

- Benign tumours: - angiomyolipoma
  - adenoma (papillary, metanephrogen)
  - oncocytoma, stb.
- Malignant tumours:

  - adenocarcinoma (82%)(clear cell, papillary, chromophob, Bellini tumor)
  - sarcomas
  - lymphomas

Diagnostical procedures

- Medical history, phisical examination, laboratorical investigations
- **ULTRASOUND**
- CT scan
- Chest XRay
- Non obligatory:- MRI (tumour thrombus of vena cava)
  - CT/MRI angiography (nephron sparing surgery)
  - US/CT targeted biopsy
  - (iv. pyelography/retrograd urography)


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MI:0.8
FR:19
G: 43%
Prs:2
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Tumor 1 (US)


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H: 57mm
W: 44mm
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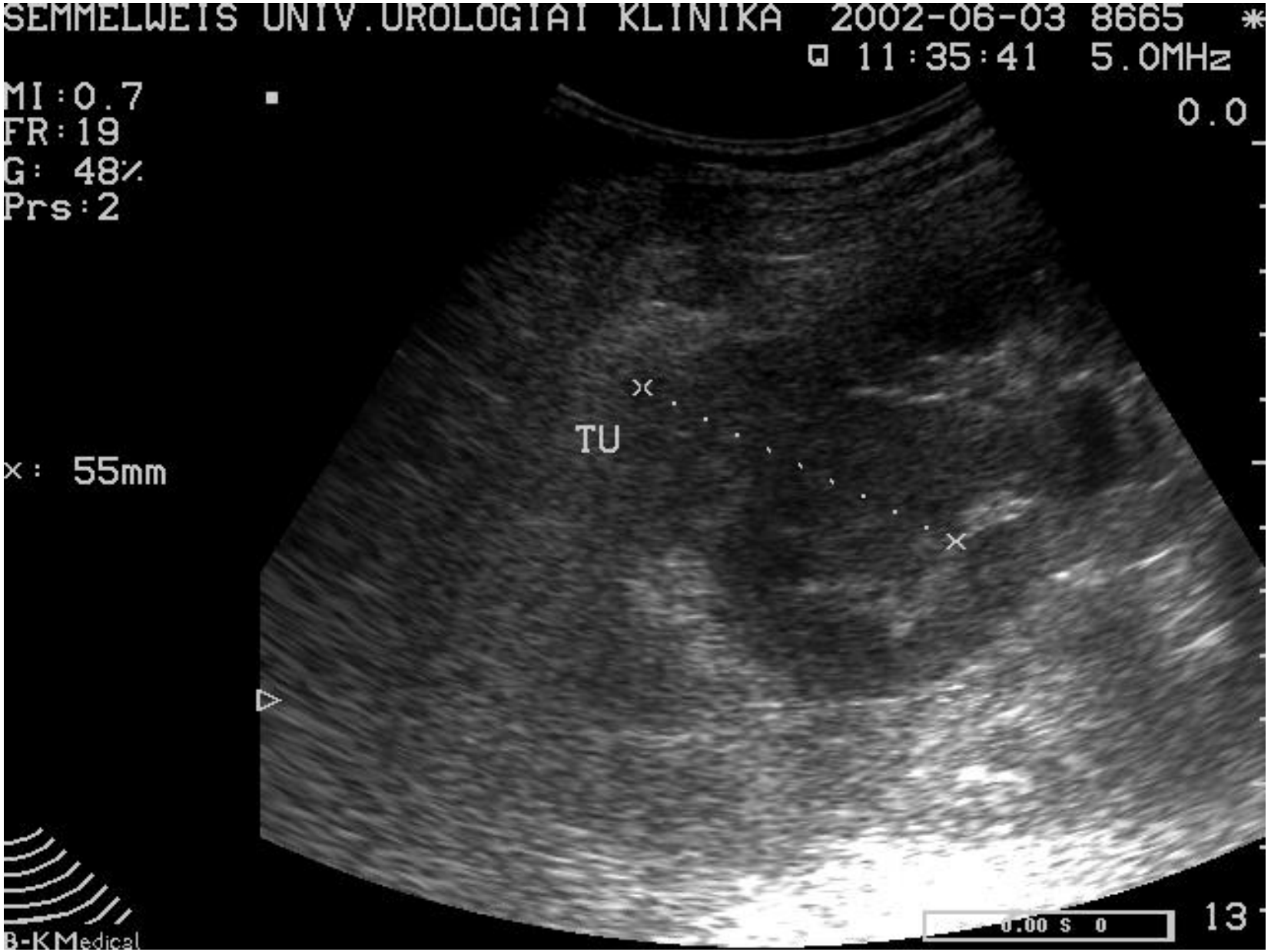
Tumor 2 (US)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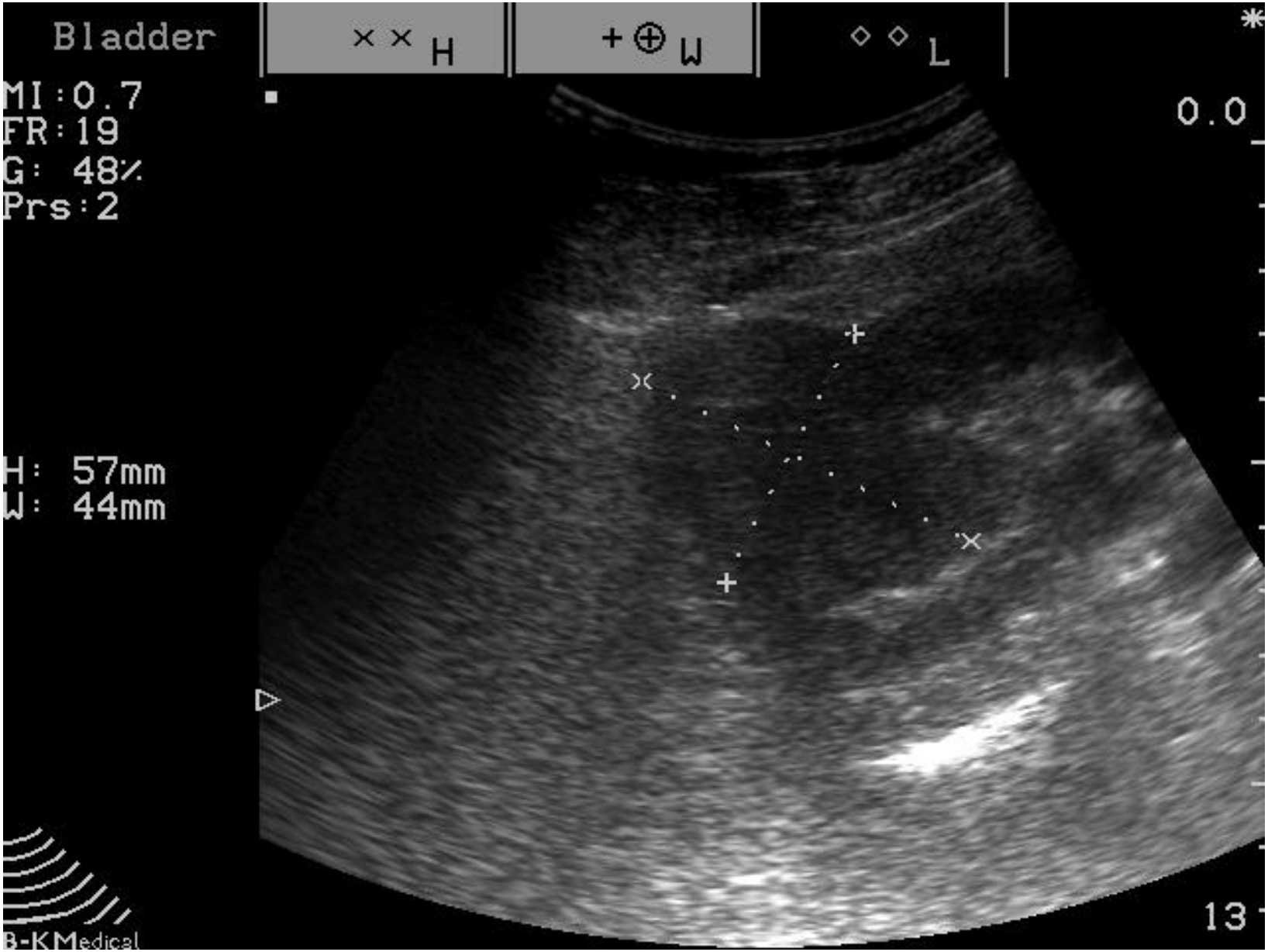
Tumor 3 (US)



