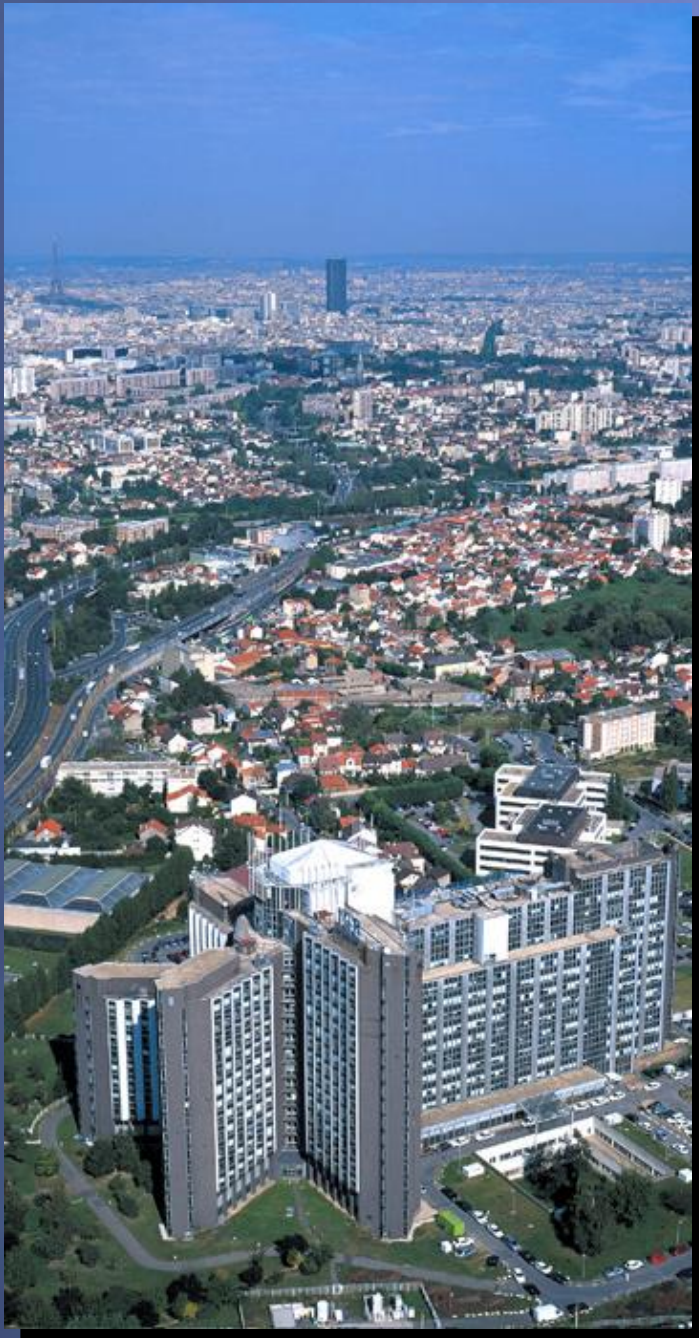




# Echo-endoscopie : Particularités et indications

*Pascal Burtin*



Institut de cancérologie  
**GUSTAVE ROUSSY**  
VILLEJUIF - [www.igr.fr](http://www.igr.fr)

DU Echographie digestive

2019



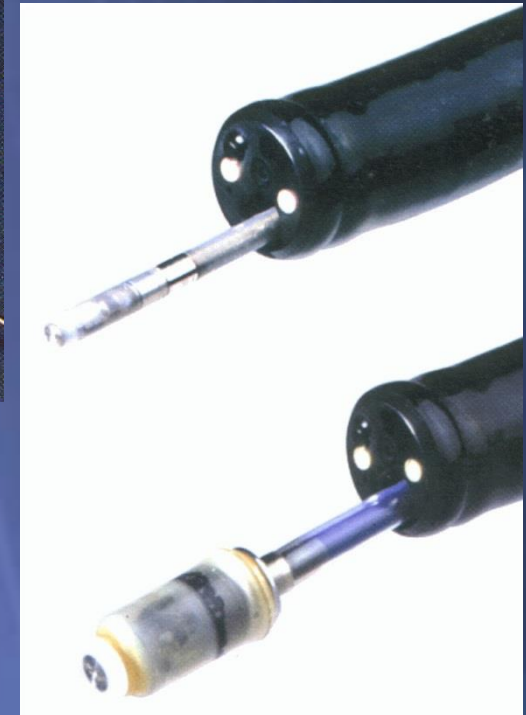
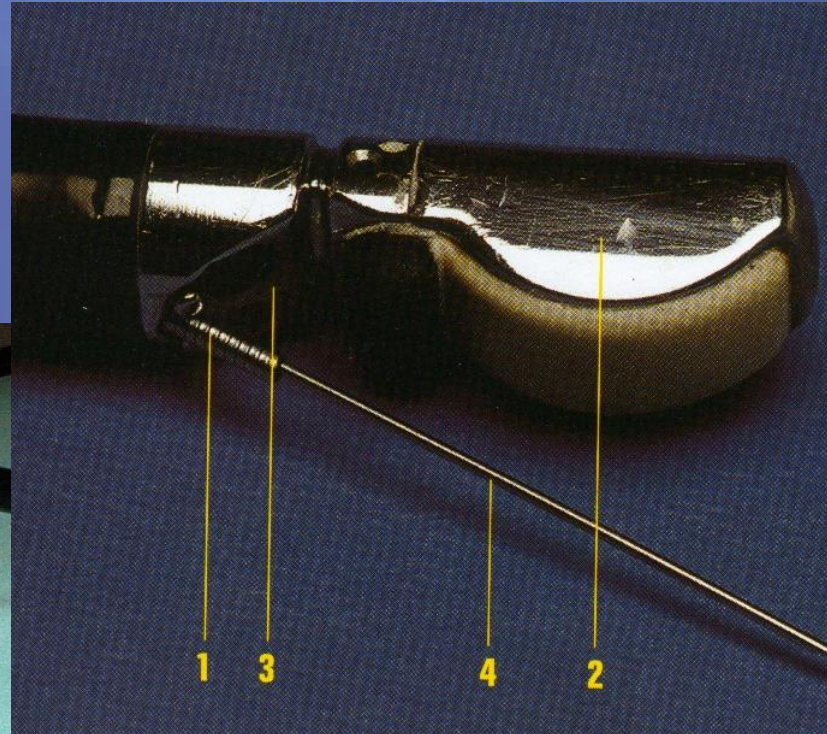
# Un compromis

| MHz | Penetration<br>(cm) | Resolution<br>(mm) |
|-----|---------------------|--------------------|
| 20  | 1                   | 0.2                |
| 10  | 2                   | 0.5                |
| 7.5 | 5                   | 1                  |
| 5   | 10                  | 2                  |
| 3.5 | 20                  | 5                  |

# Modalités pratiques

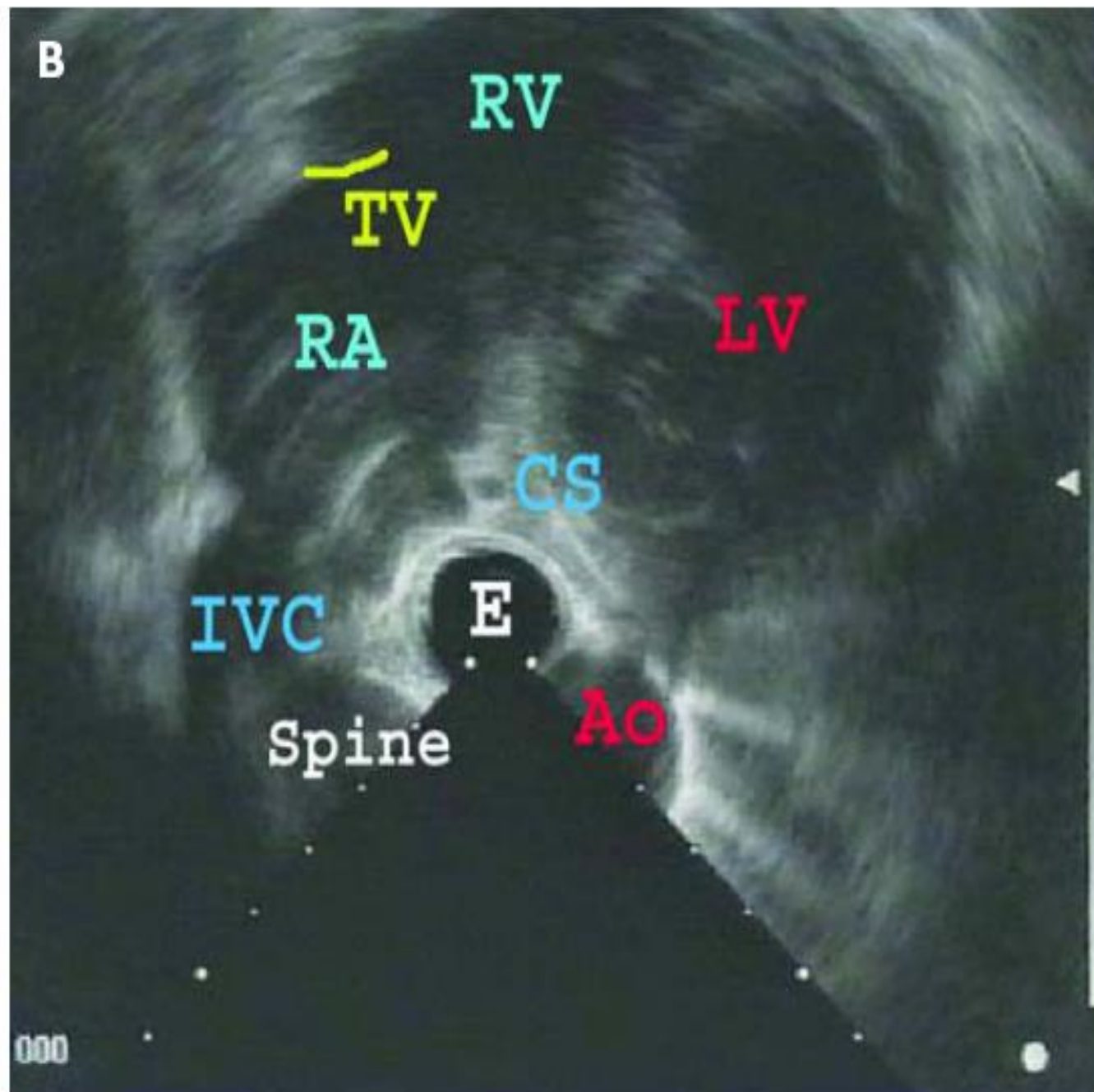
- ❖ Endoscope souple de 11-13 mm de diamètre
- ❖ Console:
  - Doppler
  - Echographie de contraste
  - Elastographie
- ❖ A jeun
- ❖ Anesthésie fréquemment nécessaire
  - Biliopancréatique++
  - Œsophage +
  - Rectum, sans sédation

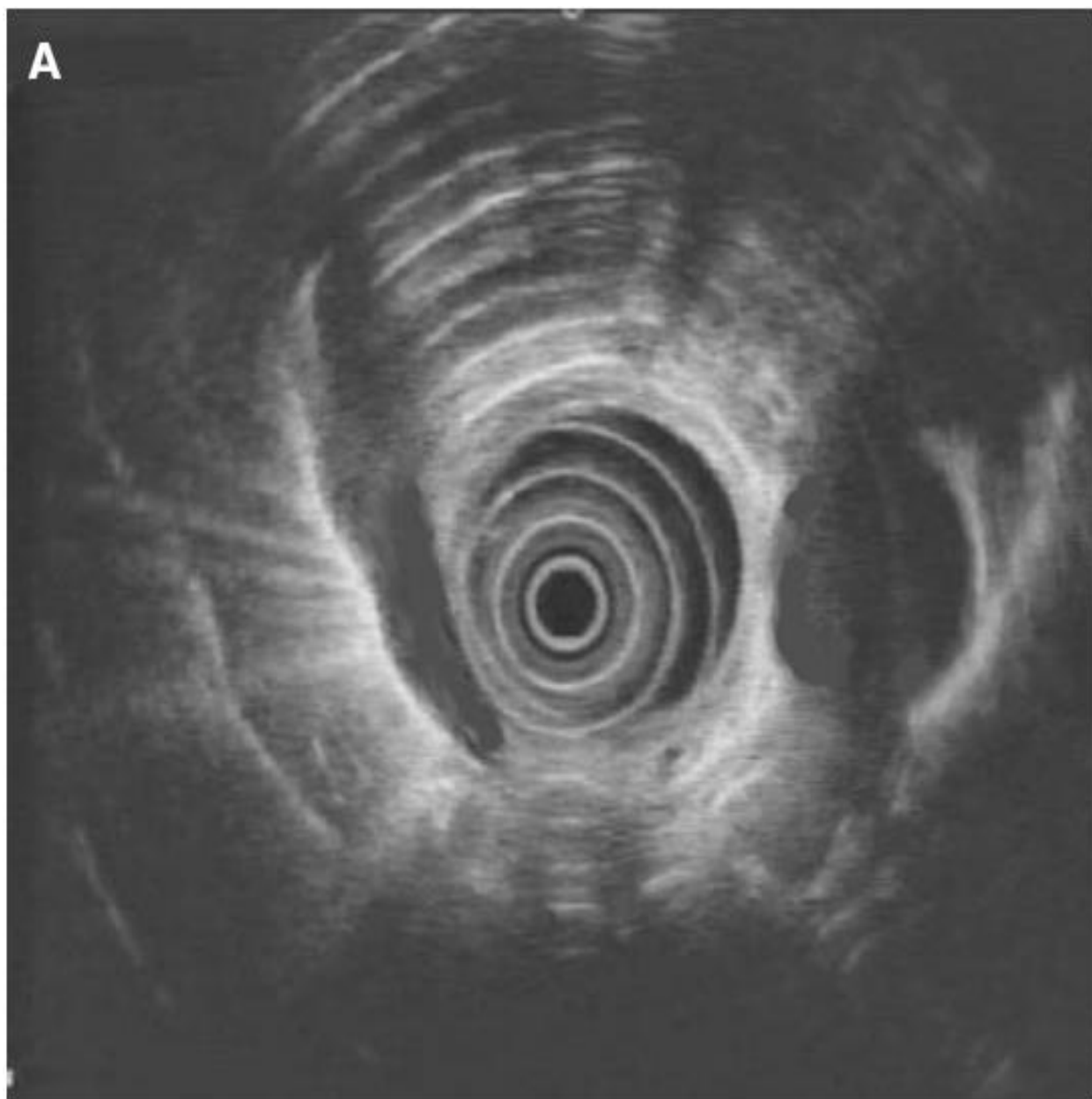
# Les appareils

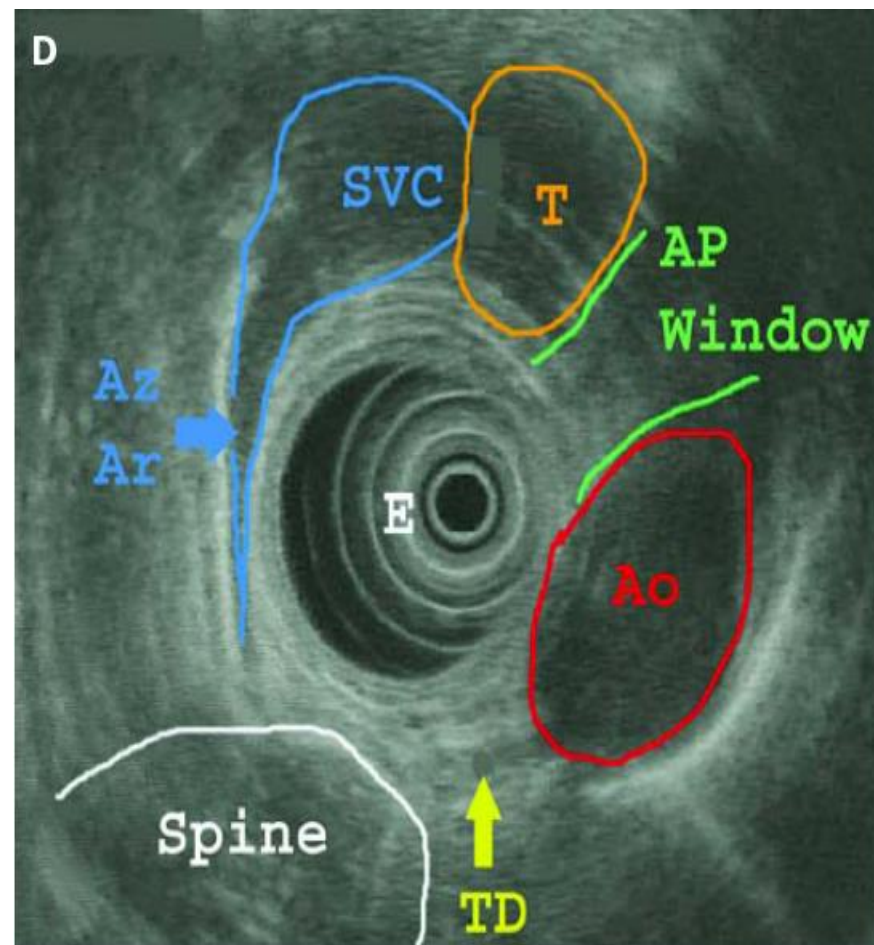
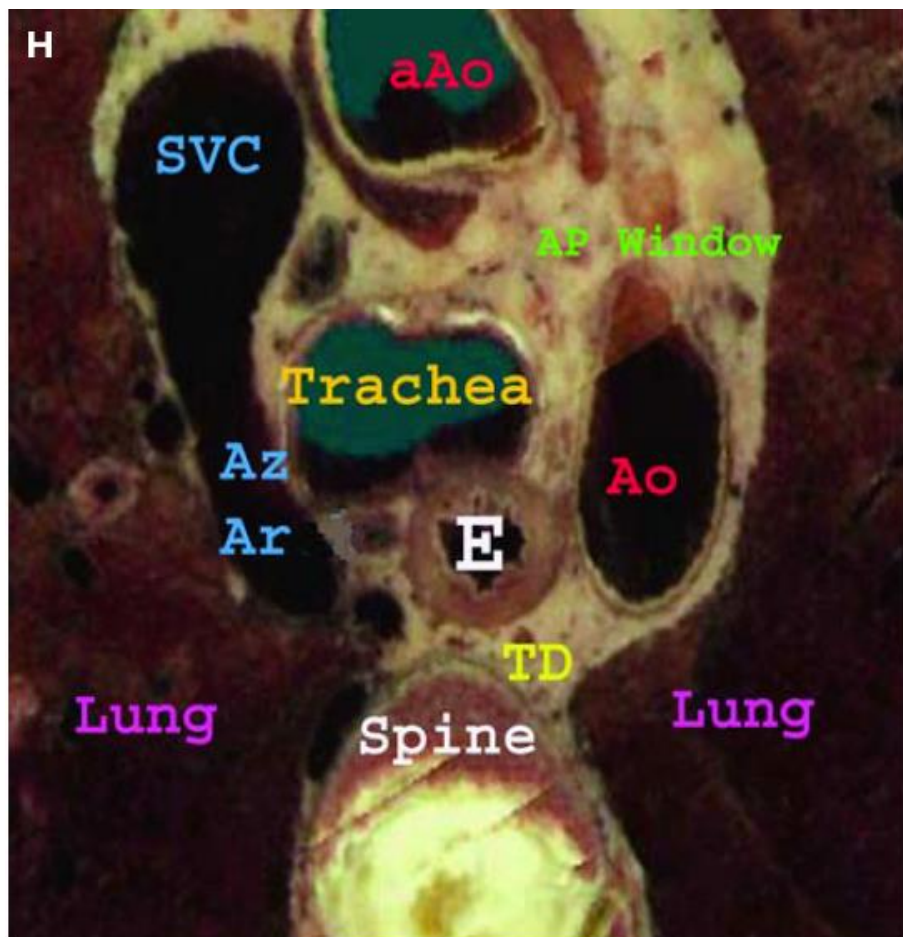


# Anatomie du médiastin

- Peu de contraintes spécifiques
- Structures aériques = barrage aux ultrasons
- Appareil radial : cf TDM
- Appareil linéaire : cf reconstructions TDM
- Zones accessibles :
  - Tout le médiastin inférieur autour de l'œsophage
  - Le médiastin postérieur







