Maladie inflammatoire

chronique intestinale (MICI)

Dr. Dragean C.A. & group abdominal UCL

Quelles maladies font partie du group MICI ?

- **Maladie Crohn**
- **Rectocolite ulcéro-hemorragique**

Quelle clinique pour quelle maladie ?

CROHN

- Diarrhée
- Douleurs abd.

→ Grêle terminal

- Glaire/Sang
- Faussé besoin

→ Rectum Colon

- Fièvre/Frison/ Sdr.inflam.
- Crampes abd./ Vomissement

Complications : - fistule/abcès
- sténose/occlusion

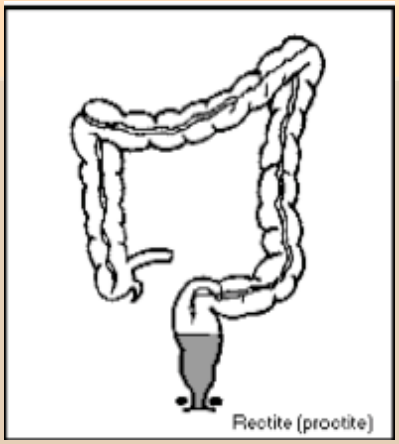
RCUH

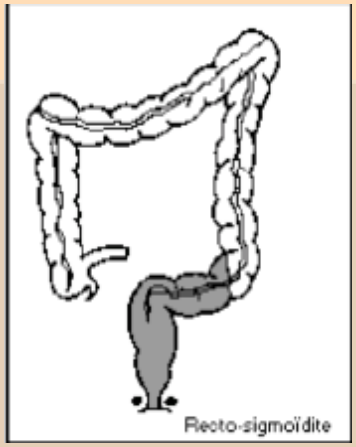
- Diarrhée + sang
- Douleurs abd.
- Perte de poids/Fatigue
- Sdr. Inflam.

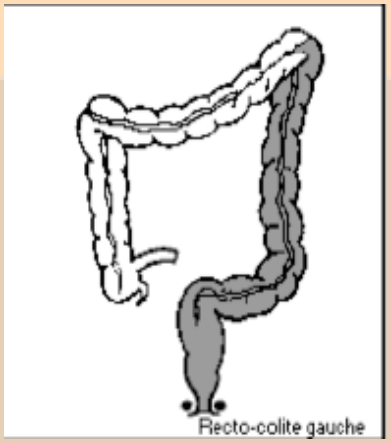
Quelle patient et quelle atteinte ?

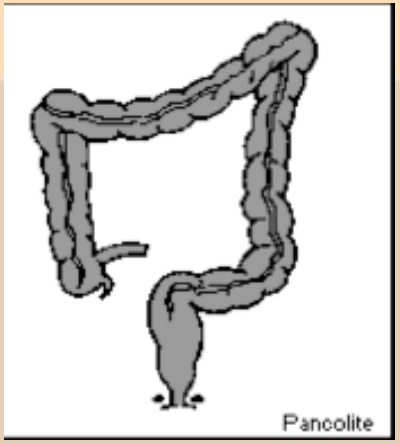
20-40 ans
Non-Fumeurs
Génétique -1- 6 %

RCUH – atteinte digestive









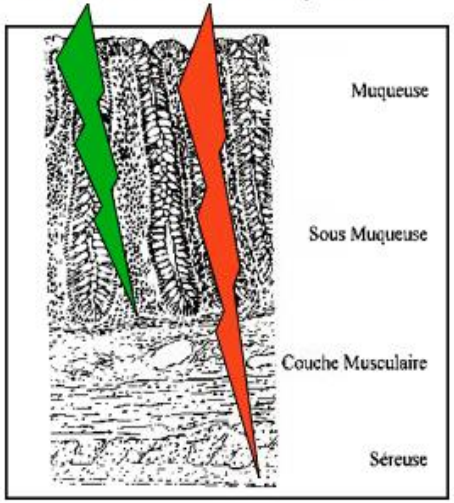
- **Atteinte continue sans muqueuse saine**
- **Le rectum ce la 1-ère atteinte et la dernière à s'améliorer**
- **Rectum ➡ Colon G - 2/3 cases ➡ Colon D - 1/3 cases**
- **Pancolite – 1-ère diag. - 1/3 patients et >20 ans d'évolution 1/2 patients**

Quelle patient et quelle atteinte ?

Tabac
Appendicectomie en enfance
protège de RCUH

RCUH – atteinte digestive

Inflammation touche les couches les plus superficielles la muqueuse et la sous-muqueuse.



Formes aiguës graves, les ulcérations peuvent toucher l'ensemble de la paroi, avec atteinte de la musculeuse pouvant entraîner une perforation.

Cholangite Sclérosante Primitive (CSP)

- prévalence d'environ 5% dans la colite qui dépasse l'angle G,
- prévalence de 0,5% en cas de colite distale
- diag.. CSP impose colonoscopie + biopsie recherche MICI (RCUH 75%)

Quelle patient et quelle atteinte ?

2 Tranche d'âge
- **10-30 ans**
- **50-70 ans**

Génétique
- **15-20% de patients atcd**
- **70% - gémeaux**

Crohn – atteinte digestive

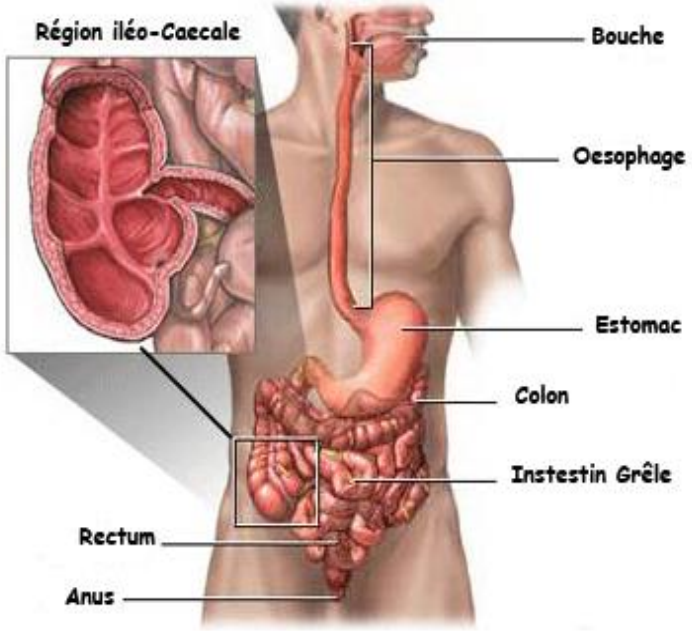


Figure n°1 : Atteintes digestives de la maladie de Crohn

(Source Hepatoweb.com/A.D.A.M)

Atteinte discontinue – alternance segments normaux et pathologiques

Atteinte de toutes les segments du tube digestif
* **iléo-colique** – 12- 44 %
* **colique** – forme pure 20-48%
* **grêle terminal (iléon)** – forme pure 18-30%
* **atteinte proximale** est exceptionnelle chez l'adulte

Atteinte ano-périneale
* **initiale -** < 25% (1/4 de patients)
* **pendant l'évolution** – 50% de patients ont une atteinte périnéale

Quelle patient et quelle atteinte ?

Tabac
- **majeur le risque de Crohn 3-4 fois,**
- **la maladie est plus agressive,**
- **réactivation rapide en post-op.**

Crohn – atteinte digestive

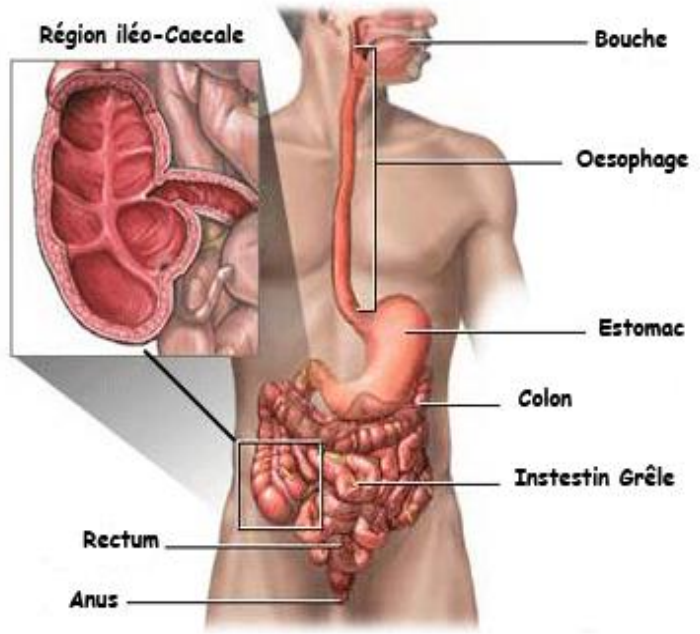


Figure n°1 : Atteintes digestives de la maladie de Crohn

(Source Hepatoweb.com/A.D.A.M)

Atteinte grêle:

- isolée peut rester asymptomatique long terme et évolué silencieux vers une sténose qui se complique d'occlusion, fistule ou perforation

- **iléo-colique –** fistule/collection sur le versant iléal et perforation sur le versant colique (dans le cadre de atteinte inflammatoire à long terme sans sténose).

Atteinte colique :

- isolée clinique plus bruyante avec de manifestations extradigestives

Quelle exploration, demande par qui ?

AVIS GASTROENTEROLOGIQUE
CLINIQUE + BIOLOGIQUE
AVANT TOUT IMAGERIE

MICI connue

- **MICI – sans complication**
  Traitement +/-
  Imagerie
- **MICI – avec complication**
  Imagerie

MICI suspectée

- **MICI – sans complication**
  Imagerie
  Coloscopie
- **MICI - avec complication**
  Imagerie

Journal of Crohn's and Colitis (2013) 7, 556–585

Available online at www.sciencedirect.com

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CONSENSUS/GUIDELINES

Imaging techniques for assessment of inflammatory bowel disease: Joint ECCO and ESGAR evidence-based consensus guidelines

US

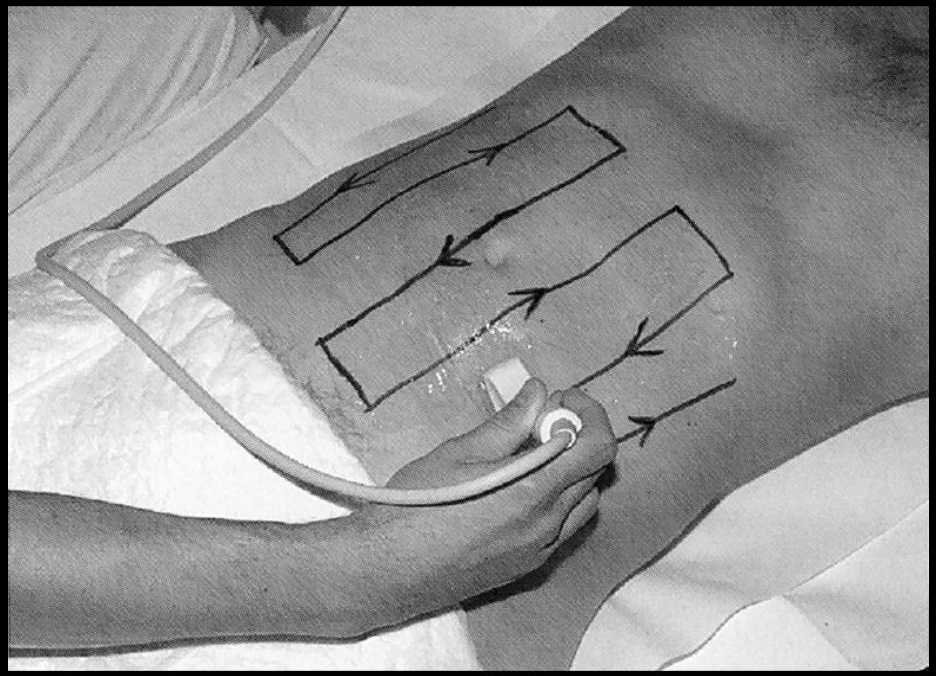
- **Condition pour la réalisation d'un examen optimal**
- Vessie remplie, sans préparation digestive

- **Examen réalise en 2 étapes:**
- **Sonde convexe C5-1/C9-2 -** analyse des organes intra-abdominales et collections/d'ascite intra-abdominale
- **Sonde linéaire à haute fréquence (5 -12 Mhz)** signes à chercher
- ***un épaississement de la paroi digestif,***
- ***identification de la stratification pariétale,***
- ***de signes de hyperhémie pariétale,***
- ***complications – collection, fistule, distension du grêle en amont,***
- ***hypertrophie de la graisse péridigestive (sclérolipomatose)*** avec de signes de hyperhémie et le signe de peigne,
- **atteinte appendiculaire**