Tumor 4 (US)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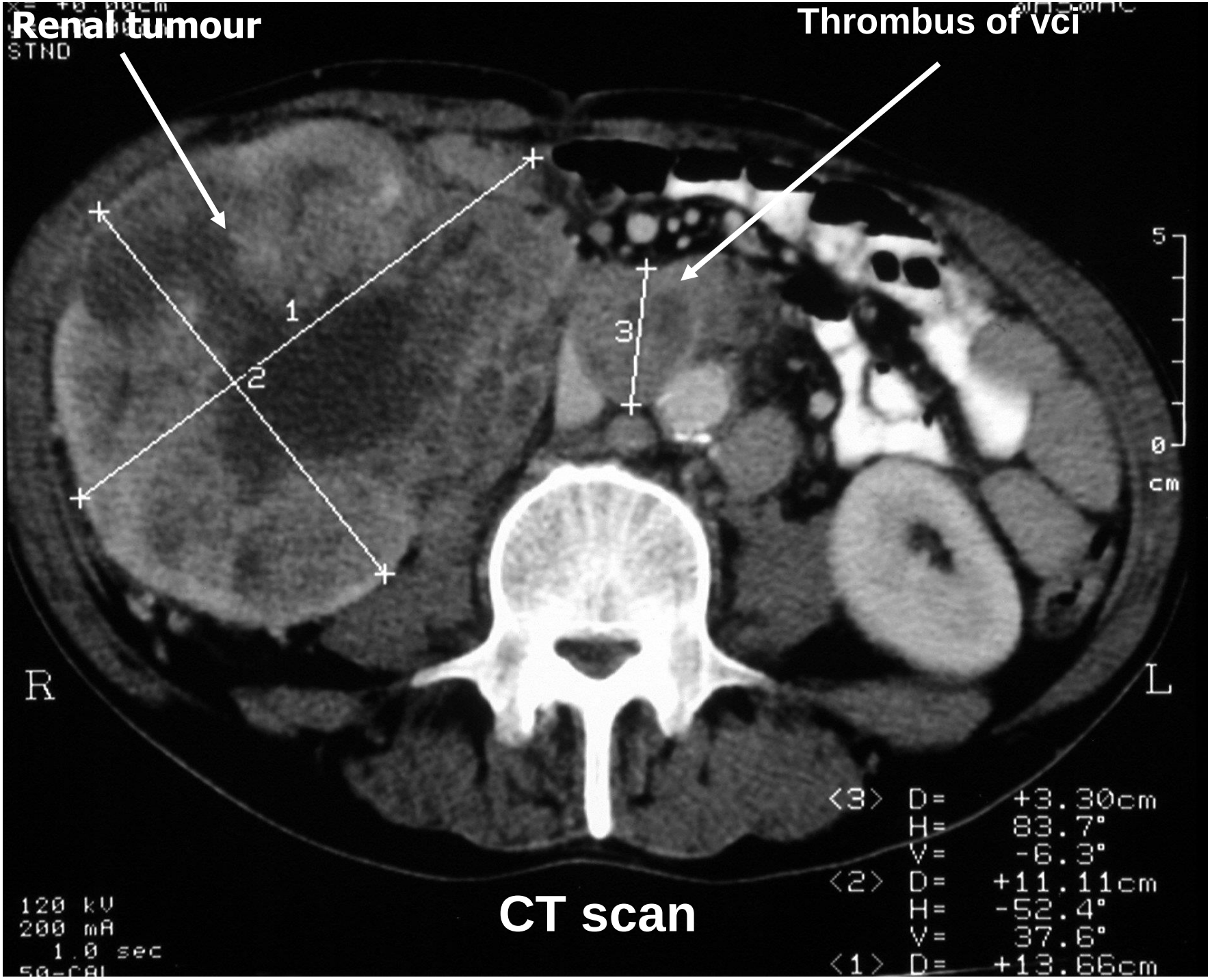
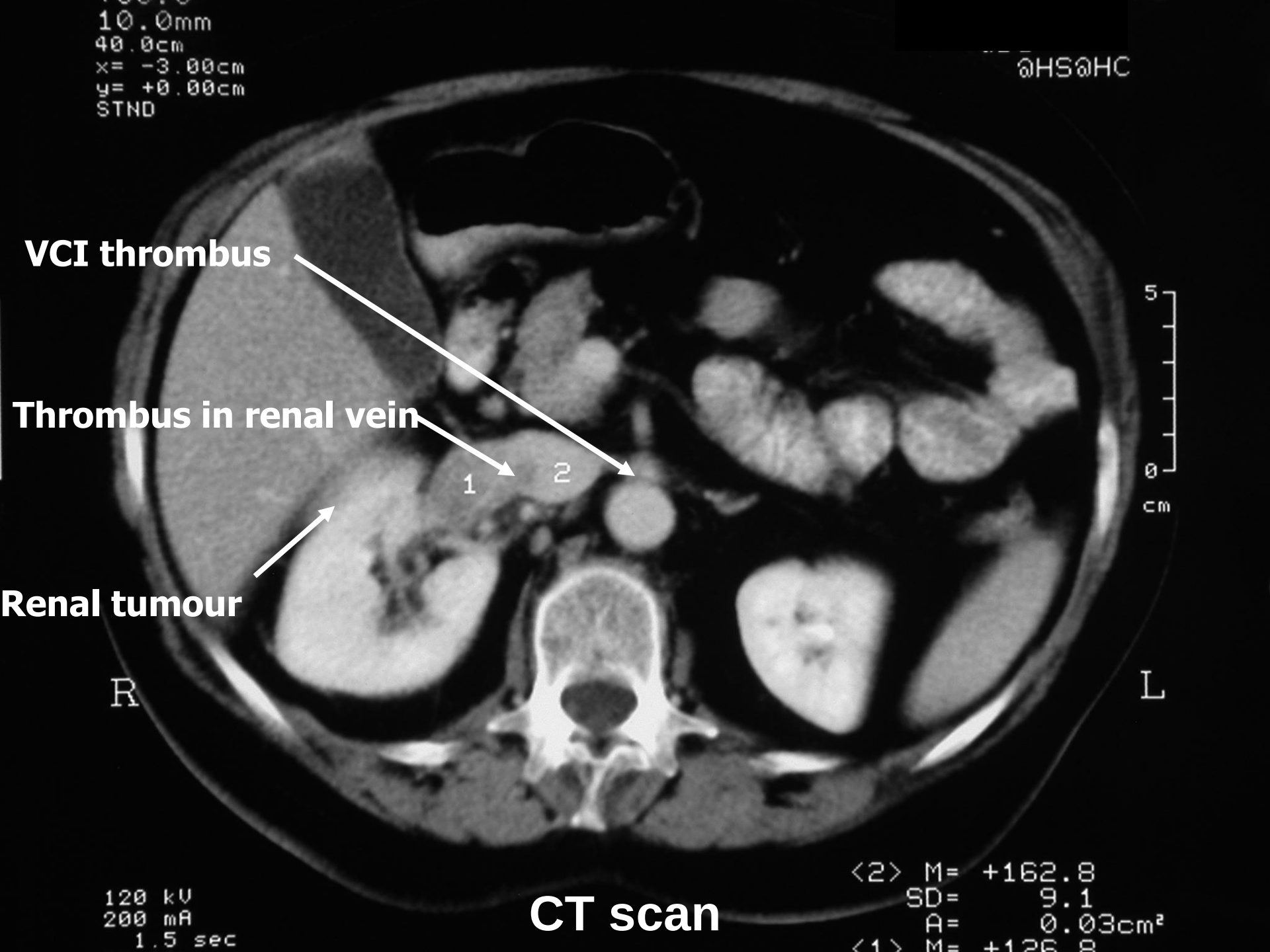
Tumor 5 (US)

