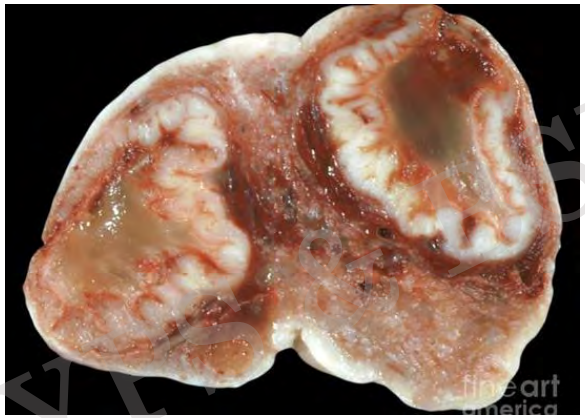
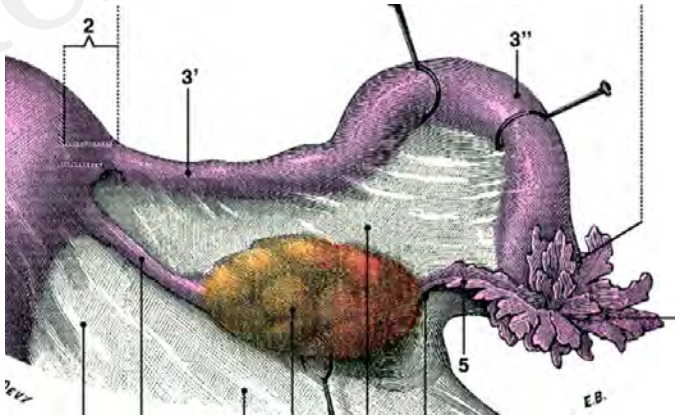
Macroscopy course
Ovary and Fallopian tube