IRM

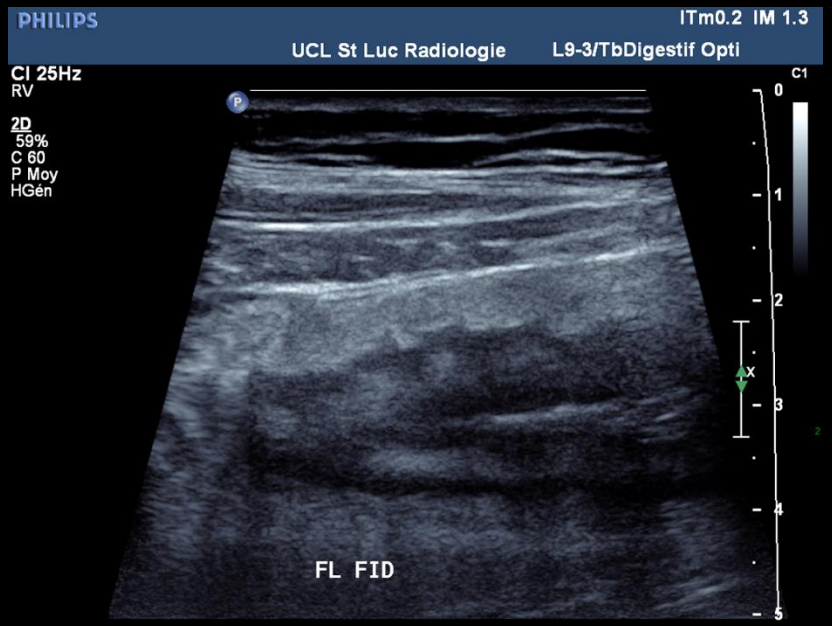
- **Condition pour la réalisation d'un examen optimal pour le grêle/colon**
- Remplissage d du tube digestif par voie orale/sonde d'enteroclyse – orale 1-1,5 l Moviprep 45 min avant l'examen (sans atcd de résection) /30 min avant (atcd de résection)..
- Décubitus ventral + vérification de remplissage liquidien du tube digestif + ½ injection IV de Glucagon avant les séquences sans injection et ½ avant l'injection IV de pdc
- **Séquences a réaliser (protocole UCL)**
- bFFE 3D (balanced fast-field echo -T2) coronal - vérification de remplissage
- ½ IV glucagon/buscopan
- T2 cholangio - IRM coronal et axial/axial-oblique sur la région pathologique/région iléo-caecale.
- ½ IV glucagon/buscopan
- T1 FS coronal sans injection, à 40 sec et à 3 min
- T1 FS axial entre 40sec et 3 min.
- Optionnel T2FS/DWI, dynamique

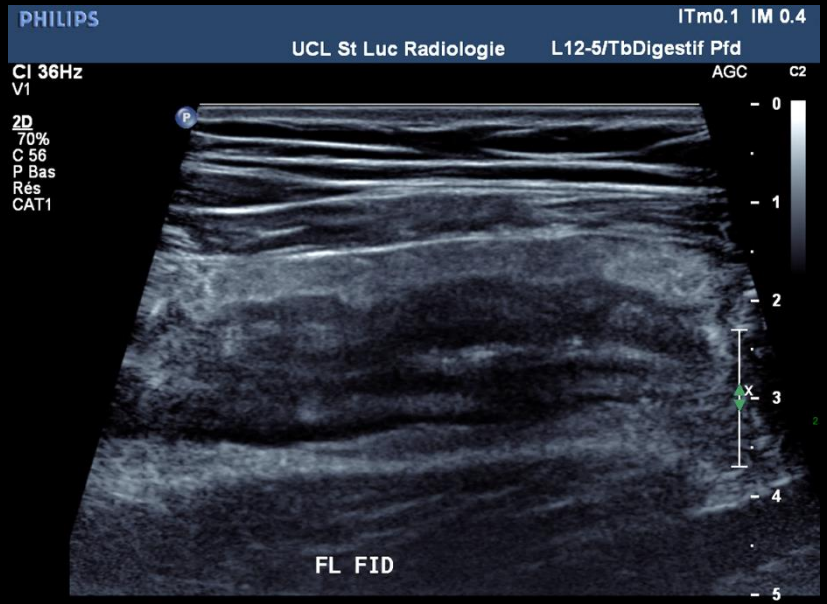
Cas 1 – F. 28 ans bilan d'ileite

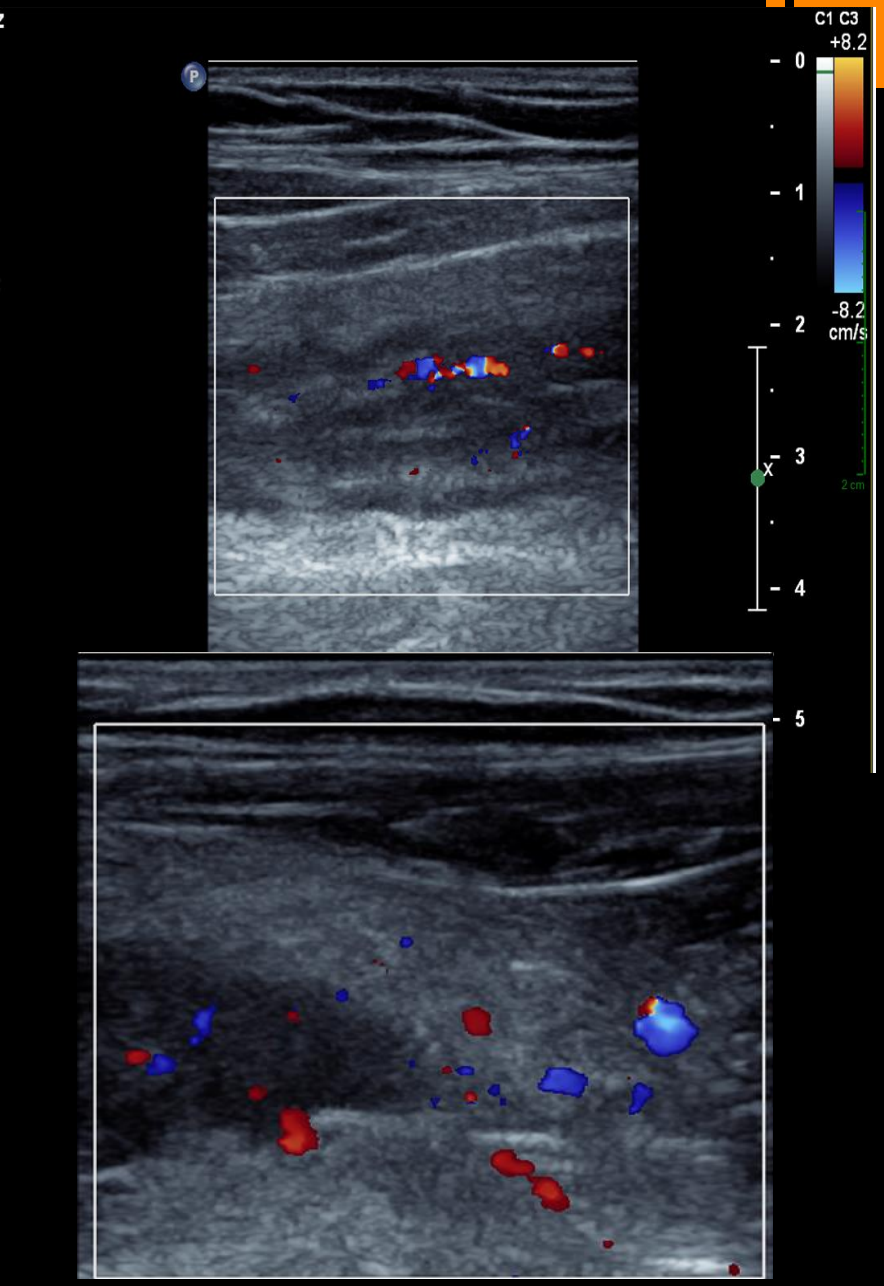


Sturm et al Eur Radiol, 2004

Cas 1 – F. 28 ans bilan d'ileite



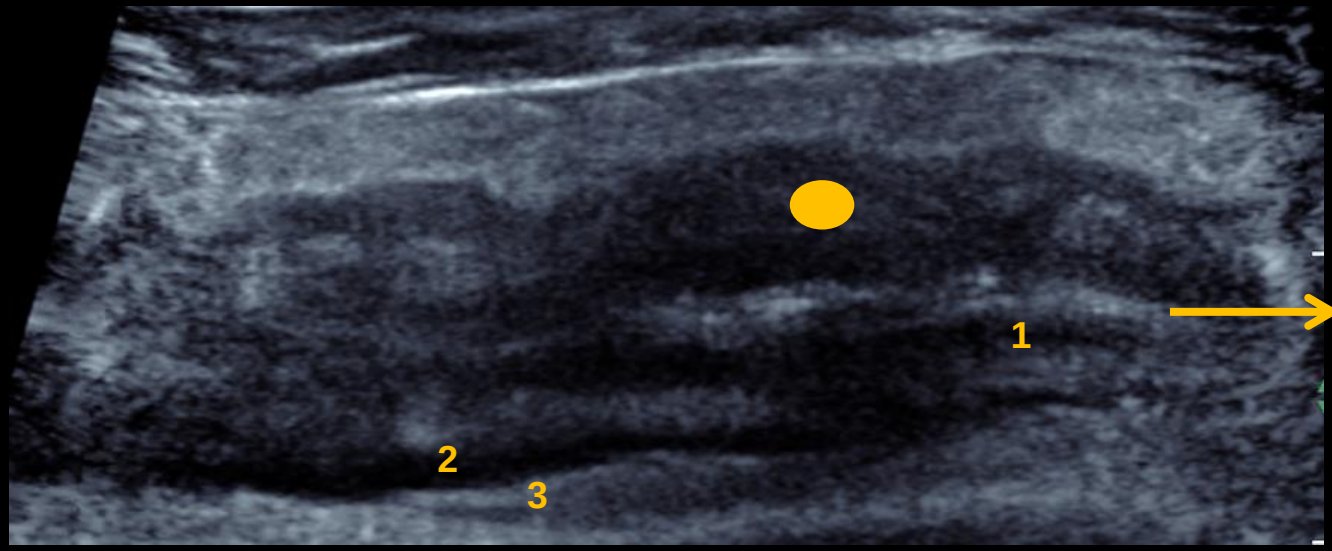




Cas 1 – F. 28 ans bilan d'ileite
Maladie Crohn iléale modérément active sur en fond chronique sans complication

*** Epaississement de la paroi** - grêle > 4 mm
- colon > 5 mm

*** Préservation/Disparition de la stratification pariétale (5 couches)**



Sous -muqueuse
hyperéchogène, la plus épaissi

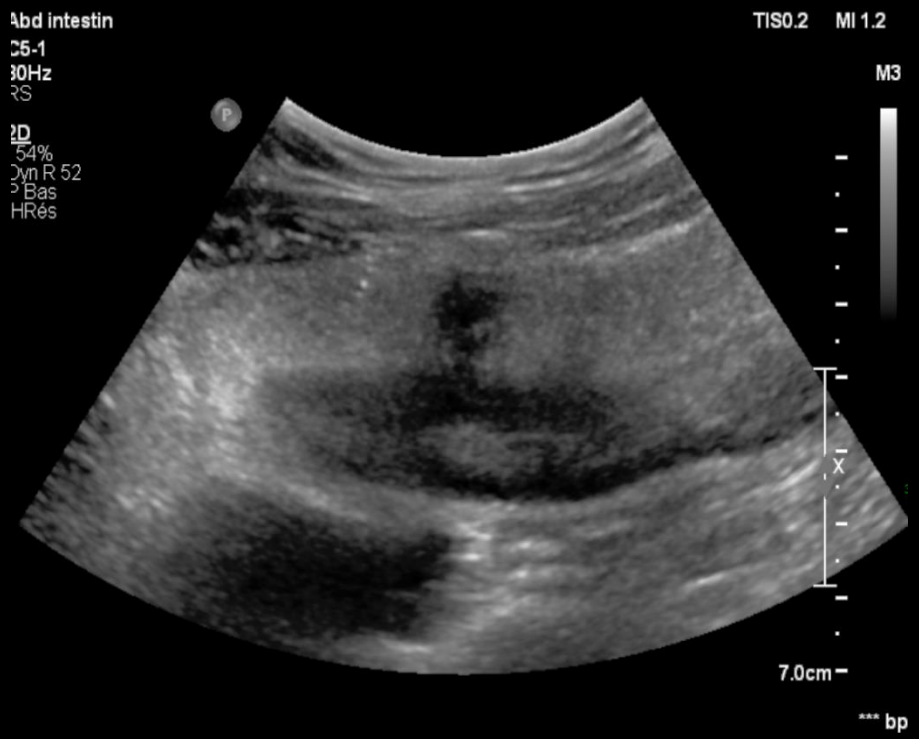
Interface muqueuse – lumière
hyperéchogène

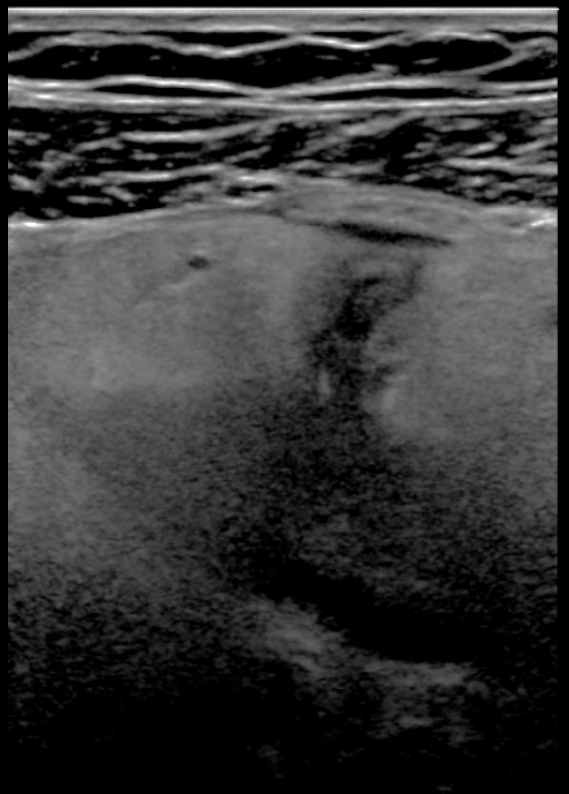
1 . Muqueuse - hypoéchogène

2. Musculeuse – hypoéchogène

3. Interface séreuse - interface avec la graisse

Cas 2 – F. 28 ans bilan d’ileite





Dr. V. Pasoglou

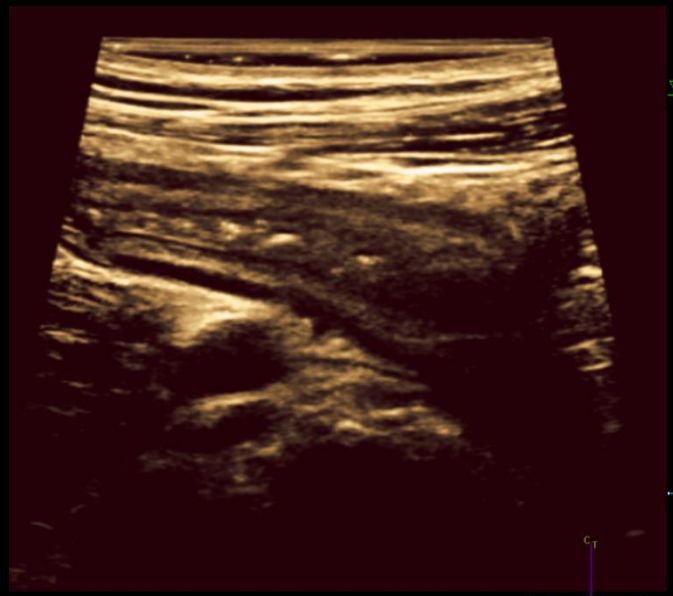
Cas 1 – F. 28 ans bilan d'ileite
Maladie Crohn iléale modérément active sur en fond chronique avec complication (fistule – abcès)