B

Pleural  
Reflection

T

Balloon Air

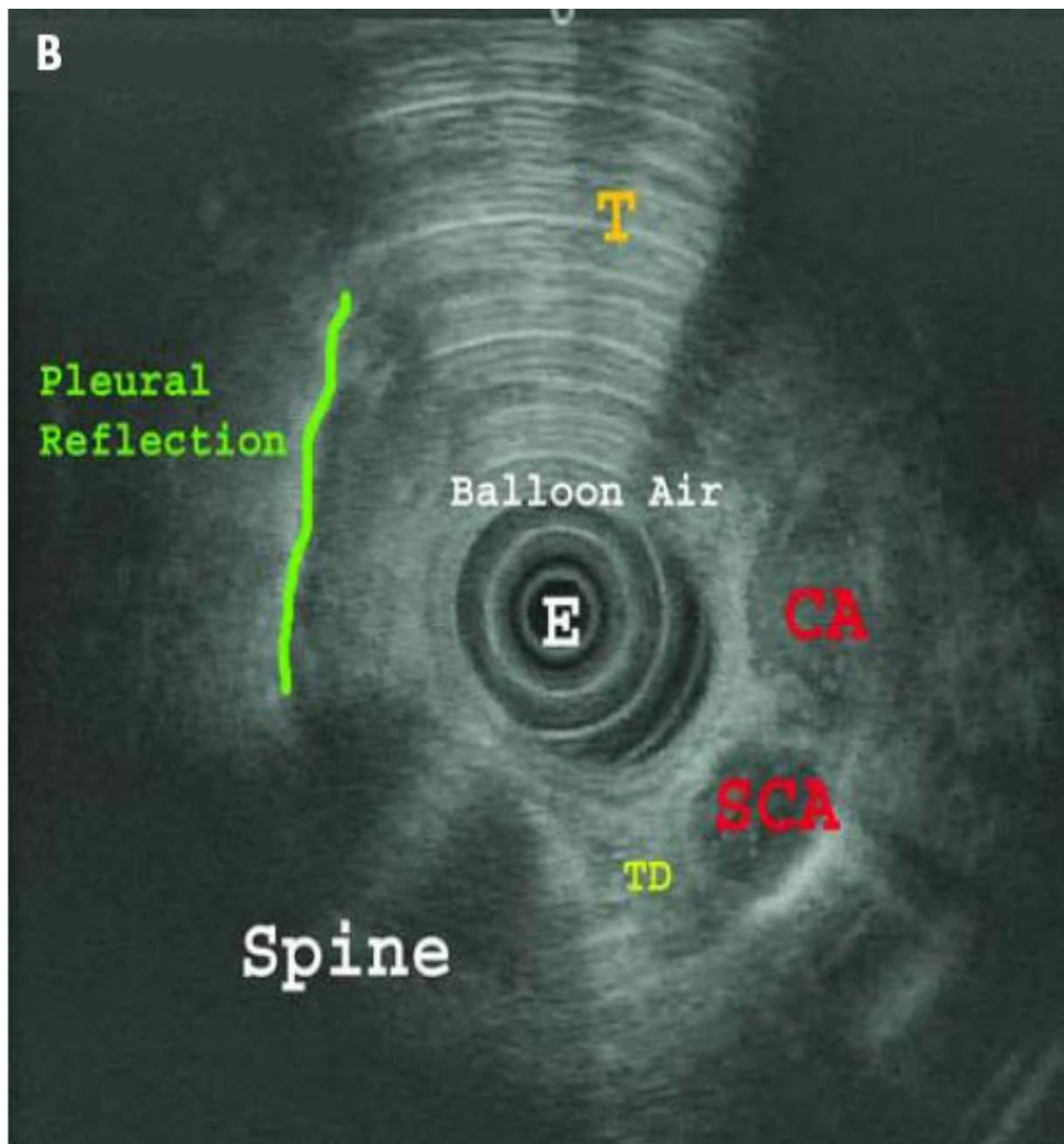
E

CA

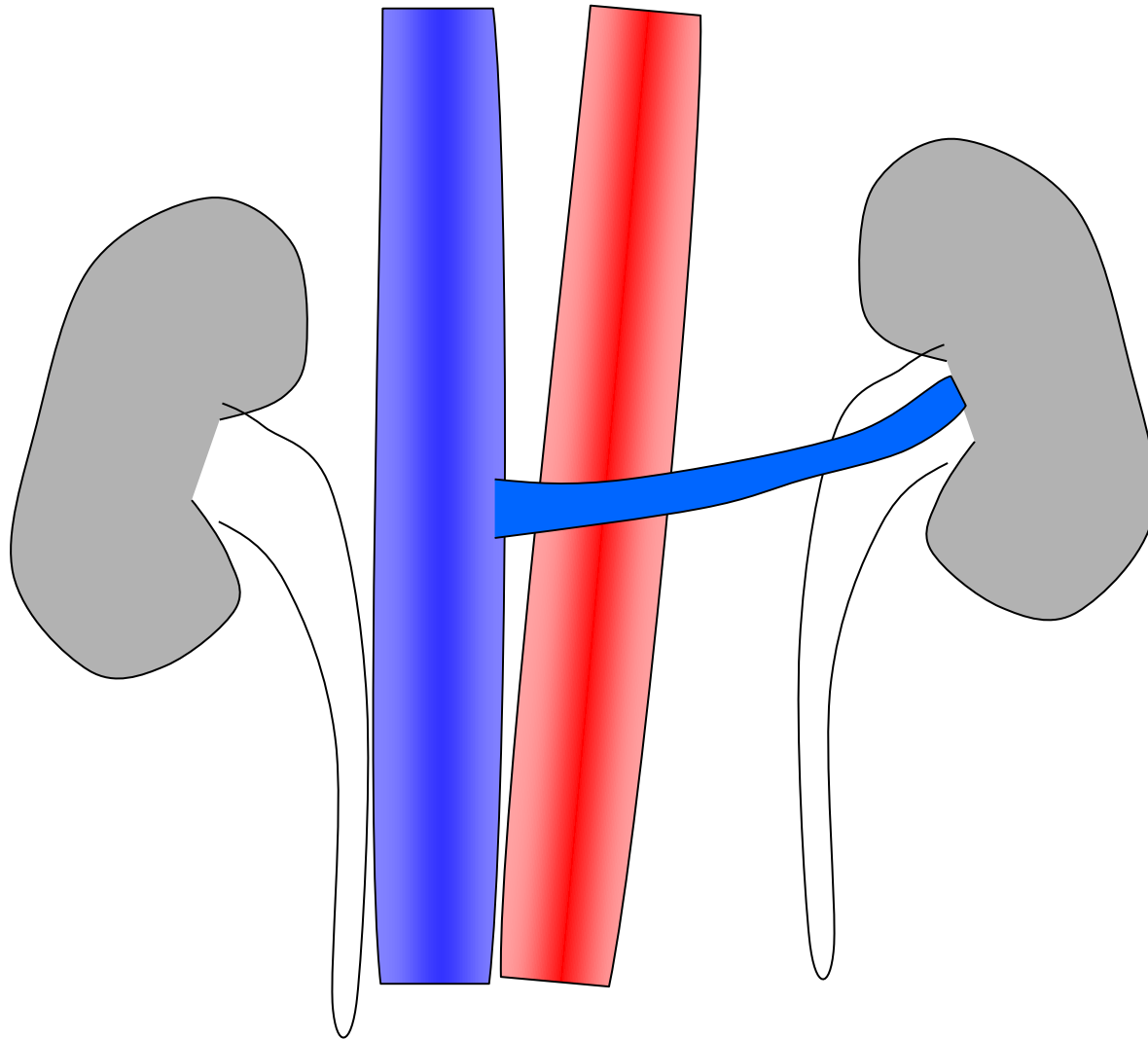
SCA

TD

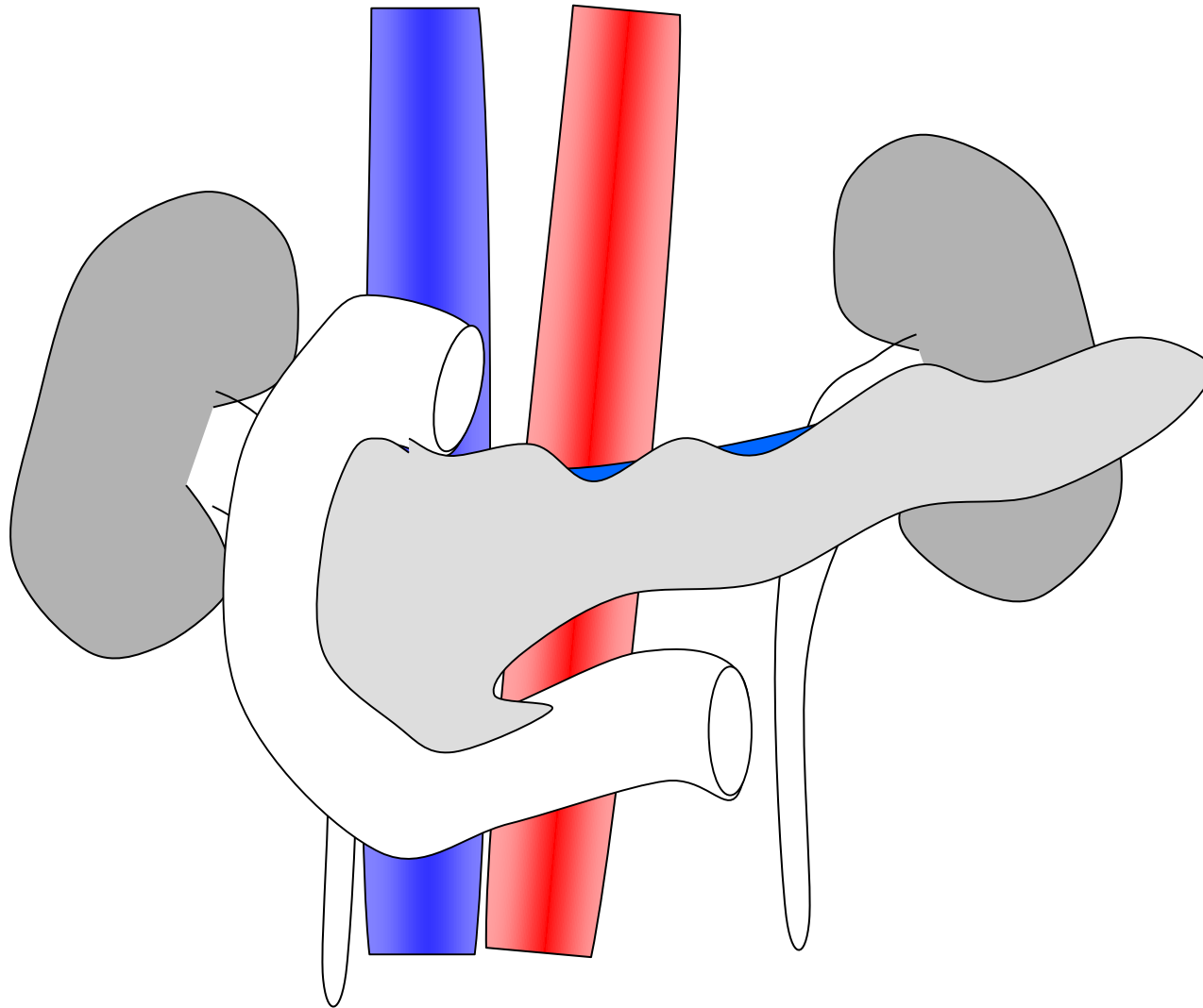
Spine



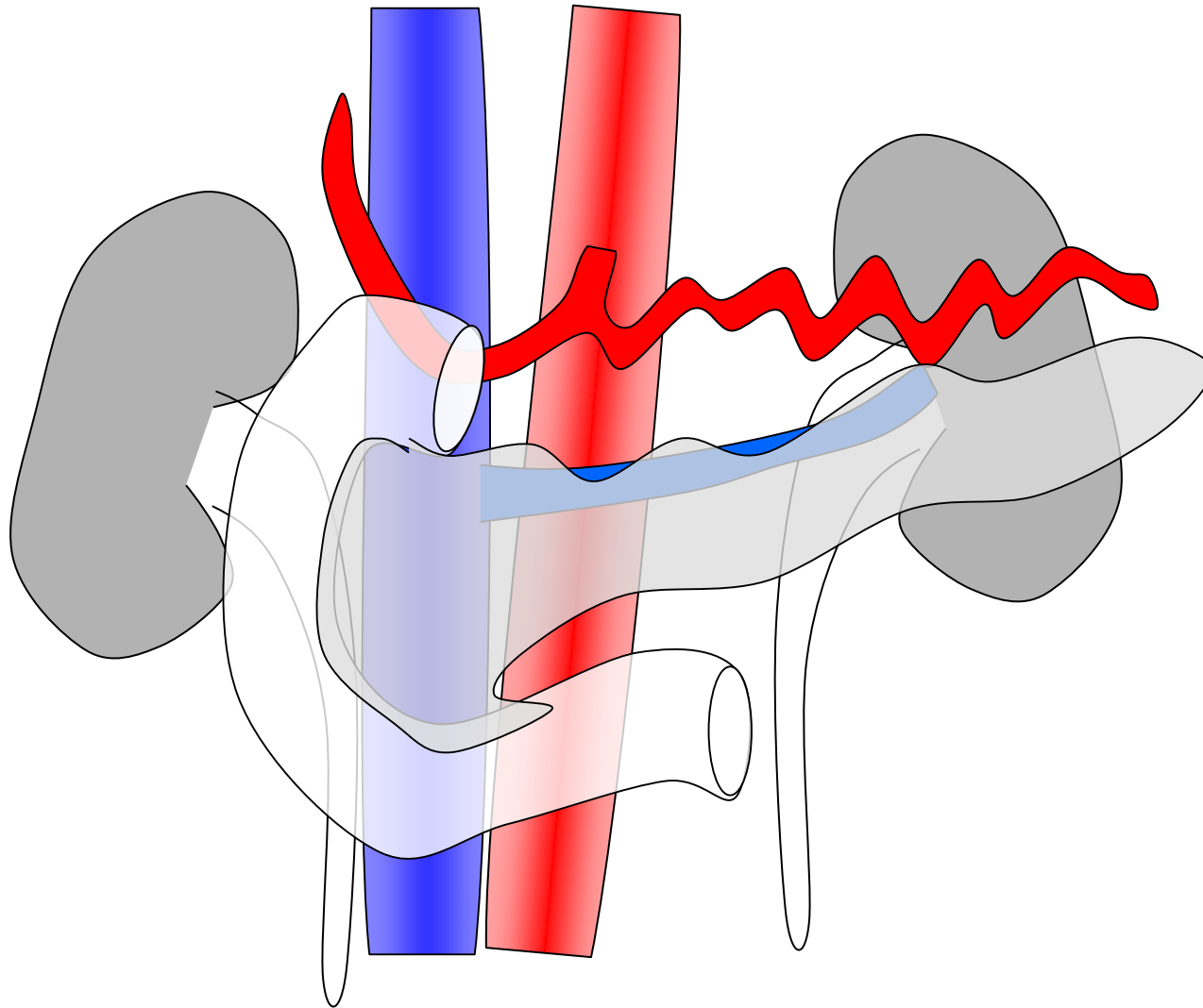
# Anatomie biliopancréatique



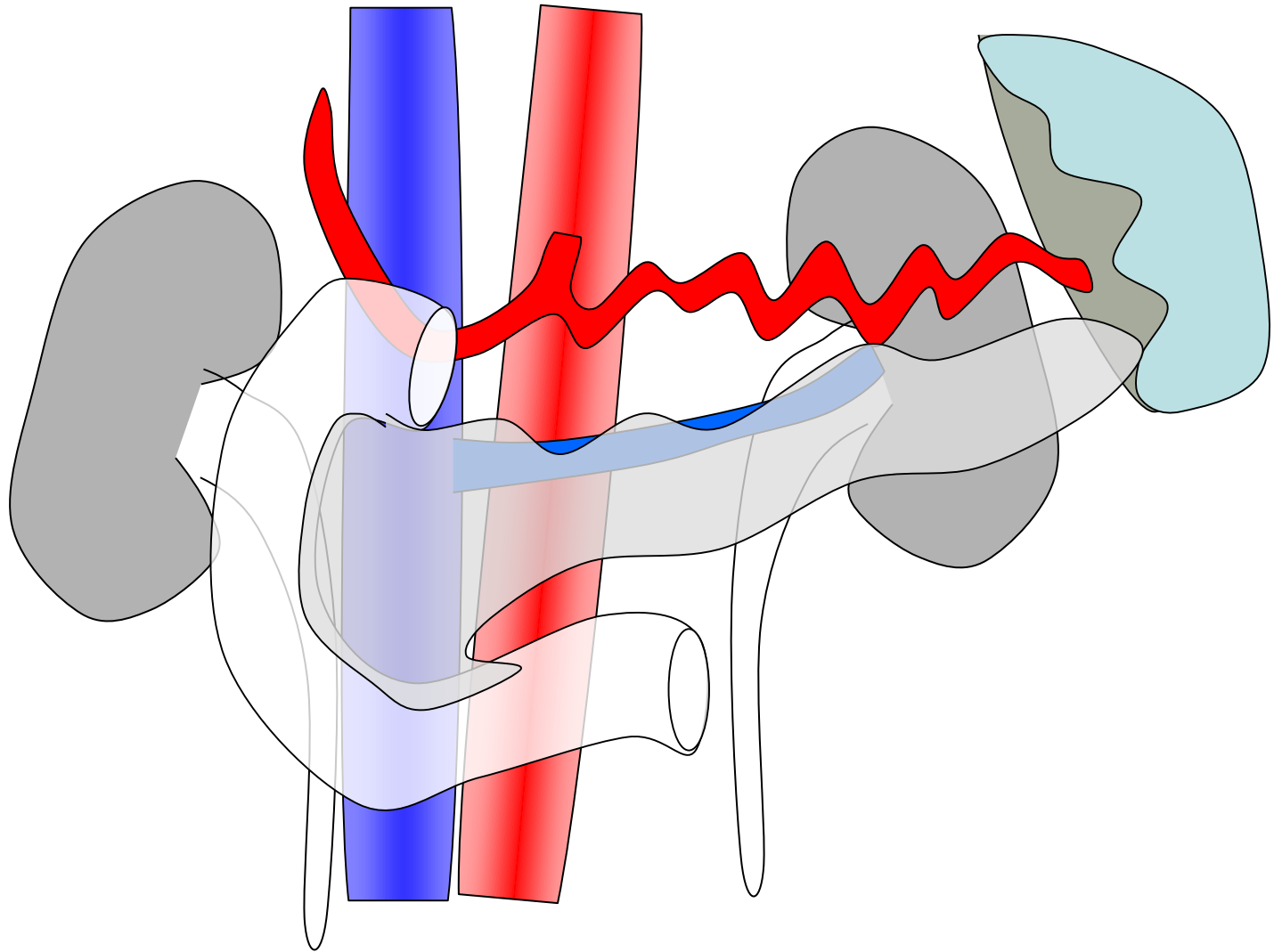
# Duodeno-pancreas



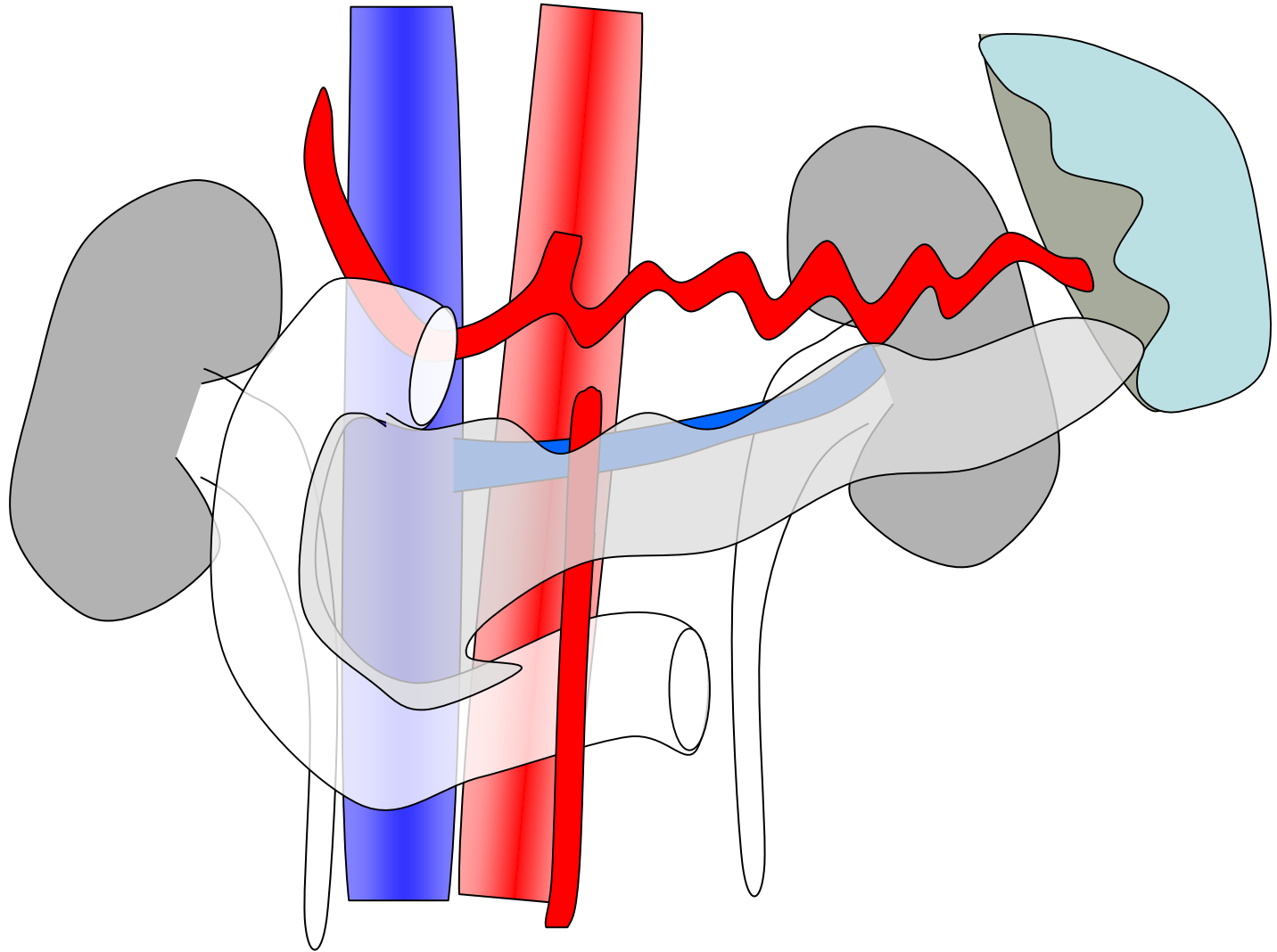
# Tronc coeliaque et branches



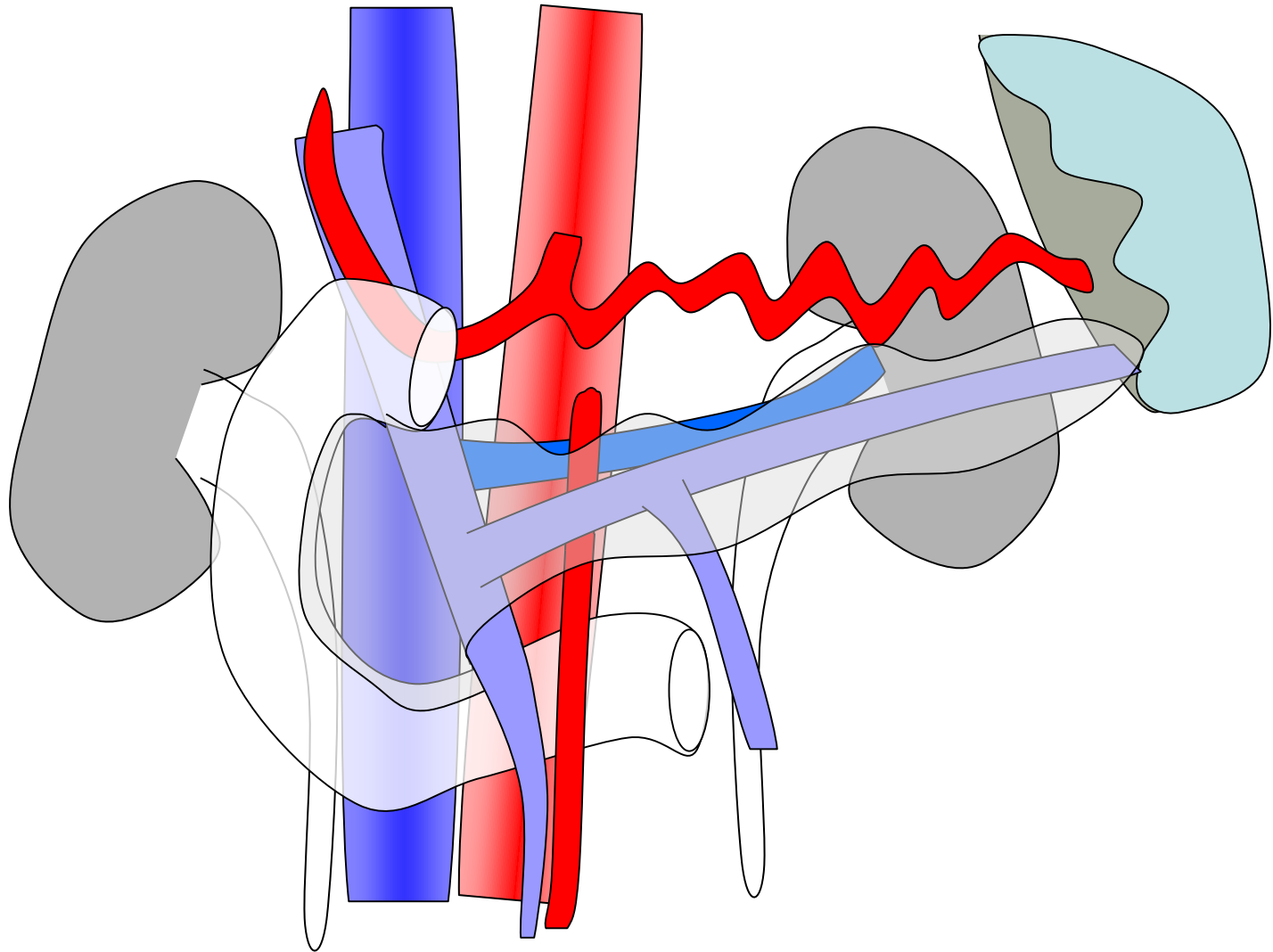
# Tronc coeliaque et branches



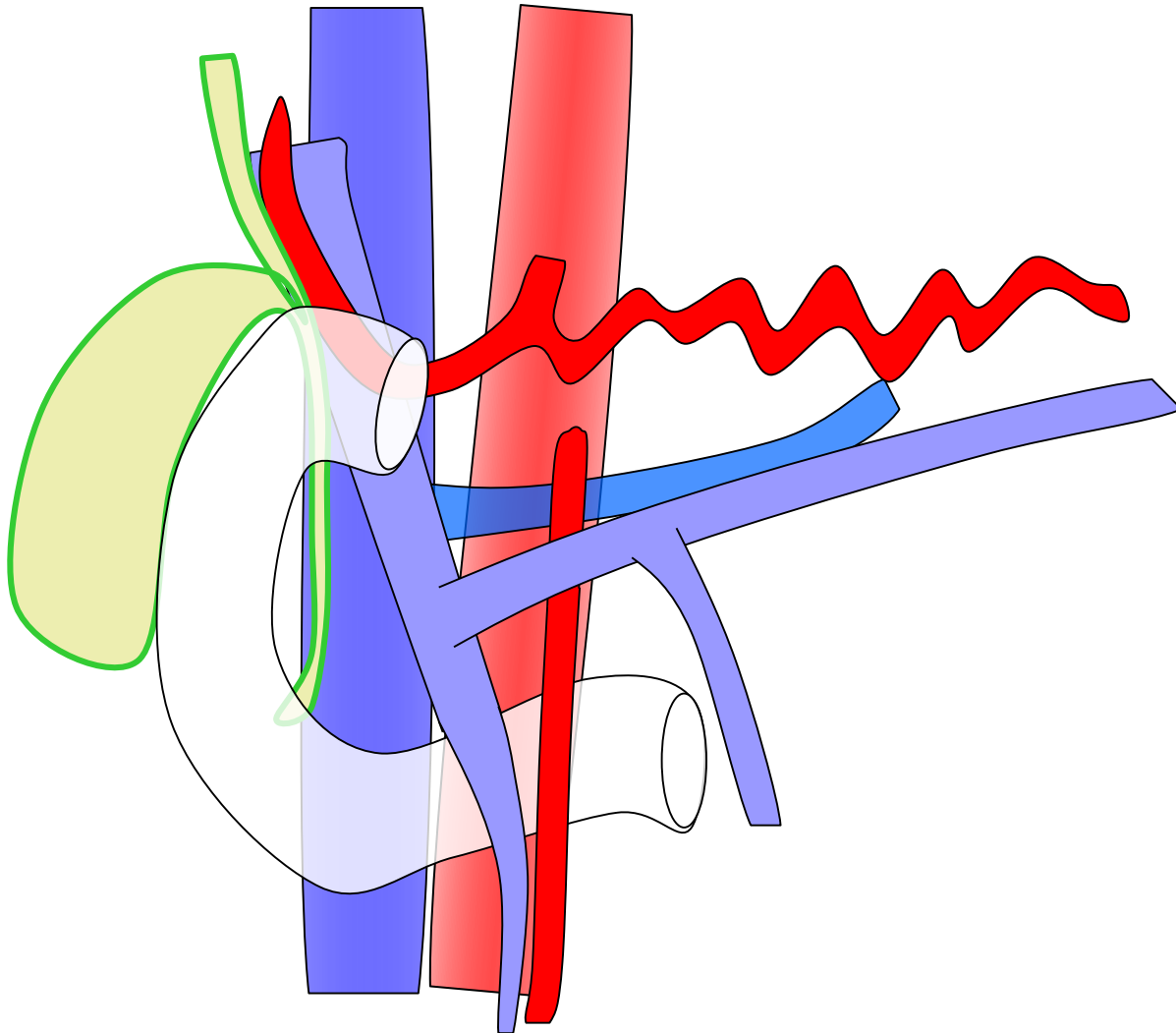
# Artère mésentérique supérieure



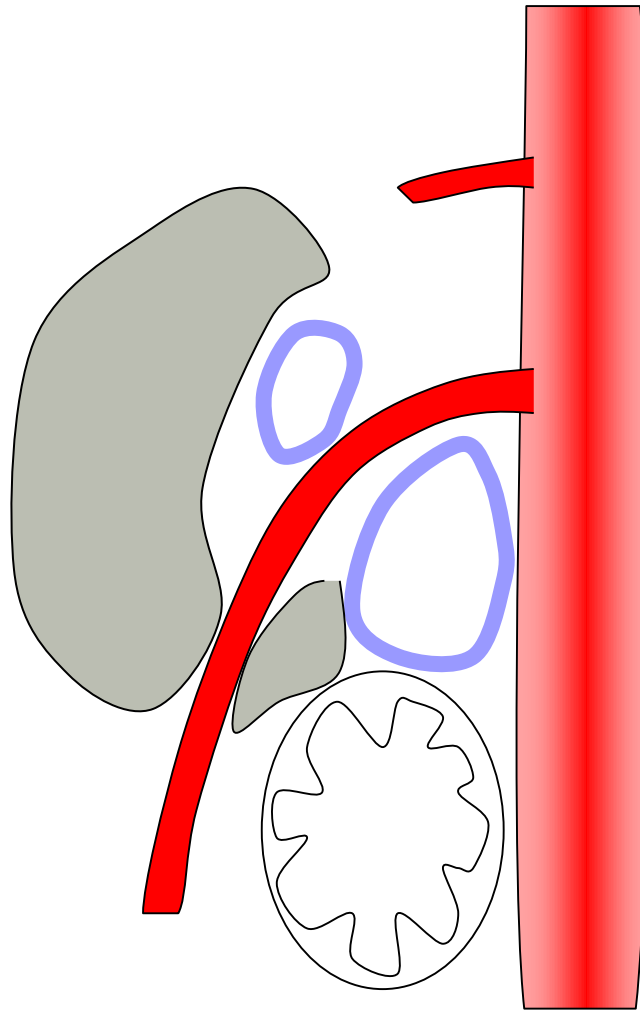
# Systeme veineux splanchnique



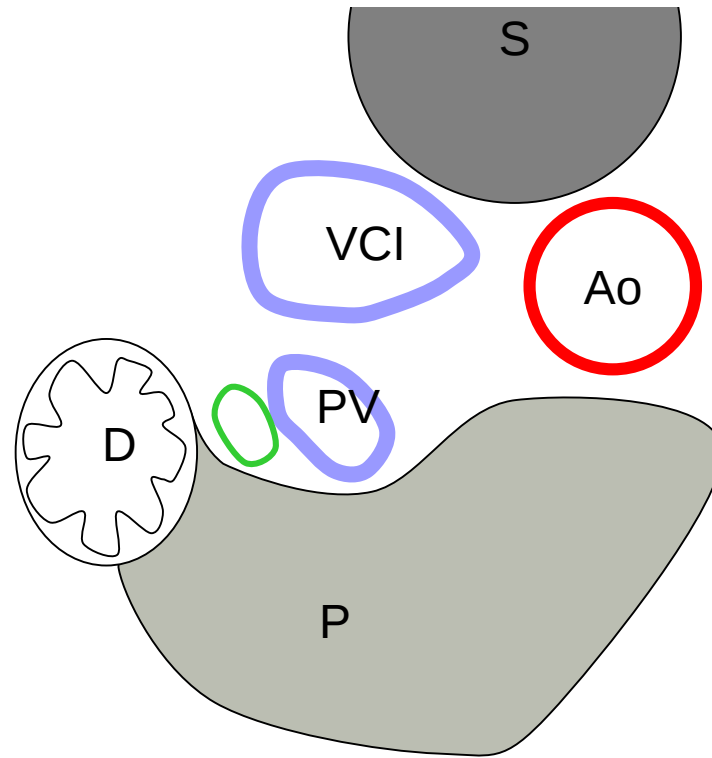