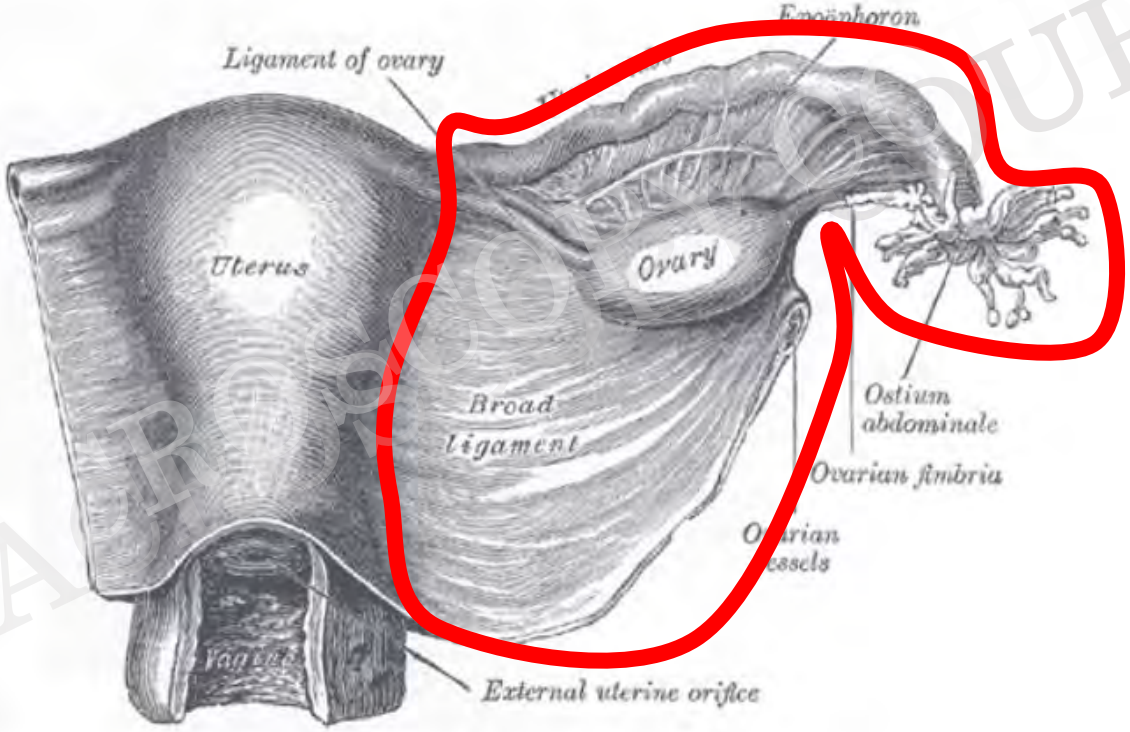




Quitterie Fontanges, Cliniques Universitaires de St Luc, UCL, Bruxelles

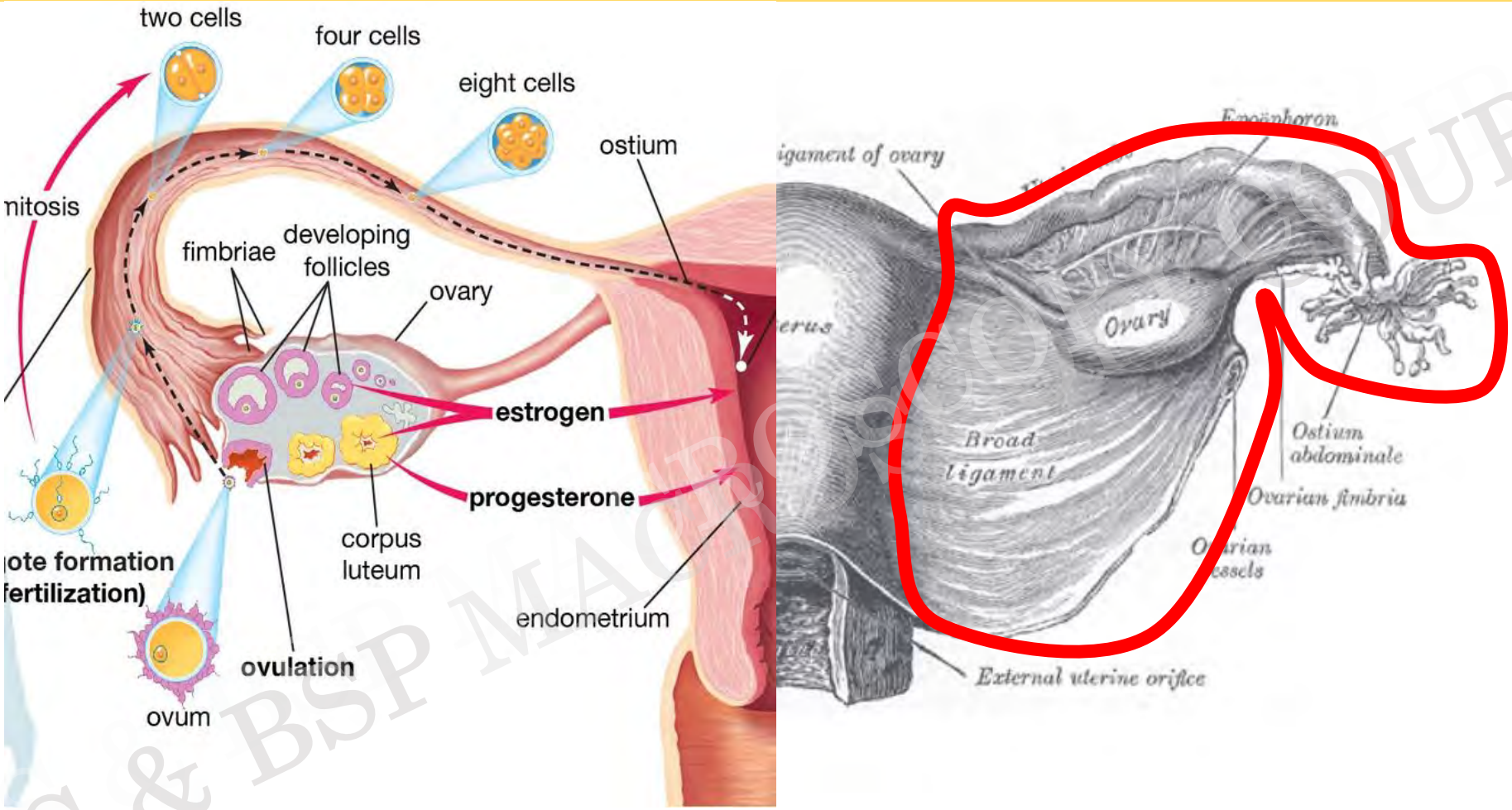
- Some anatomy and terminology
- Concept of peritoneal cavity and why it is important to understand it
- Most common clinical context
- Salpinx
- Ovary

Adnexa = appendage of the uterus
adnectere: what is attached to



GRAY H. GRAY'S ANATOMY. LEA & FEBIGER, NEW YORK, 1918.