*** Epaississement de la paroi** - grêle > 4 mm
- colon > 5 mm

*** Préservation/Disparition de la stratification pariétale (5 couches)**

*** Complications:** **-** fistule
- abcès/collection
- sténose/occlusion
- perforation


P
X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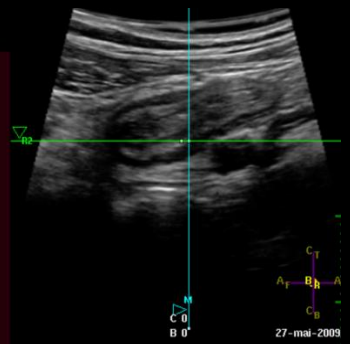
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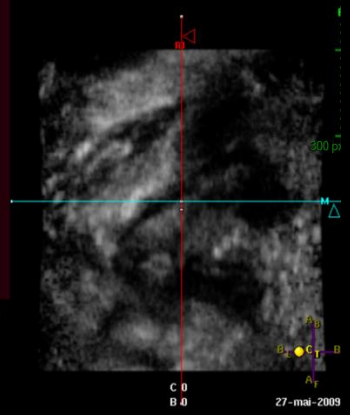
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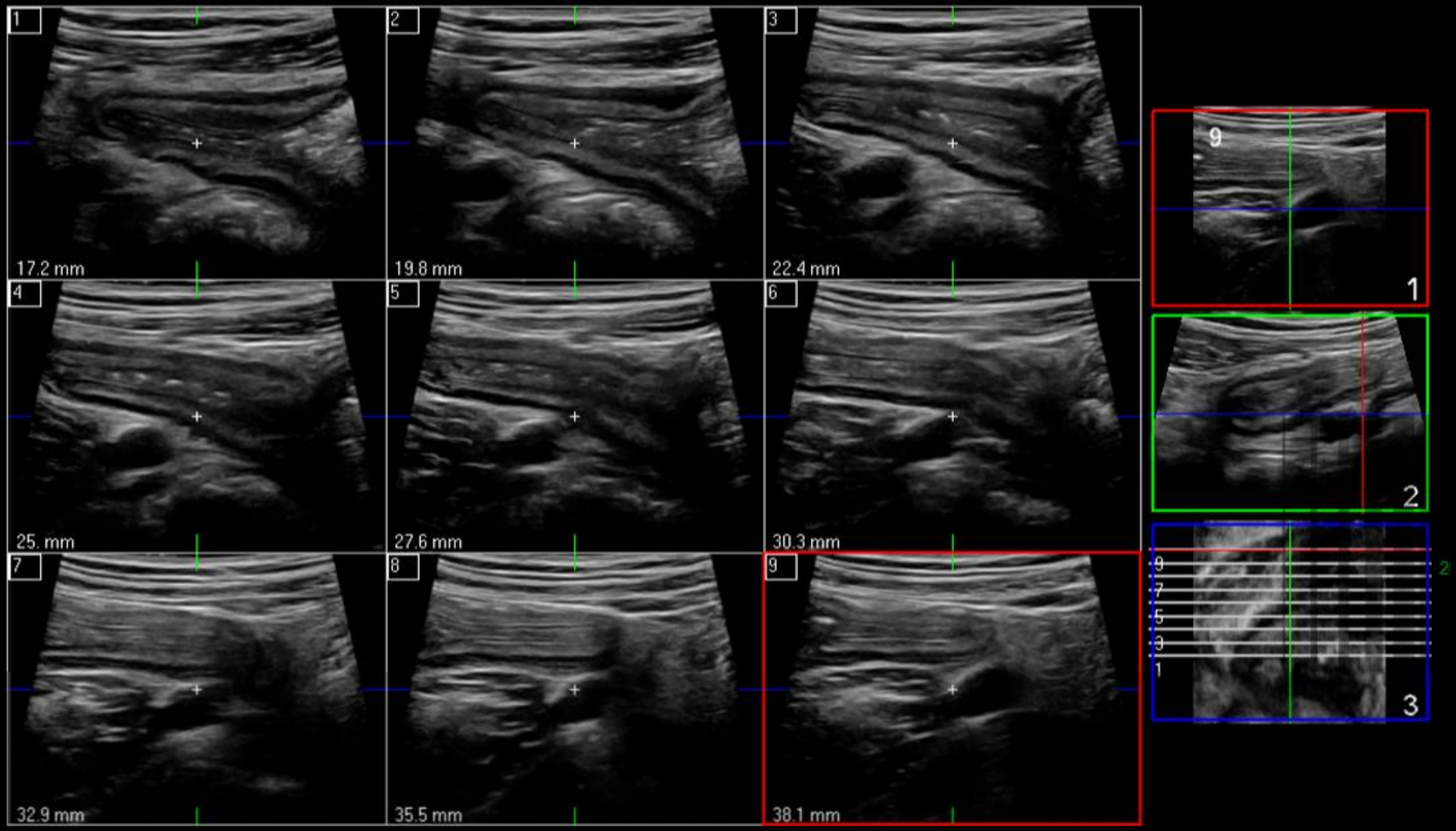

1
17.2 mm
2
19.8 mm
3
22.4 mm
4
25. mm
5
27.6 mm
6
30.3 mm
7
32.9 mm
8
35.5 mm
9
38.1 mm
9
1
2
3

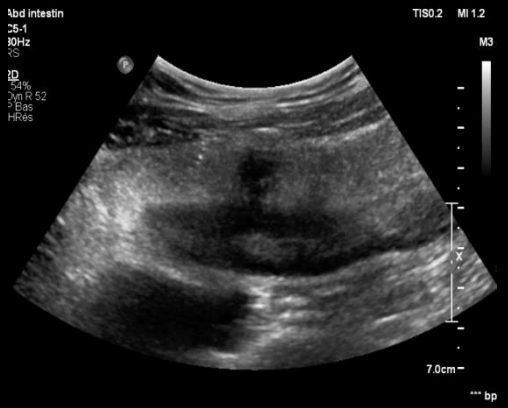
Prof. E .Danse

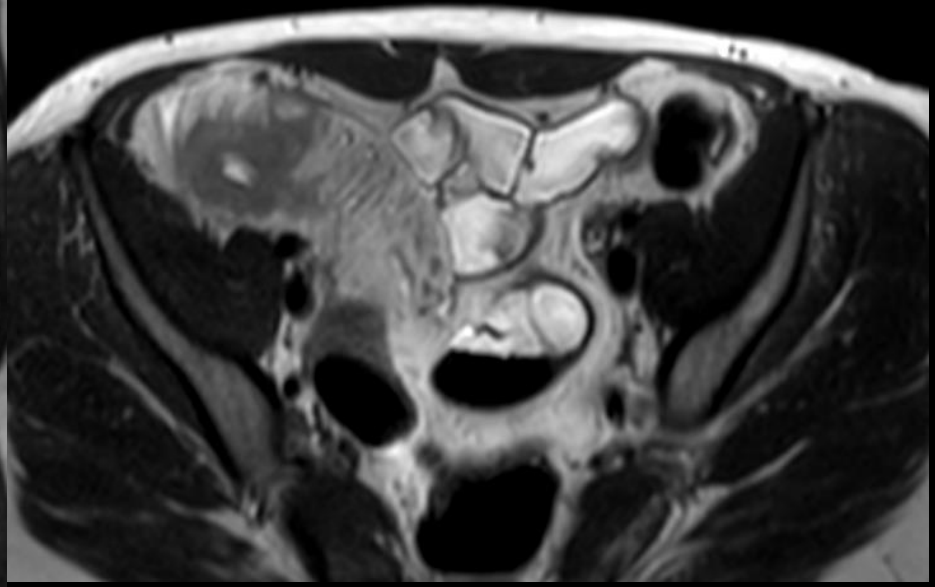
Limitations échographie

* **Distension aérique du tube digestif**
* **Caecum + dernière anse en position pelvienne**
* **Vessie vide**
* **Absence de distension du tube digestif**
* **Patient très douloureux**
* **Absence d'experience de l'operateur**

bFFE 3D

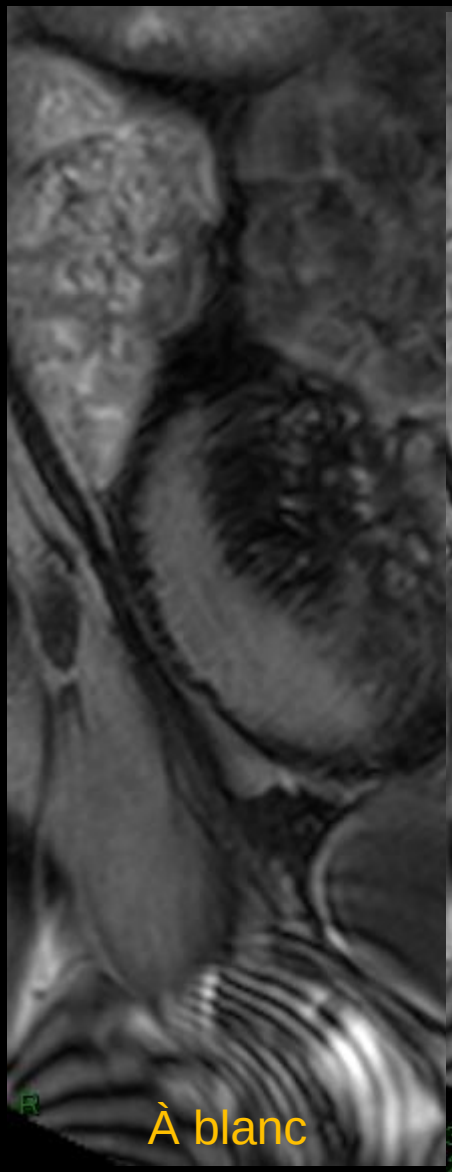
Cas 2 – F. 28 ans bilan d'ileite





T2 cholangio - 4 mm

Cas 2 – F. 28 ans bilan d’ileite



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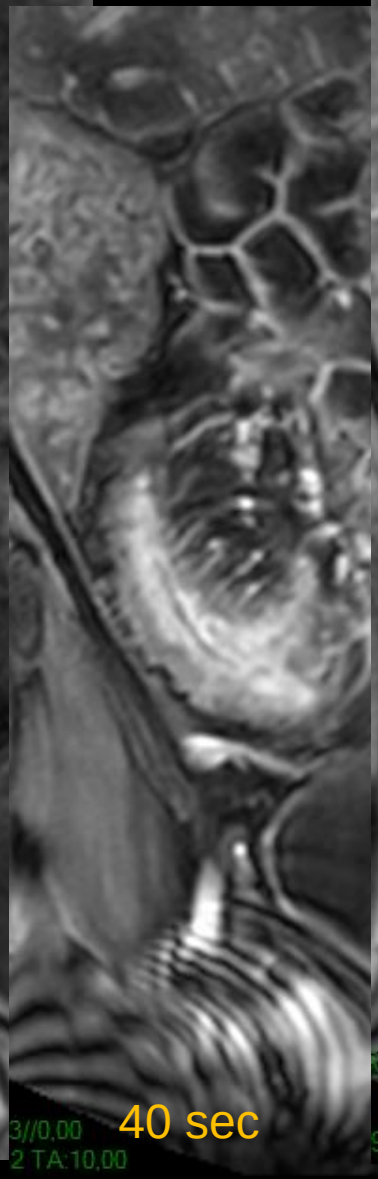
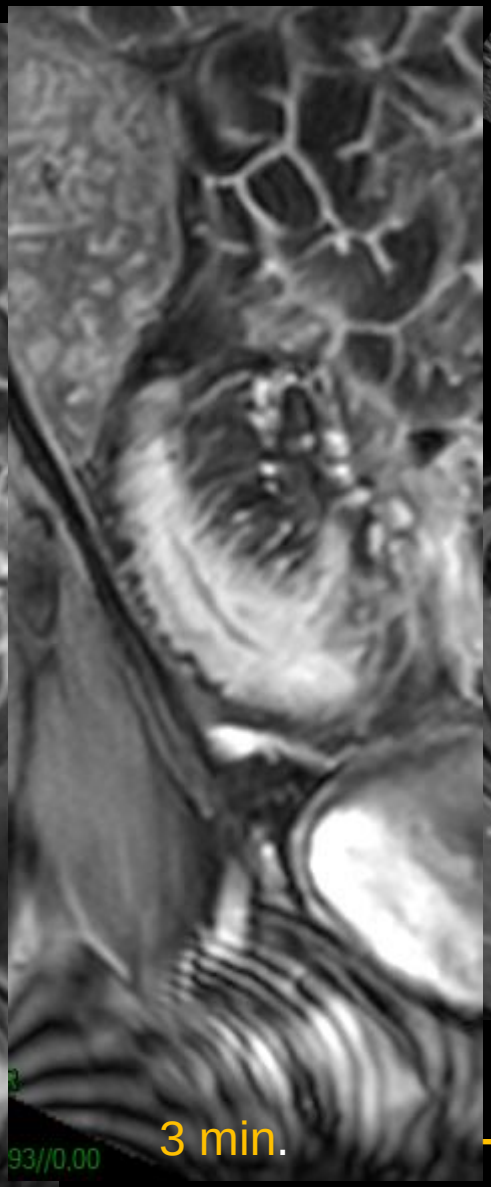
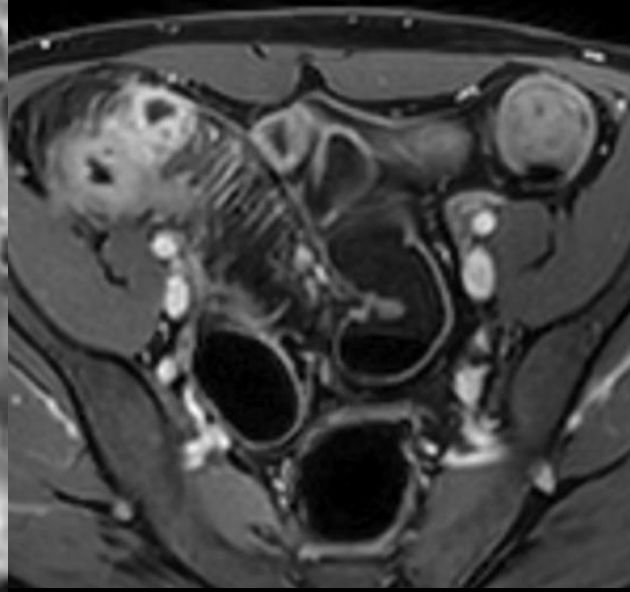