# Voies biliaires



# Vue latérale gauche

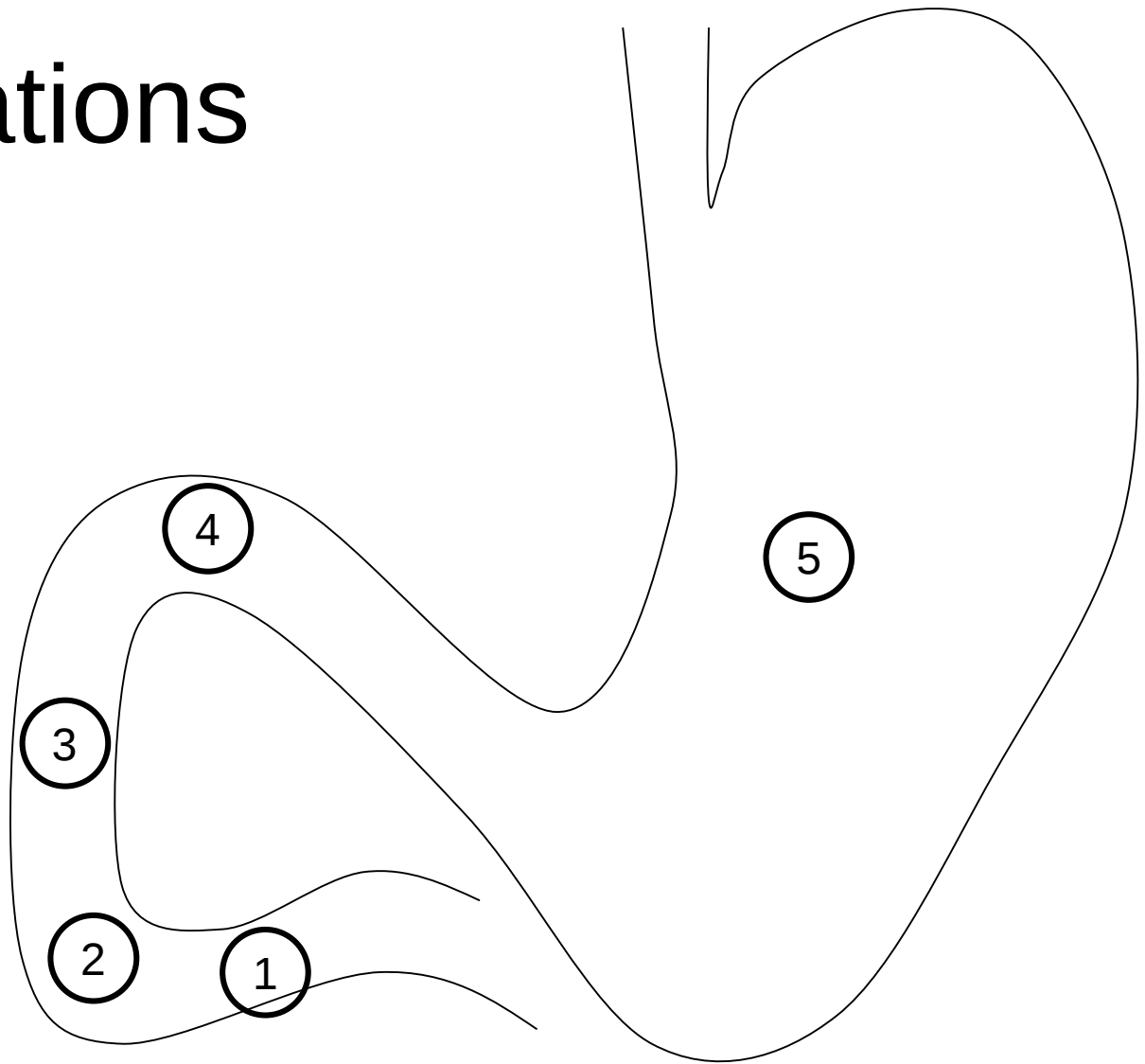


# Second duodenum

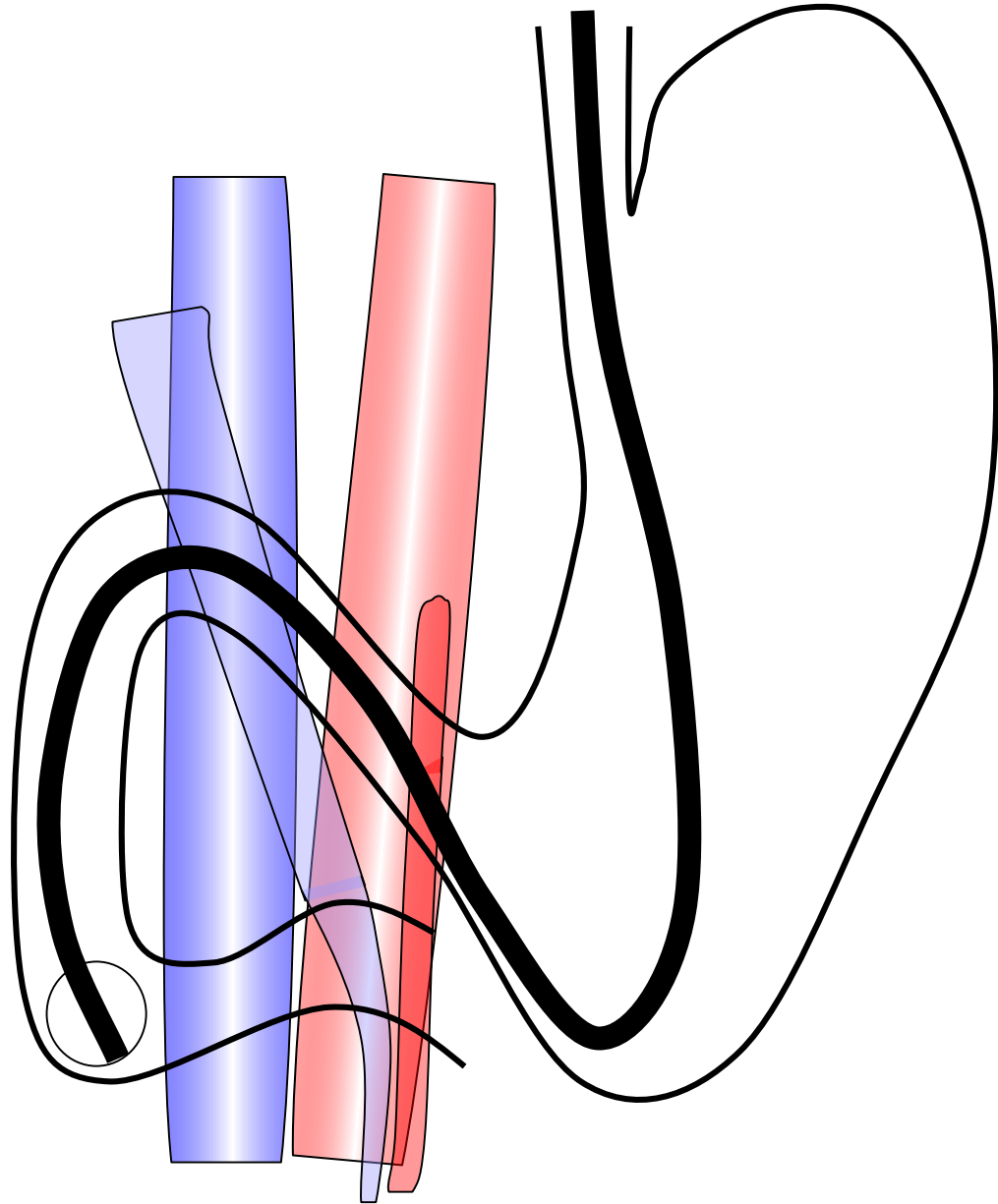


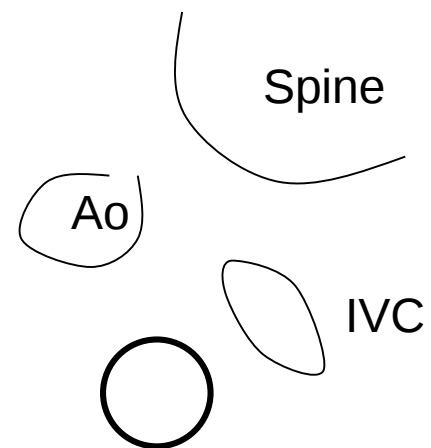
# Réalisation pratique

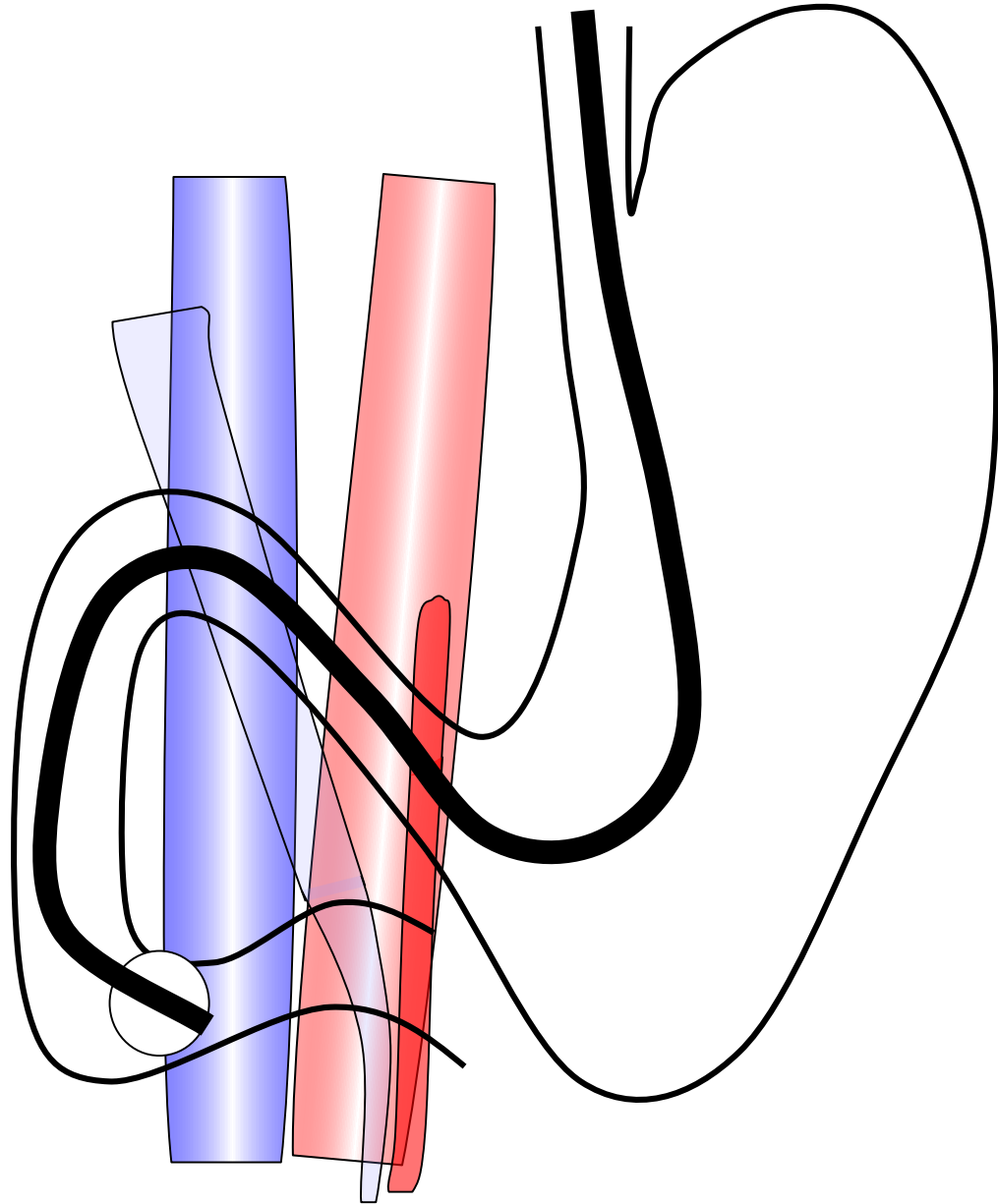
# Stations

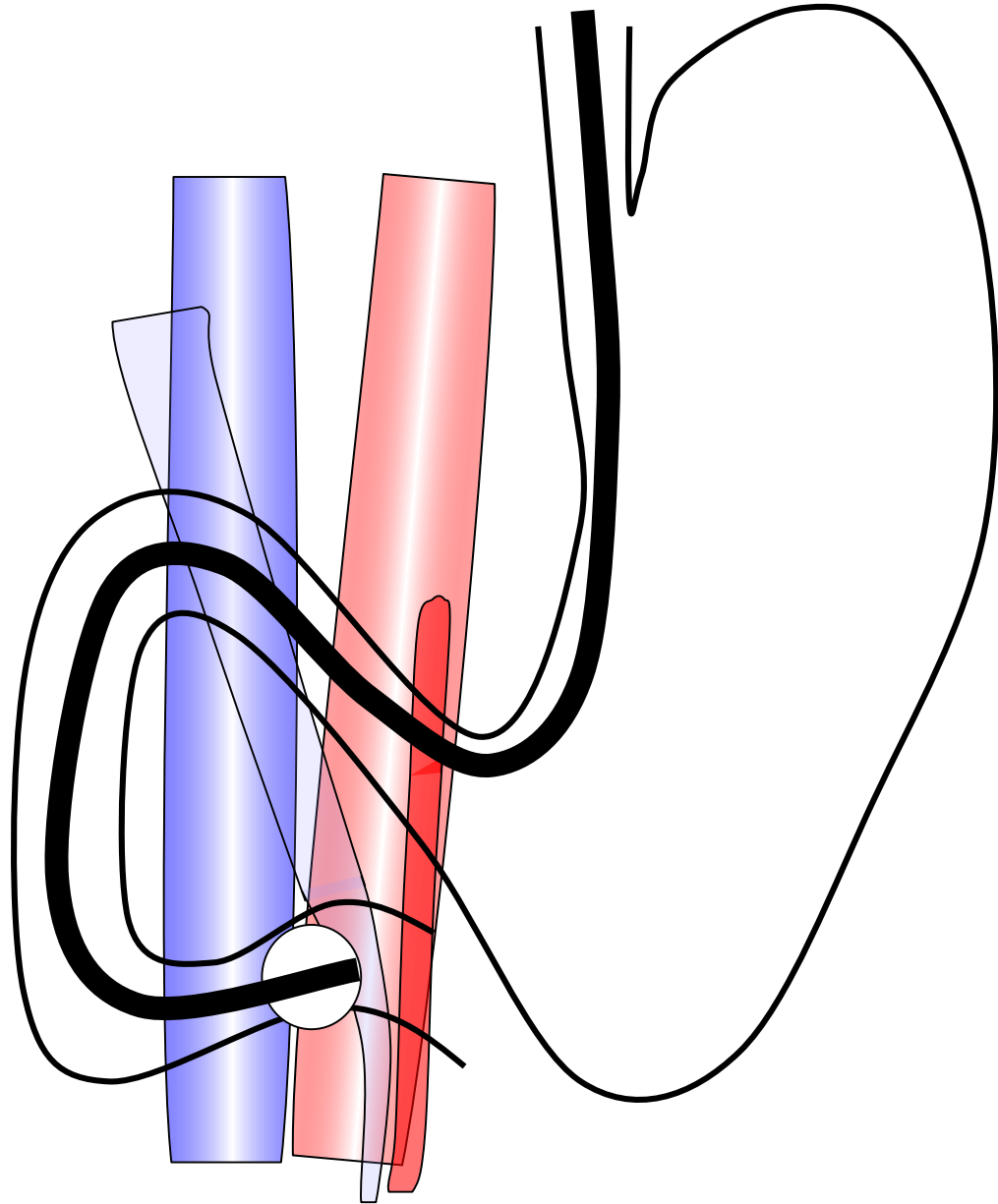


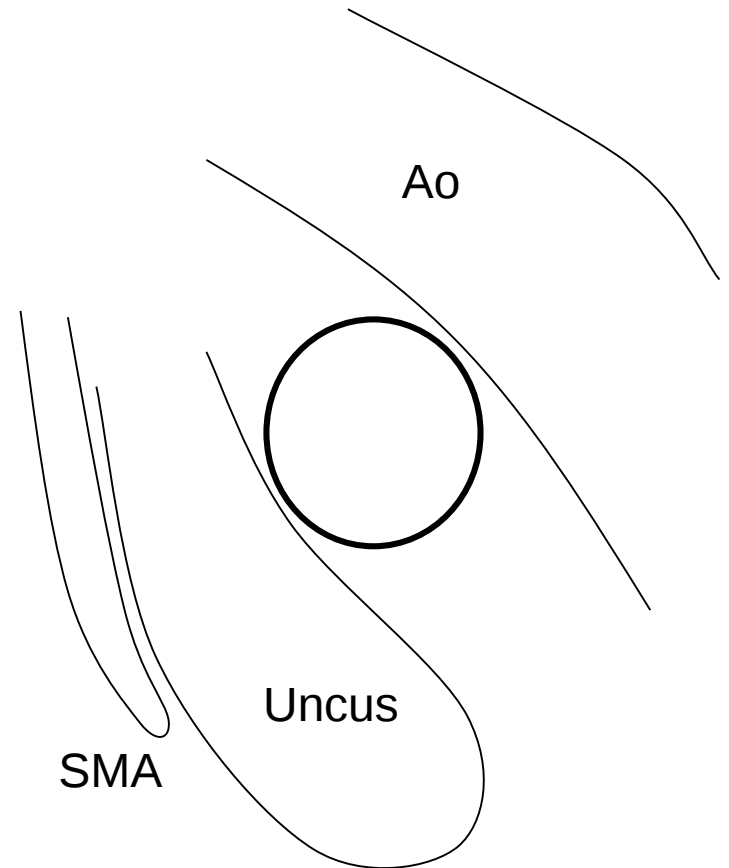
En radial



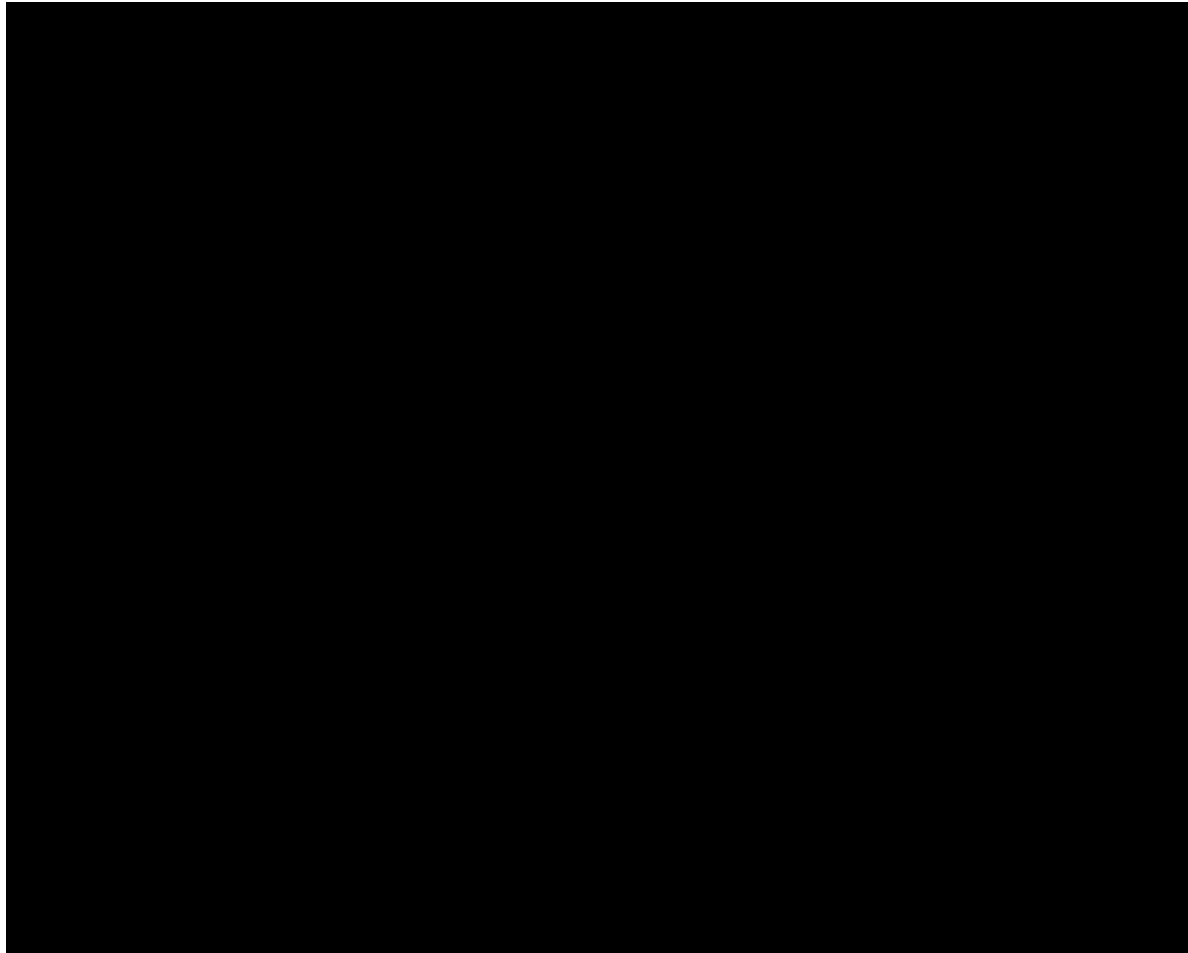


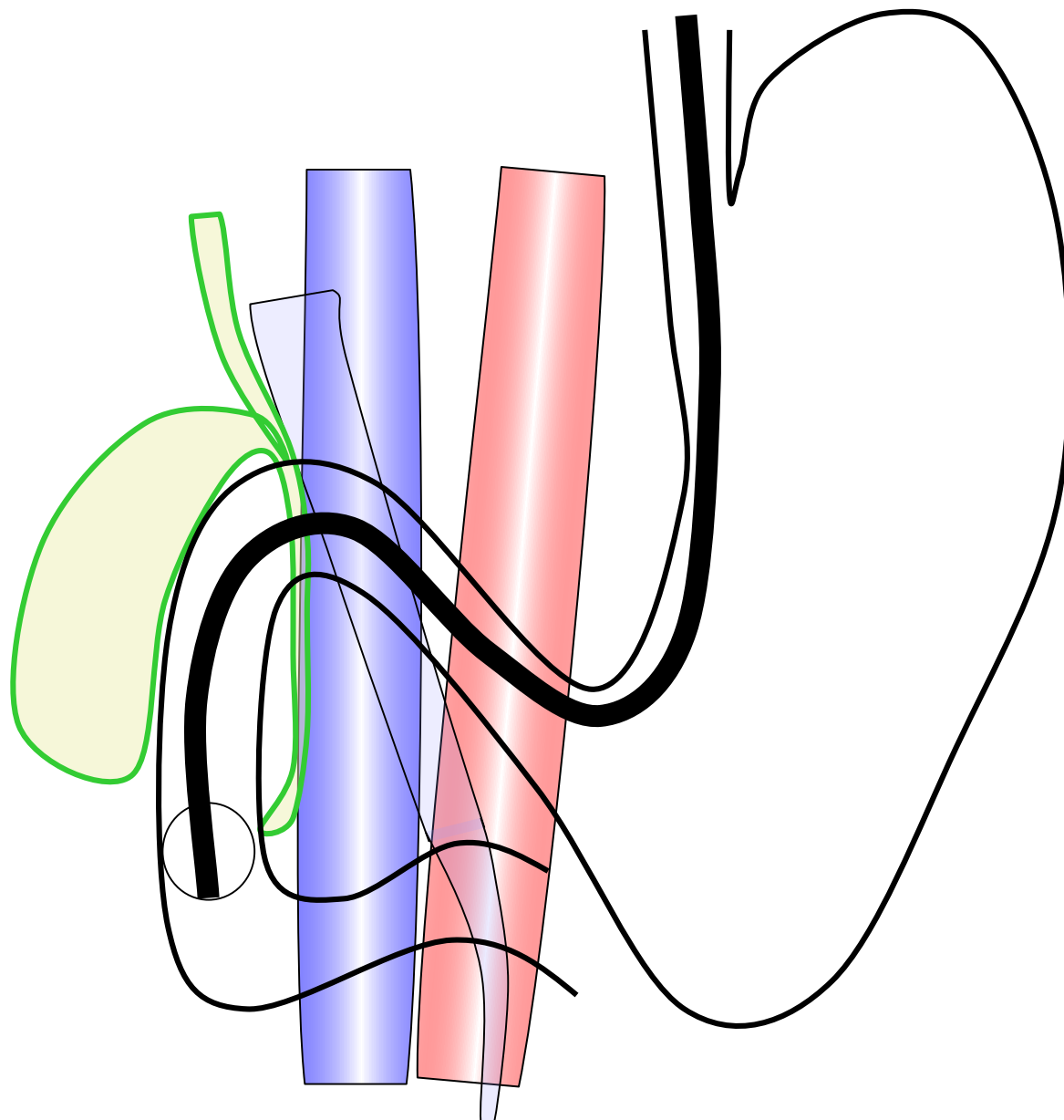






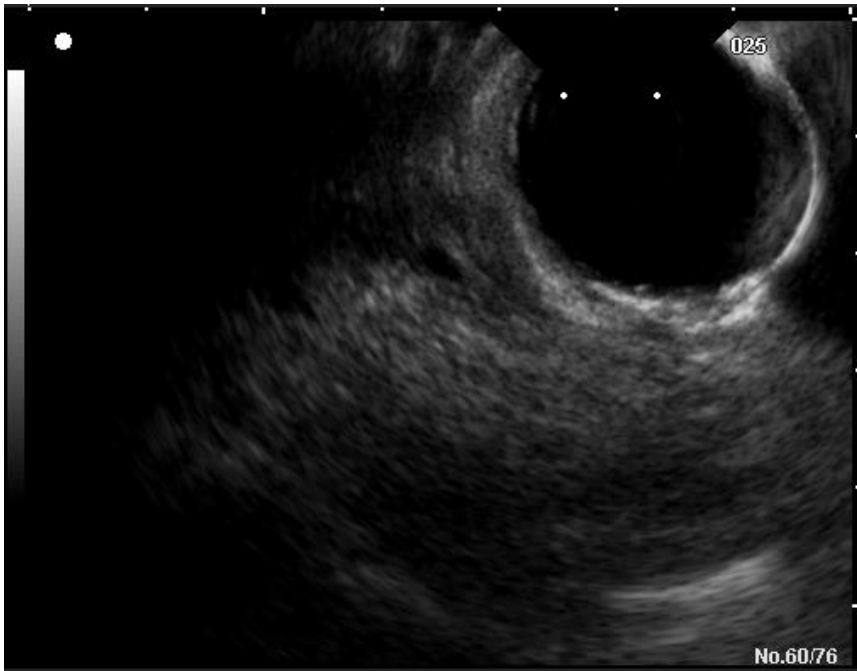
# Uncinate process







# Papilla



Pancreatic duct

Biliary duct

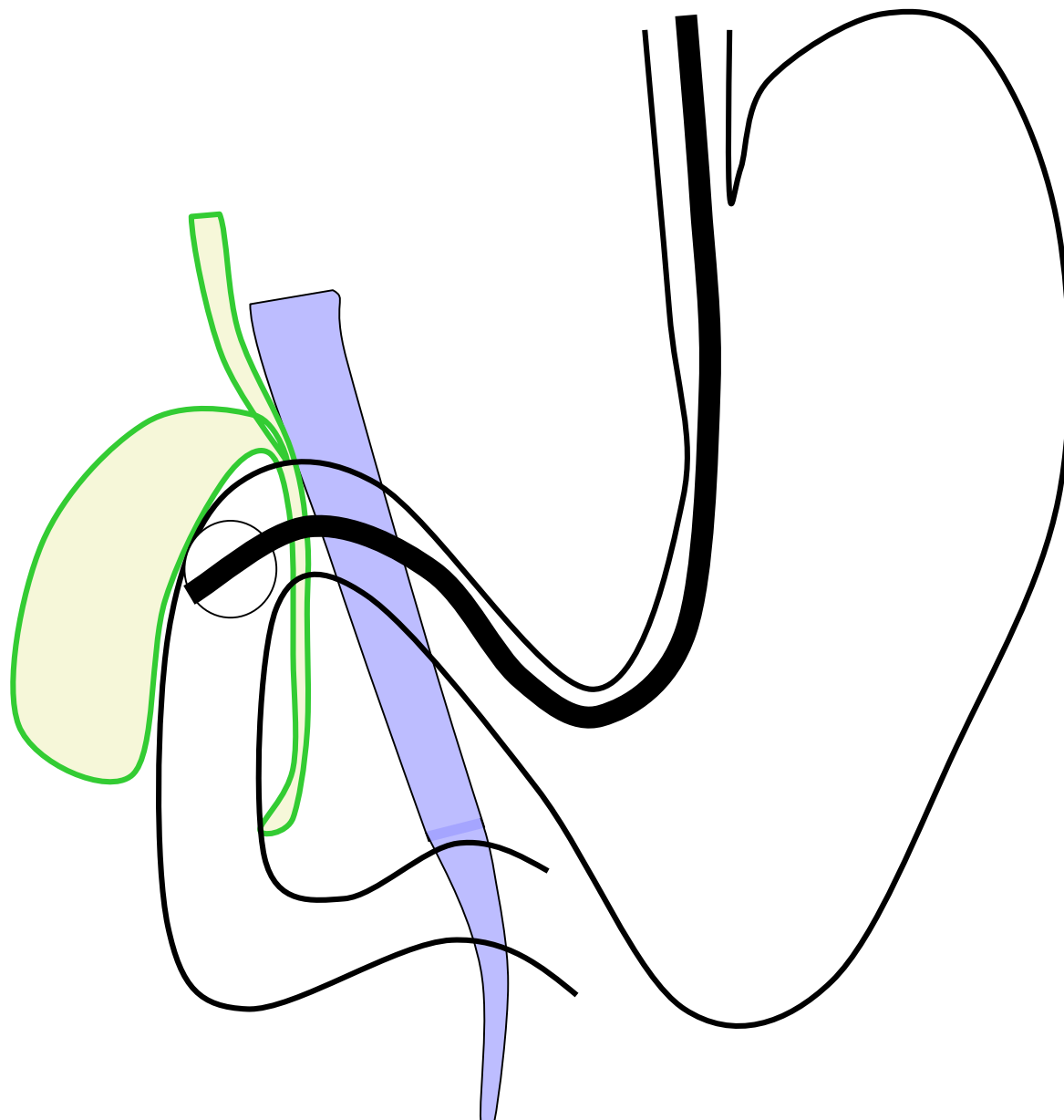


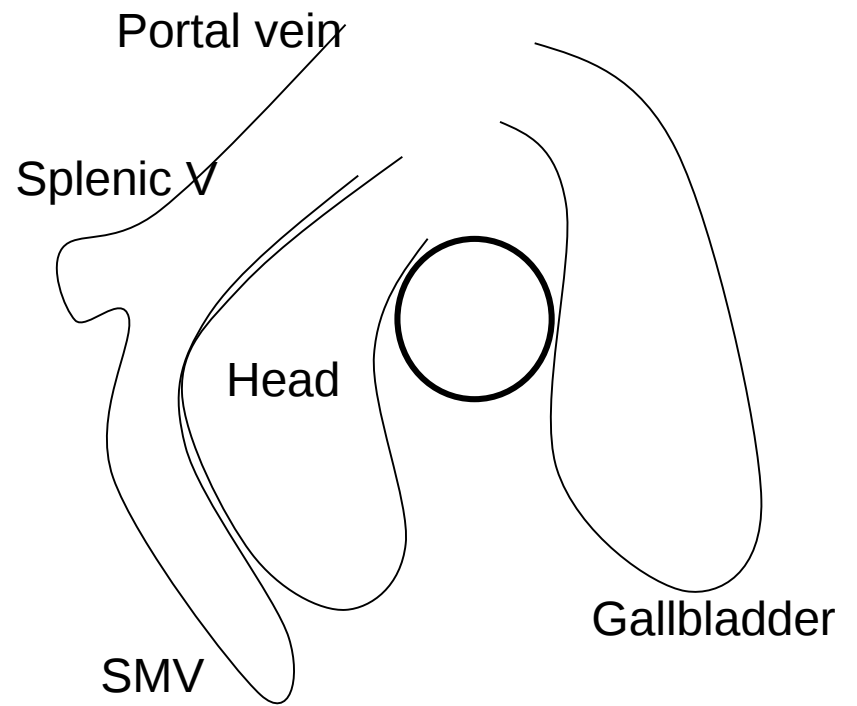
HITACHI GB-5 DYN-75 P-2/2/1/A  
PTR-H IN-20 LIS-6 50mm 7.5H