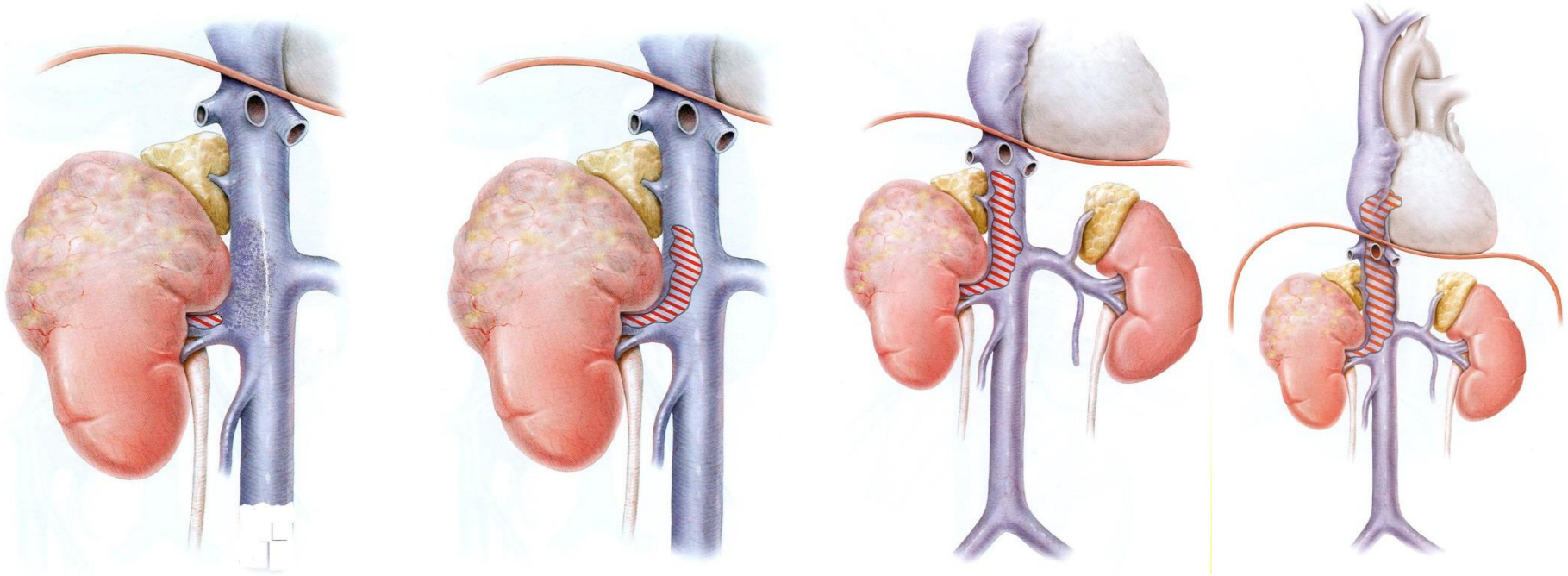

Renal tumour
Thrombus of vci
1
2
3
5
0
cm
R
L
<3> D= +3.30cm
H= 83.7°
V= -6.3°
<2> D= +11.11cm
H= -52.4°
V= 37.6°
<1> D= +13.66cm
120 kV
200 mA
1.0 sec
CT scan


10.0mm
40.0cm
x= -3.00cm
y= +0.00cm
STND
@HS@HC
VCI thrombus
Thrombus in renal vein
Renal tumour
1
2
5
0
cm
R
L
120 kV
200 mA
1.5 sec
<2> M= +162.8
SD= 9.1
A= 0.03cm²
<1> M= +126.8

CT scan

Angiography

Nevus classification:



I. II. III. IV.

Treatment

- **Surgery (first choice!)**

  - radical nephrectomy

  - nephron sparing surgery (elective/imperative)

  - laparoscopic surgery (resection/nephrectomy)

  - alternativ procedures: kryoablation, ultrasound ablation

  -embolisation of renal artery

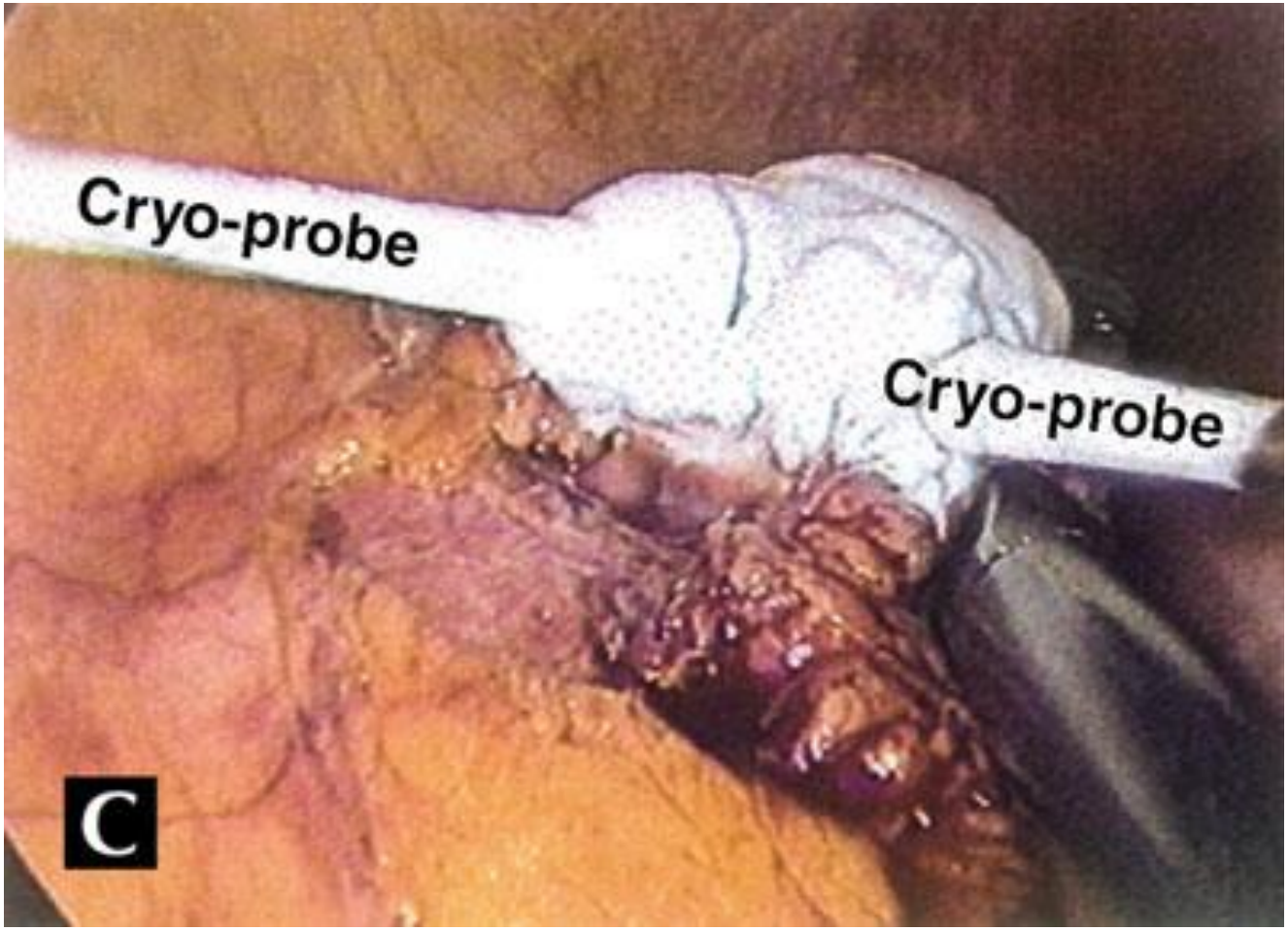
- **Non-surgical treatment (adjuvant)**

  -immuntherapy (Alfa2 Interferon, Interleukin2)