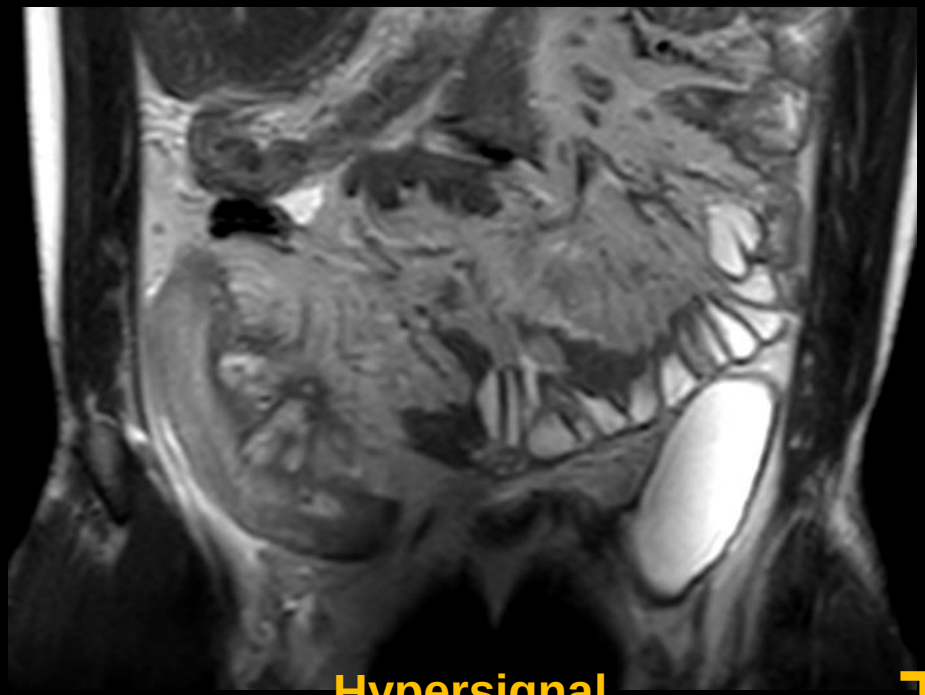
40 sec

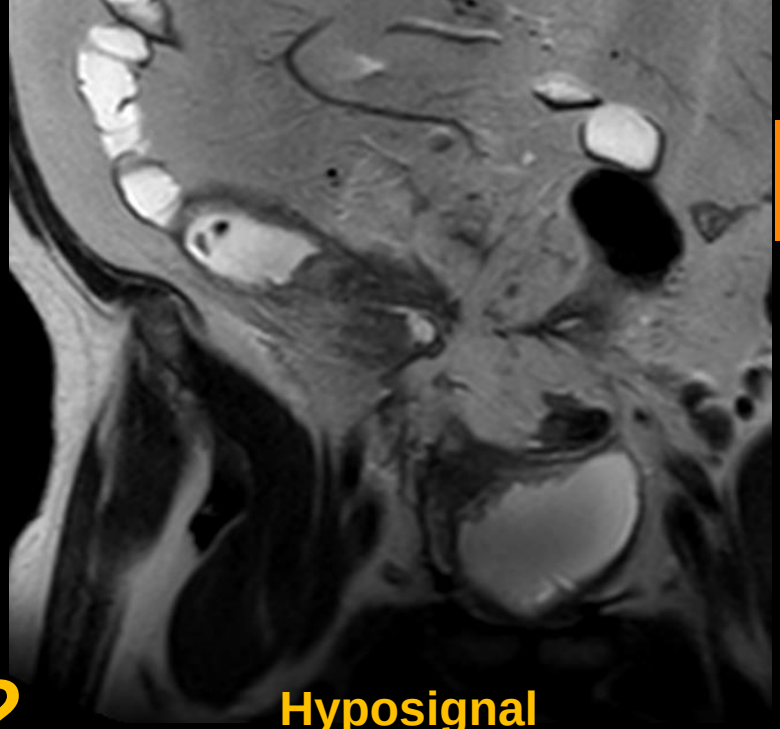


3 min.



T1 FS 3D - 3 mm (m-Dixon)

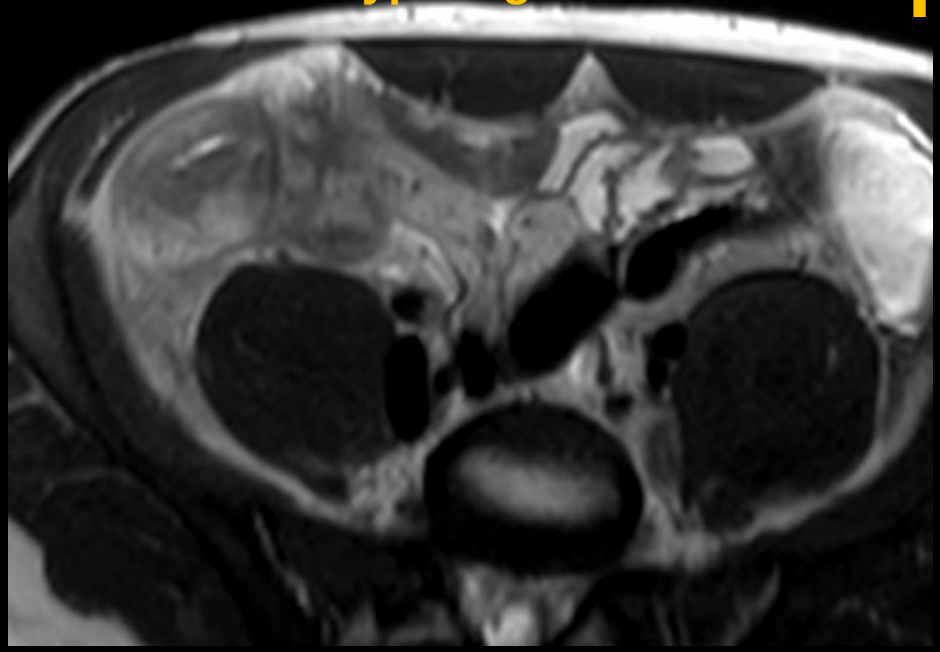


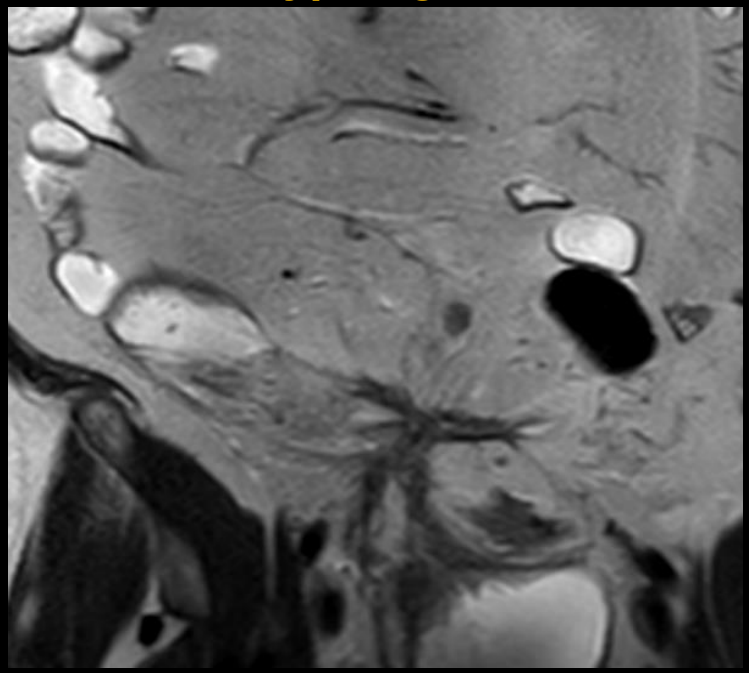


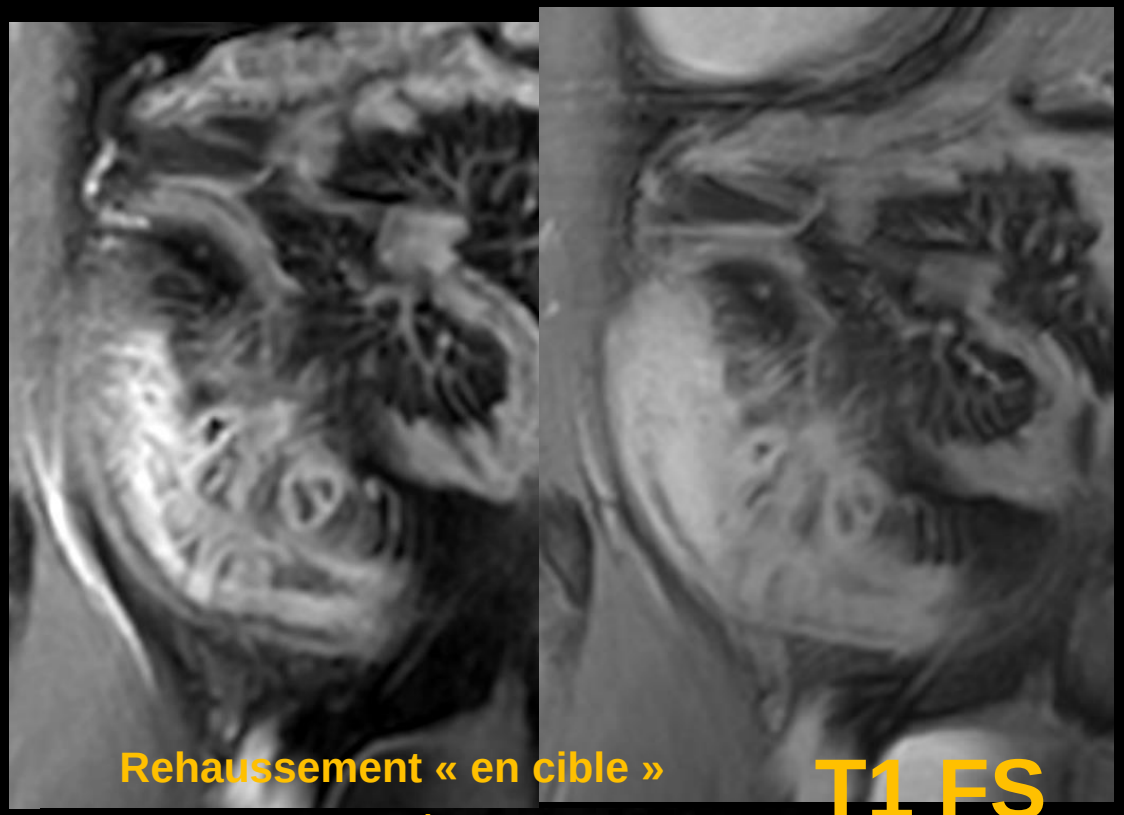
Hypersignal

T2

Hyposignal



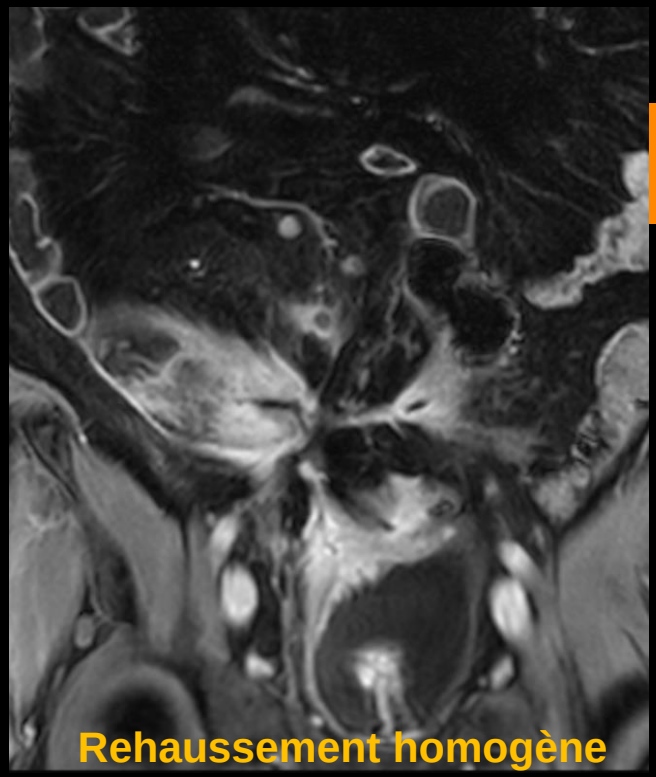




Rehaussement « en cible »