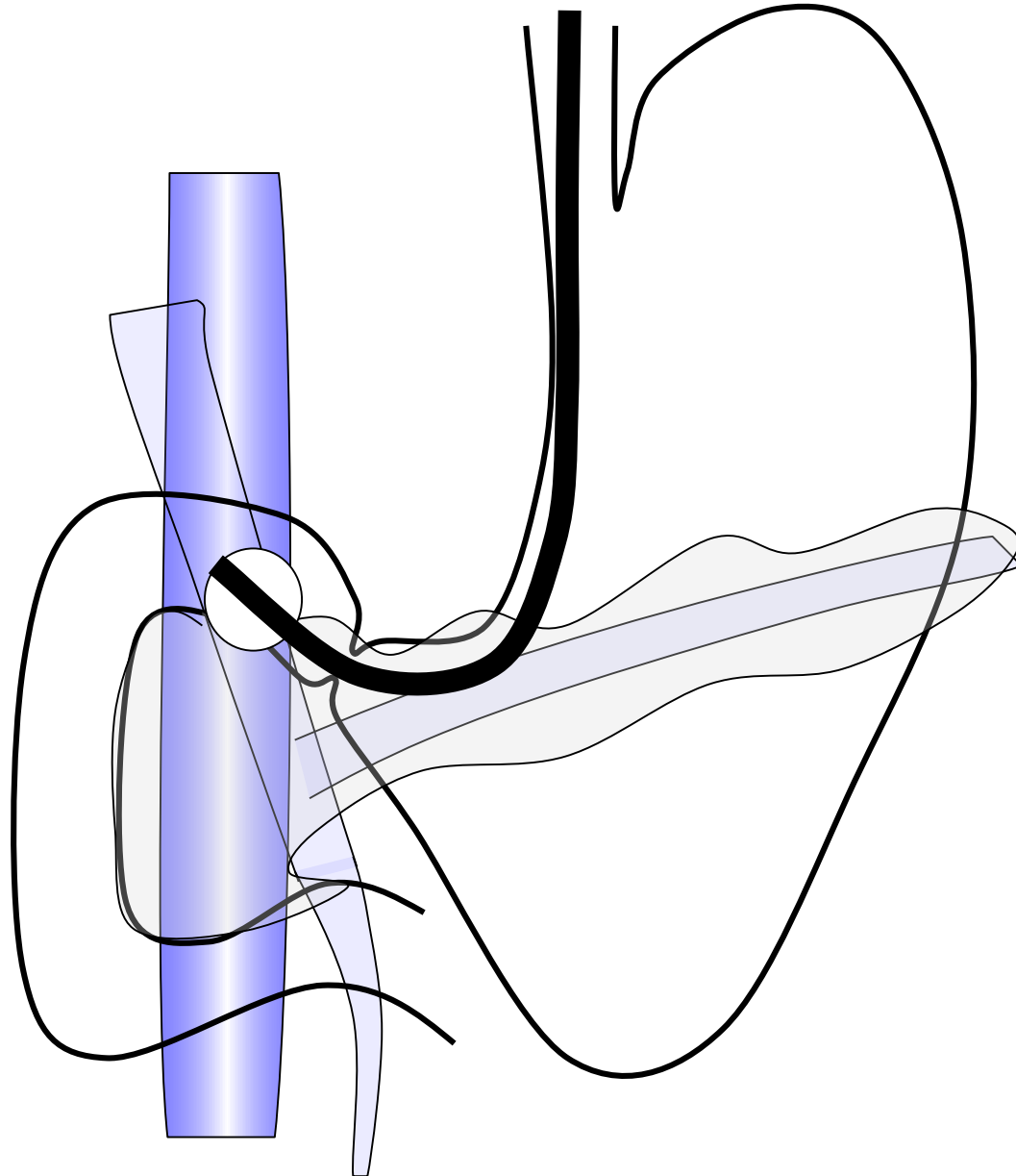


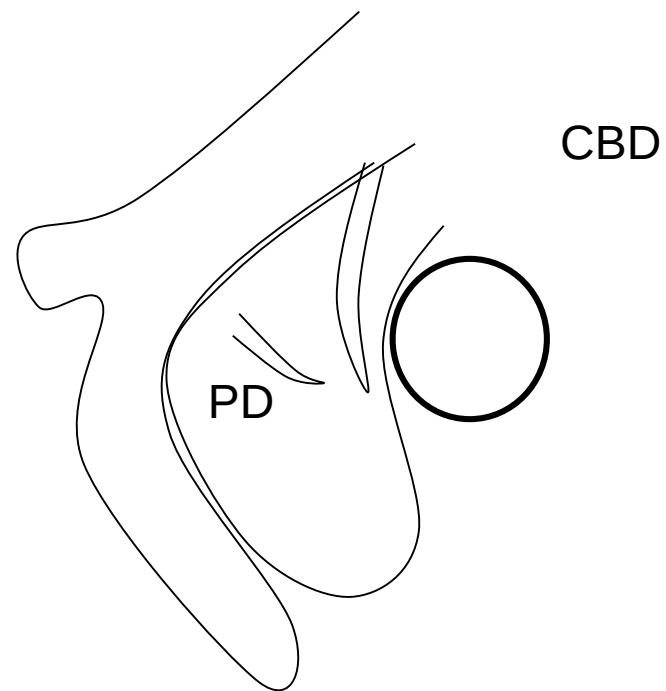
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10:48:05

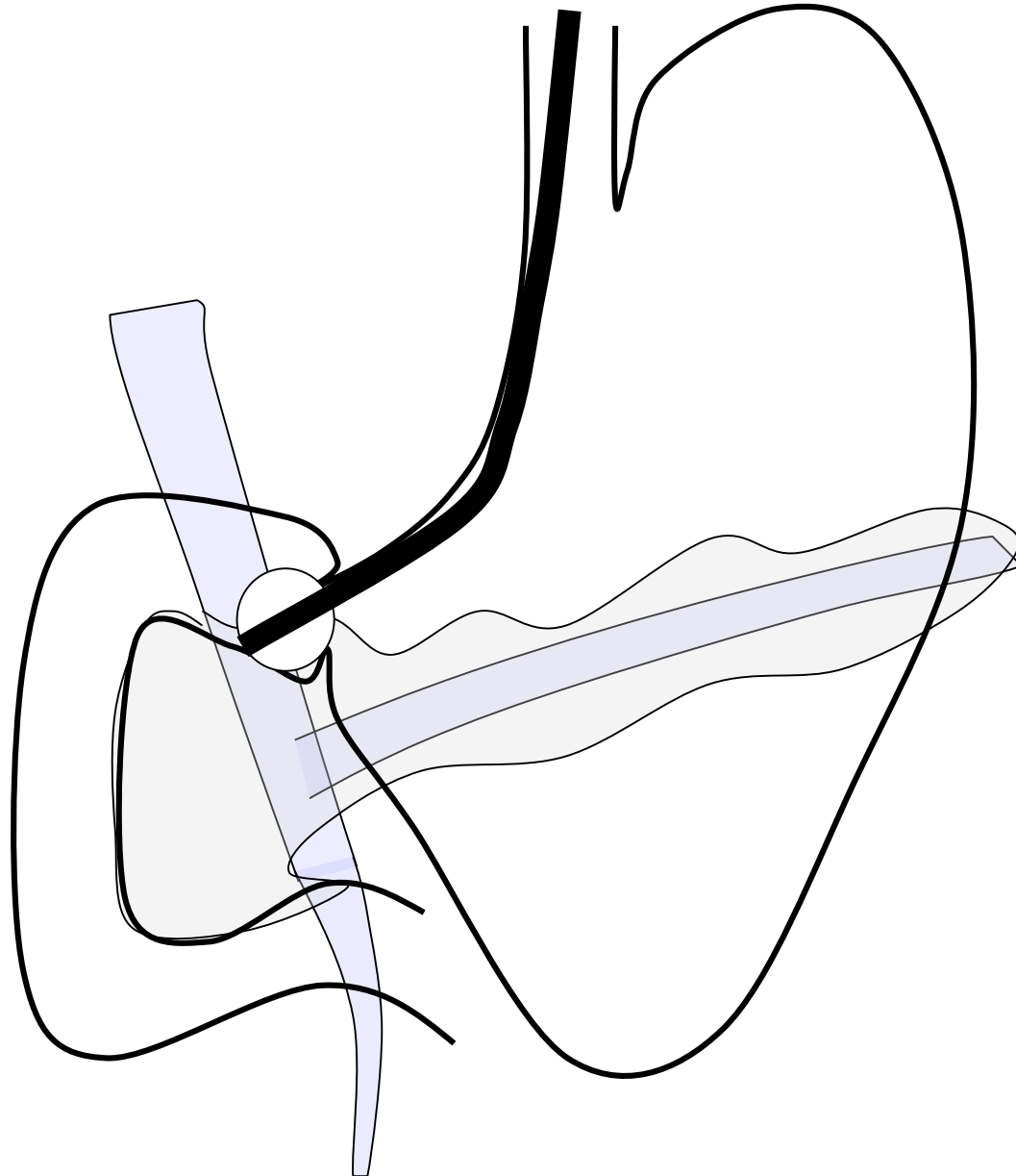
ENDOSCOPIE CHU NORD

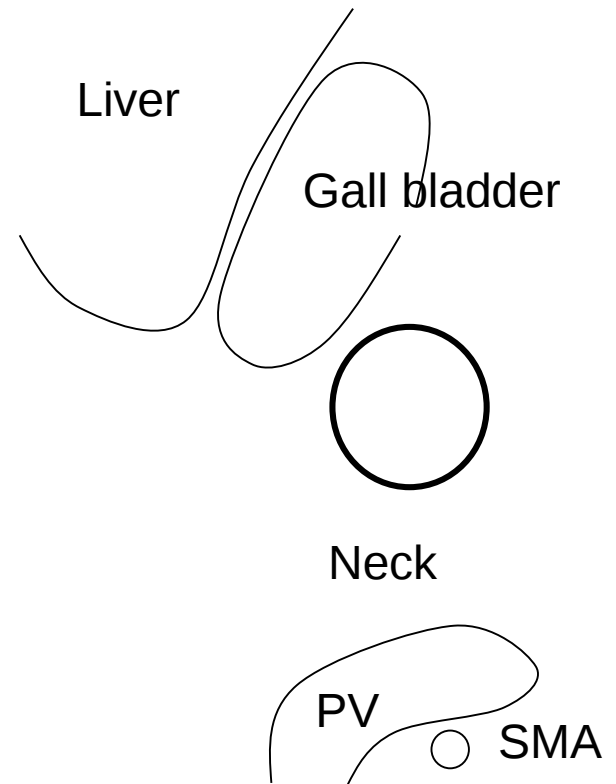
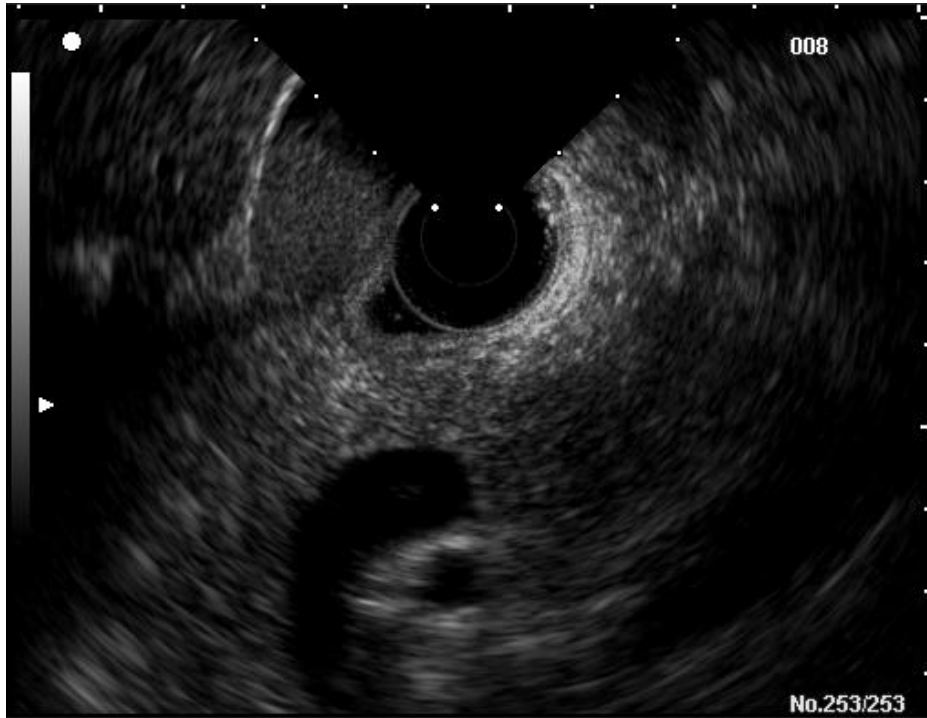