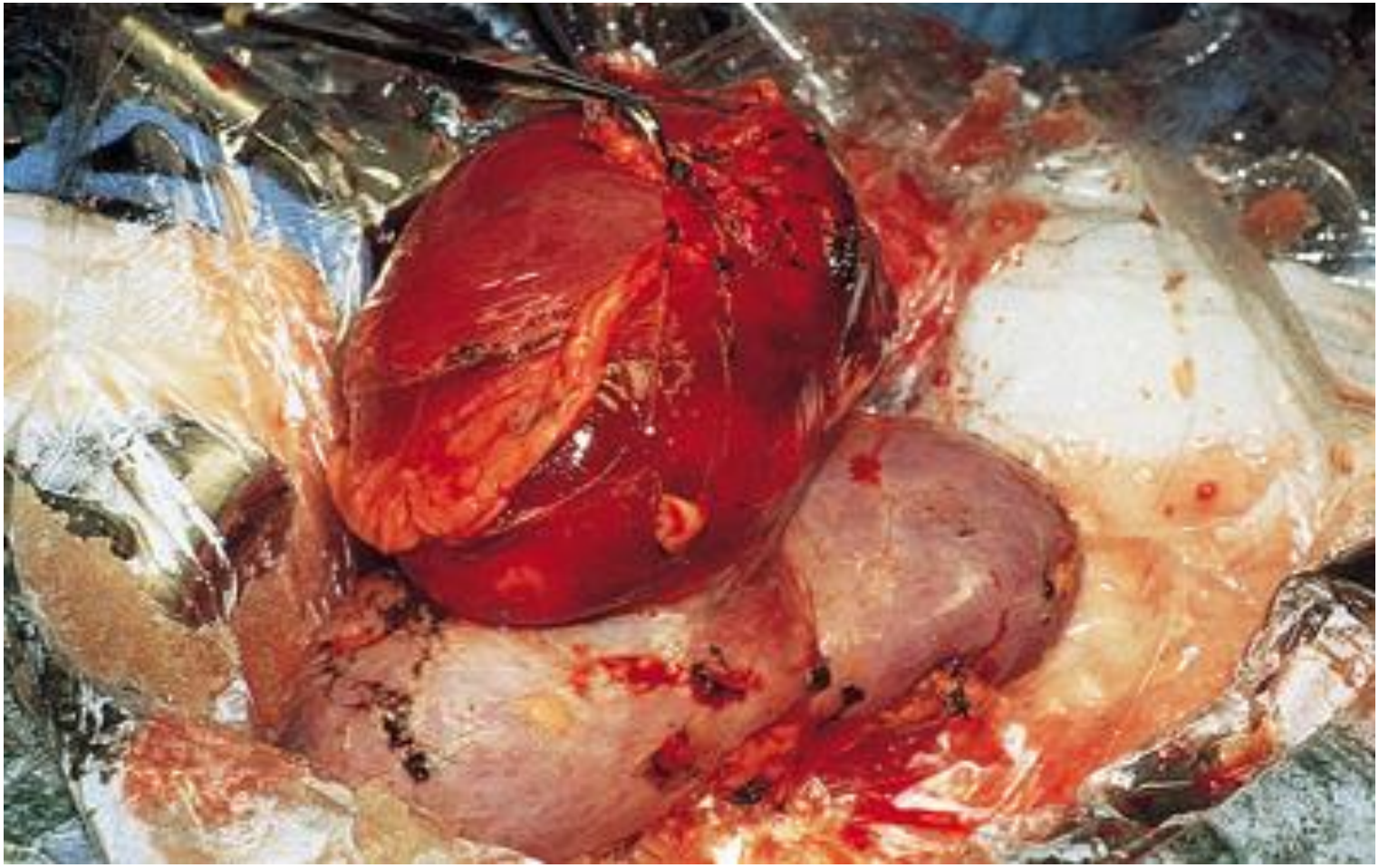
  -chemoterapy (Vinblastin, 5 Fluorouracil, etc.)

  -bisphosphonate therapy

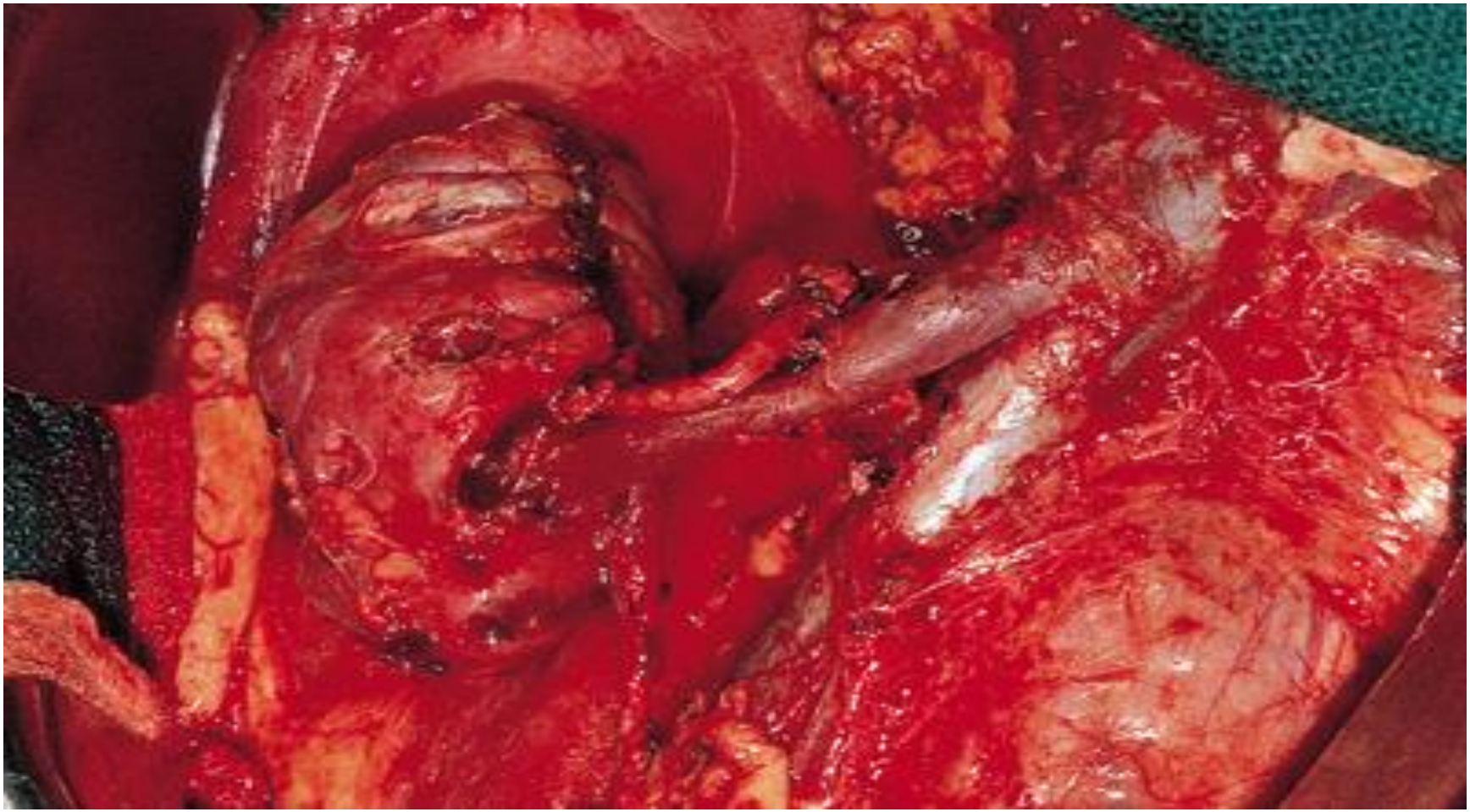
Kryoablation



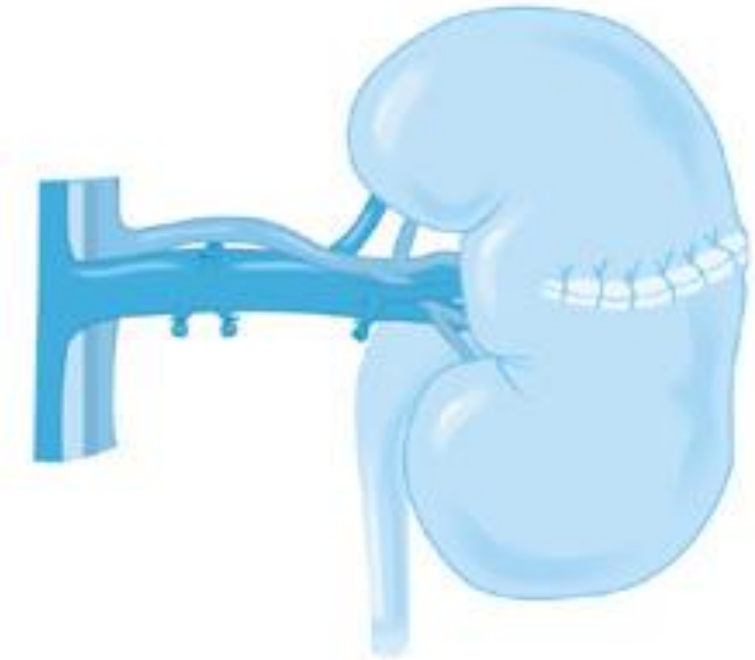
Laparoscopic nephron sparing surgery with local hypothermy