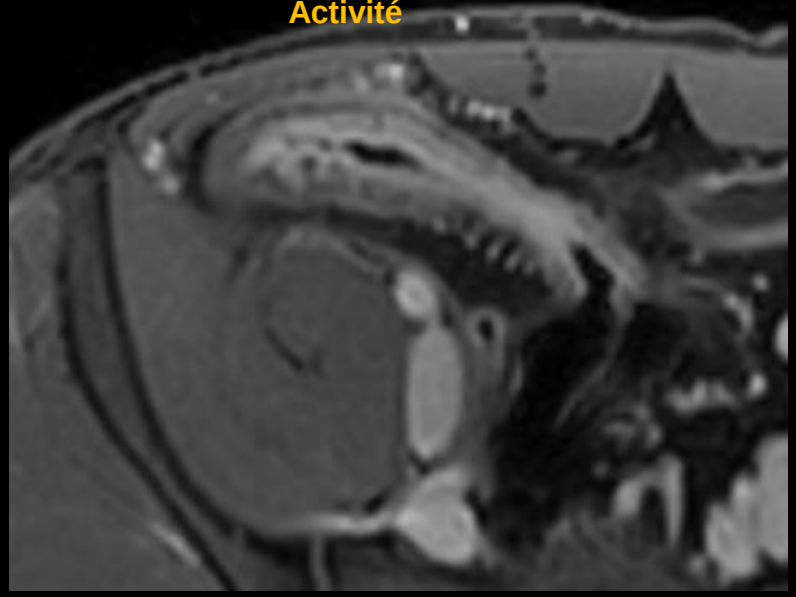
Activité

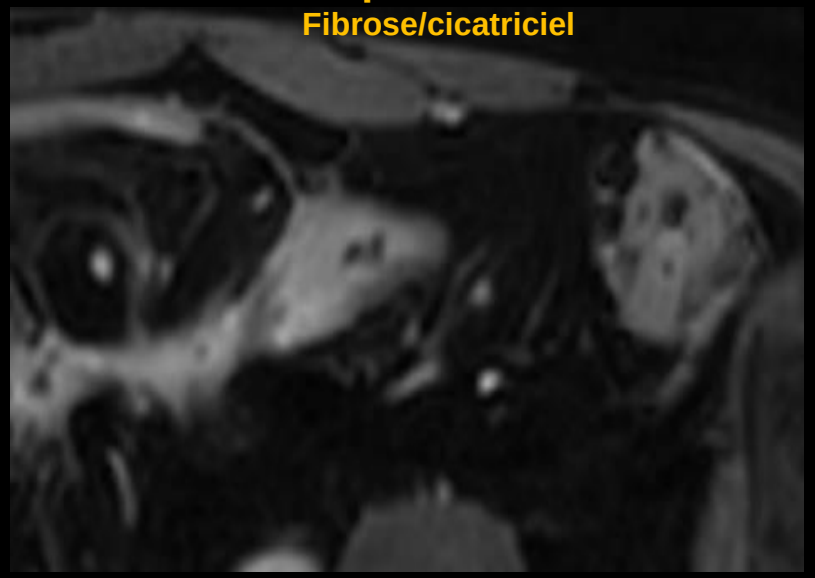
T1 FS

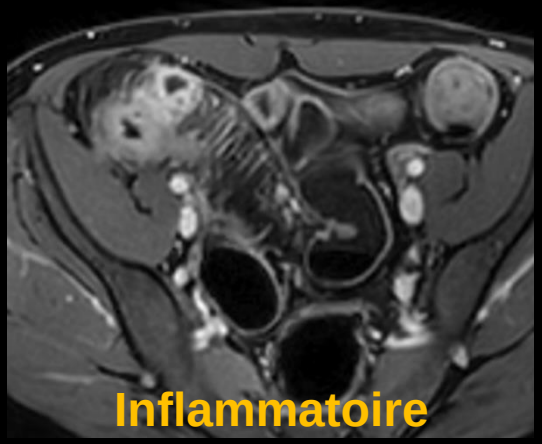


Rehaussement homogène ou paroi total

Fibrose/cicatriciel





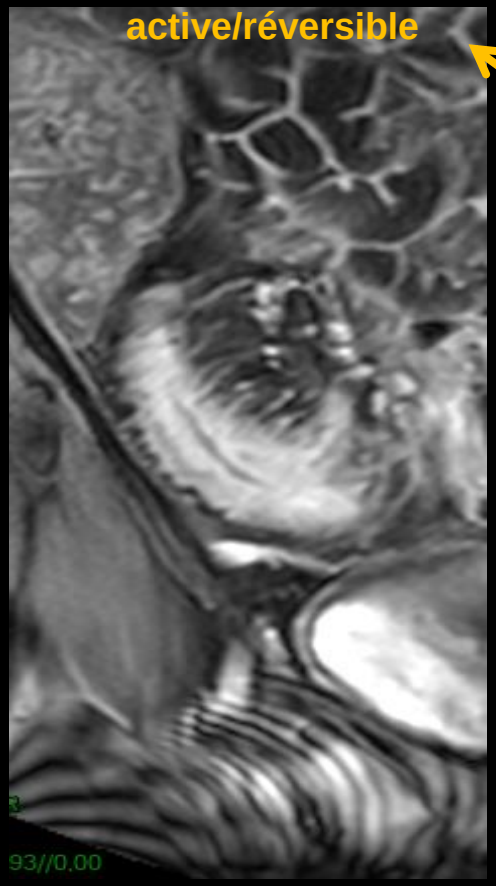


Inflammatoire

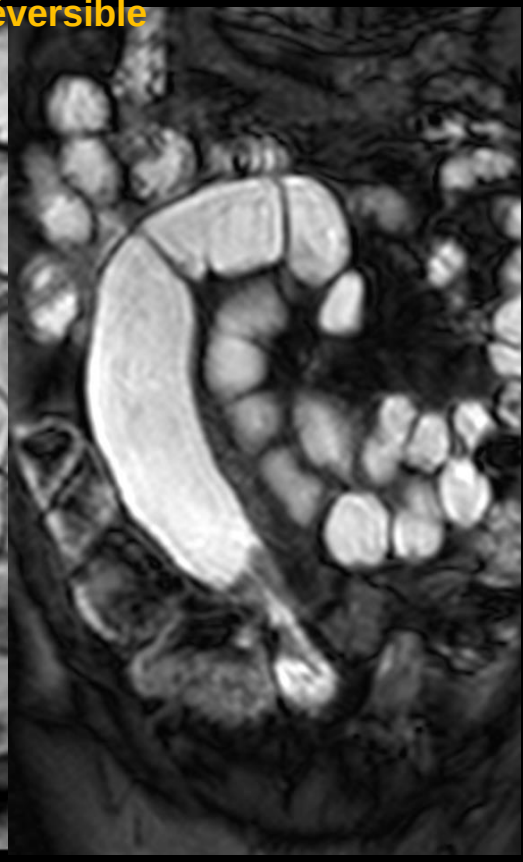
Fibreuse

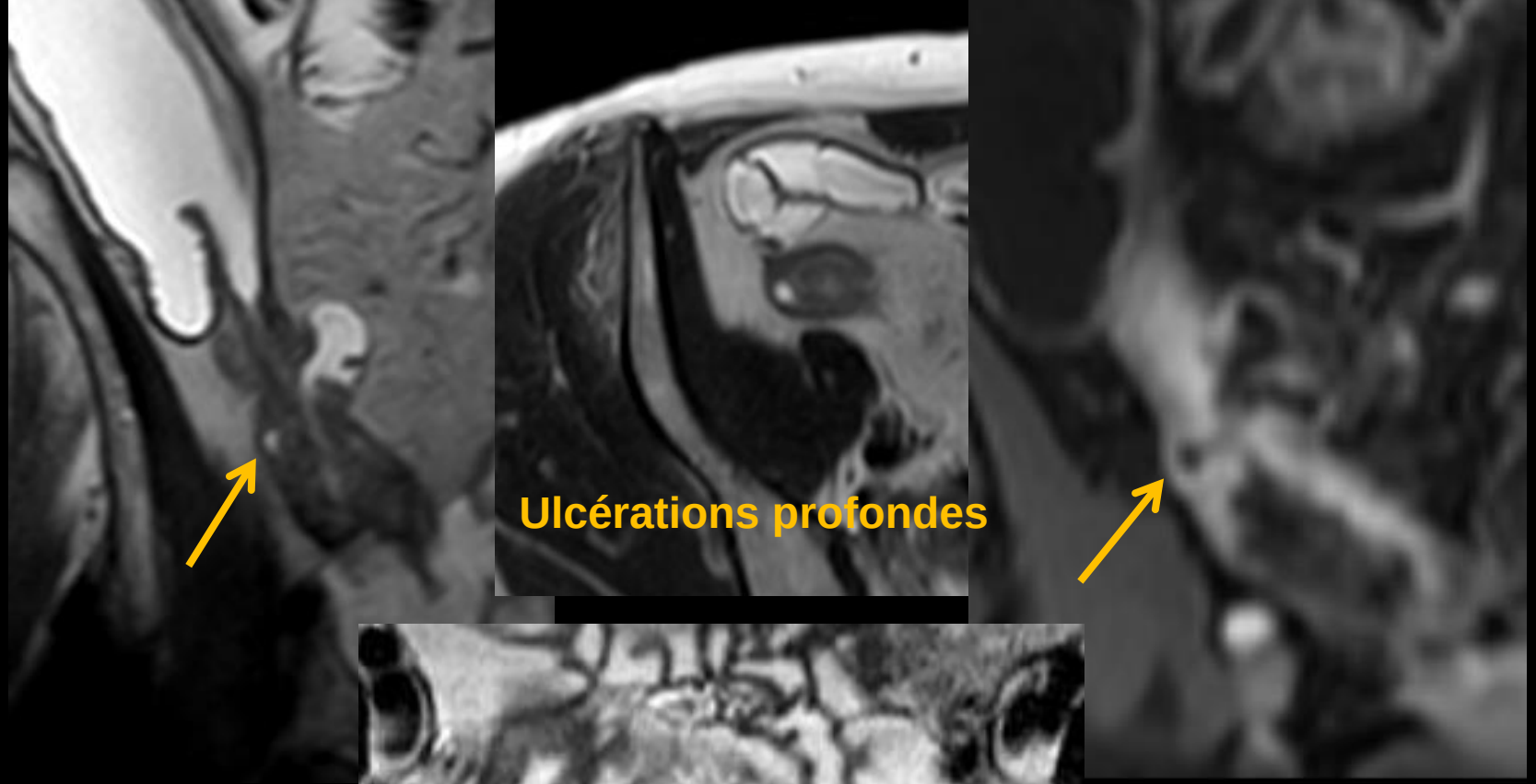
Chronique/irréversible

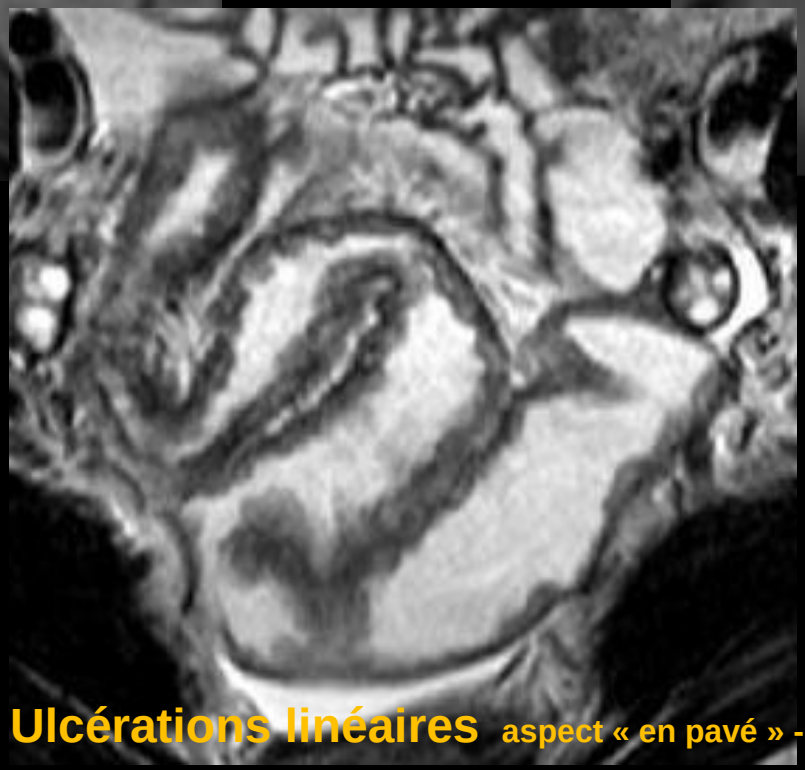
active/réversible



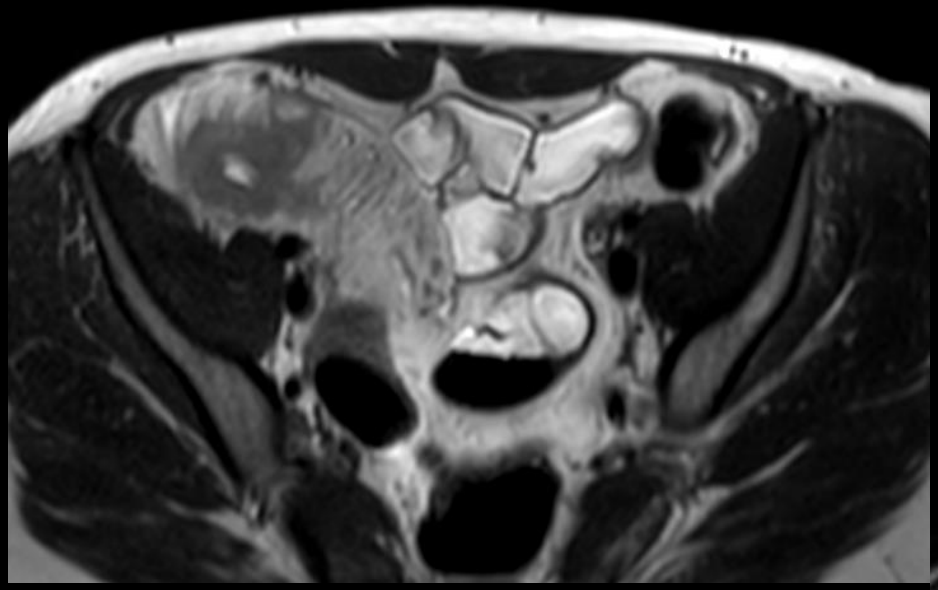
Sténose



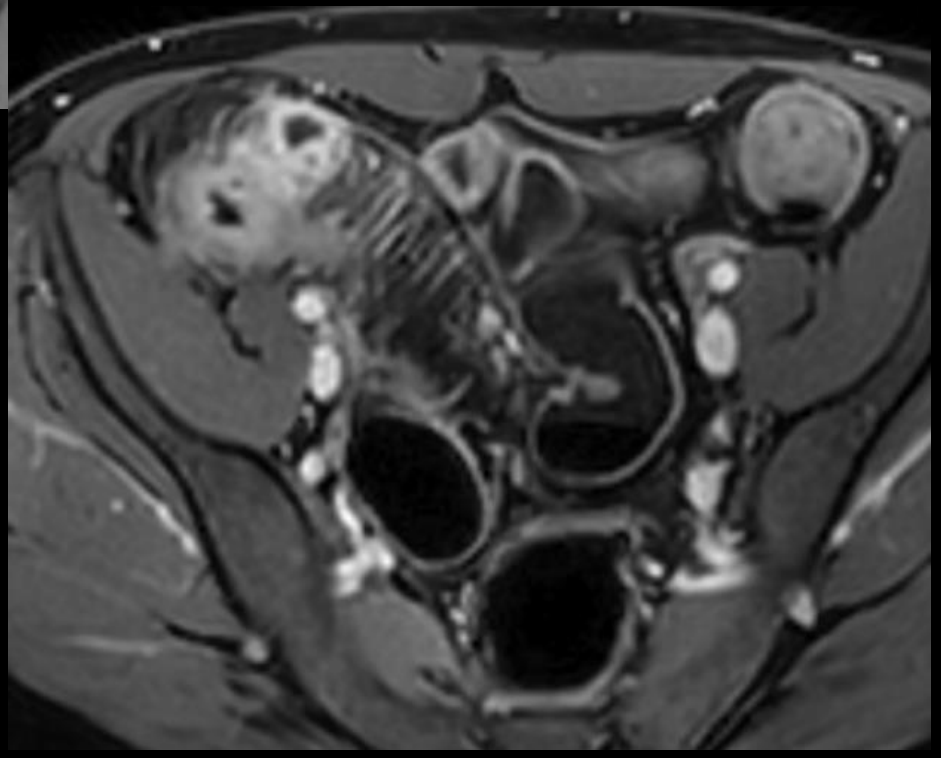




Ulcérations linéaires aspect « en pavé » - Dr. L. Annet



Sclérolipomatose
maladie chronique

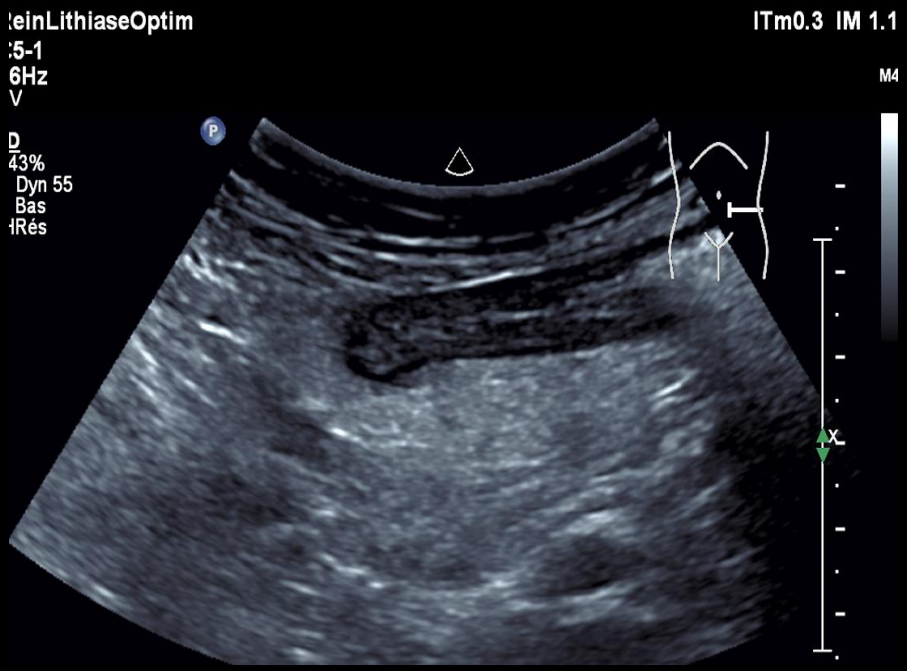


Signe de peigne
« comb sign» - maladie active

Limitations IRM

* **Opacification digestive**
* **Sonde d'enteroclyse difficilement acceptable et tolérable par les patients**
* **Artefacts de mouvement** **limité par le décubitus ventral, Glucagon/Buscopan si le décubitus ventral impossible cousin sur le ventre**