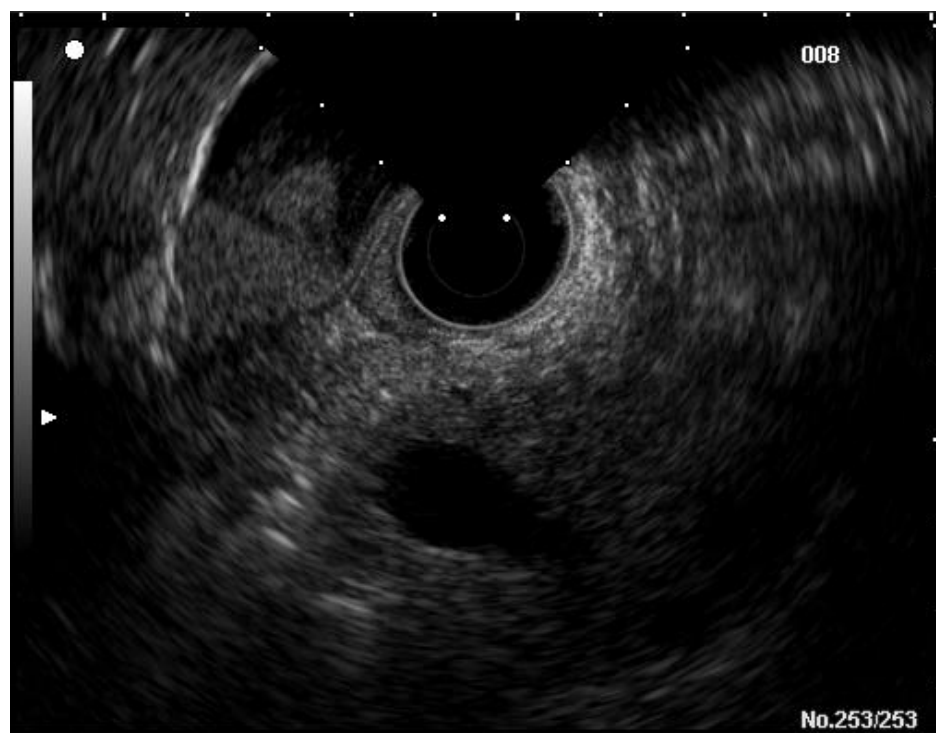


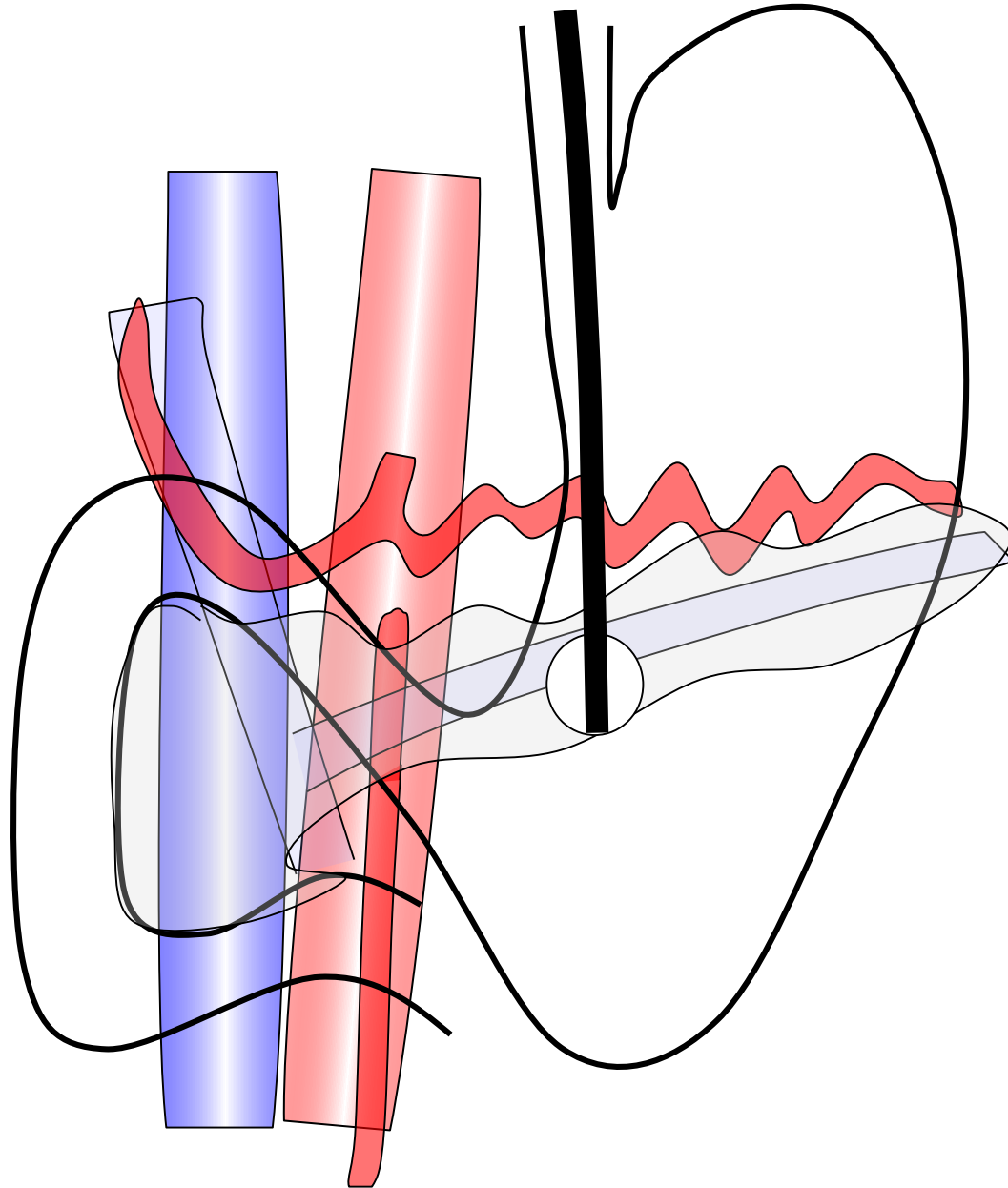


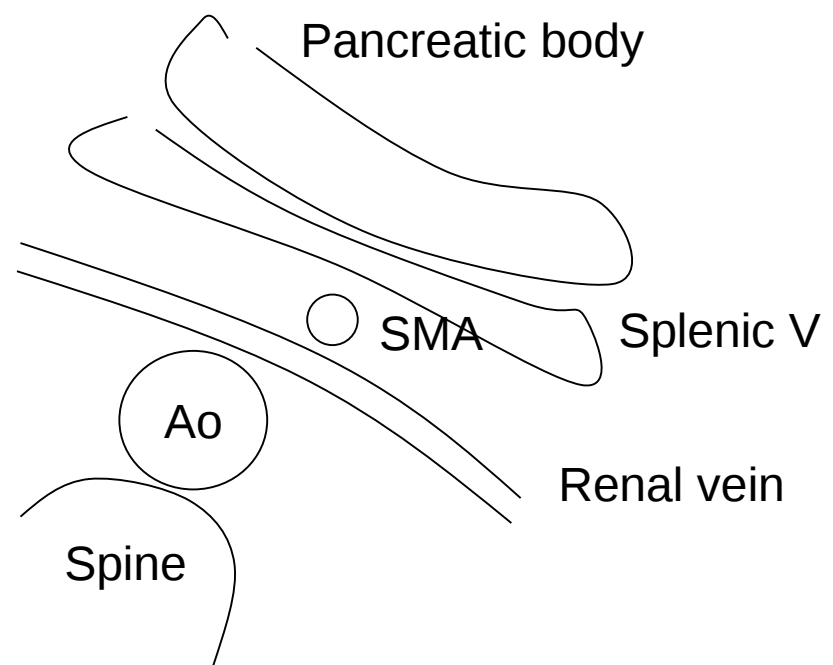


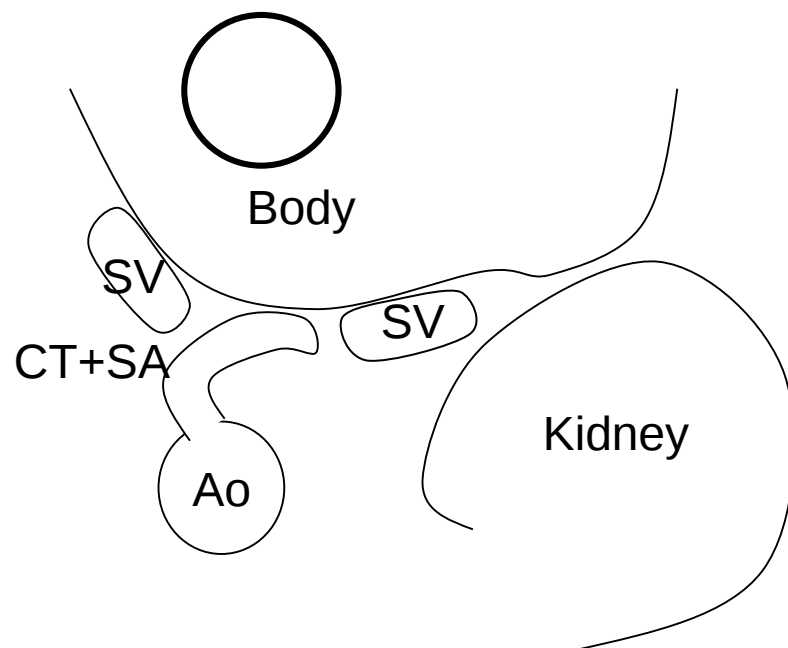


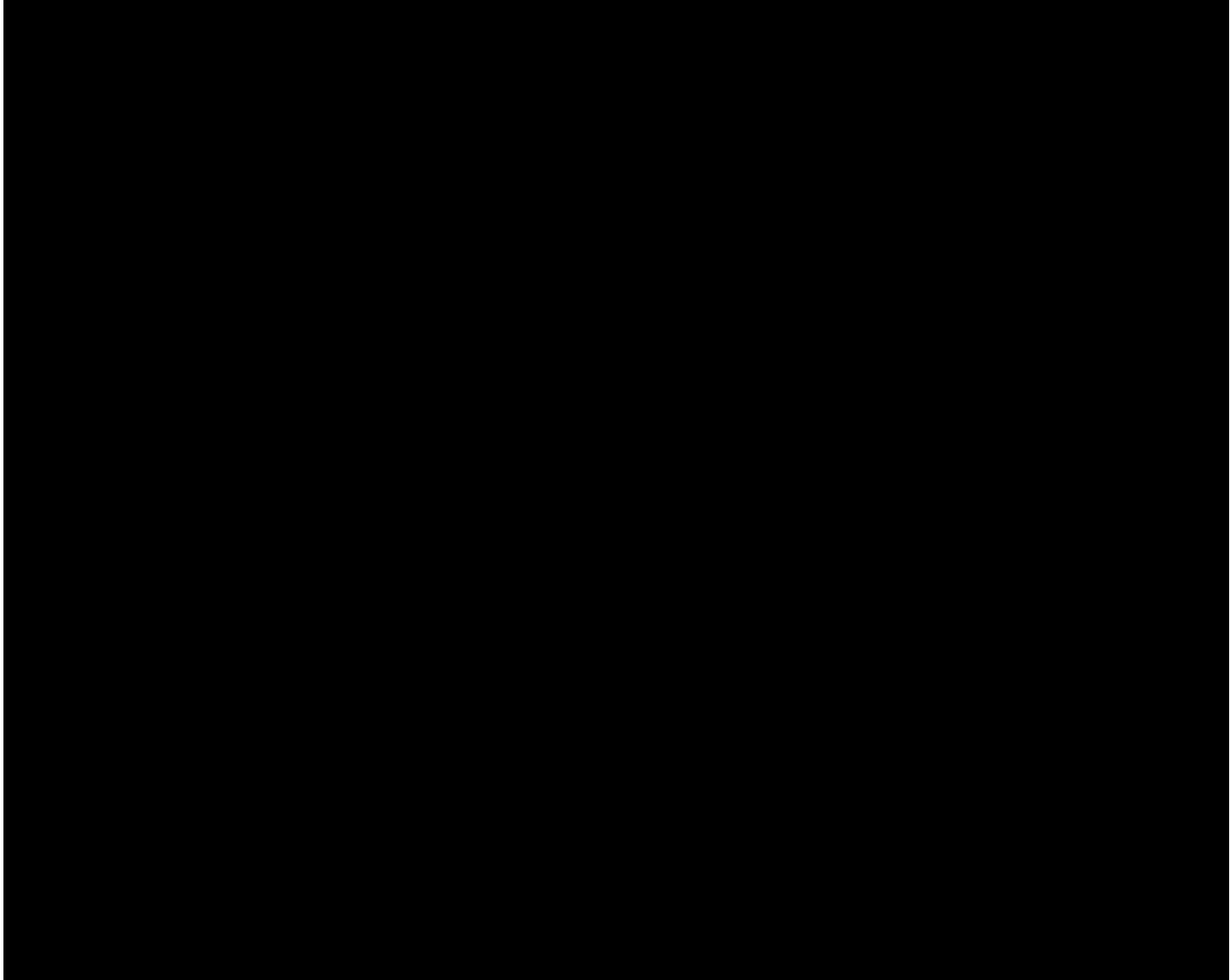






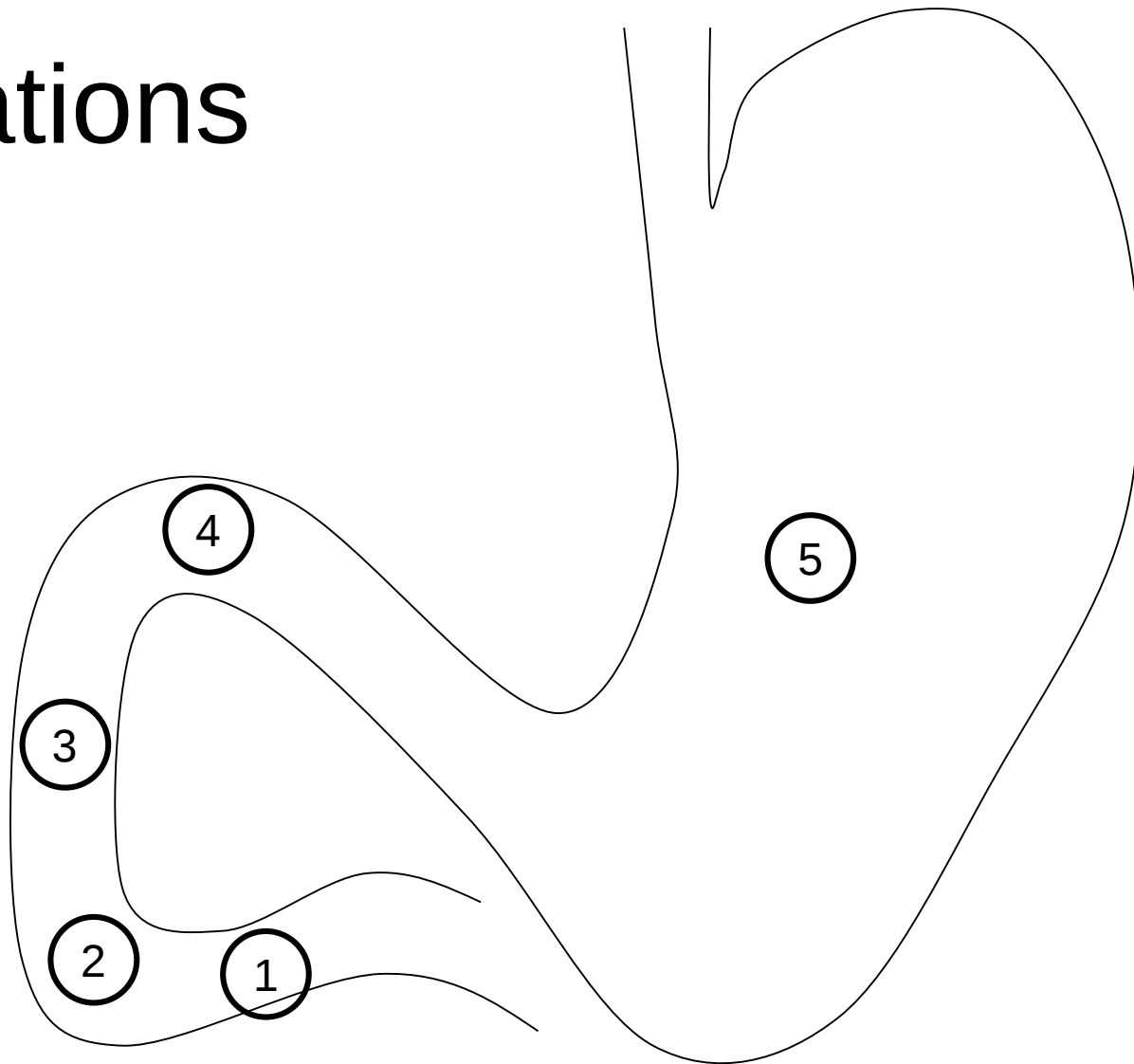


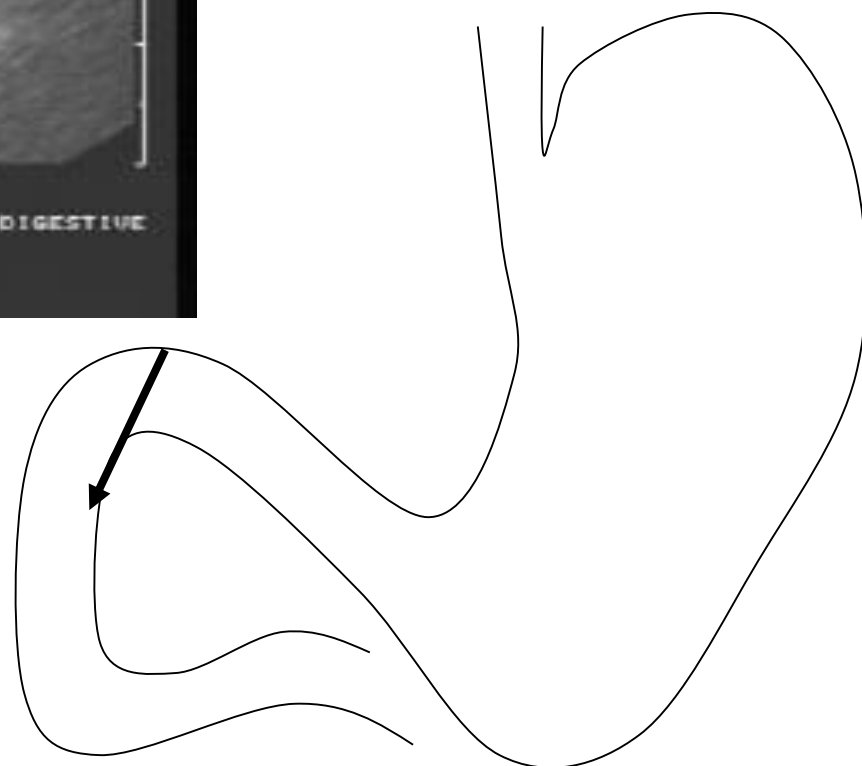


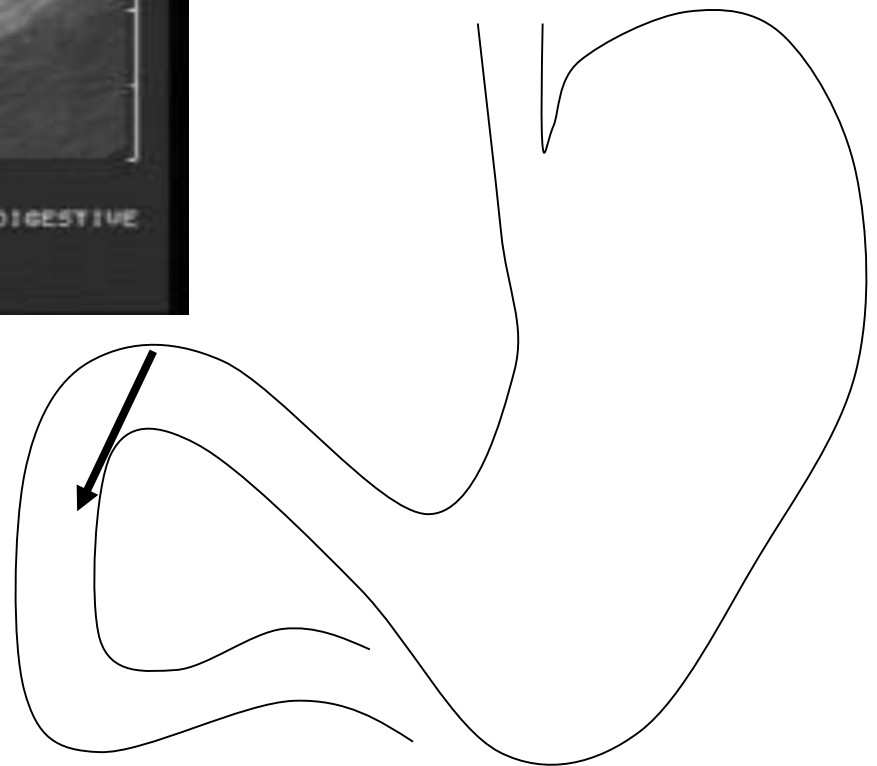
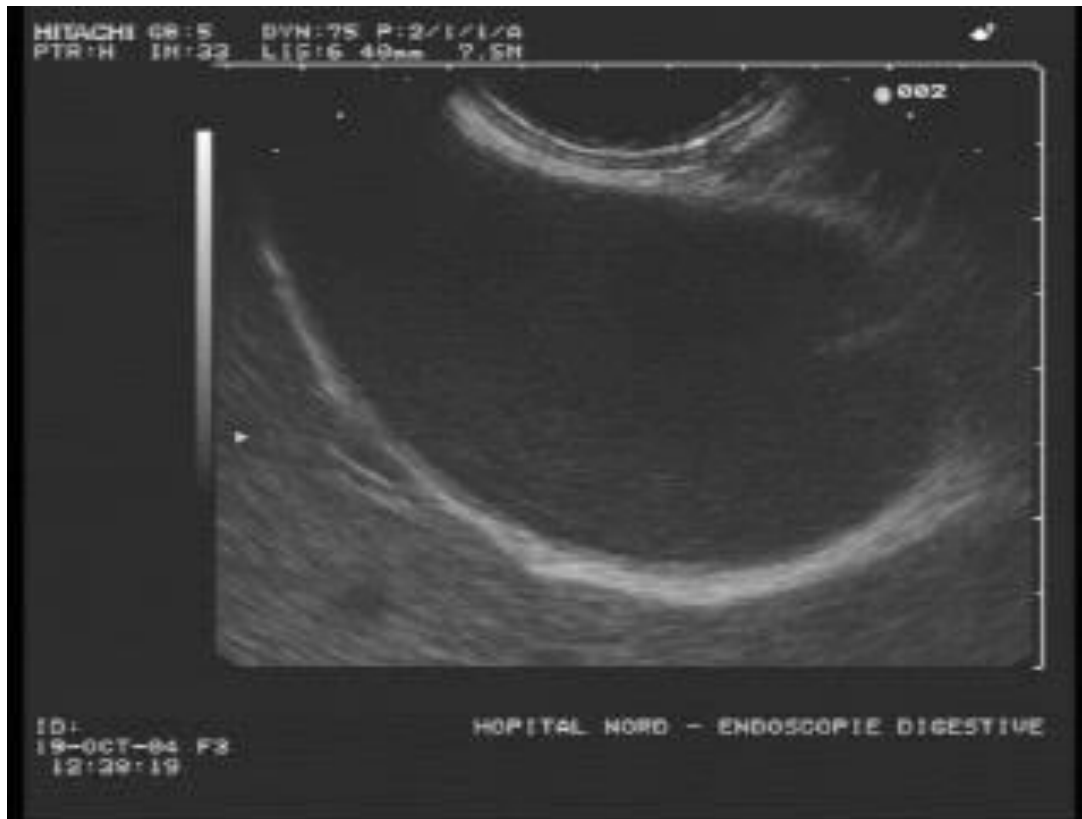


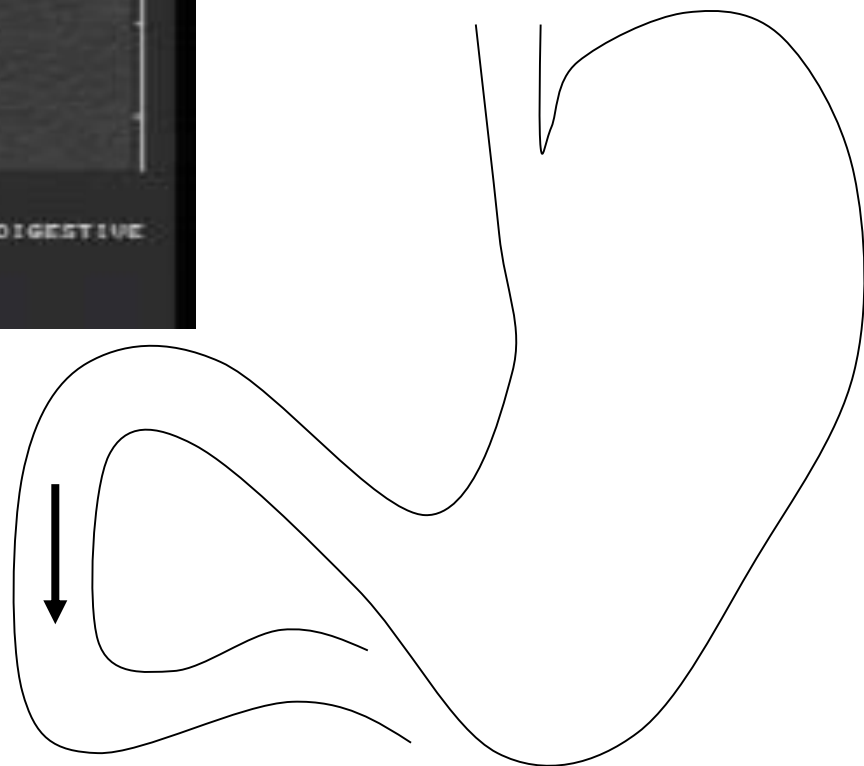
- En linéaire

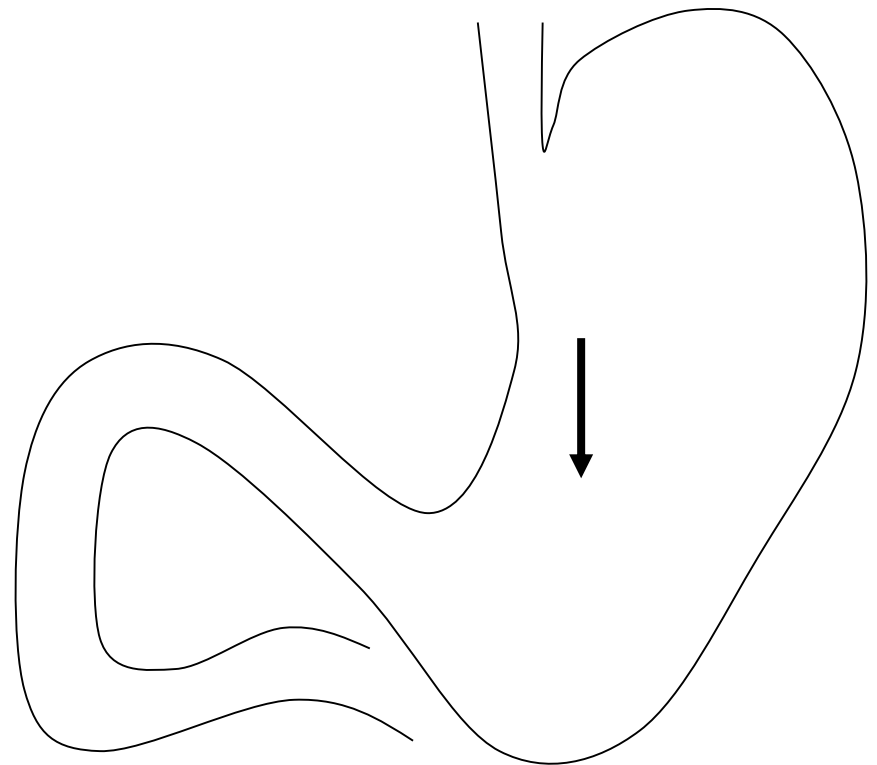
# Stations

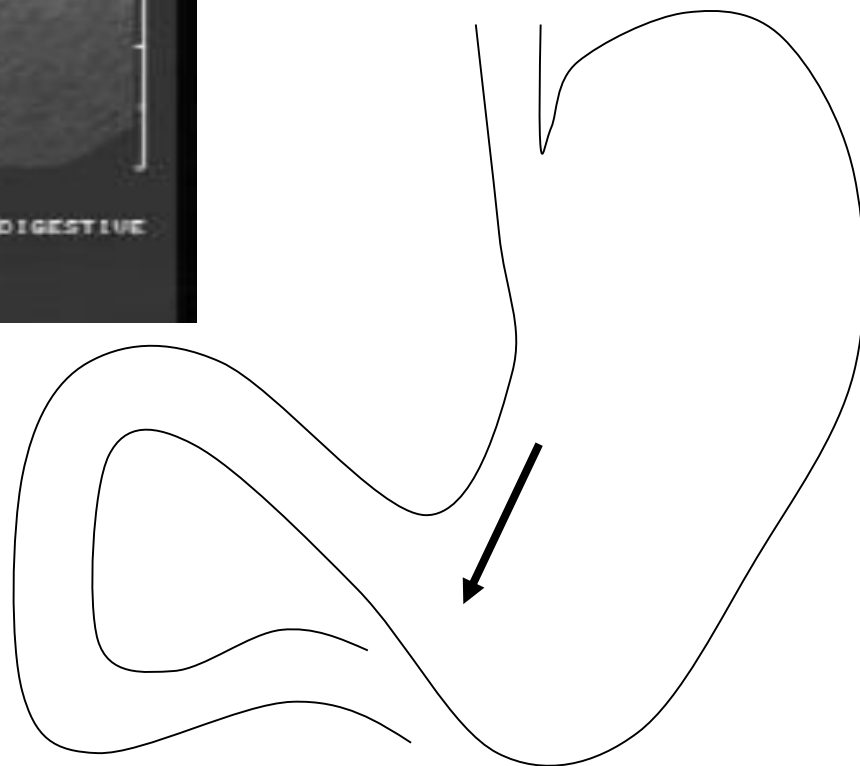












# Indications cliniques

# Les indications reconnues

- ❖ Bilan d'extension des cancers des organes creux
  - Œsophage
  - Rectum
  - Estomac, plus récent
- ❖ Exploration des cholestases
- ❖ Bilan des tumeurs des VB et pancréas
- ❖ Lésions kystiques du pancréas
- ❖ Tumeurs endocrines
- ❖ Troubles fonctionnels anorectaux

# Indications interventionnelles

- ❖ Ponction à l'aiguille fine
- ❖ Neurolyse coeliaque
- ❖ Drainage pseudokystes
- ❖ Drainage biliaire transgastrique
- ❖ Injections intratumorales
- ❖ dérivations gastro-digestives (expérimental)

# Cholestases

## ❖ Zones visualisées

- Vésicule biliaire
- Voies biliaires sous hilaires
- Papille
- Pancréas

## ❖ Diagnostic étiologique ~ 96 %

## ❖ Limites : Lésions sus-hilaires

# Diagnostic de lithiase

- ❖ 95% concordance avec la CPRE

  - *Amouyal et al., Palazzo et al., Prat et al., Burtin et al.*

- ❖ Moins invasive que la CPRE

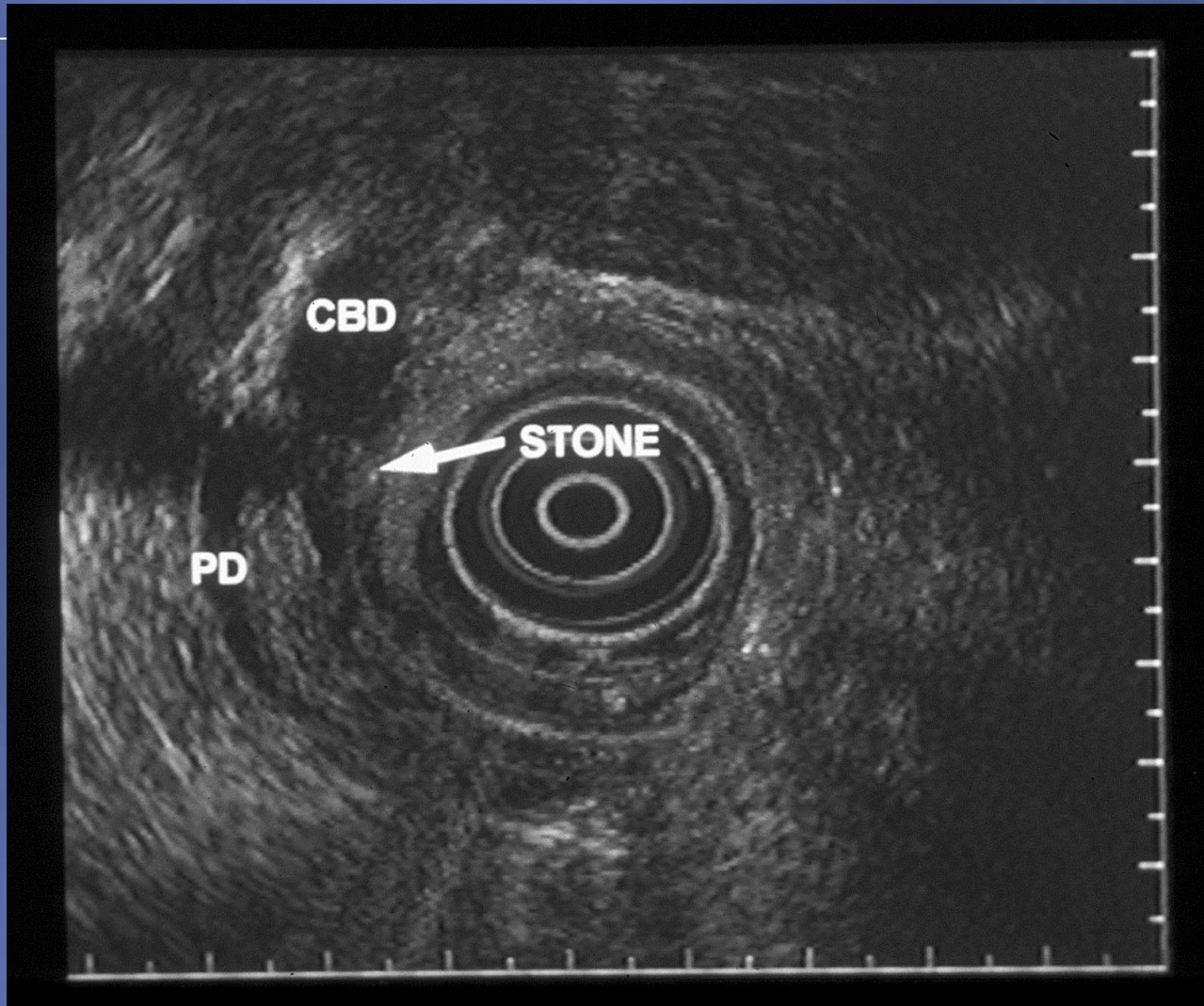
- ❖ Superposable à la MRI (papille, petit calculs)

  - *Aubé et al, 2003,*

- ❖ Combinée à la CPRE ++

  - Traitement immédiat

  - Cout efficace en cas de P moyenne de LVBP *Prat et al, Canto et al.*



# Stratégies avant cholecystectomie

|            | Asymptomatique | Pancreatite<br>Cholestase | Angiocholite      |
|------------|----------------|---------------------------|-------------------|
| P lithiase | 3 %            | 30 %                      | 80 %              |
| Action     | stop           | EUS<br>puis ERCP          | ERCP<br>Pas d'EUS |

# Détection tumeur

❖ Borbath 2005

**Table 2.** Respective sensitivities and specificities of EUS, PET and MRI for tumor detection

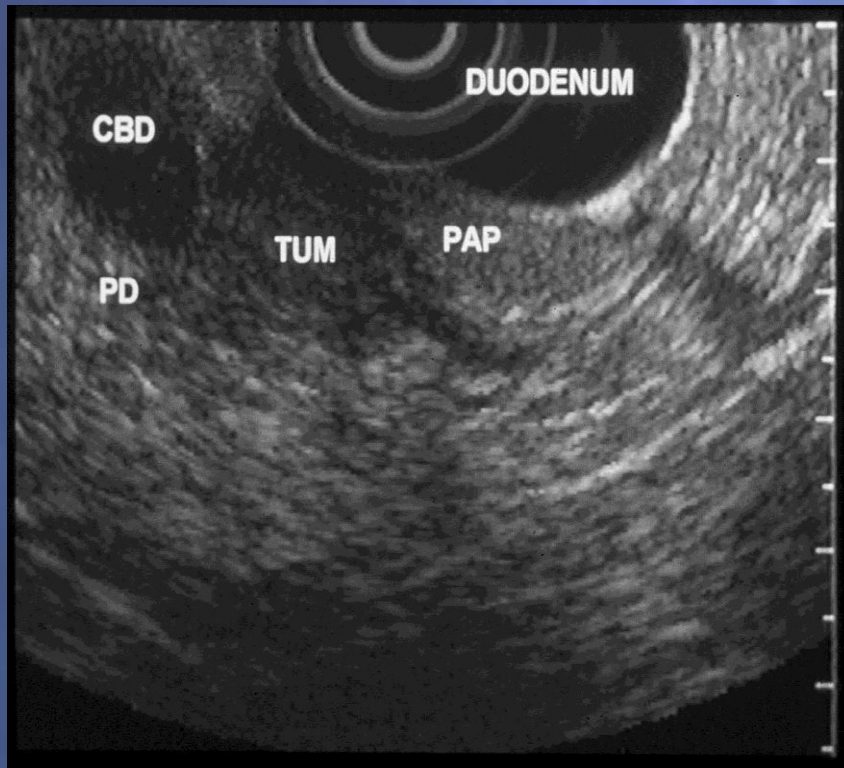
|                  | EUS                      | PET                                    | MRI                      |
|------------------|--------------------------|----------------------------------------|--------------------------|
| Sensitivity, %   | 98 (47/48)               | 87.5 (42/48)                           | 87.5 (42/48)             |
| Tumors <25 mm, % | 100 (12/12) <sup>a</sup> | 83 (10/12)                             | 50 (6/12)                |
| Tumors >25 mm, % | 97 (35/36)               | 89 (32/36)                             | 100 (36/36) <sup>a</sup> |
| Specificity, %   | 82 (9/11)                | 54.5 (6/11)<br>66.6 (6/9) <sup>b</sup> | 91 (10/11)               |

## Diagnostic cancer du pancréas (%)

|                      | EUS | US | CT | ANGIO |
|----------------------|-----|----|----|-------|
| All cancers (No=333) | 94  | 69 | 74 | 91    |
| Tumors < 3 cm        | 100 | 59 | 53 | 85    |

*Palazzo et al. 1998*

# Papillary and pancreatic tumors



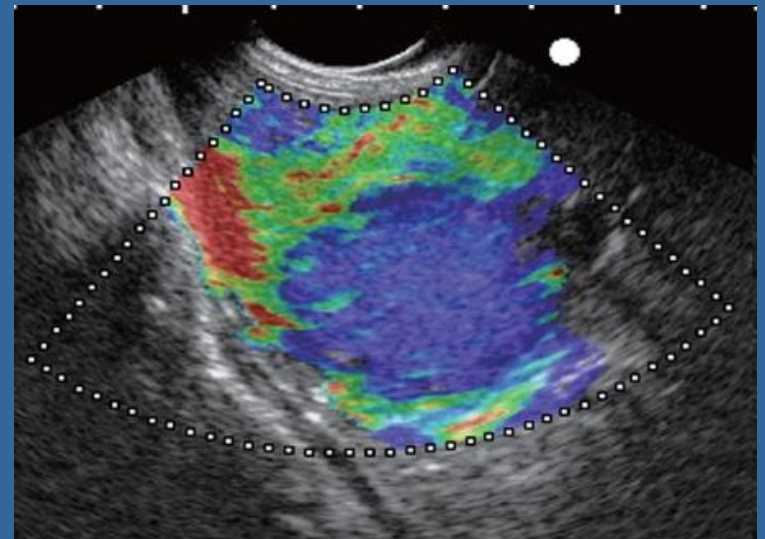
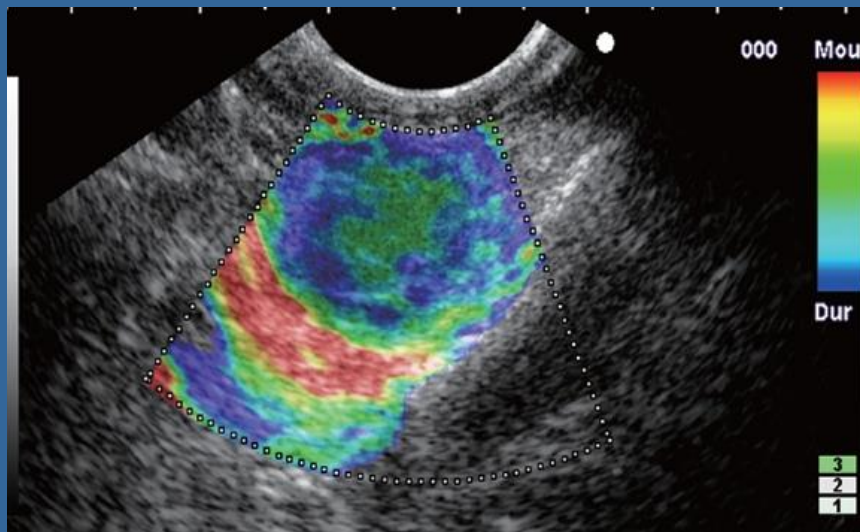
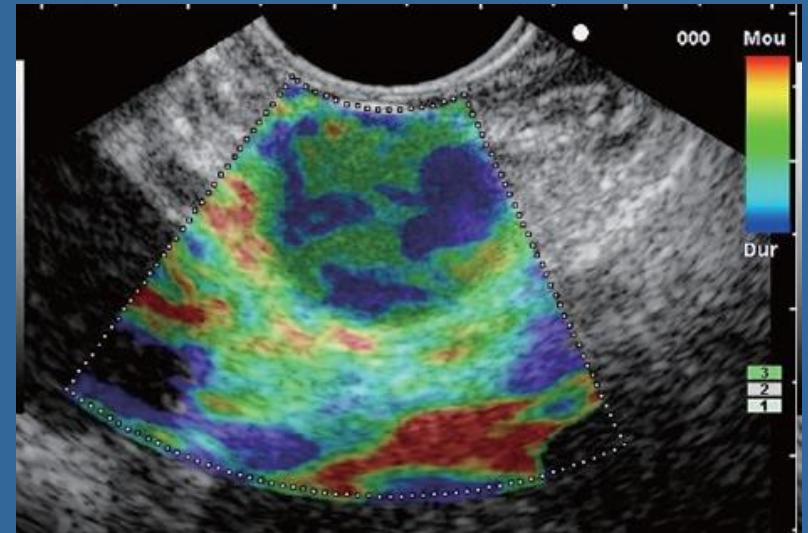
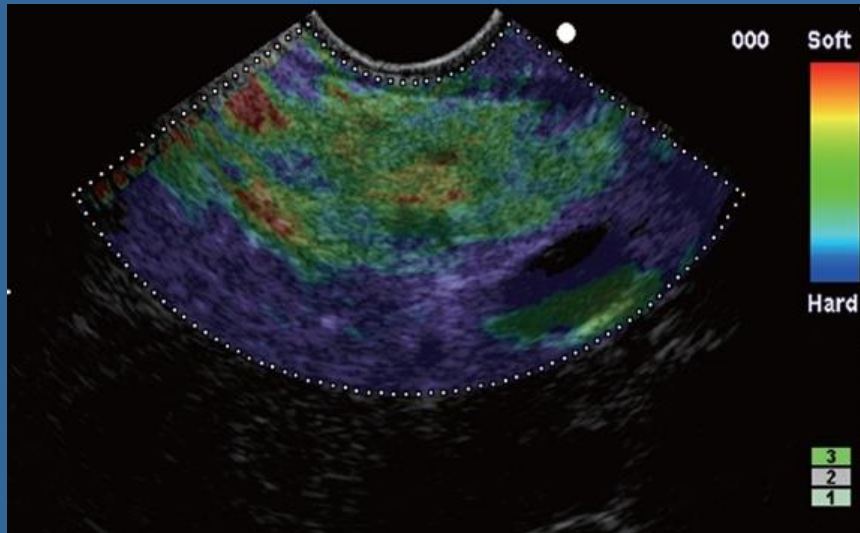
# Les techniques EUS pour améliorer le diagnostic ?