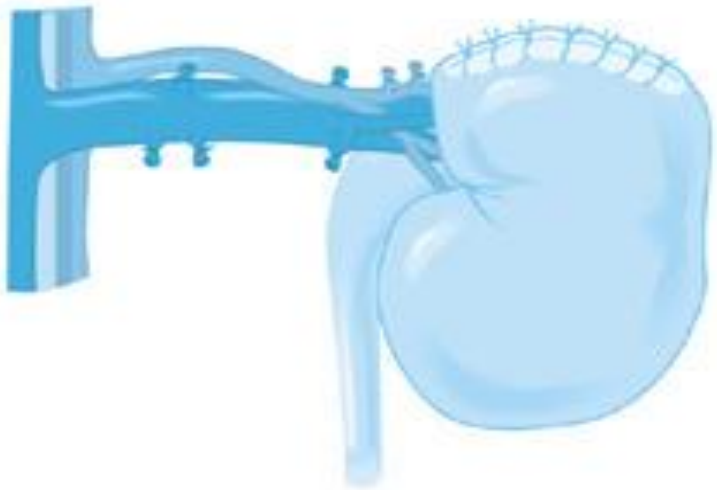
Open surgery



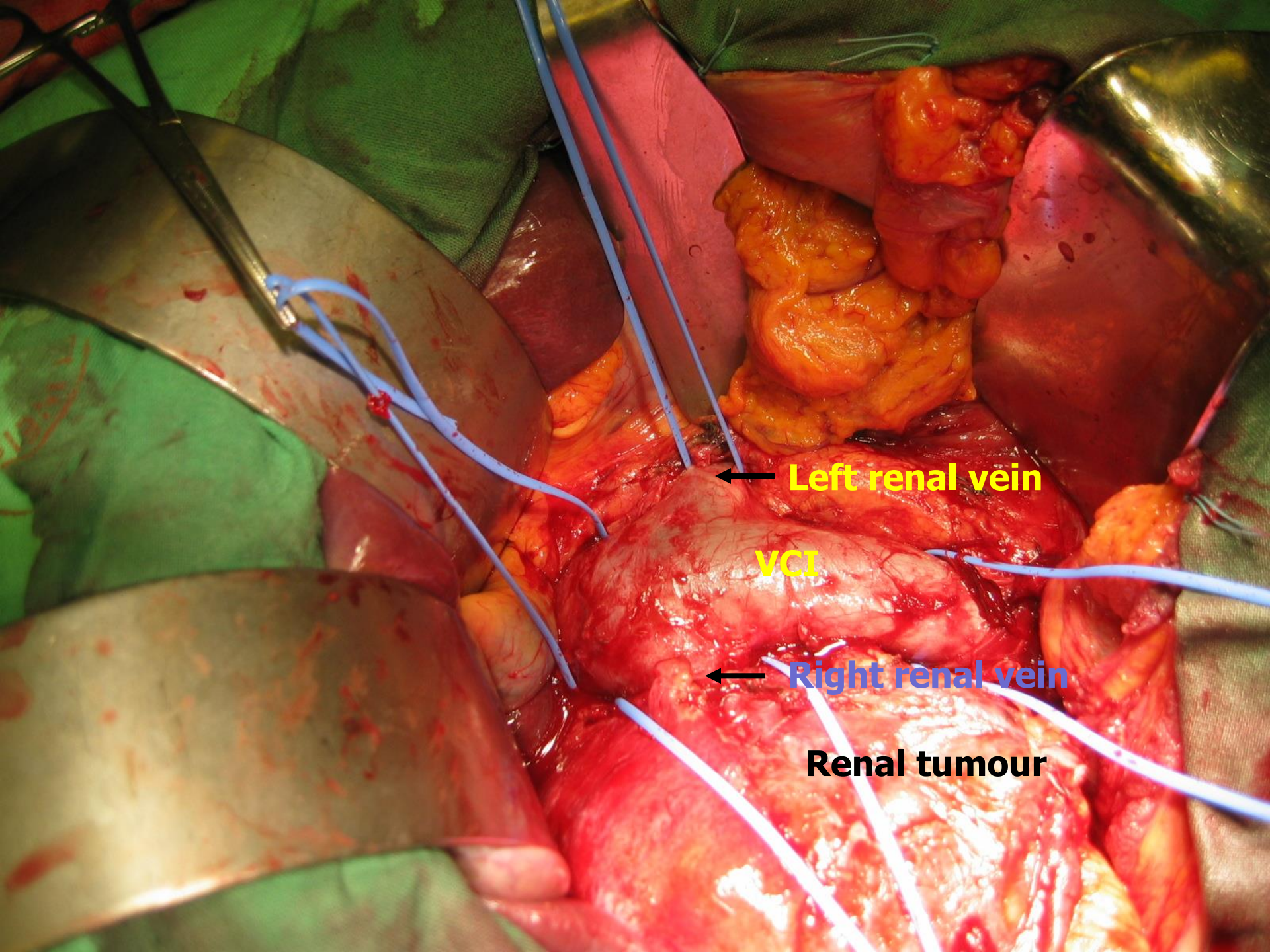
Nephron sparing surgery

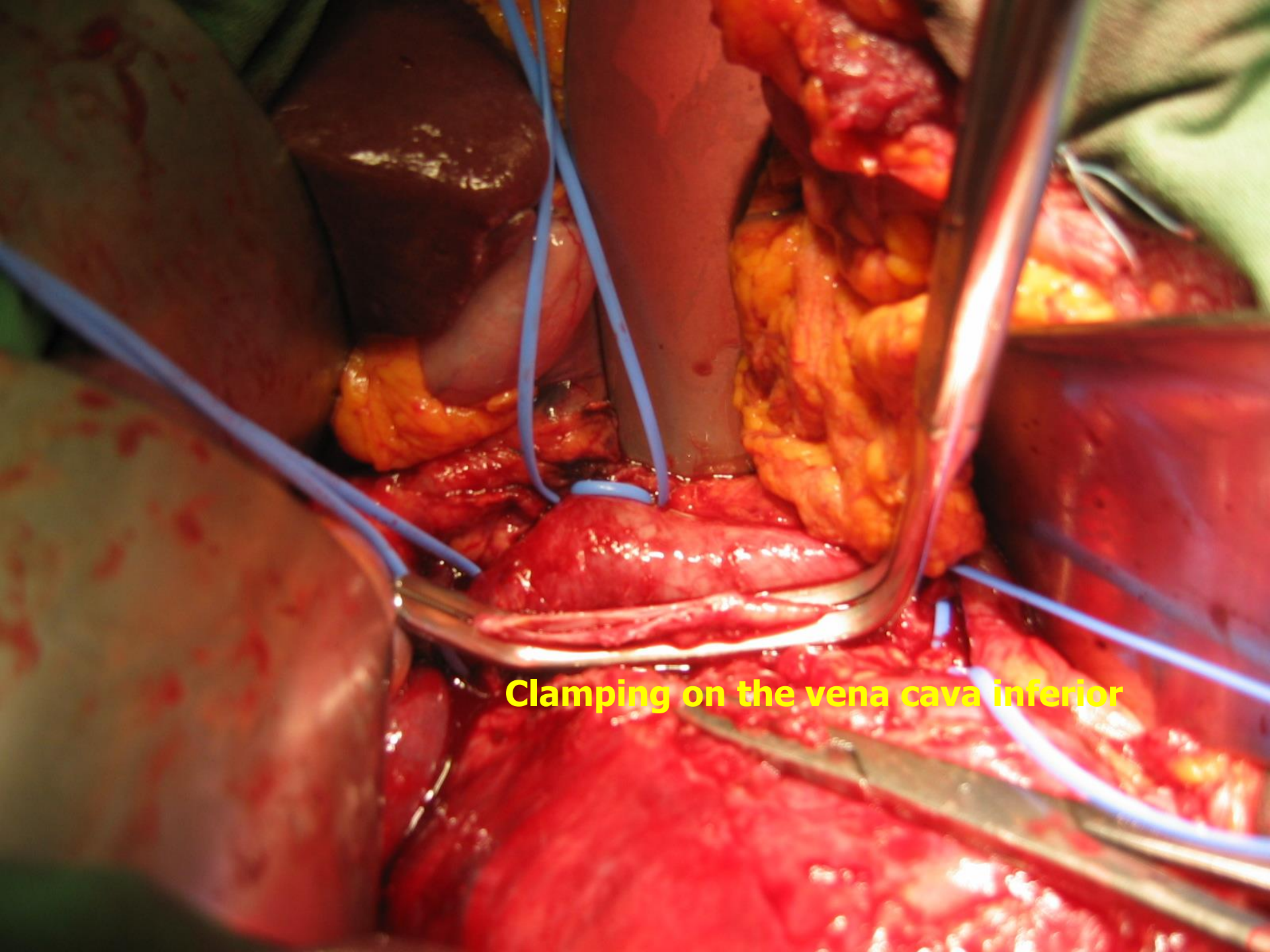


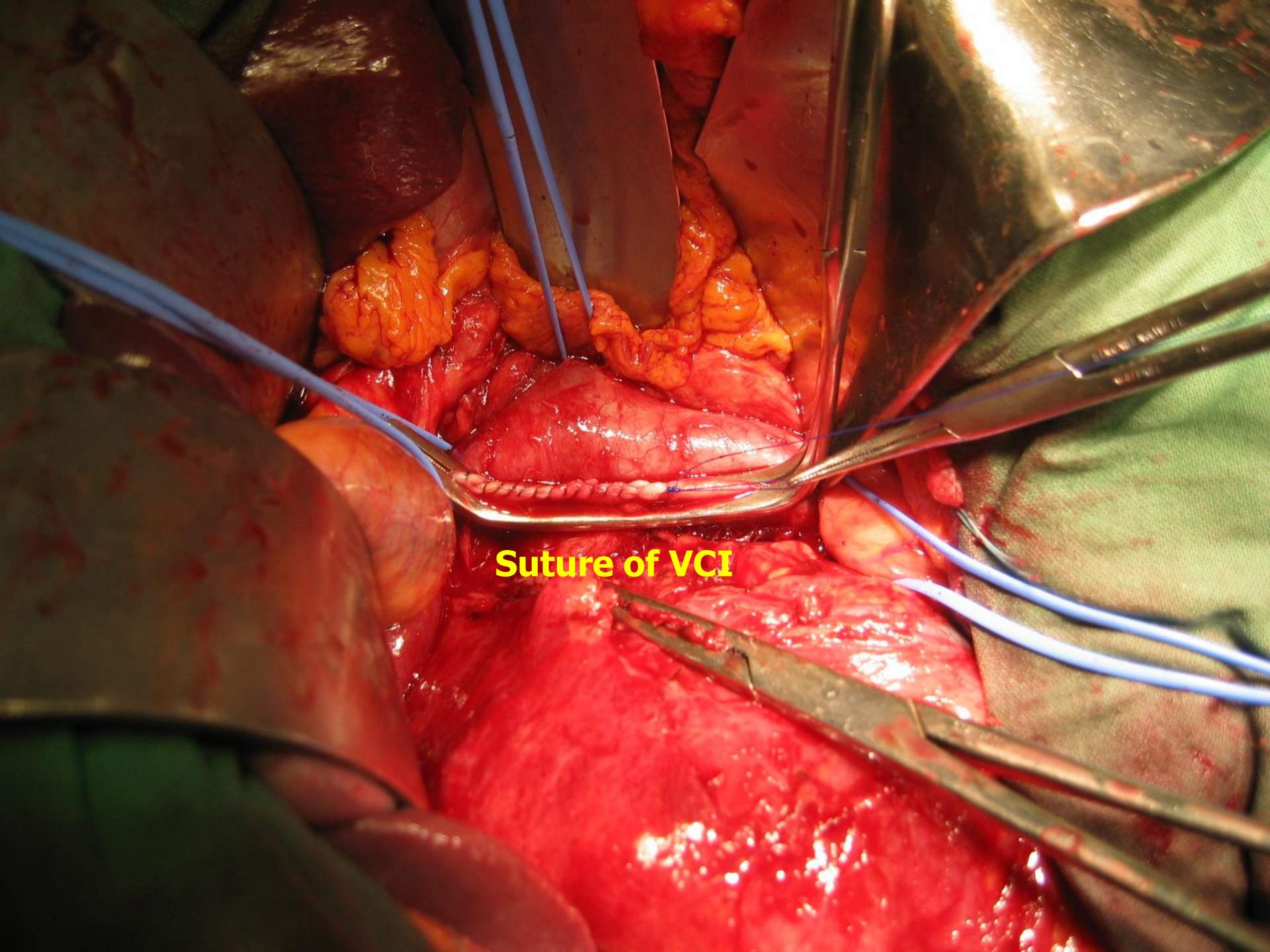
Wedge resection

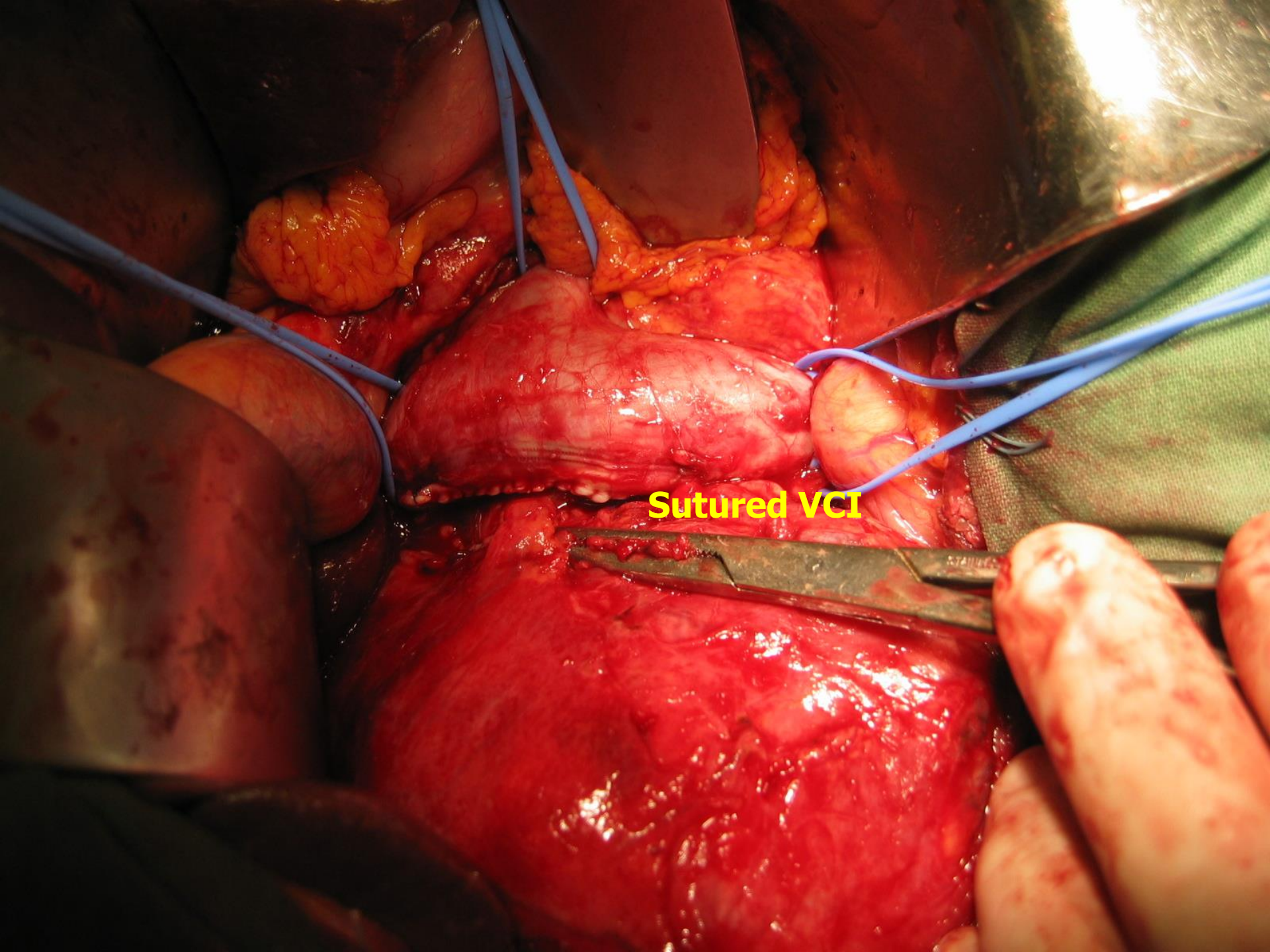


Transverse resection


Left renal vein
VCI
Right renal vein
Renal tumour


Clamping on the vena cava inferior


Suture of VCI


Sutured VCI

Treatment of metastates

- Typical localisation: lungs, liver, bones, retroperitoneal lymphnodes
- Often the metastases are causing the first symptoms
- 30% of renal tumours are metastatic at the time of first diagnosis
- Late onset (years) of metastases is typicall
- Treatment of metastases is surgery (if possible) with adjuvant immunochemotherapy (in case of solitaer metastasis it can be curative)

Case report I.