* **Lésions superficielles débutantes**

	M.CROHN ACTIVE	M.CROHN CHRONIQUE
Epaississement pariétal	+++	+
Signal de la paroi en T2	***Hypersignal***	***Hyposignal***
Stratification pariétale	**Préservée** **signe de réversibilité**	**Disparition/signe de halo graisseux** **signe de irréversibilité**
Rehaussement	**« En cible »** **Prise de contraste précoce (artérielle)** **Œdème/involution graisseuse de la sous-muqueuse**	**Homogène/paroi totale** **Prise de contraste tardive**
Signe de peigne	+++	+
Ulcérations	+++	- / +
Sclérolipomatose	- / +	+++
Complications	**Abcès/Perforation couverte** **Fistule active** **Sténose réversible (inflam.)**	**Fistule chronique/bloc fibreux rétractile** **Sténose irréversible (fibreuse.)**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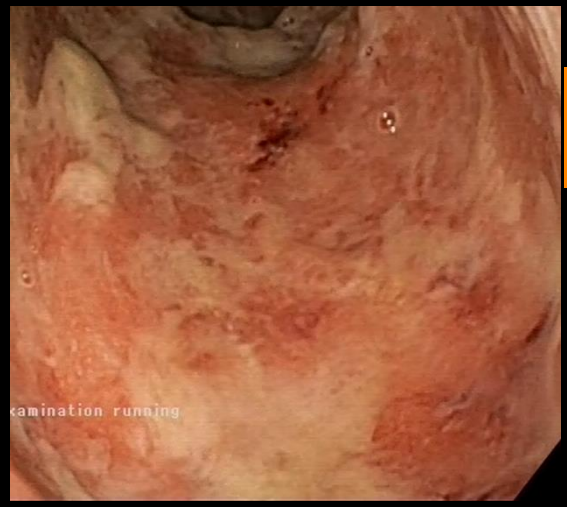
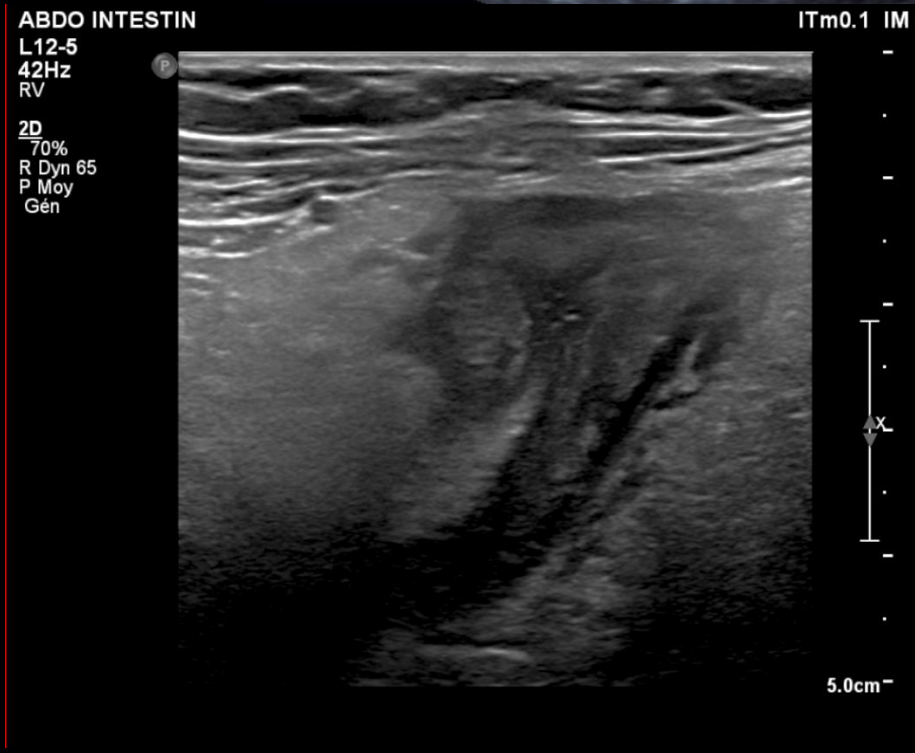
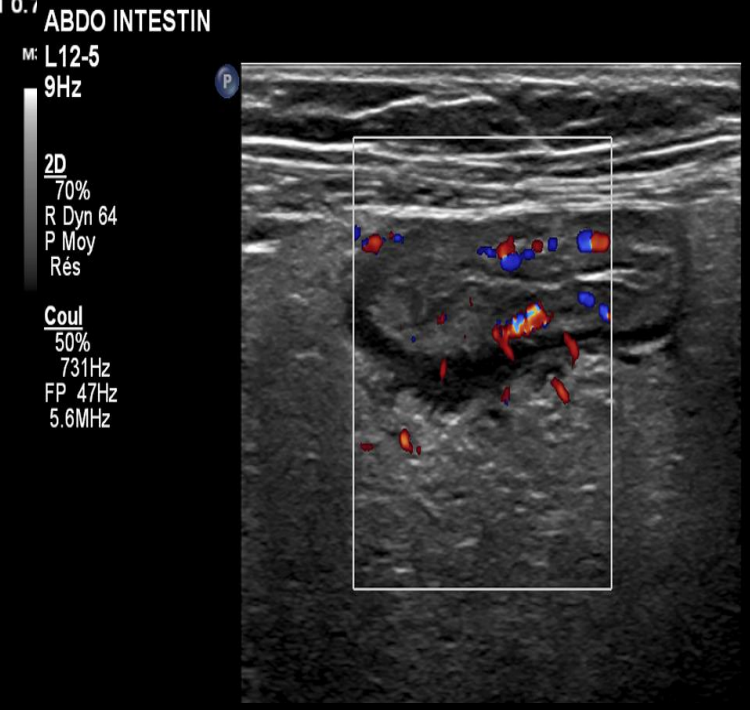
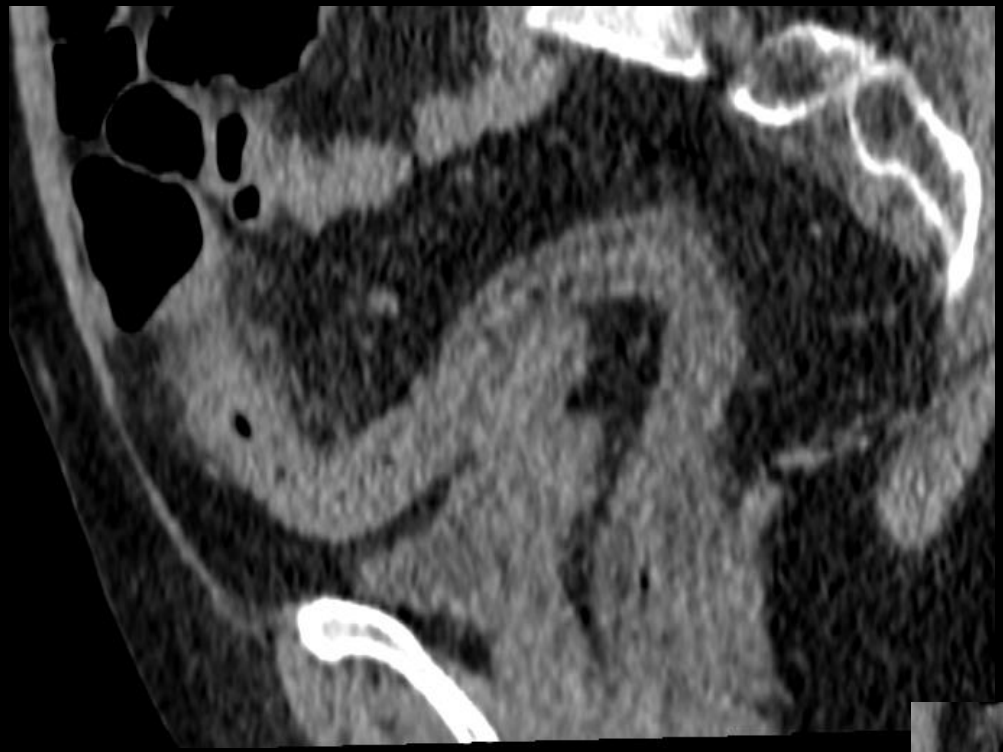
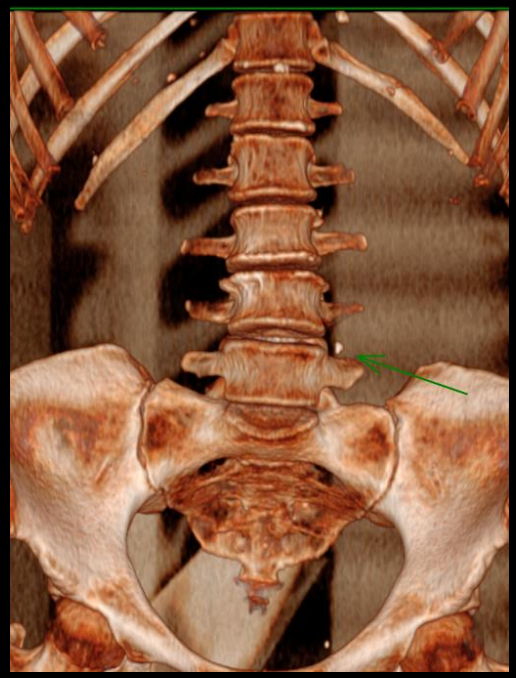
ITm0.3 IM 1.1
M4