- ❖ 3D ?
- ❖ Echoendoscopie de contraste ?
- ❖ Elastographie ?
- ❖ Endomicroscopie ?
- ❖ Ponction cytologique

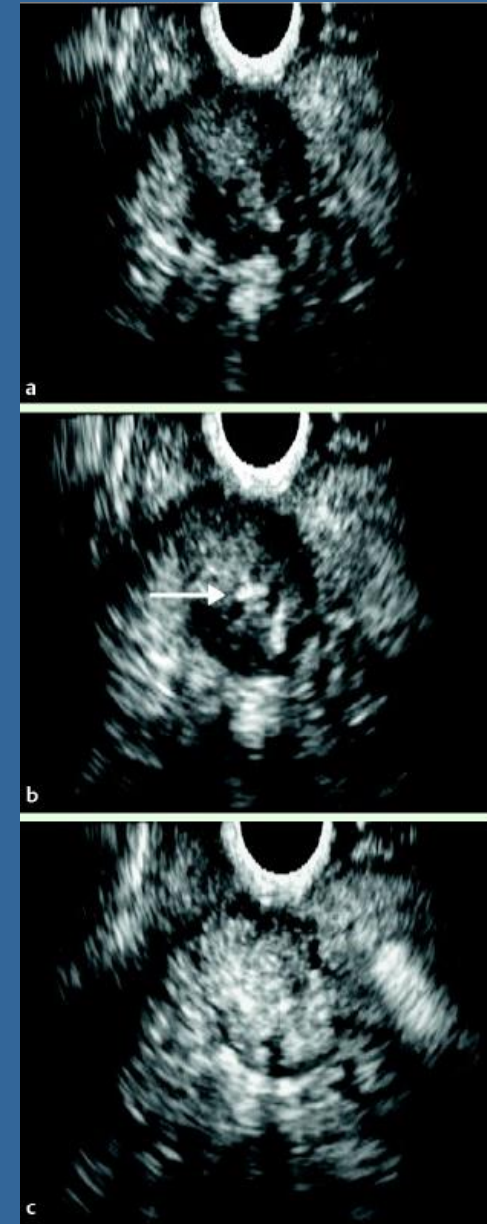
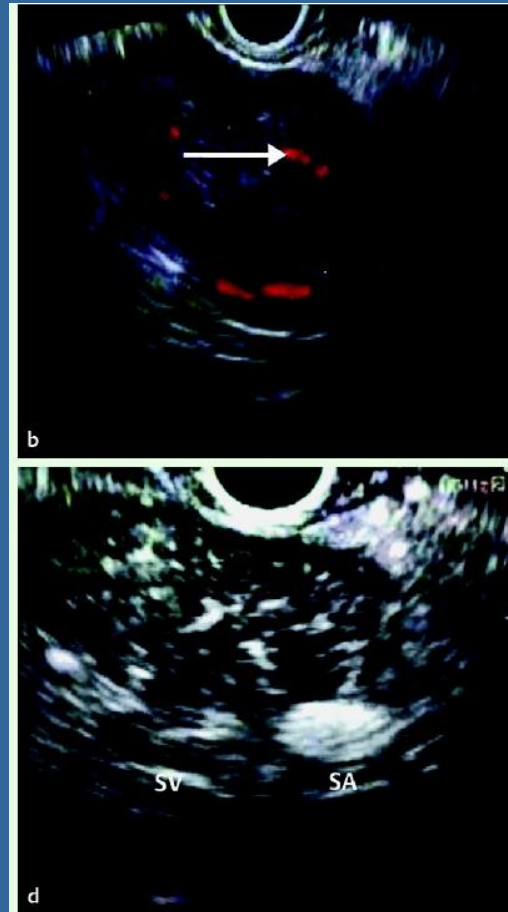
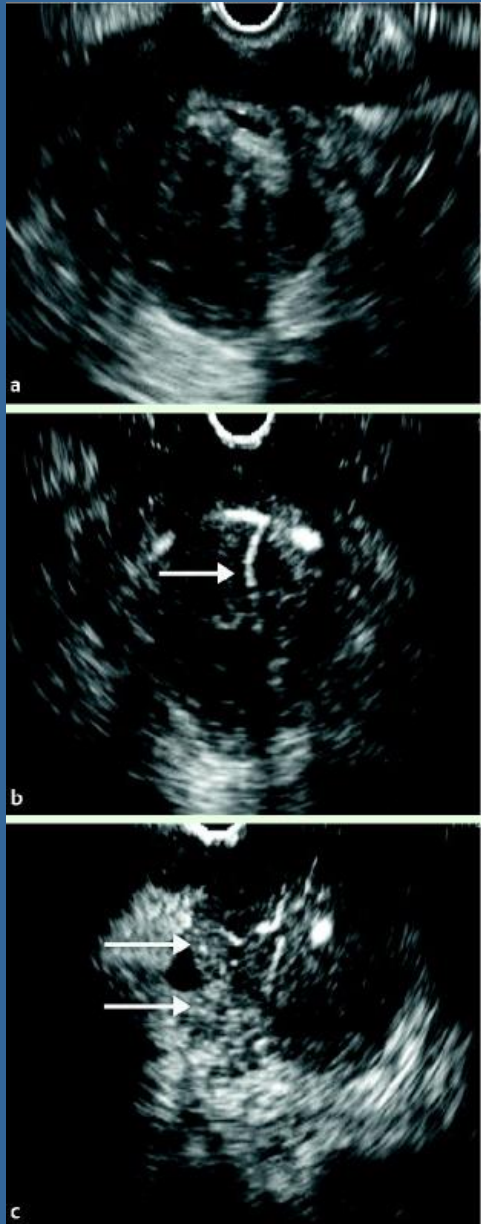
# Echoendoscopie de contraste

- ❖ Evaluation de la vascularisation en dynamique
- ❖ Marqueur de flux sanguin : microbulles
- ❖ Aspects observés :
  - Hypovasculaire (cancer)
  - Isovasculaire
  - Hypervasculaire avec washout rapide (TNE)
  - Avasculaire (kystes)

# Elastographie



# Contrast EUS



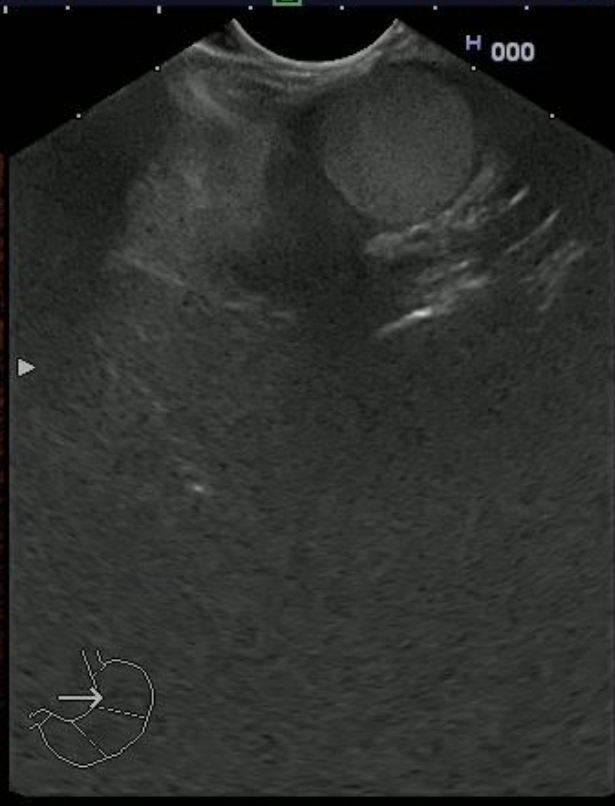
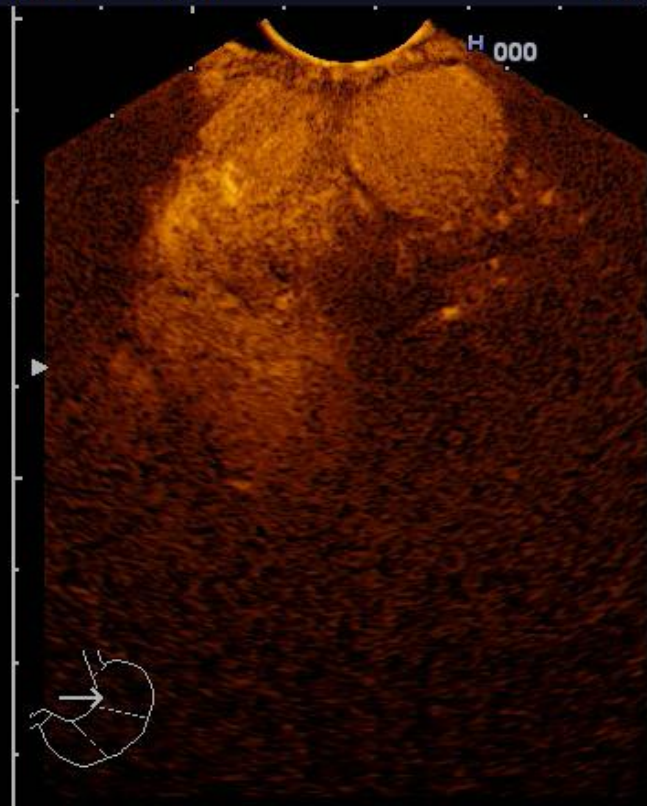
ADK    AIP    NET  
95% VPP et VPN  
Endoscopy 2014



**HITACHI** Hi Vision Echoendoscopie IGR  
 IM:26 BEN

P:24% MI:0.14  
 2013 04466 GK

00:13  
 10-AVR-13 12:09:46



GB:25 65/+3/6/0/C/2

3870UTK dCHI-L-P Contraste-Ponctio 85mm

GB:35 65/+3/4/1/C/2

3870UTK IF

Contraste-Ponctio 85mm

1Contraste

2Alterné

3Eff. chrono

4MTI

5Flash L

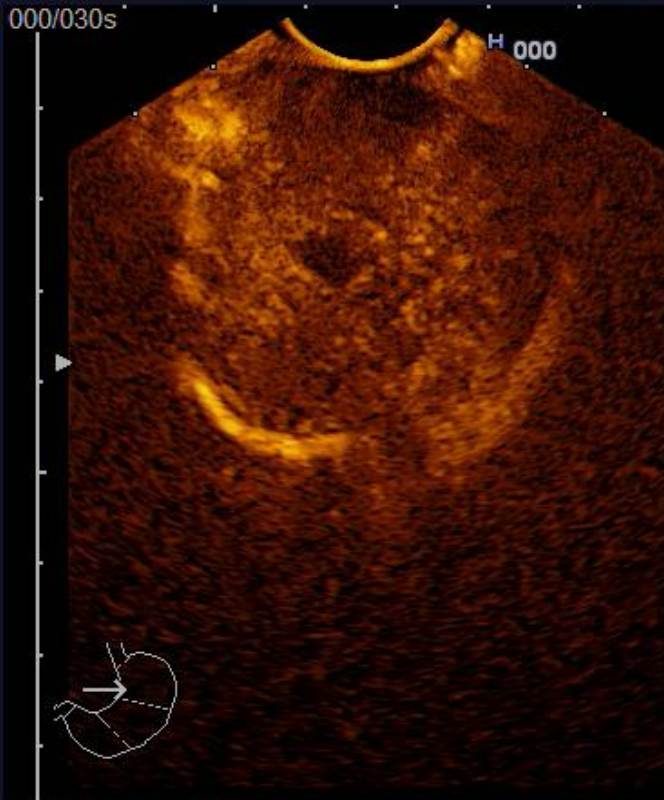
6Flash

7Vers IF



**HITACHI** Hi Vision Echoendoscopie IGR  
 IM:26 BEN P:24% MI:0.14 00:27 10-AVR-13 11:44:24  
 2013 04466 GK

000/030s



GB:25 65/+3/6/0/C/2

3870UTK dCHI-L-P Contraste-Ponctio 85mm

GB:30 65/+3/4/1/C/2

3870UTK IF

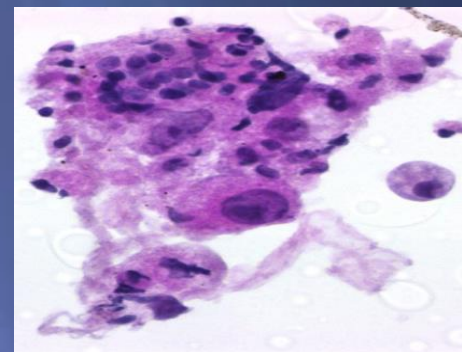
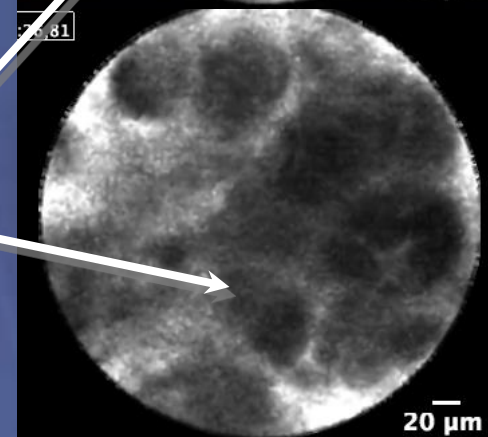
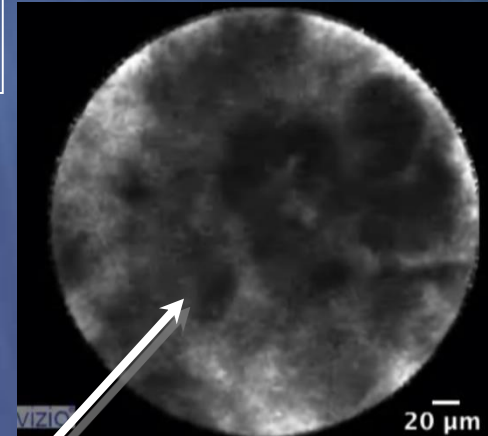
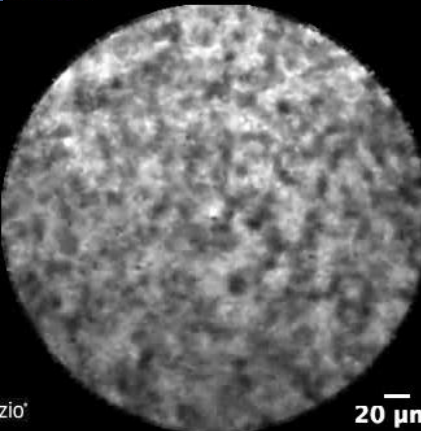
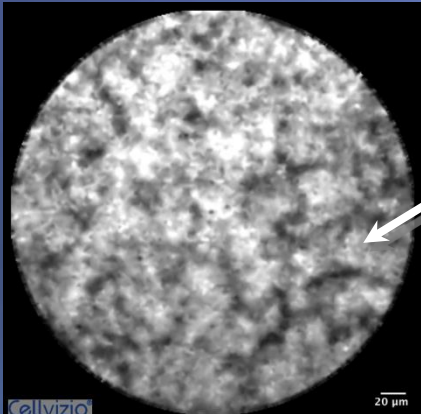
Contraste-Ponctio 85mm

1Contraste 2Alterné 3Eff. chrono 4MTI 5Flash I. 6Flash 7Vers IF

# Endomicroscopy

Reticular structure

Glandular structures



Grant : Giovaninni et al.

# Bilan d'extension tumorale

# Cancer du pancréas

- ❖ T 82%
- ❖ N 65-75%
- ❖ N2 ?
- ❖ Extension vasculaire ++

# Cancer du pancréas : 2 facteurs pronostiques majeurs

## ❖ Marge rétropéritonéale

→ AMS, VMS, Confluent MP

## ❖ Atteinte ganglionnaire N3

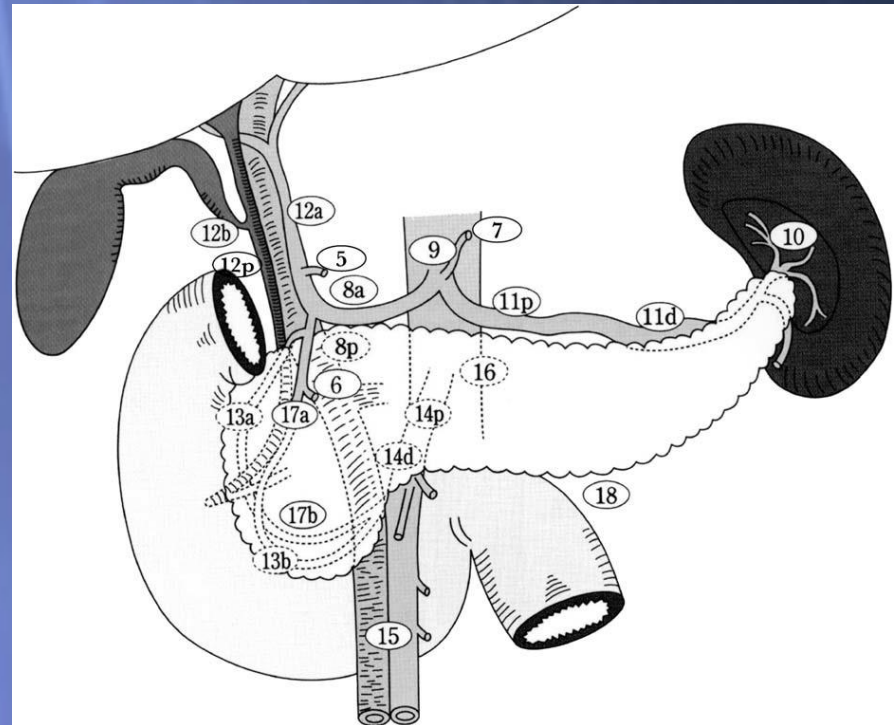
→ Péripancréatique : 50%

→ Sus claviculaire gauche : 2%

→ Mediastinal postérieur: 5%

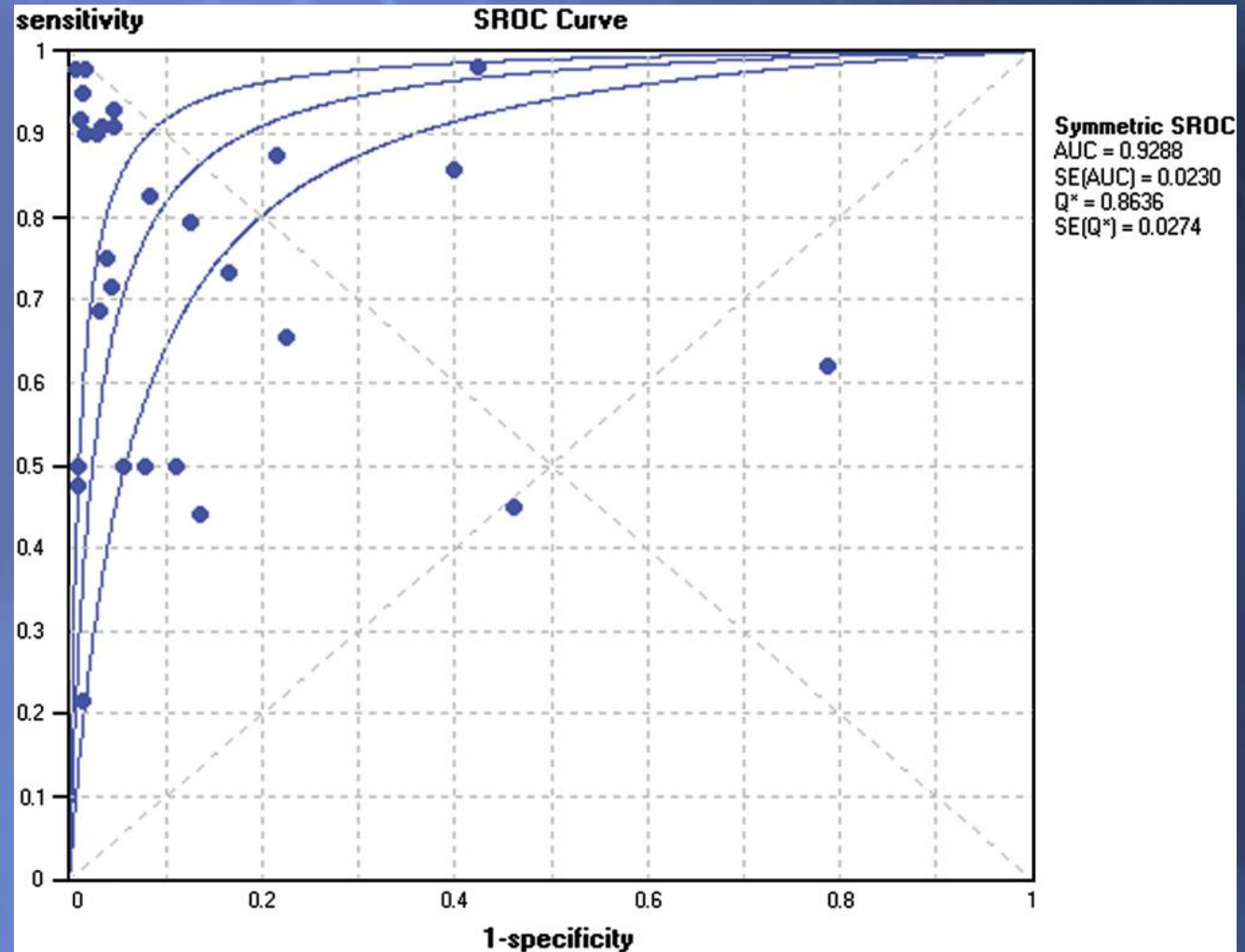
→ Coeliaque : 15%

→ Lombo-aortique : 20%



# Metaanalyse : cancer du pancréas invasion vasculaire

*Puli  
GIE  
2007*



# Diagnostic et bilan d'extension

## Hunt 2002

| Detection |       | Accuracy for resectability |       | Sensitivity for vascular invasion |       |
|-----------|-------|----------------------------|-------|-----------------------------------|-------|
| EUS       | CT    | EUS                        | CT    | EUS                               | CT    |
| 27/27     | 25/27 | 20/22                      | 19/22 | 6/7                               | 7/7   |
| 33/34     | 26/34 | 25/30                      | 23/30 | 13/16                             | 9/16  |
|           |       | 30/31                      | 25/31 | 16/16                             | 10/16 |
| 29/31     | 16/31 | 16/16                      | 13/16 | 6/6                               | 3/6   |
| 97%       | 73%   | 91%                        | 83%   | 91%                               | 64%   |
| <0.001    |       | 0.02                       |       | <0.001                            |       |

# Cancer du pancreas : extension vasculaire

## ❖ Critères habituels d'envahissement vasculaire

- Bourgeon intravasculaire
- Vaisseau absent
- Extension  $> 180^\circ$
- Disparition d'interface
- Hypertension portale (cavernome)

# Tumeurs borderline

- ❖ Atteinte du confluent ou de la VMS

  - < 2 cm de hauteur

  - < 180°

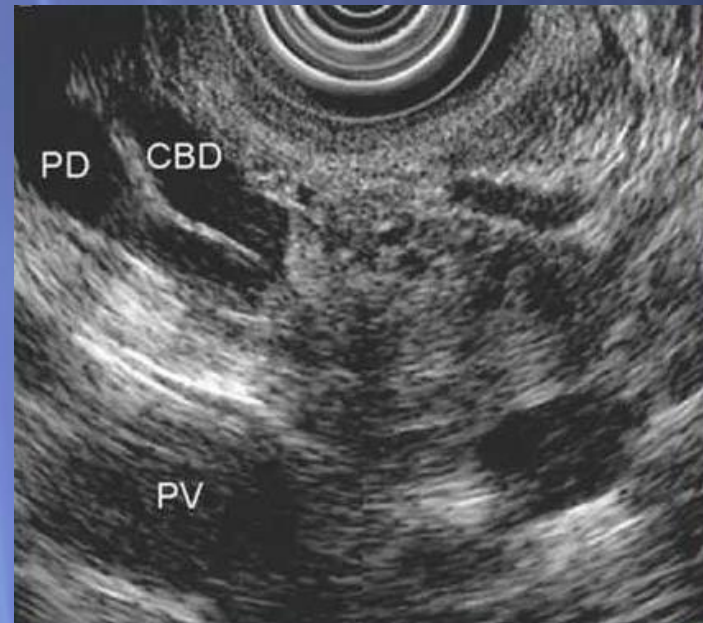
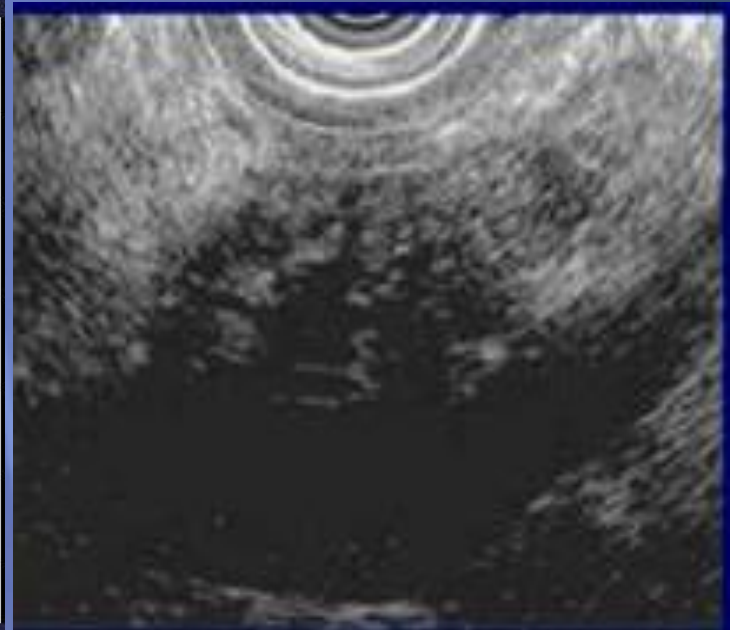
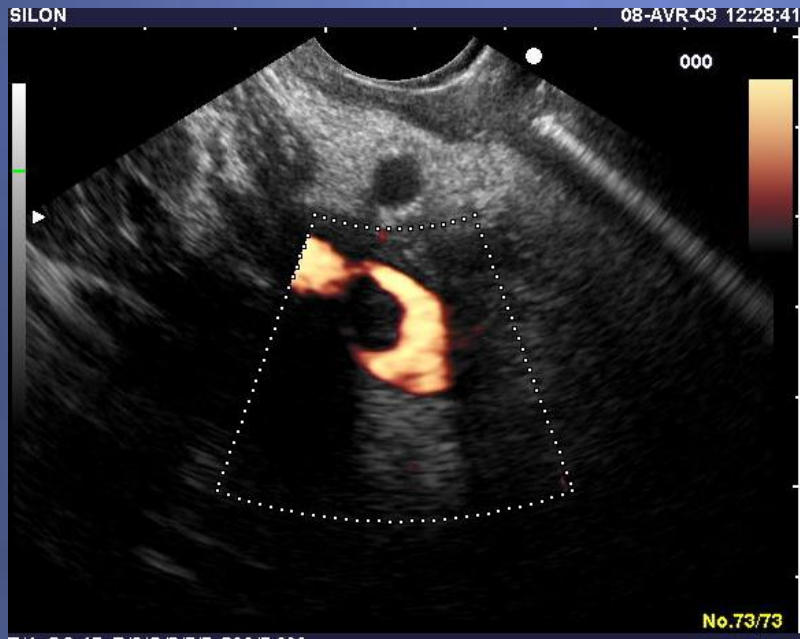
- ❖ Thrombose VMS courte