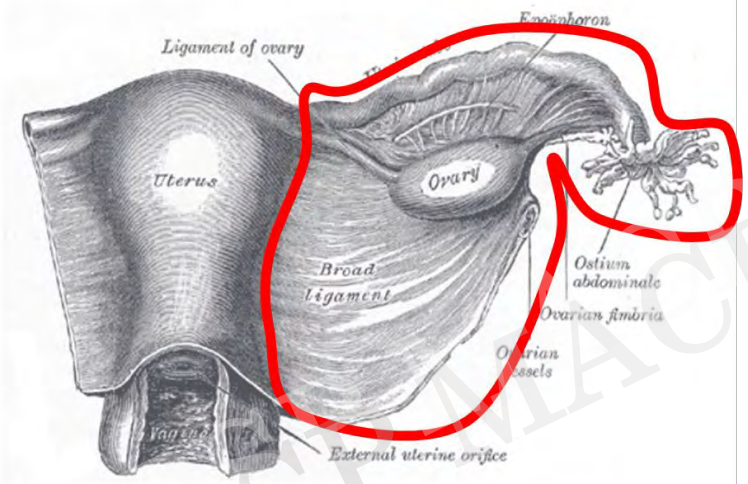
Adnexa = appendage of the uterus
adnectere: what is attached to



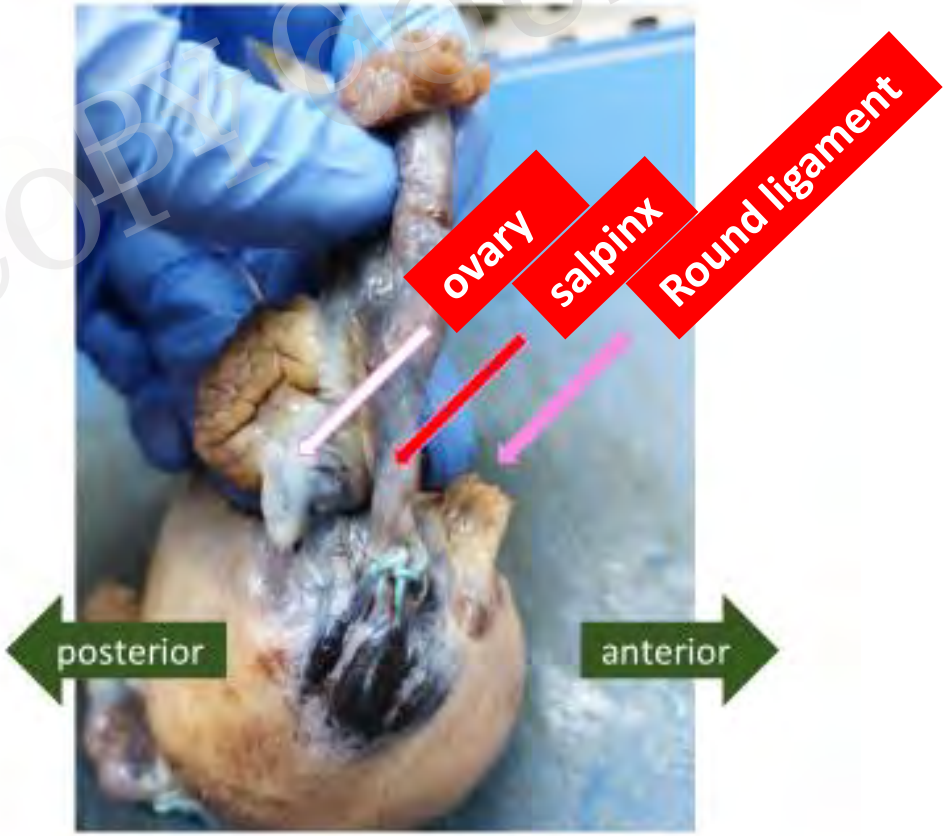
GRAY H. GRAY'S ANATOMY. LEA & FEBIGER, NEW YORK, 1918.