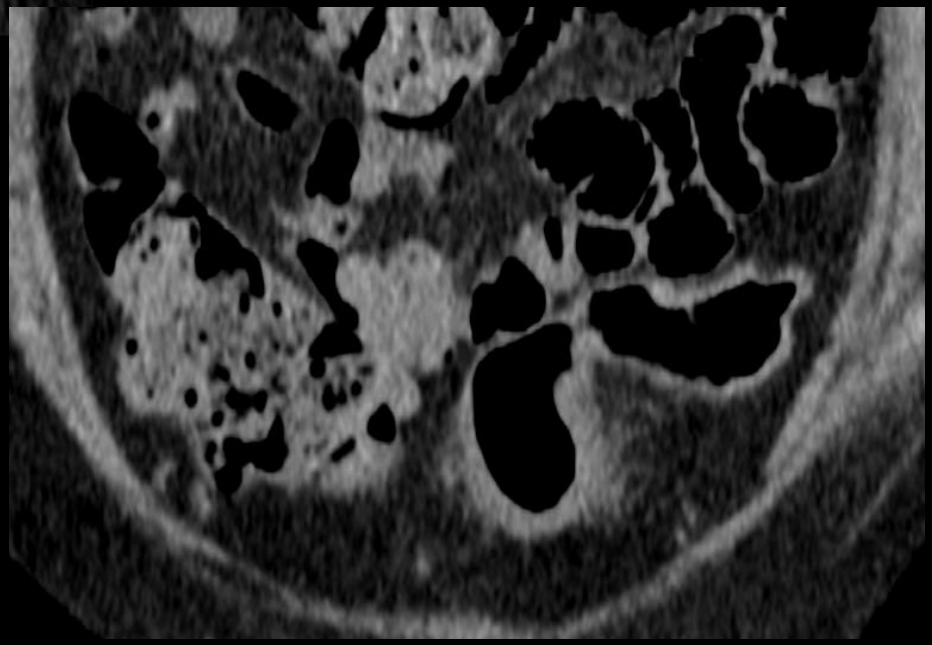

xamination running

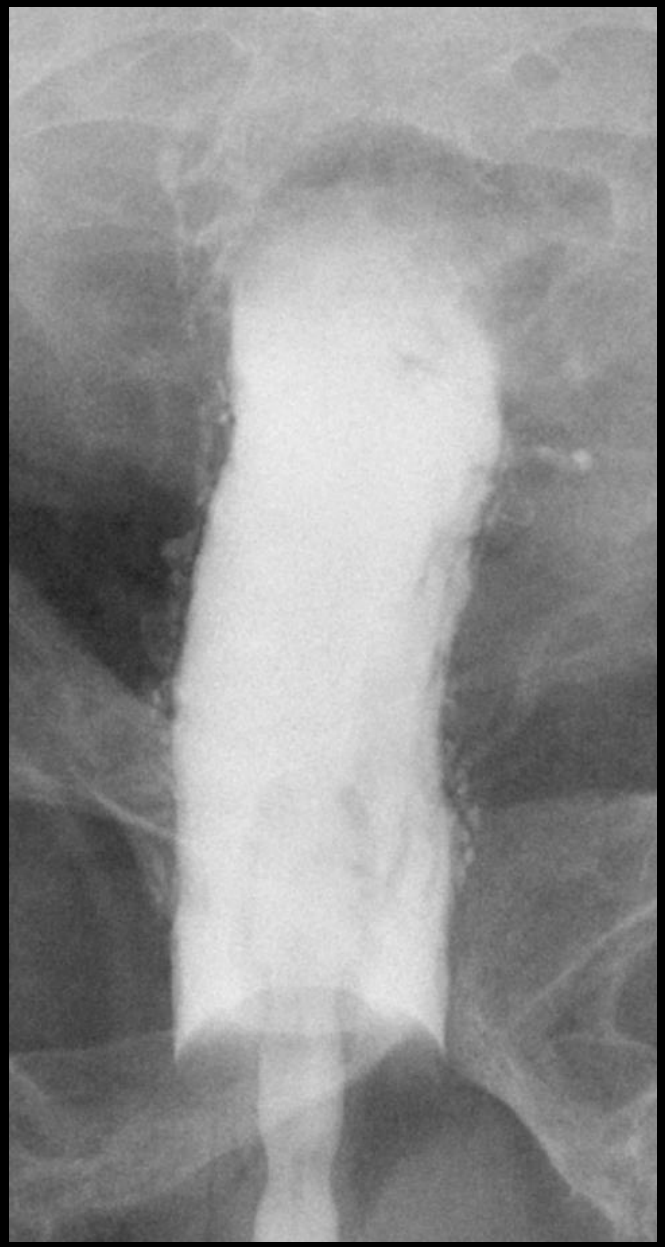

ABDO INTESTIN
L12-5
42Hz
RV
2D
70%
R Dyn 65
P Moy
Gén
ITm0.1 IM 0.7
5.0cm

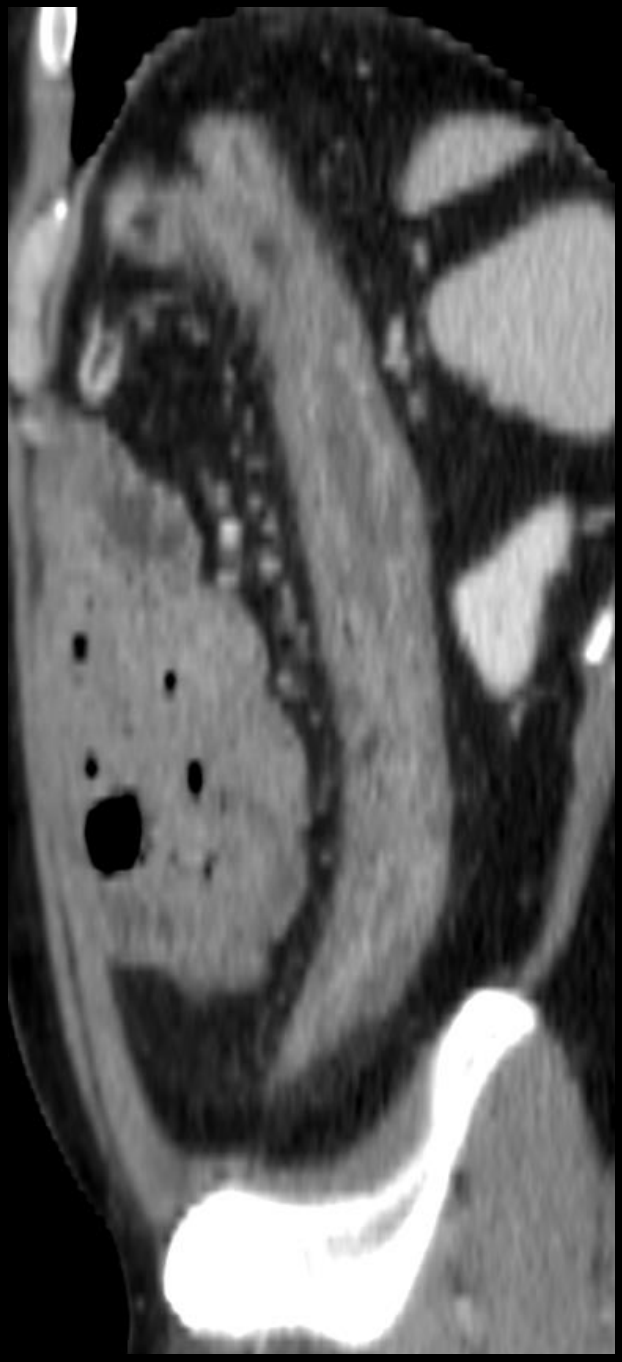

ABDO INTESTIN
L12-5
9Hz
2D
70%
R Dyn 64
P Moy
Rés
Coul
50%
731Hz
FP 47Hz
5.6MHz
ITm0.2 IM 0.9
M3 M3
+5.0
-5.0
cm/s
2 cm