- ❖ Atteinte AMS < 180°

- ❖ Atteinte AH réparable < 180°

- ❖ *Intérêt d'un traitement néo-adjuvant ?*

*Gigot et , CFE, 2012*



# Ganglions lombo-aortiques

## ❖ Murakami 2010

|         | Absents | Présents |
|---------|---------|----------|
| S 2 ans | 12%     | 49%      |
| S 5 ans | 0%      | 23%      |
| Mediane | 12 mo   | 15 mo    |

## ❖ Donc : ponctionner les ganglions N2 ou N3

# Oesophagus 7<sup>th</sup> edition

## TNM definitions: AJCC = UICC

|     |                                                                                                                                                         |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tis | Carcinoma in situ /High-grade dysplasia                                                                                                                 |
| T1  | lamina propria or submucosa<br>T1a lamina propria or muscularis mucosae<br>T1b submucosa                                                                |
| T2  | muscularis propria                                                                                                                                      |
| T3  | adventitia                                                                                                                                              |
| T4  | adjacent structures<br>T4a pleura, pericardium, diaphragm, or adjacent peritoneum<br>T4b other adjacent structures, e.g. aorta, vertebral body, trachea |

|                             |                                   |
|-----------------------------|-----------------------------------|
| N0                          | No regional lymph node metastasis |
| N1                          | 1 to 2 regional lymph nodes       |
| N2                          | 3 to 6                            |
| N3                          | >6                                |
| [N1 was site dependent]     |                                   |
| M - Distant Metastasis      |                                   |
| M1                          | Distant metastasis                |
| [M1a,b were site dependent] |                                   |

Changes from 6<sup>th</sup> edition

# Stomach 7<sup>th</sup> edition

T1 Lamina propria, submucosa

T1a Lamina propria

T1b Submucosa

T2 Muscularis propria

T3 Subserosa (*was T2b*)

T4a Perforates serosa (*was T3*)

T4b Adjacent structures

N1 1 to 2 nodes

N2 3 to 6 nodes (*was N1*)

N3a 7 - 15 nodes (*was N2*)

N3b 16 or more (*was N3*)

Changes from 6<sup>th</sup> edition

Stage IA T1 N0

Stage IB T2 N0

T1 N1

Stage IIA T3 N0

T2 N1

T1 N2

Stage IIB T4a N0

T3 N1

T2 N2

T1 N3

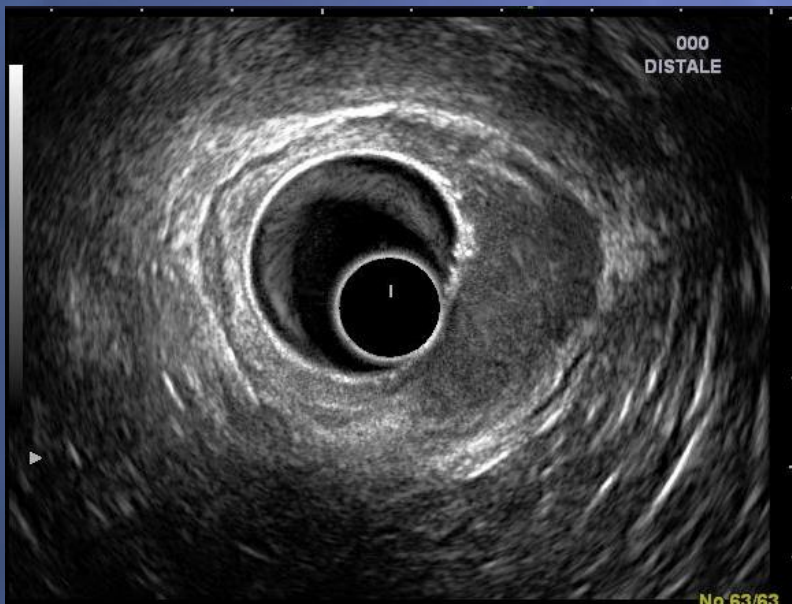
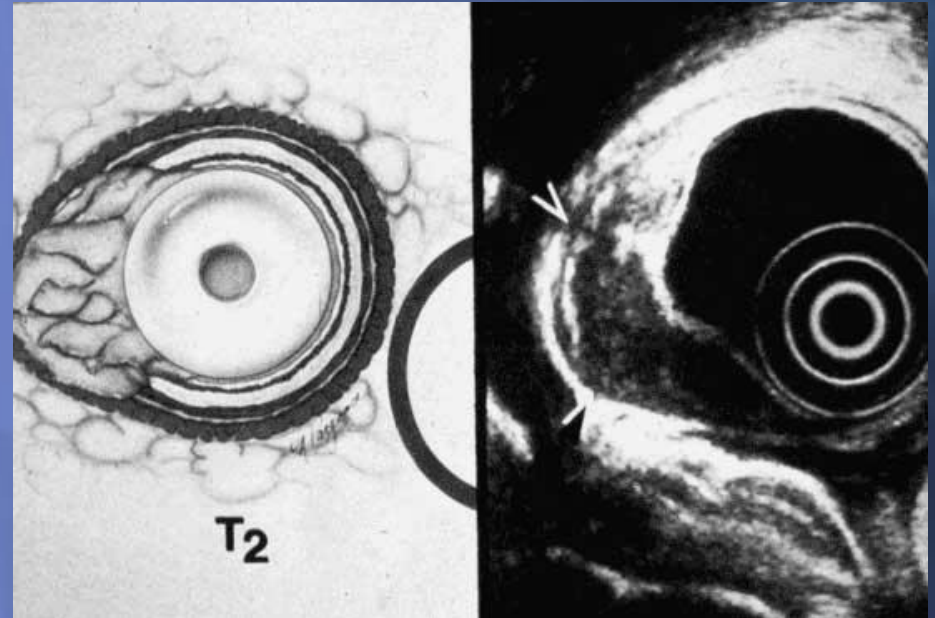
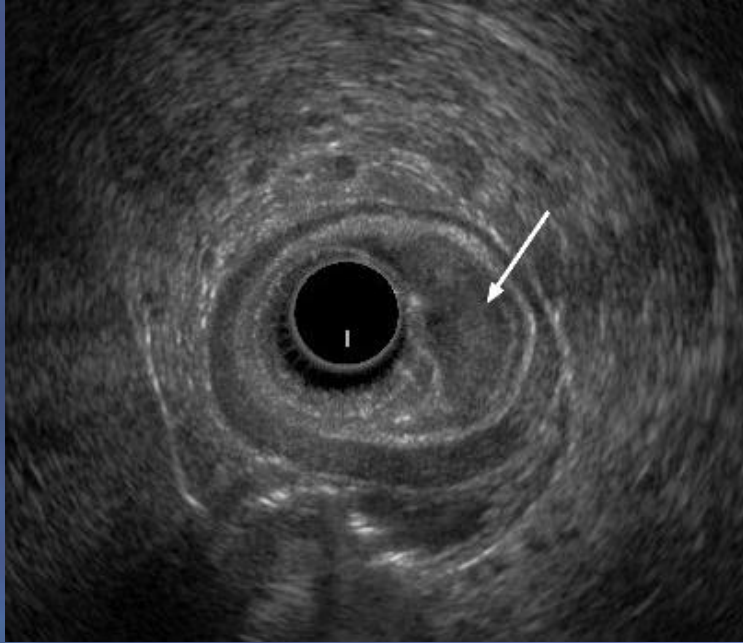
Stage IIIA T4a N1

T3 N2

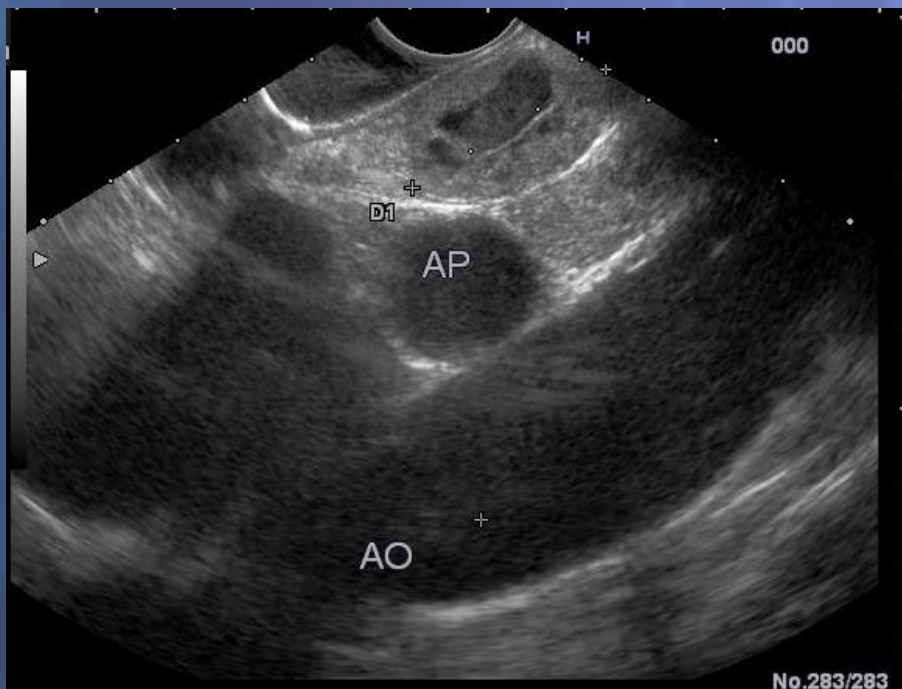
T2 N3

Stages IIIB, IIIC, IV...

Stages: most  
changed



# GANGLIONS



# Ganglions

|       | Mediastinaux | Coeliaques |
|-------|--------------|------------|
| Se    | 79 %         | 83 %       |
| Sp    | 63 %         | 98 %       |
| Kappa | 0.50         | 0.73       |

- ❖ *Catalano et al. Gastrointest endosc 1999;50:352-6*
- ❖ *Burtin et al. Gastrointest Endosc 1996;43:20-4*

# Metaanalyse : cancer de l'oesophage

*Puli World J Gastroenterol 2008*

|    | <b>Pooled<br/>sensitivity (%)</b> | <b>Pooled<br/>specificity (%)</b> | <b>Pooled<br/>LR +</b> | <b>Pooled<br/>LR-</b> | <b>Pooled<br/>DOR</b>  |
|----|-----------------------------------|-----------------------------------|------------------------|-----------------------|------------------------|
| T1 | 81.6<br>(77.8-84.9)               | 99.4<br>(99.0-99.7)               | 44.4<br>(15.5-127.4)   | 0.2<br>(0.2-0.4)      | 221.5<br>(118.5-413.9) |
| T2 | 81.4<br>(77.5-84.8)               | 96.3<br>(95.4-97.1)               | 16.6<br>(9.3-29.7)     | 0.2<br>(0.2-0.3)      | 90.7<br>(48.3-170.5)   |
| T3 | 91.4<br>(89.5-93.0)               | 94.4<br>(93.1-95.5)               | 12.5<br>(7.7-20.3)     | 0.1<br>(0.1-0.2)      | 145.2<br>(90.3-233.4)  |
| T4 | 92.4<br>(89.2-95.0)               | 97.4<br>(96.6-98.0)               | 25.4<br>(13.7-47.0)    | 0.1<br>(0.1-0.2)      | 250.0<br>(145.2-430.5) |

# Metaanalyse : ganglions et cancer de l'oesophage

*British J cancer 2008*

| <b>Disease</b>                  | <b>Investigation</b> | <b>Pooled sensitivity<br/>(95% CI)</b> | <b>Pooled specificity<br/>(95% CI)</b> |
|---------------------------------|----------------------|----------------------------------------|----------------------------------------|
| Regional lymph node metastases  | EUS                  | 0.80 (0.75–0.84)                       | 0.70 (0.65–0.75)                       |
| Regional lymph node metastases  | CT                   | 0.50 (0.41–0.60)                       | 0.83 (0.77–0.89)                       |
| Regional lymph node metastases  | FDG-PET              | 0.57 (0.43–0.70)                       | 0.85 (0.76–0.95)                       |
| Celiac lymph node metastases    | EUS                  | 0.85 (0.72–0.99)                       | 0.96 (0.92–1.00)                       |
| Abdominal lymph node metastases | CT                   | 0.42 (0.29–0.54)                       | 0.93 (0.86–1.00)                       |
| Distant metastases              | CT                   | 0.52 (0.33–0.71)                       | 0.91 (0.86–0.96)                       |
| Distant metastases              | FDG-PET              | 0.71 (0.62–0.79)                       | 0.93 (0.89–0.97)                       |

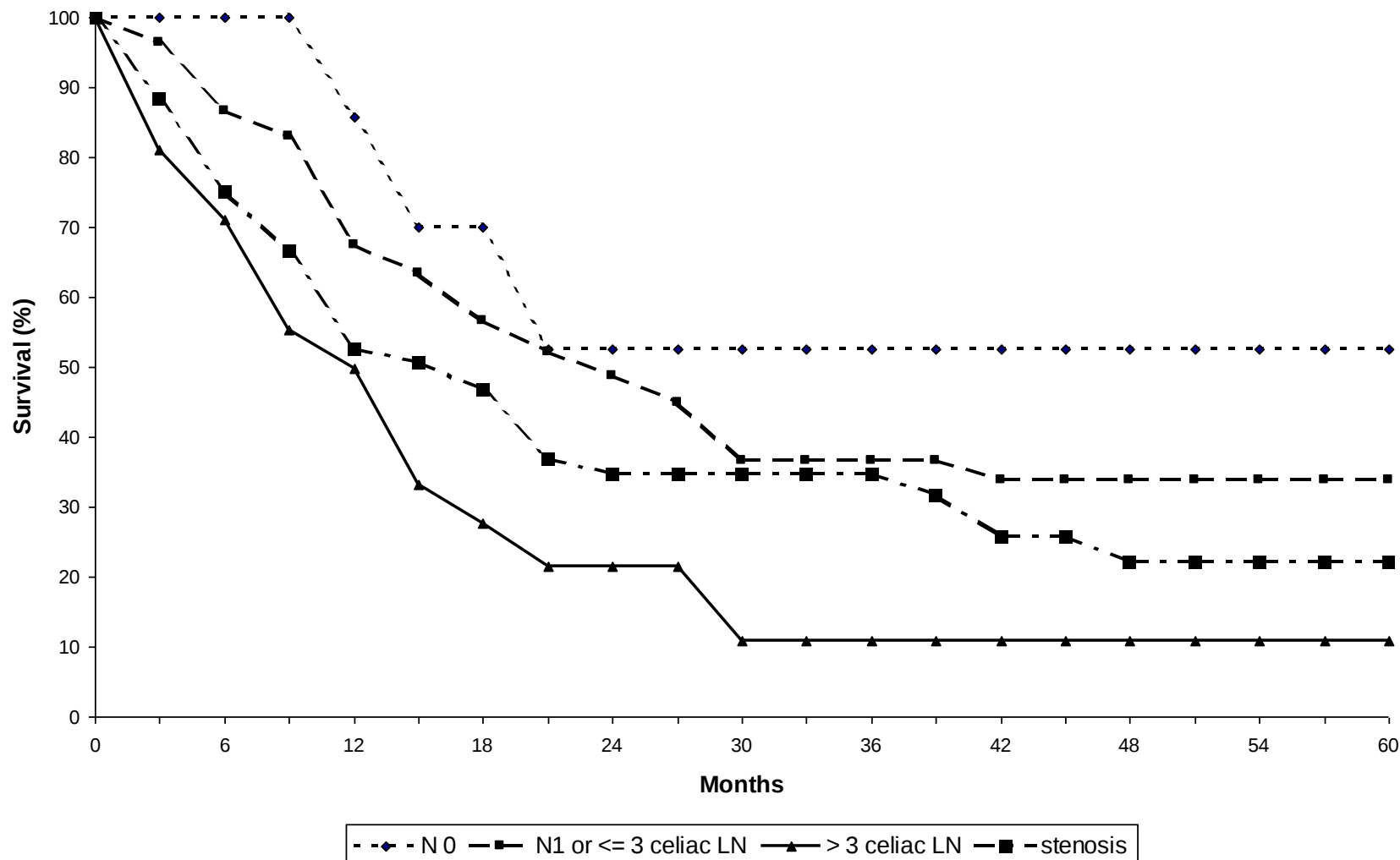
# Ganglions : pronostic

- ❖ Peu d'études multivariées
- ❖ Stade T : ne prédit pas le pronostic
- ❖ Stade N : prédicteur du pronostic
  - > 3 gg médiastin
  - > 3 gg coeliaques
- ❖ Ponction à l'aiguille fine ?
  - Sièges inattendus
  - Associés à une petite tumeur

*Giovannini et al. Endoscopy 1999; 31:536-40*

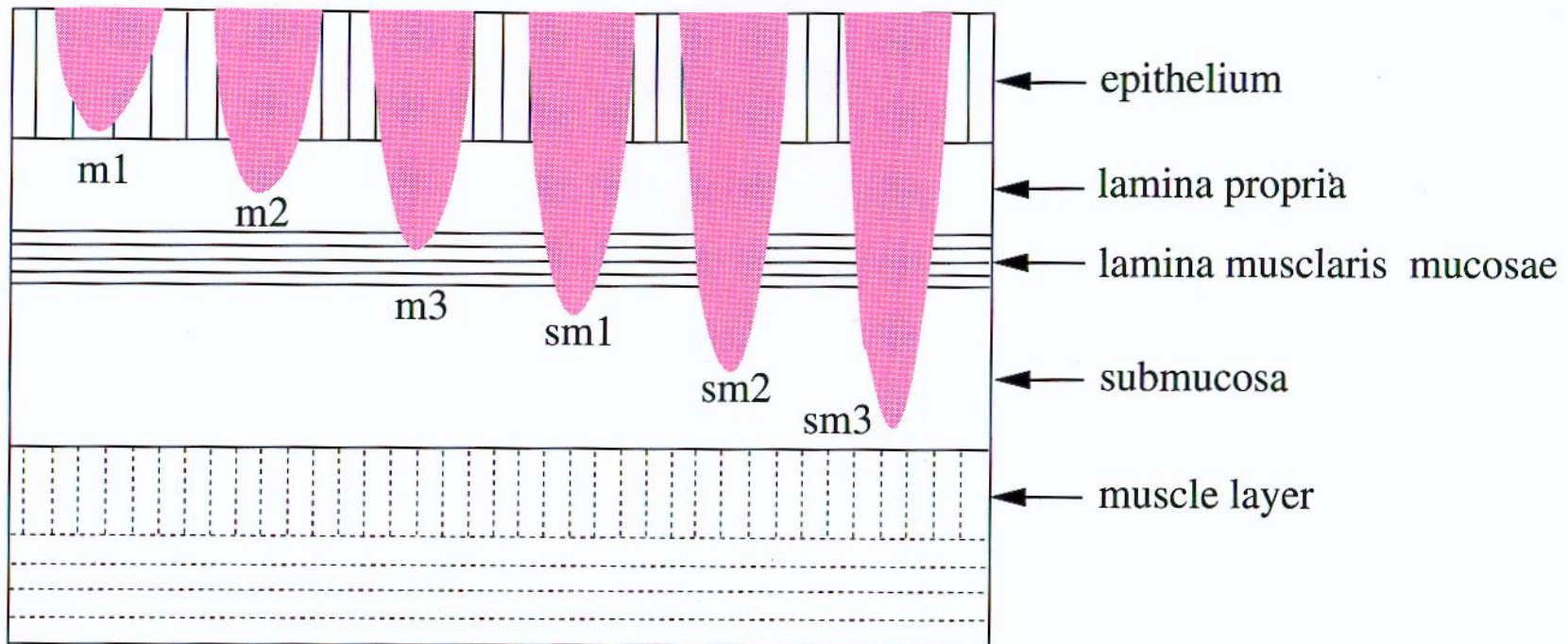
*Burtin et al. In press*

# Survies cancer œsophage avancé



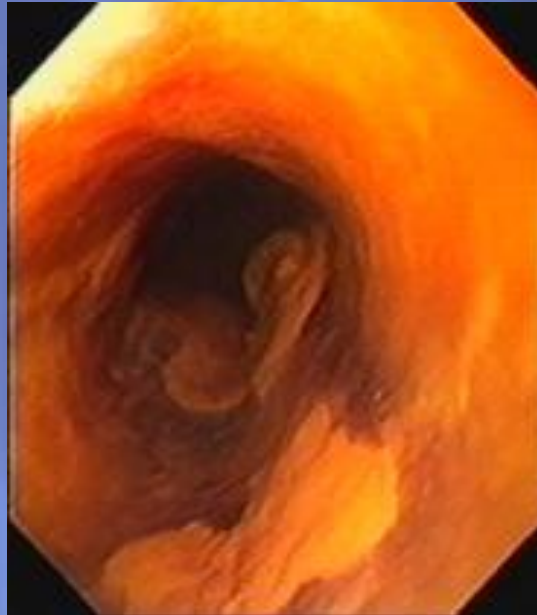
# Tumeurs superficielles

0 %   0 %   2 %   10 %   30 %   60 %   Lymphatic extent

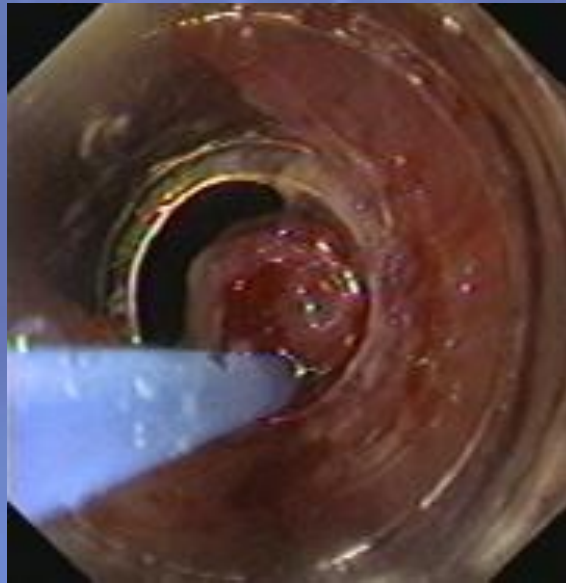


**Fig. 1-3** Classification of depth of invasion of superficial esophageal cancer (Japanese Society of Esophageal Diseases, 1992).