Adnexa = appendage of the uterus
A world about orientation

Posterior view



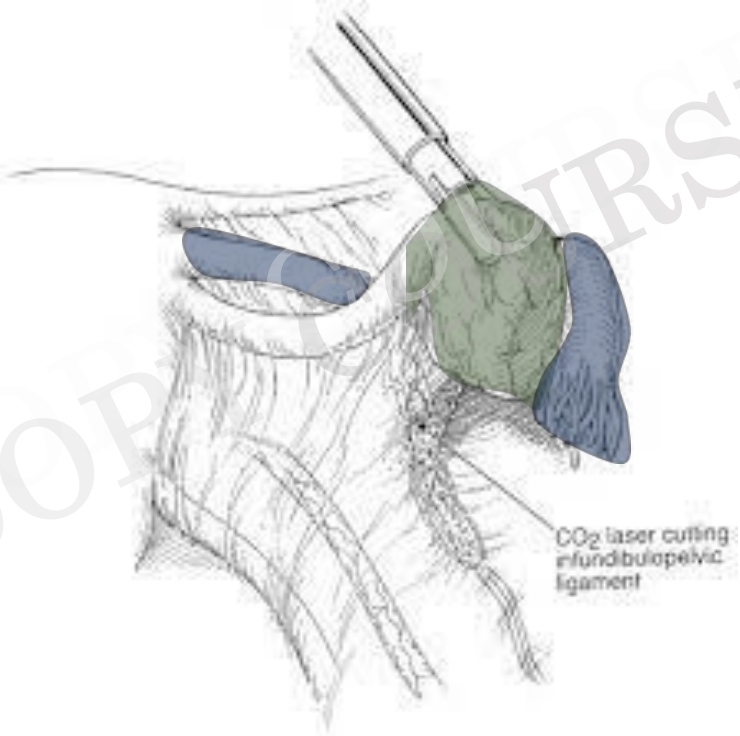
GRAY H. GRAY'S ANATOMY. LEA & FEBIGER, NEW YORK, 1918.



Looking from above

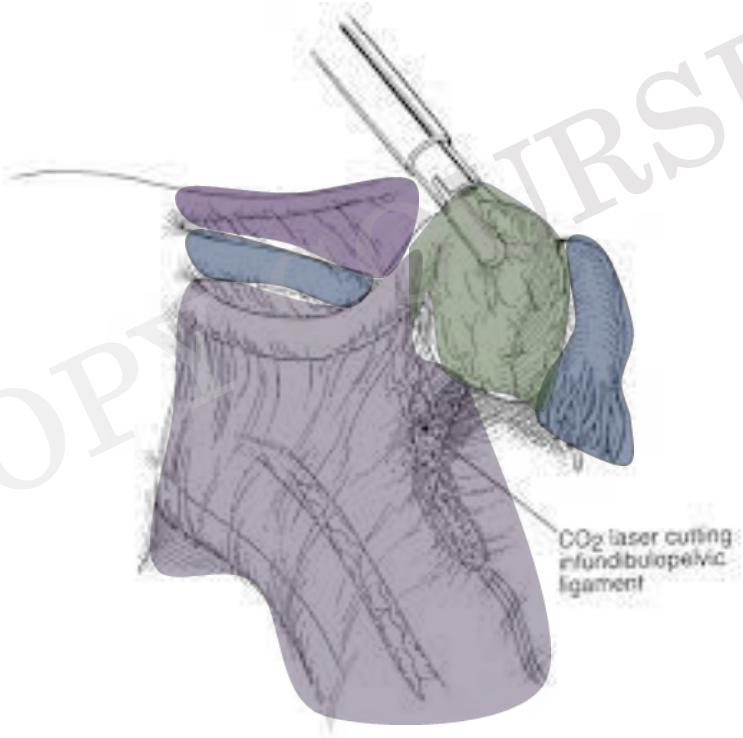
- Salpingectomy = removal of the Fallopian tube
- Oophorectomy = ovariectomy
- Adnexectomy = salpingo-oophorectomy

It can be unilateral or bilateral



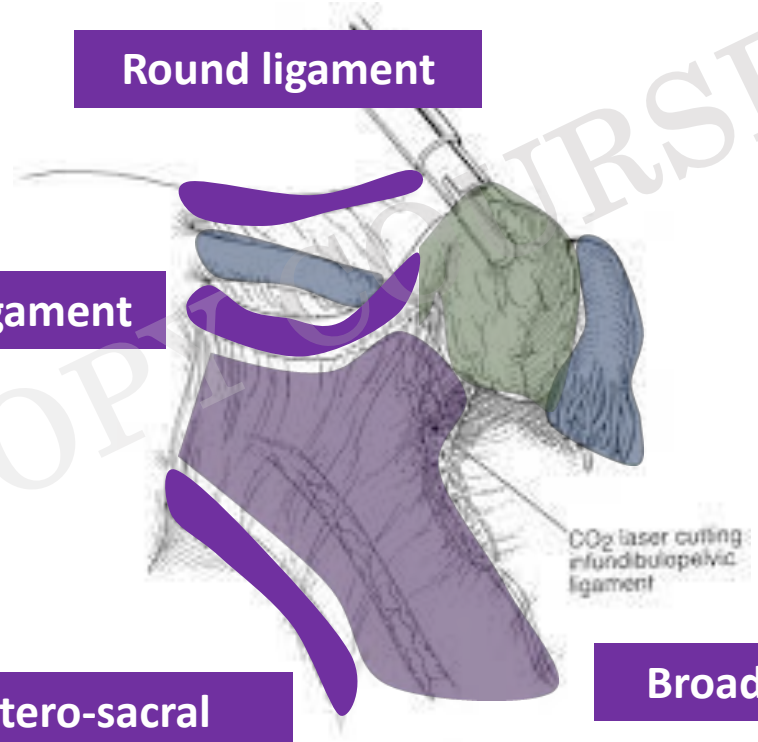
Because you might read this..: **BSO** → Bilateral salpingo-oophorectomy

What's the name of all the fluffy things around?