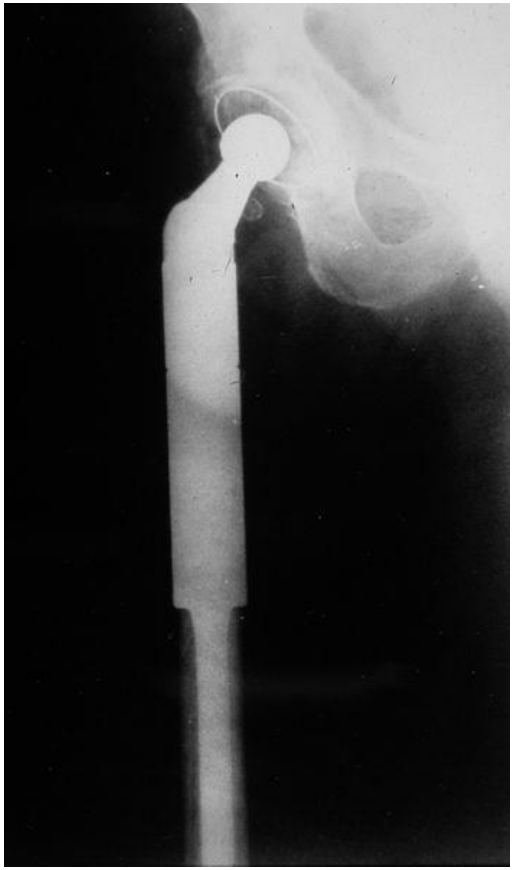
- 55 year old man, renal clear cell carcinoma, left sided nephrectomy (1985).
- 8 years later adequat trauma, subtrochanter fracture of right femur, stabilised by Gamma nail, no suspicion of pathological fracture
- 3 years later painful swelling of the right hip, lytic tumour of the proximal femur on Xray .

Resection of the femur metastasis I. (1996)

- No distant metastases on chest Xray, bone scan abdominal US.
- The huge tumour, involving the vastus and adductor muscles was resected with a wide tumourfree margin.

Resection of the femur metastasis II. (1996)

- Modul system tumour endoprosthesis was implanted during the organ preserve surgery
- The histological examination shows the metastasis of clear renall cell cancer.



Resection of metastases of the right kidney and adrenal gland I. (2004)

- 8 years later during the controll US examination of the symptomless patient was detected metastases of the solitary right kidney (4cm) and adrenal gland (10cm).

MRI scan

Resection of metastases of the right kidney and adrenal gland I. II. (2004)

- The tumours of the right kidney and adrenal gland was resected with a wide surgical margin.
- Histology confirmed the metastases of clear cell renal cancer.

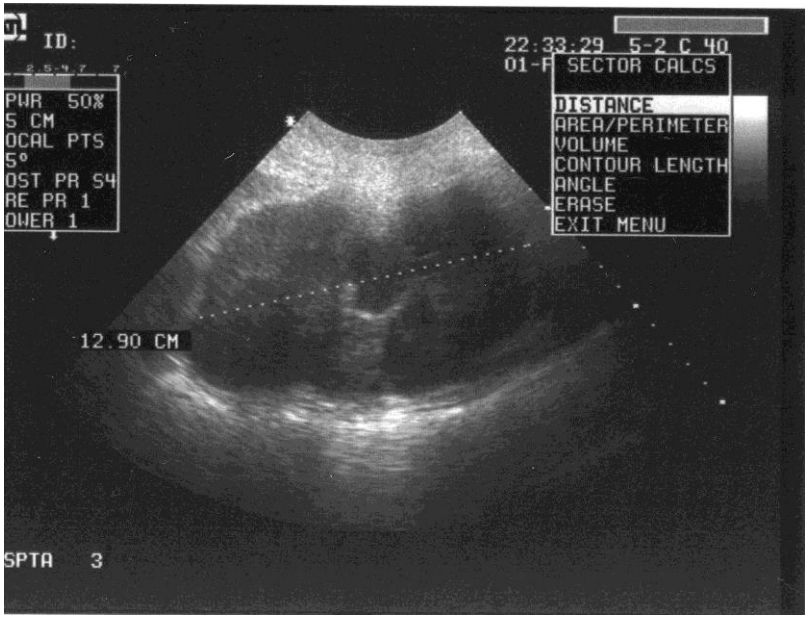
Outcome:

- The interferon treatment was stopped because of serious side effects.
- The patient died in acute cardiac failure 20 years after the tumour nephrectomy of the left kidney, 9 years after the resection of bone metastasis and one year after the surgery for contralateral kidney and adrenal gland metastases. He was free of malignant disease based on autopsy finding.

Case report II:

- 28 years old woman developed haematuria in the 32th week of pregnancy. She was given antibiotics since urinary infection was suspected by her gynaecologist, and she became symptom free. The delivery was uneventful.
- During the 2nd week of puerperium she visited our department due to the development of left sided renal colic accompanied by fever (39,2^{o}C) and ceased lactation.

Pyelonephritis apostematosa?



- US of left kidney: dilation of pelvis, hypoechogenous, inhomogeneous mass on the lower part.
- US of right kidney: 6mm cyst.

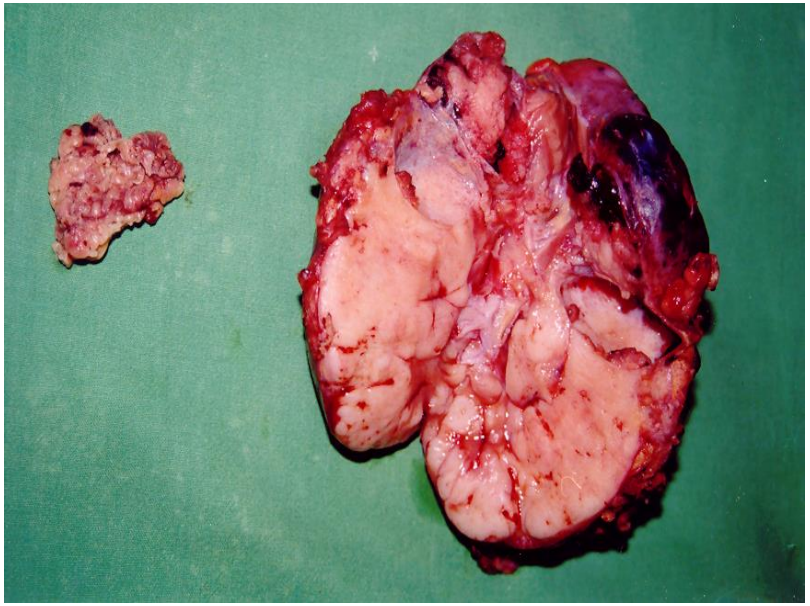
•Results of laboratory investigations: CRP: 125mg/l, Hbg: 82g/l, ESR: 125mm/h.

•The patients' condition became worse despite of parenteral antibiotics, and septic fever developed.

Nephrectomy

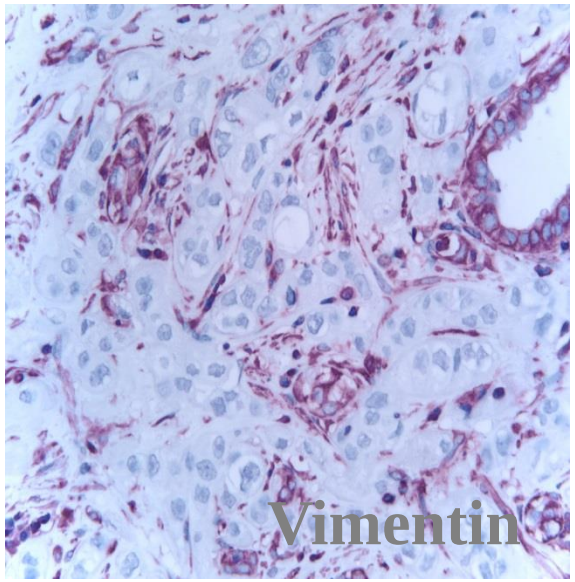
Because of acute progression and unusual clinical behaviour urgent lumbar surgical intervention was decided.