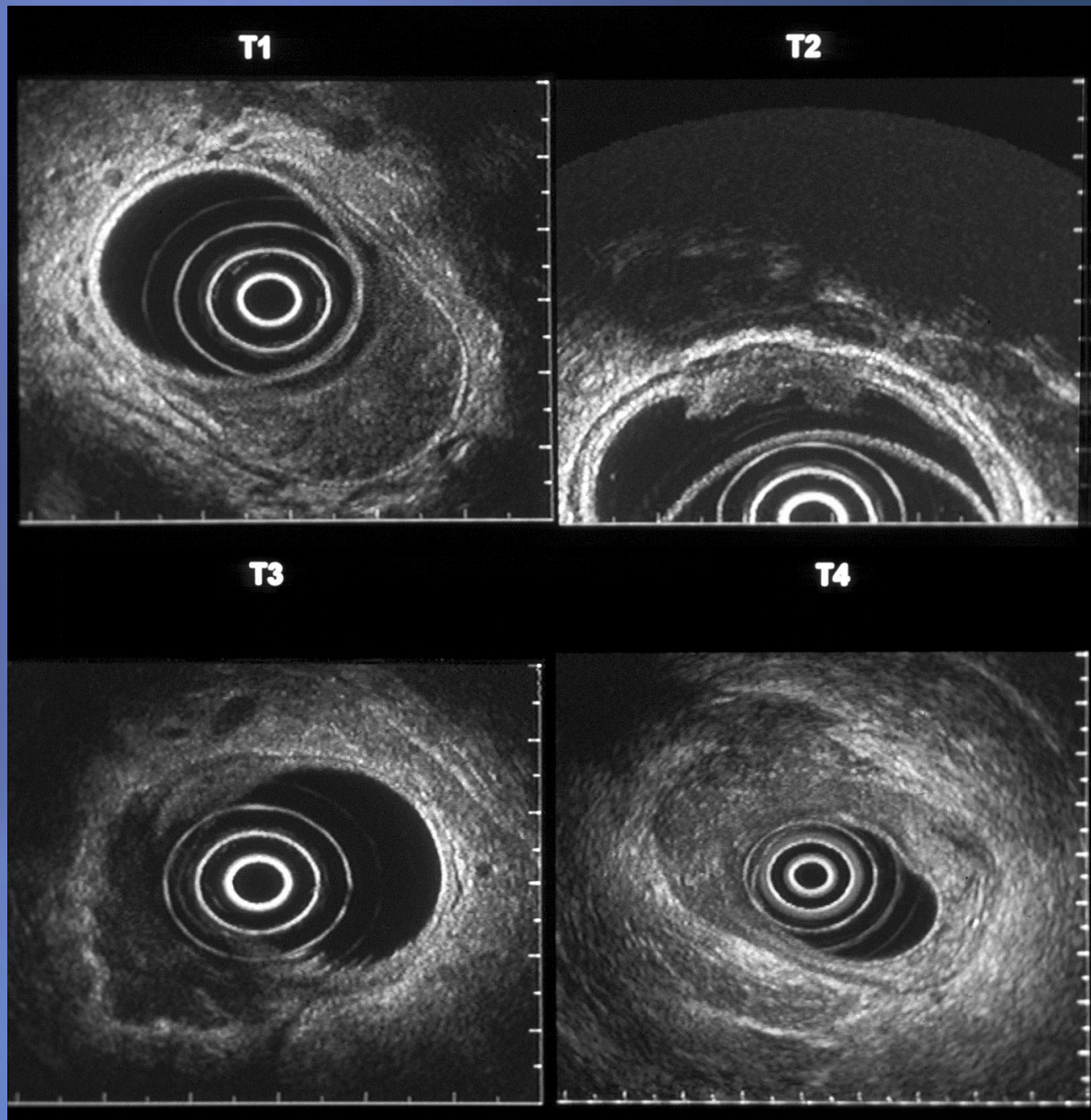
# Mucosectomie endoscopique



# Résection muqueuse endoscopique



# Tumeurs rectales



## Colon - Rectum – 7<sup>th</sup> edition

**T4** Tumour directly invades other organs or structures and/or perforates visceral peritoneum

T4a perforates visceral peritoneum

T4b directly invades other organ or structures

**M1** Distant metastasis

M1a one organ

M1b > one organ or peritoneum

Basic categories unchanged

Subdivisions expanded

**N1** Metastasis in 1 to 3 regional lymph nodes

N1a 1 node

N1b 2 – 3 nodes

N1c satellites in subserosa, *without* regional nodes\*

**N2** Metastasis in 4 or more regional lymph nodes

N2a 4 – 6 nodes

N2b 7 or more nodes

Basic categories unchanged

Subdivisions expanded

Changes from 6<sup>th</sup> edition

# Tumeurs neuroendocrines



# Carcinoids (NET) – 7<sup>th</sup> edition

## Gastrointestinal

### Appendix

- T1  $\leq 2$  cm
- T2  $> 2 - 4$  cm; cecum
- T3  $> 4$  cm; ileum
- T4 Perforates peritoneum; other organs, structures

### Small Intestine

- T1 Lam propria/ submucosa and  $\leq 1$  cm
- T2 Muscularis propria or  $> 1$  cm
- T3 Jejunal, ileal: subserosa.  
Ampullary, duodenal: pancreas or retroperitoneum`
- T4 Perforates serosa; adjacent structures

### Stomach

- Tis  $< 0.5$  mm confined to mucosa
- T1 Lam propria or submucosa &  $\leq 1$  cm
- T2 Muscularis propria or  $> 1$  cm
- T3 Subserosa
- T4 Perforates serosa; adjacent structures

### Large Intestine

- T1 Lamina propria or submucosa or  $\leq 2$  cm
  - T1a  $\leq 1$  cm; T1b 1 to 2 cm
- T2 Muscularis propria or  $> 2$  cm
- T3 Subserosa, or pericorectal tissues
- T4 Perforates serosa; adjacent structures

# Endocrine tumors : EES vs SRS

|                         | <b>Gastrinome</b> | <b>Insulinome</b> |
|-------------------------|-------------------|-------------------|
| <b>EUS seule</b>        | <b>79%</b>        | <b>93%</b>        |
| <b>octréoscan</b>       | <b>86%</b>        | <b>14%</b>        |
| <b>EUS + octréoscan</b> | <b>100%</b>       | <b>-</b>          |

*Zimmer et coll. Gut 1996;39:562-568*

**En 2014 : Intérêt majeur de**  
**FNA**  
**Echo de contraste**

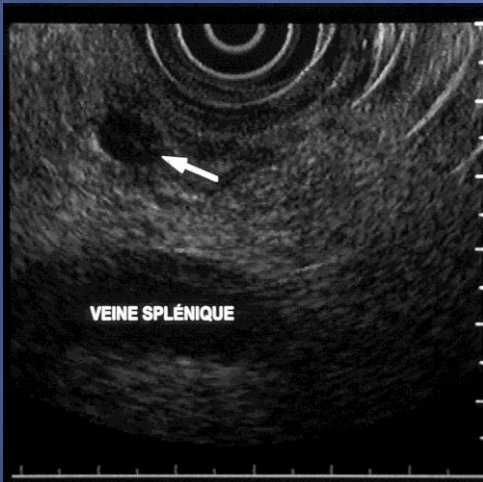
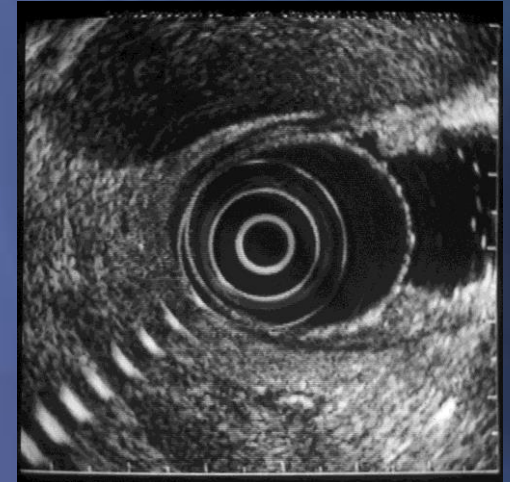
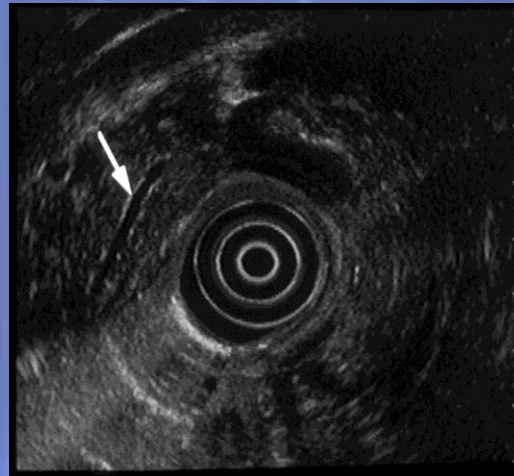
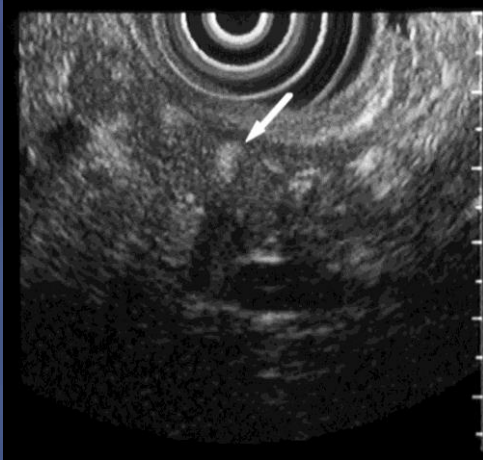
# Comparaison EUS IRM

- ❖ **Tumeur manquée : 15 %**  
EUS : siège caudal  
RMI : Taille < 10 mm
- ❖ **Nombre de tumeurs**  
EUS > RMI
- ❖ **Recommandation GTE : faire les deux**

# Pancréatite chronique

- ❖ Bonne concordance interobservateurs
- ❖ Diagnostic précoce, avant TDM et CPRE
- ❖ Non indiqué à un stade avancé
- ❖ Sauf pour le bilan des calculs obstructifs

# Pancréatite chronique



# Tumeurs kystiques

## ❖ Cystadénome séreux

→ Aspects typiques connus

- Calcifications
- Microkystes

→ Pas de risque de malignité

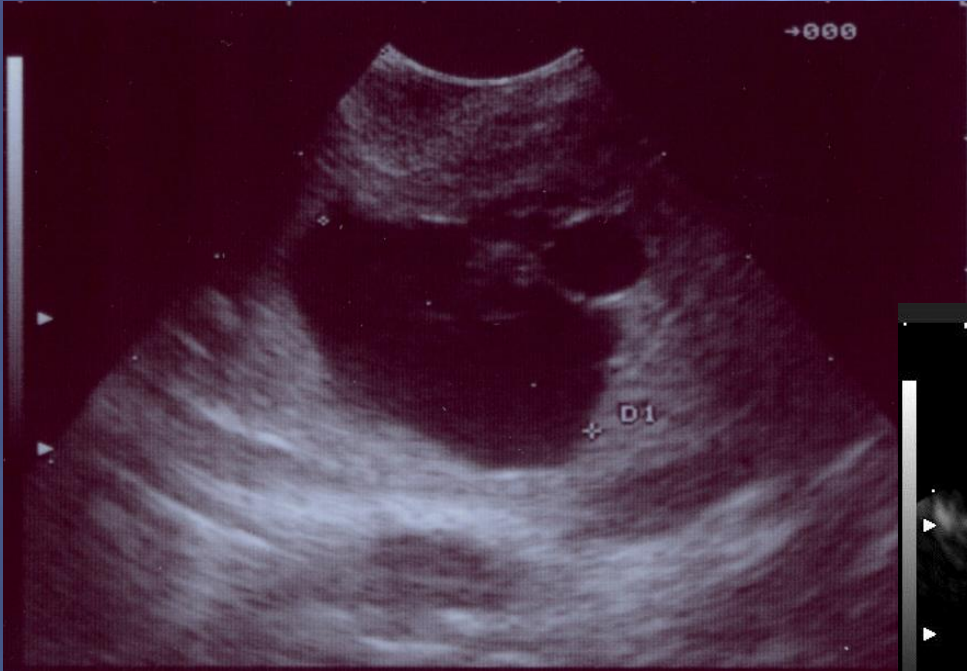
## ❖ Autres lésions kystiques

→ Fréquemment aspécifiques

→ Risque de malignité

→ PAF+++

# Tumeurs kystiques



# Analyse liquide

|                | Pseudokyste | CA séreux  | Autres *      |
|----------------|-------------|------------|---------------|
| <b>Amylase</b> | > 5000 U/L  | var        | var           |
| <b>CEA</b>     | var         | < 5 ng/mL  | > 400 ng/mL   |
| <b>CA 19.9</b> | var         | < 150 U/mL | > 50,000 U/mL |
| <b>CA 72.4</b> | bas         |            | > 40 U/mL     |

❖ \* Spécificité > 90 %

# Marqueurs intra kystiques

| Marqueur               | Diagnostic  | VPP  | VPN  |
|------------------------|-------------|------|------|
| Amylase > 5 000 U/L    | Pseudokyste | 85%  | 88%  |
| CA 19.9 > 50 000 U/mL  | TKM         | 67%  | 90%  |
| CEA > 400 ng/mL        | TKM         | 100% | 85%  |
| CEA < 5 ng/mL          | CS          | 54%  | 100% |
| CA 72.4 > 40 U/mL      | TKM         | 95%  | 85%  |
| Mucines M1 >1 200 U/mL | TKM         | 100% | 79%  |

# TIPMP

## ❖ Deux formes

- Canal principal : dégénérescence 50% - Chirurgie
- Canaux secondaires : dégénérescence 15% - Surveillance

## ❖ Ponction peu contributive au stade non dégénéré

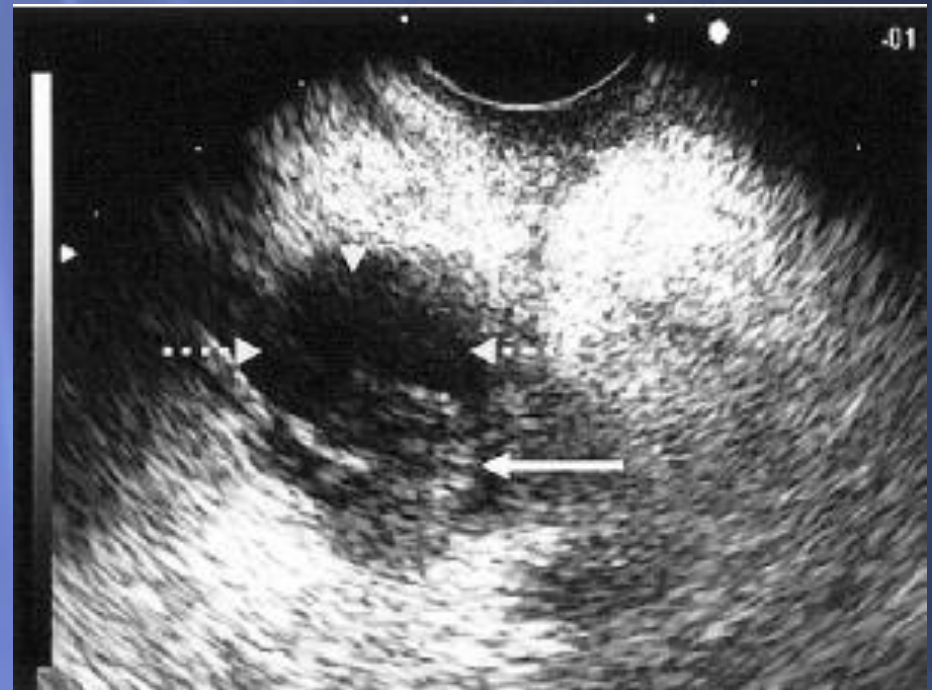
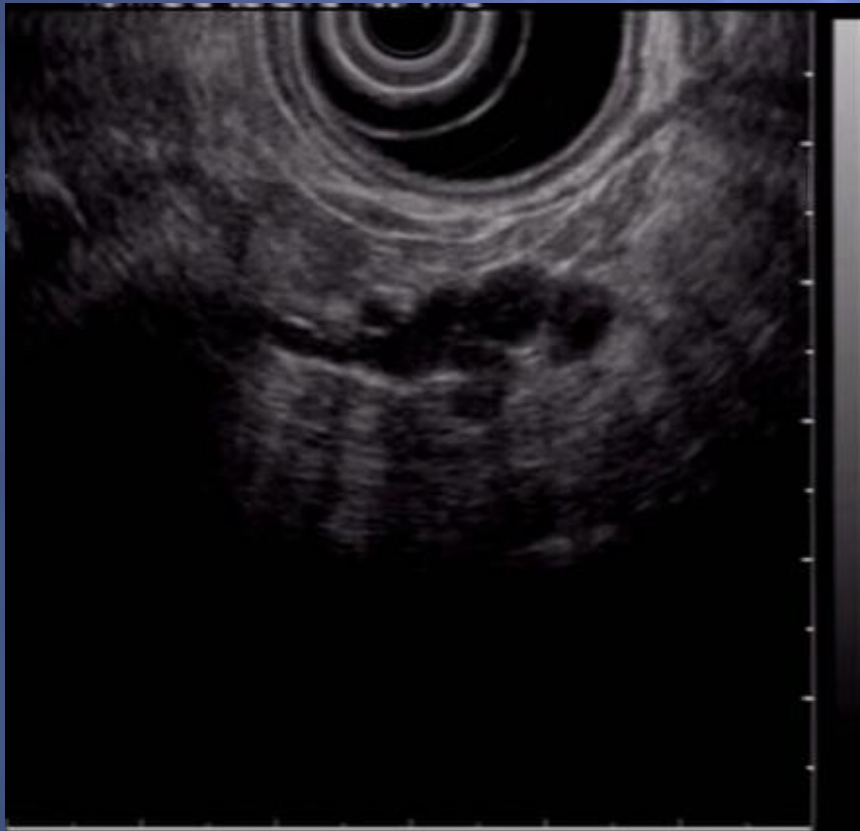
## ❖ Aspects morphologiques évocateurs

- IRM
- Echoendoscopie

## ❖ Ponction cytologique si

- Progression de diamètre
- Apparition de zones tissulaires (végétations, épaissement pariétal)

# TIPMPs



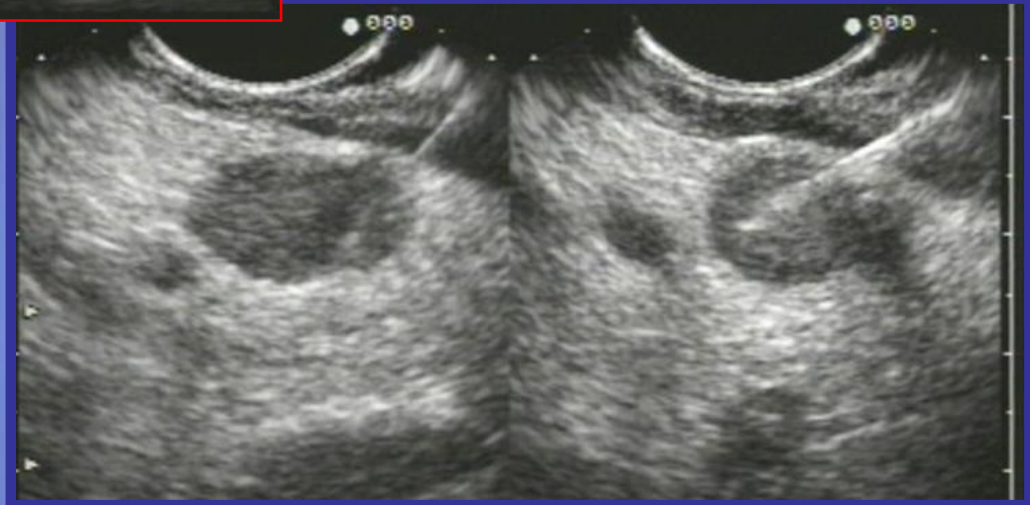
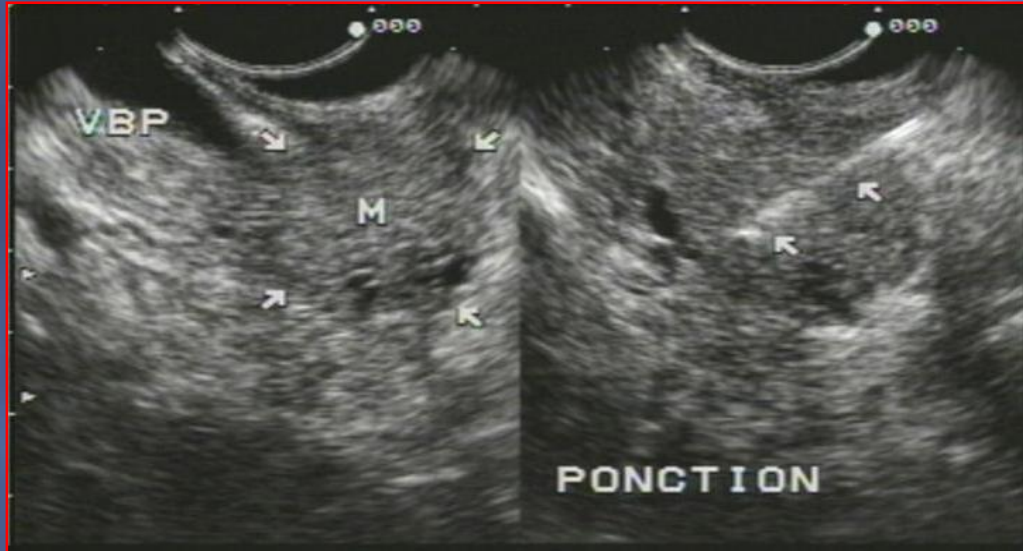
# Minisondes

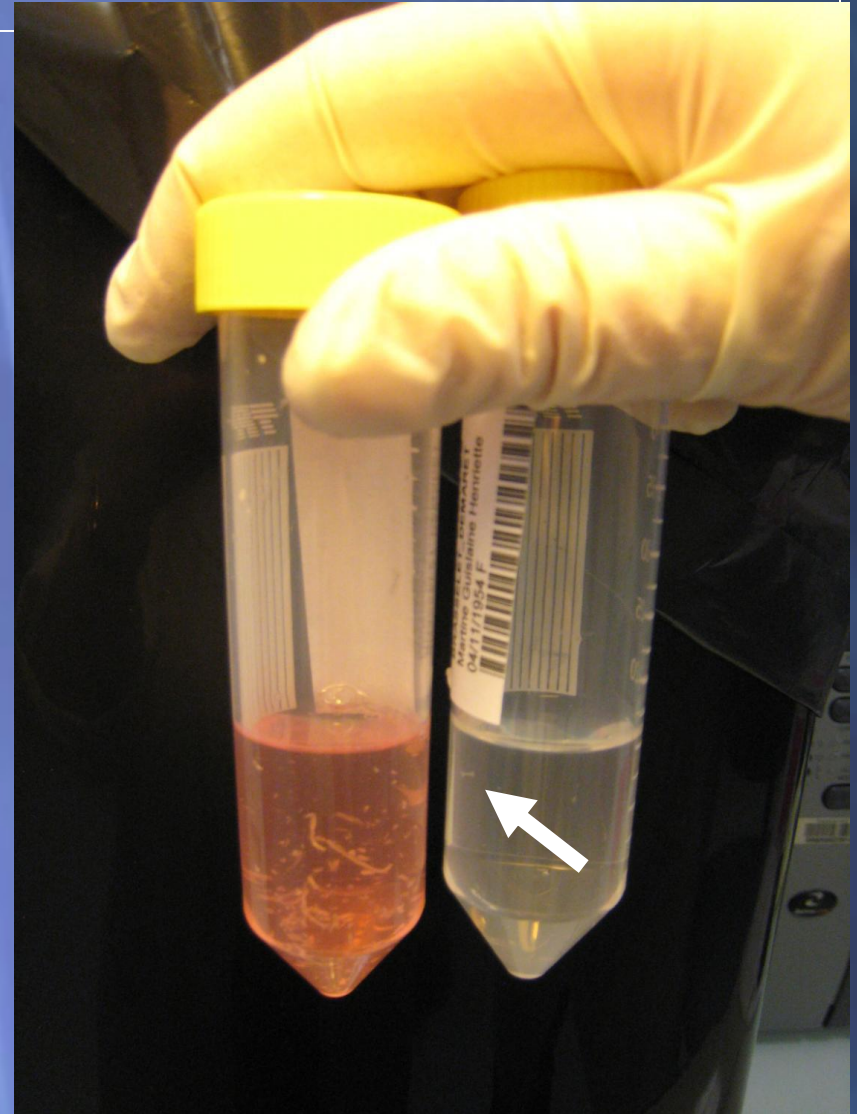
- ❖ *Nombreuses études ; résultats prometteurs*
- ❖ *Place à valider*
- ❖ Esophage : avant résection muqueuse endoscopique
- ❖ Canaux biliaires : bilan tumeurs intra hépatiques
- ❖ Papille : avant papillectomie

# EE interventionnelle

- ❖ Ponction aiguille fine
- ❖ Neurolyse coeliaque
- ❖ Kystogastrostomie
- ❖ Drainage biliaire transgastrique
- ❖ injections intratumorales

# FNA





# Pancreas — résultats FNA

*Volmar GIE 2005,*  
1000 cas

|     | EUS | US   | CT   | EUS<br><2cm | US<br><2cm |
|-----|-----|------|------|-------------|------------|
| PPV | 99% | 100% | 100% | 97%         | 100%       |
| NPV | 73% | 49%  | 47%  | 88%         | 50%        |
| Acc | 87% | 82%  | 82%  | 92%         | 83%        |

## En cas de ponction négative...

*Tessier, Am J Surgery 2006*

Predictive factors for finding neoplasia in patients with suspected pancreas malignancy

| Factors                                                                     | Sensitivity (%) | Specificity (%) |
|-----------------------------------------------------------------------------|-----------------|-----------------|
| Wt loss >20 lb or bili >3 mg/dL or<br>CA 19-9 >37 U/mL                      | 90.5            | 40.0            |
| Wt loss >20 lb & bili >3 mg/dL &<br>CA 19-9 >37 U/mL                        | 45.4            | 100             |
| Wt loss >20 lb & bili >3 mg/dL &<br>CA 19-9 >37 U/mL & biliary<br>stricture | 66.7            | 100             |
| Wt loss >20 lb & bili >3 mg/dL &<br>CA 19-9 >37 U/mL & mass on<br>CAT/EUS   | 83.3            | 100             |

bili = bilirubin; CAT = computerized axial tomography; EUS = endoscopic ultrasound; NPV = negative value; Wt = weight.

# PAF lésions médiastinales

- ❖ Précision > 90 %
- ❖ 3 passages dans la lésion
- ❖ Prise en charge modifiée dans 80 %
- ❖ Ponctionner tous les ganglions ?

→ *Catalano et al. Am J Gastroenterol 2002;97:2559-65*

→ *Chlieng et al. Cancer 2002;96:232-9*

→ *Erickson et al. Gastrointest Endosc 2000;51:184-90*

→ *Wallace et al. Gastrointest Endosc 2001;54:441-5*

# Complications des ponctions cytologiques

Wang GIE 2011

❖ 107/10941 patients (51 studies)

**TABLE 1. EUS-FNA-related complications in 10,941 patients (51 studies)**

| EUS-FNA related complications | No. | %    |
|-------------------------------|-----|------|
| Chest or abdominal pain       | 37  | 34.6 |
| Acute pancreatitis            | 36  | 33.6 |
| Mild-moderate                 | 33  |      |
| Severe                        | 3   |      |
| Bleeding                      | 14  | 13.1 |
| Fever                         | 12  | 11.2 |
| Infection                     | 5   | 4.7  |
| Perforation                   | 2   | 1.9  |
| Bile leakage                  | 1   | 0.9  |
| Total                         | 107 | 100  |

EUS-FNA, EUS-guided FNA.

**TABLE 3. Rates of EUS-FNA complications relative to organs sampled, as determined in retrospective and prospective studies**

|                 | Retrospective studies | Prospective studies | P value |
|-----------------|-----------------------|---------------------|---------|
| Pancreas        | 0.59%                 | 2.64%*              | .0000   |
| Pancreatic mass | 0.35%                 | 2.44%*              | .0000   |
| Pancreatic cyst | 2.33%                 | 5.07%†              | .0363   |
| Mediastinal     | 0.26%                 | 0.43%               | .6491   |
| Liver           | 2.29%                 | 2.44%               | .9337   |
| Abdominal mass  | 0%                    | 0.36%               | .0825   |
| Ascites         | 3.33%                 | 4.0%                | .4256   |
| Total           | 0.64%                 | 1.72%*              | .0000   |

EUS-FNA, EUS-guided FNA.

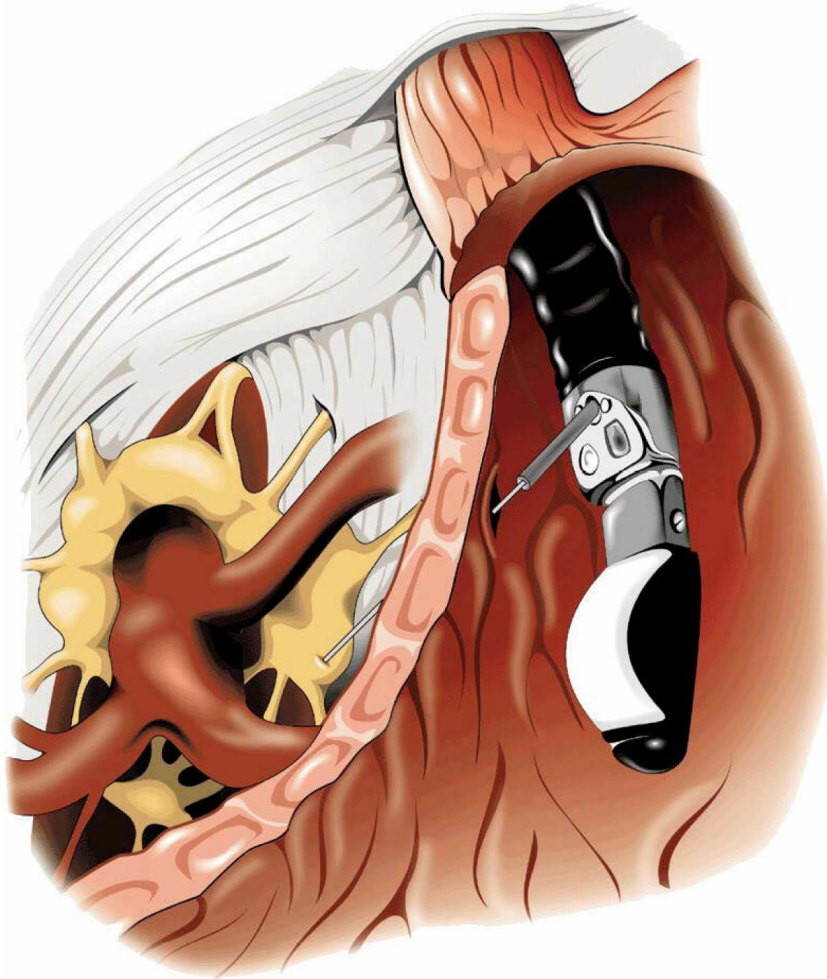
\*P < .001 compared with retrospective studies.

†P < .05 compared with retrospective studies.

# Indications PAF

- ❖ Masses médiastinales et ganglions
- ❖ Tumeurs pancréatiques (pleines, kystiques)
- ❖ Tumeurs extrinsèques
- ❖ GIST (?)
- ❖ Ganglions péirectaux ?
- ❖ Lésions hépatiques gauches (*Gastrointest Endosc*, 2002)

# Neurolyse coeliaque



**Figure 1.** The celiac plexus.

# Neurolyse coeliaque

## ❖ Une méta analyse récente

Cochrane Database Syst Rev. 2011

- 6 études, CT Vs EUS, 358 pts
- Hétérogénéité
- Contrôle de la douleur : limité
- Consommation d'opioïdes : diminuée,  $p < 10^{-5}$

# Remerciements

- ❖ Laurent Palazzo
- ❖ Marc Barthet
- ❖ Manoop Bhutani

*Pour la mise à disposition de plusieurs figures*