What's the name of all the fluffy things around?

Anterior



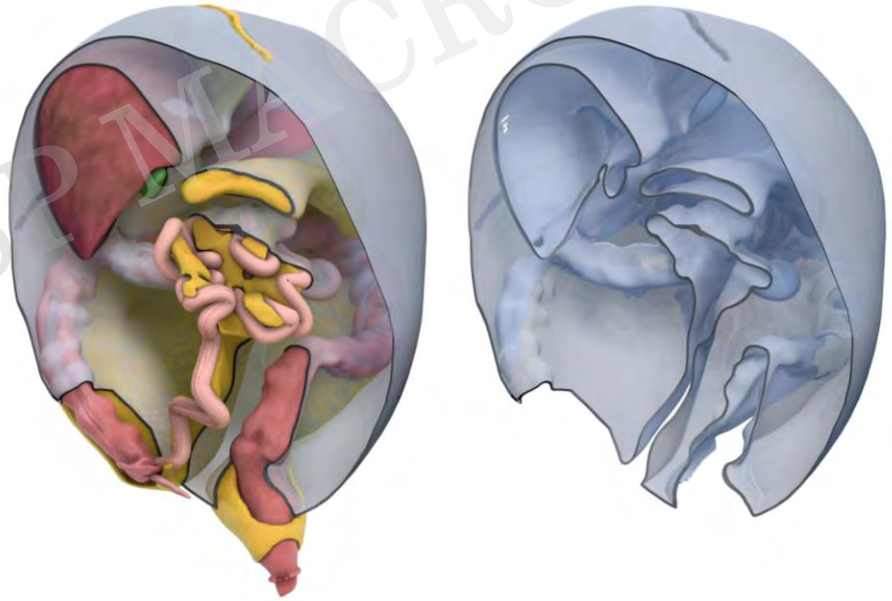
Posterior

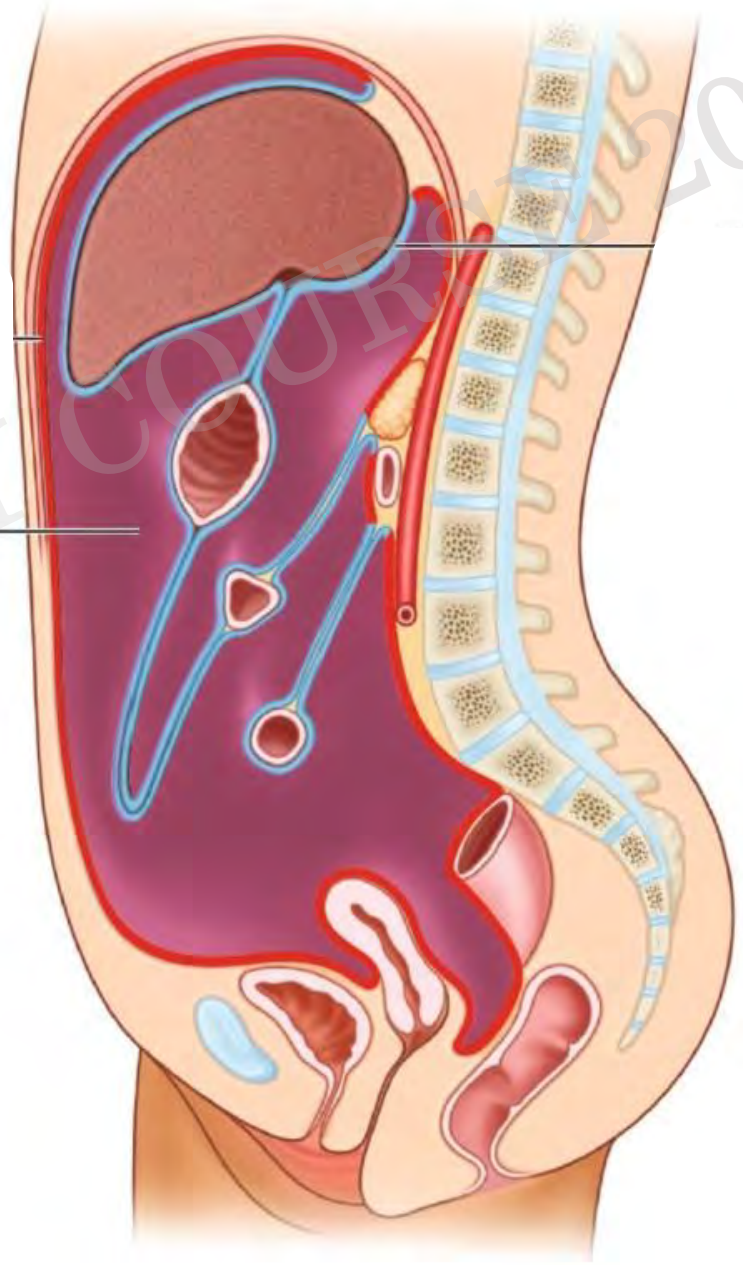
Ligament?