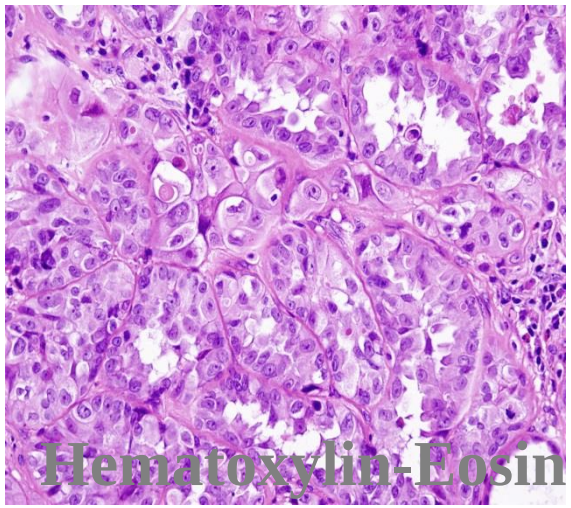
- A solid, inhomogeneous tumour involved the en-larged kidney and adipose capsule. Nephrectomy was performed.



- RLA could not be performed (scarred, firm, infiltrated retroperitoneum). From the enlarged retroperitoneal lymph nodes biopsy was performed.

Bellini duct cancer

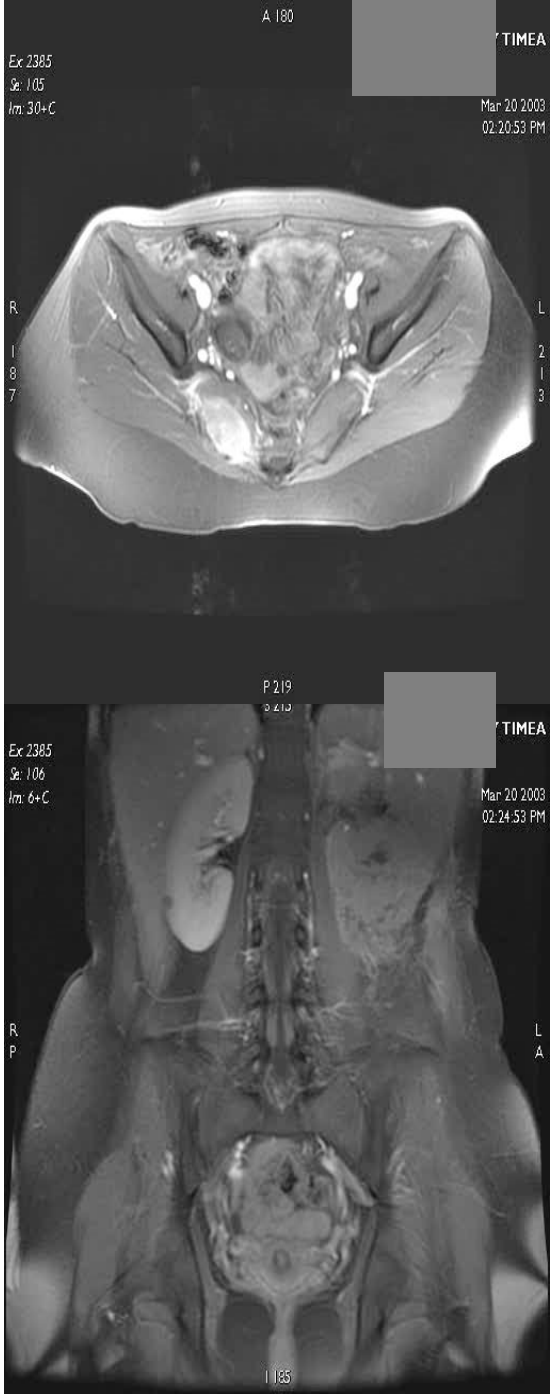




- The first histological result suggested anaplastic T3G4 transitiocellular cancer by haematoxylin eosin staining and Vimentin negativity, but 5 months later the clinical behaviour and further immunohistochemical reactions made us to change the diagnosis to Bellini duct cancer.
- No tumour cells were found in the removed lymph nodes.
- The postoperative period was uneventful.

Contralateral kidney tumour?

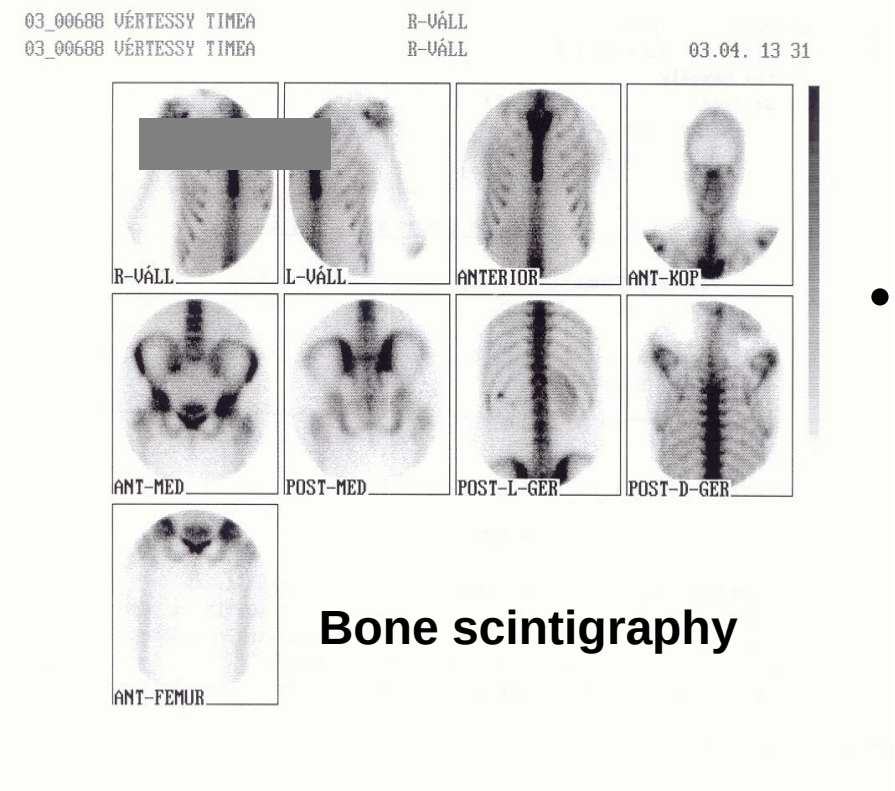
- CT scan performed on the 18th postoperative day revealed a 3x4cm sized retroperitoneal tumorous lymph node.
- The 8mm cyst on the right kidney seemed to be a potential contralateral renal tumour.
- Bone scan and X ray: negative results.



Postinjection abscess?

- One month after the nephrectomy she returned with a painful mass of the right gluteal region.
- 16 days after the neg. bone scan, the MRI revealed a tumour expanding to the right sacral massa lateralis and pyriform muscle. The mass of the right kidney was considered to be a cyst.

Sacral metastasis



Bone scintigraphy

- Histological evaluation of biopsy of the gluteal mass revealed metastases of the anaplastic kidney tumour.
- Thorough examination of the bone scan revealed minimal positivity at sacral region, but it seemed to be a sacroileitis rather than tumour metastasis.

Events during the follow up

- Pathologic spine fracture occured to the patient caused by lytic metastases of the thoracic IX. and III. lumbar vertebrae. Stabilisation of vertebrae and local radiotherapy were performed, following by chemotherapy (MVAC, taxanes) and bisphosphonate administration.
- She died 8 months after nephrectomy.

Conclusions

- In rare cases, haematuria during the pregnancy can also be caused by renal tumour, US is obligatory!
- The value of US is limited if it is such a solid infiltrating renal mass.
- The bone scan did not indicate unambigous spinal metastases (rapid progression or less positivity of anaplastic tumour metastases?)
- Immunohistochemical examinations can be misleading in rare cases.