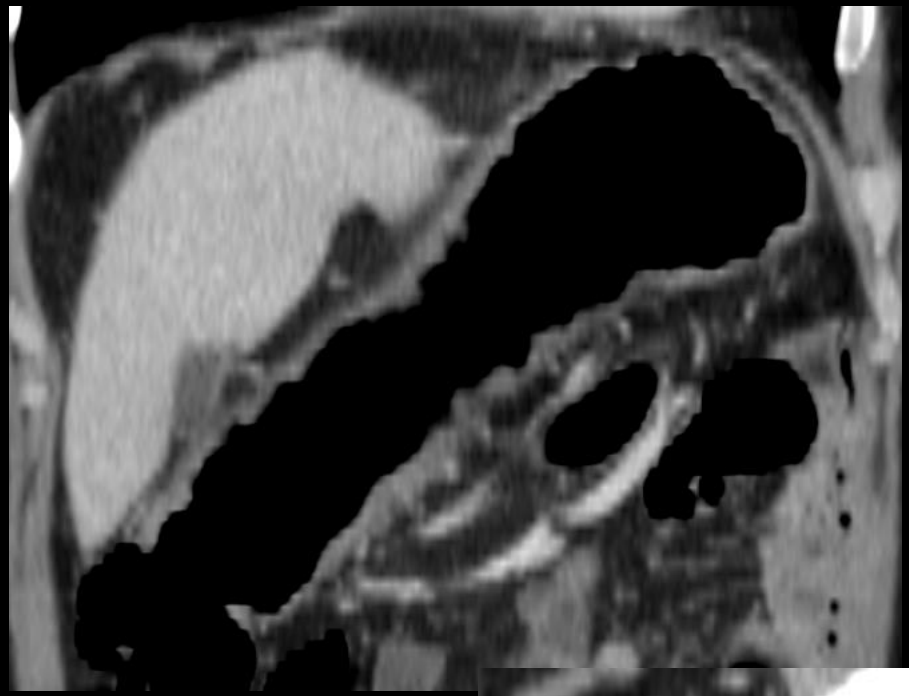


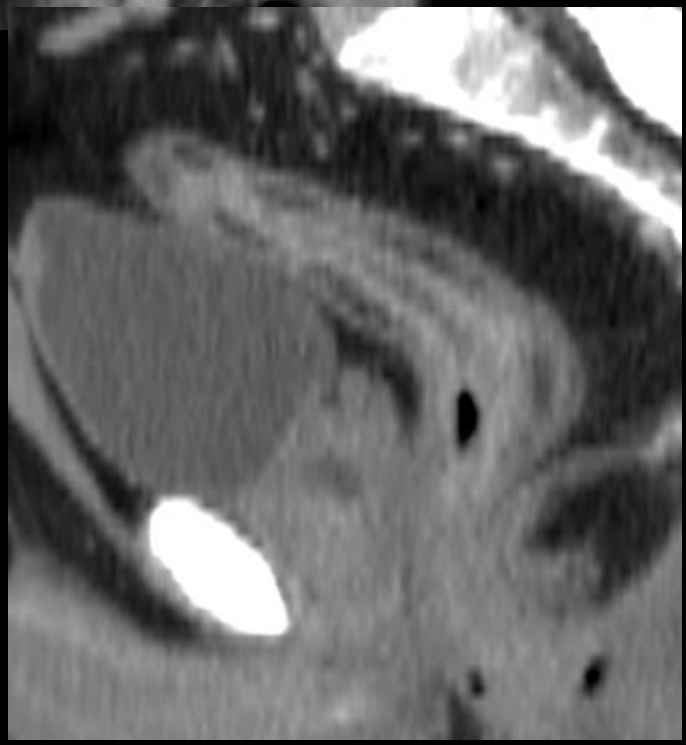


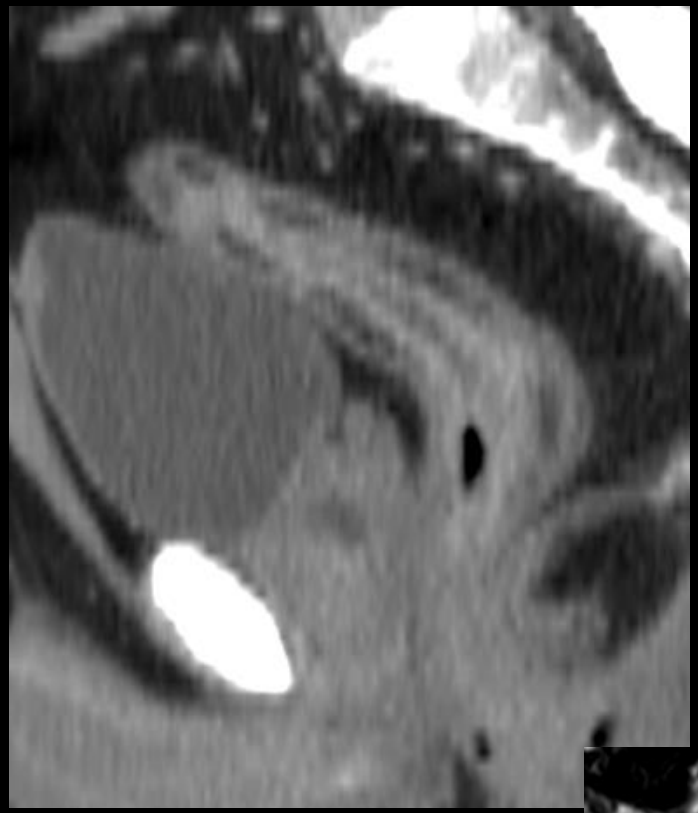


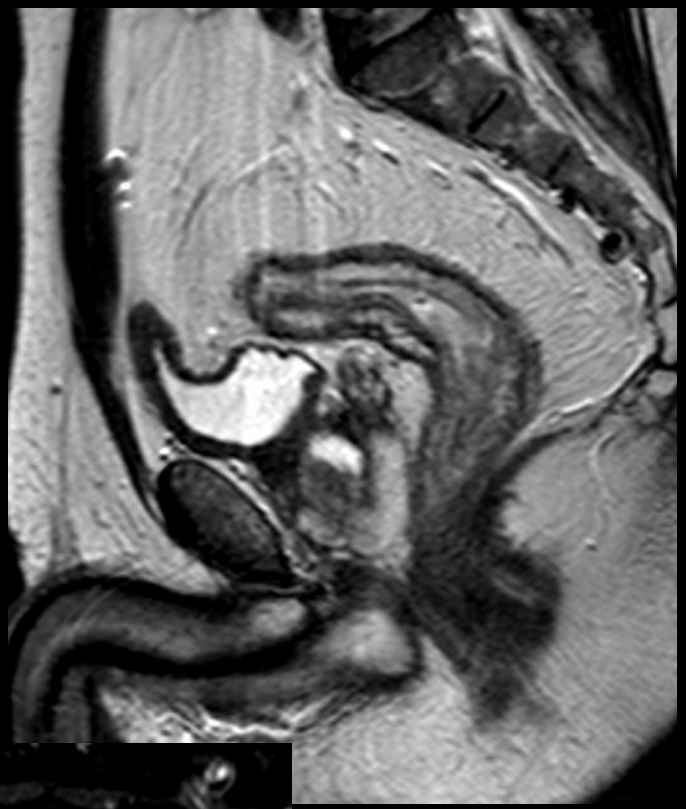


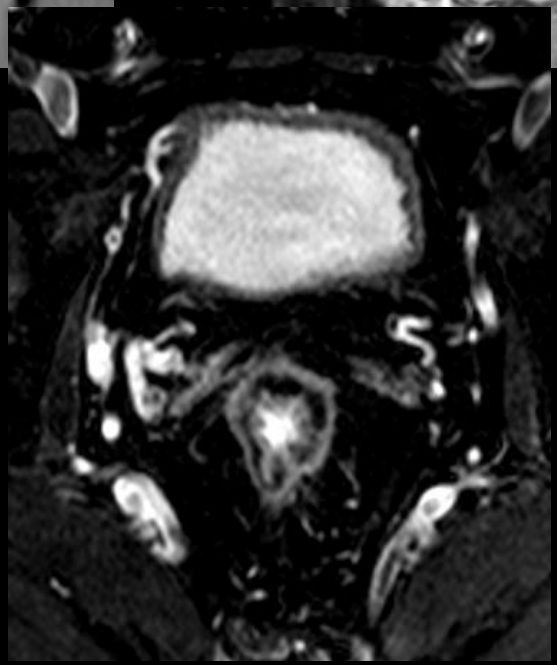












Split-Bolus Injection Producing Simultaneous Late Arterial and Portal Venous Phases in CT Enterography: Preliminary Results

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0361–803X/17/2095–1056

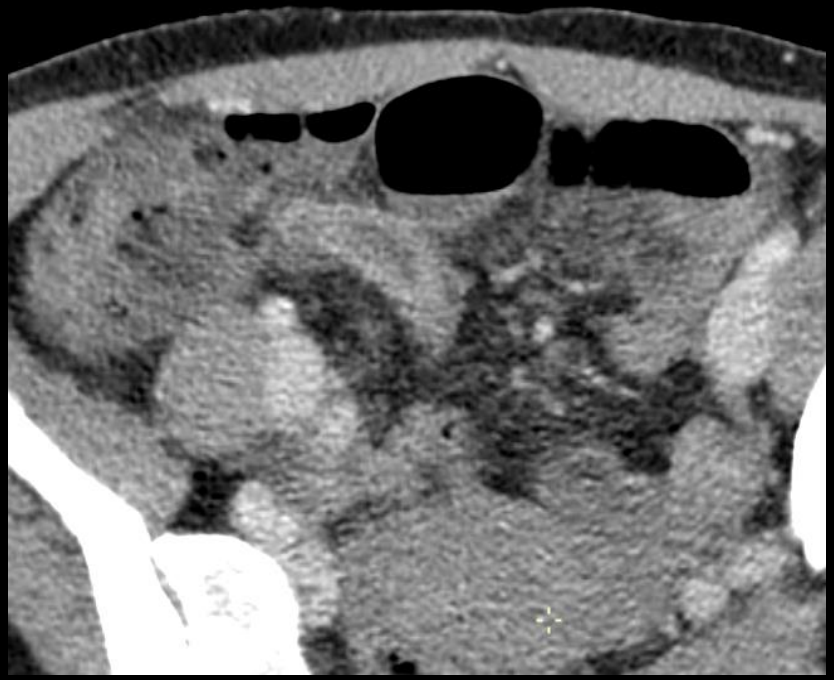
Keywords: contrast material, Crohn disease, CT,

OBJECTIVE. The purpose of this article is to evaluate the image quality and added value of split-bolus contrast agent injection combining late arterial and portal venous phases compared with single-bolus contrast agent injection late arterial phase CT enterography.

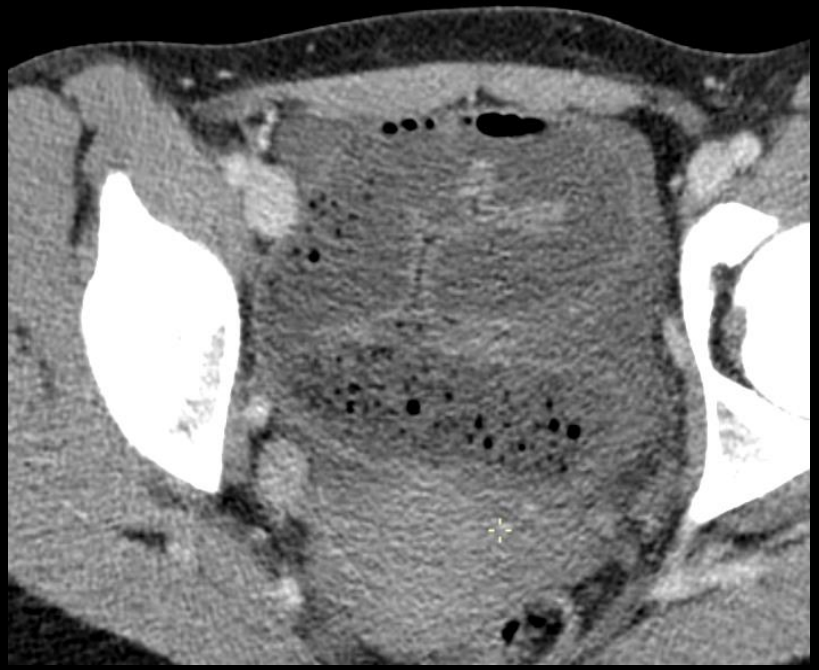
MATERIALS AND METHODS. Consecutive patients who underwent CT enterography before and after implementation of a single-bolus CT enterography protocol were included. Attenuation and contrast-to-noise ratio (CNR) were assessed by ROI measurements of the bowel wall and arterial and venous structures. Subjective enhancement of the bowel wall (1, arterial; 2, mucosal; 3, transmural; 4, transmural with mucosal hyperenhancement) and bowel abnormalities were assessed by two independent readers. MR enterography examinations, endoscopy reports, and surgery reports within 30 days after CT enterography were used to produce a composite outcome.

RESULTS. Sixty-six patients were included in our study: 33 (mean [± SD] age, 46.0 ± 19.8 years) who underwent split-bolus CT enterography and 33 (mean age, 49.9 ± 19.0 years) who underwent single-bolus CT enterography. Bowel wall attenuation and CNR were higher for split-bolus CT enterography than for single-bolus CT enterography at 120 kVp (enhancement, 98.7 ± 23.1 HU vs 85.1 ± 23.3 HU; CNR, 6.4 ± 2.5 vs 4.4 ± 2.3; $p < 0.01$). Subjective ratings of bowel wall enhancement were higher with the split-bolus CT enterography than the single-bolus CT enterography (2.6 ± 0.8 vs 2.3 ± 0.6; $p < 0.001$). Split-bolus CT enterography led to a higher detection rate of mucosal hyperenhancement than did single-bolus CT enterography in patients with active inflammatory bowel disease (100.0% [7/7; 95% CI, 59.0–100.0%] vs 33.3% [2/6; 95% CI, 4.3–77.7%]; $p = 0.02$), whereas both protocols had a specificity of 100.0% (9/9).

CONCLUSION. Split-bolus CT enterography led to improved CNR (47%) compared with single-bolus CT enterography and significantly increased the detection rate of mucosal hyperenhancement in patients with active inflammatory bowel disease.




5
3.32 cm
8.0cm



Date of origin: 1998
Last review date: 2014

American College of Radiology
ACR Appropriateness Criteria®

Clinical Condition: **Crohn Disease**

Variant 1: **Adult. Acute initial presentation. Fever, severe abdominal pain, vomiting, leukocytosis. Suspected Crohn disease.**

Radiologic Procedure	Rating	Comments	RRL*
CT abdomen and pelvis with IV contrast	8	The procedures are equivalent alternatives, and only one should be performed.	☢☢☢☢
CT enterography	8	The procedures are equivalent alternatives, and only one should be performed. Severe vomiting may preclude the required intake for this examination.	☢☢☢☢
MR enterography	6	This procedure may not be well tolerated in acute setting.	O
MRI abdomen and pelvis without and with IV contrast (routine)	5	This procedure may be an option if patient cannot receive IV iodinated contrast for CT.	O
X-ray abdomen	5	Consider this procedure if the patient is unstable and there is high suspicion for perforation.	☢☢
CT abdomen and pelvis without IV contrast	5	This procedure is only appropriate if the patient cannot receive IV contrast. Oral contrast should be given; radiodense is preferred.	☢☢☢☢
US abdomen and pelvis	5	This procedure is dependent on operator expertise and patient body habitus.	O
MRI abdomen and pelvis without IV contrast (routine)	4	This procedure is preferred over CT in pregnant patients.	O
CT abdomen and pelvis without and with IV contrast	3		☢☢☢☢
CT enteroclysis	3	Little role in the acutely ill patient.	☢☢☢☢
MR enteroclysis	3	Little role in the acutely ill patient.	O
X-ray small-bowel follow-through	3		☢☢☢
X-ray contrast enema	3		☢☢☢
Tc-99m HMPAO leucoscintigraphy	2		☢☢☢
FDG-PET/CT abdomen and pelvis	2		☢☢☢☢

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level

Clinical Condition: Crohn Disease

Variant 2: Adult. Nonacute or indolent initial presentation. Mild to moderate abdominal pain or cramping. Suspected Crohn disease.

Radiologic Procedure	Rating	Comments	RRL*
CT enterography	9	The procedures are equivalent alternatives, and only one should be performed.	☢☢☢☢
MR enterography	9	The procedures are equivalent alternatives, and only one should be performed.	O
CT abdomen and pelvis with IV contrast	6	Consider this procedure if the patient cannot tolerate oral contrast requirements of CT enterography.	☢☢☢☢
CT enteroclysis	6	This procedure requires specialized expertise that may not be available at all centers.	☢☢☢☢
MRI abdomen and pelvis without and with IV contrast (routine)	6	This procedure may be an option if the patient is unable to undergo CT enterography or MR enterography.	O
CT abdomen and pelvis without IV contrast	5		☢☢☢☢
MR enteroclysis	5	This procedure requires specialized expertise that may not be available at all centers.	O
X-ray small-bowel follow-through	5		☢☢☢
US abdomen and pelvis	5		O
MRI abdomen and pelvis without IV contrast (routine)	4	This procedure is preferred over CT in pregnant patients.	O
X-ray contrast enema	4		☢☢☢
X-ray abdomen	3		☢☢
CT abdomen and pelvis without and with IV contrast	3		☢☢☢☢
Tc-99m HMPAO leucoscintigraphy	2		☢☢☢
FDG-PET/CT abdomen and pelvis	2		☢☢☢☢

Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate

*Relative Radiation Level