Adipose and fibrous tissue, holding things together and carrying blood supply and lymphatics

Peritoneal cavity

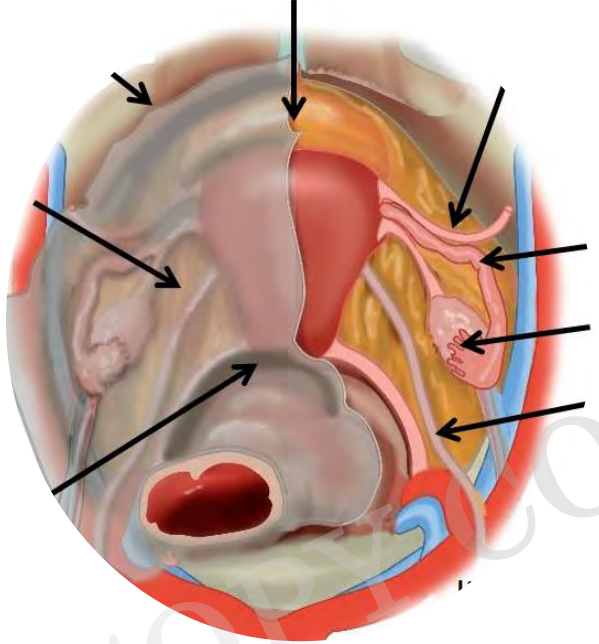
- Virtual cavity that the surgeon makes real by inflating it, or where liquid can accumulate in some pathological conditions
- From the liver to the diaphragm to the guts to the uterus, peritoneum is a thin membranous glistening layer, like a sac
- Important to understand the concept because it means anything that happens to the ovary can very quickly spread through this cavity

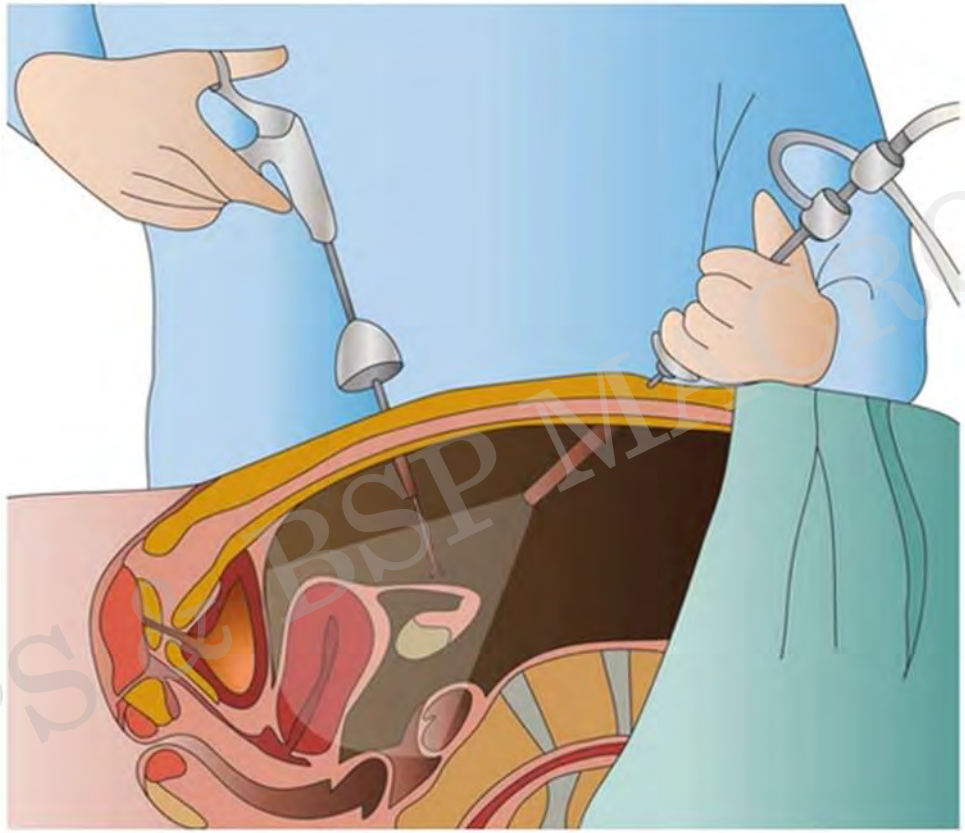


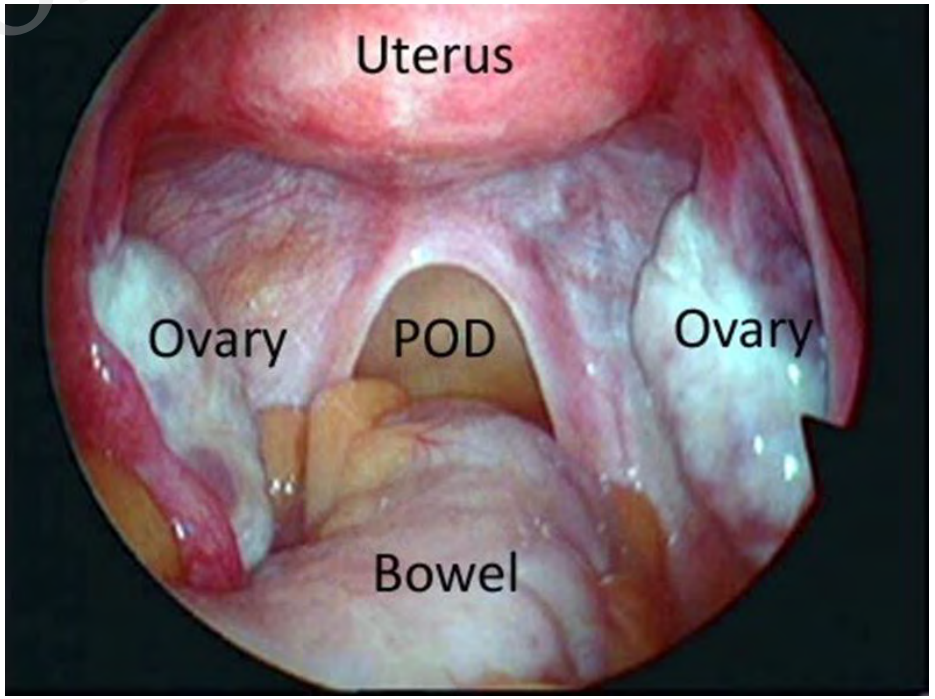


Peritoneal cavity

- What does the surgeon see ?







When do we remove the adnexa?

- Salpingectomy:
    - Tubal pregnancy
    - Abcess, hydrosalpinx, hematosalpinx
    - Often context of young patient
- Adnexectomy:
    - Cyst, mass
    - Is it benign? Is it malignant? Radiologist and clinicians have a guess, we have the last word
    - Prophylactic: remove it before cancer develops

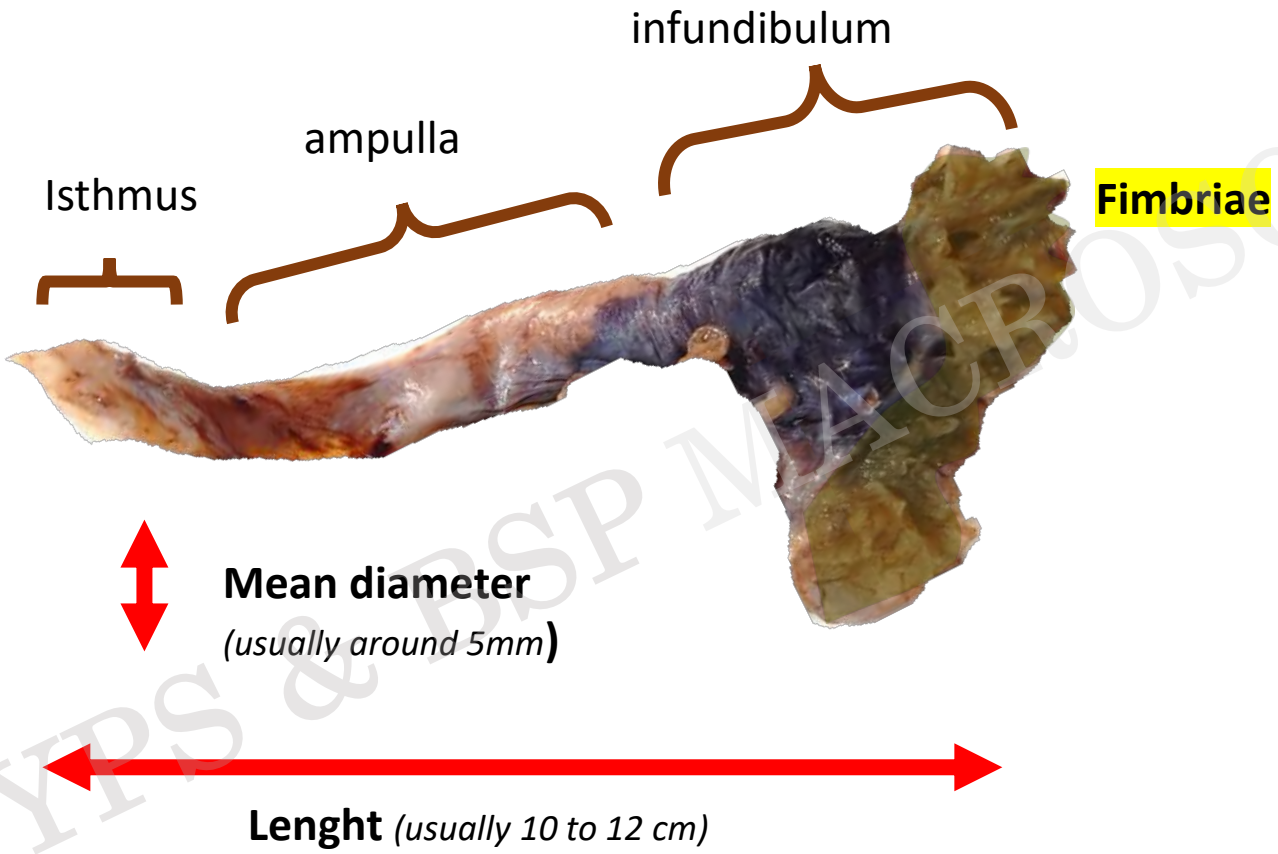
- What about ovariectomy alone?

Somehow a rare situation > if you remove the ovary you have no reason to keep the salpinx

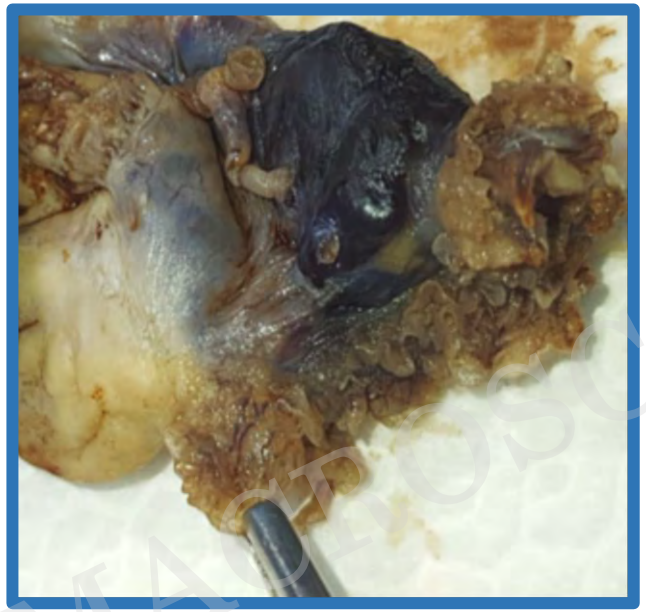
Opposite is not true ! Especially in patient before menopause, you want to preserve the ovary as much as possible

Always check the age and clinical informations !

Salpingectomy



Salpingectomy



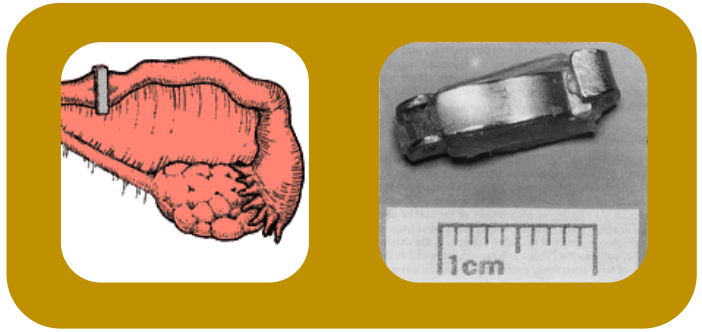
Ovarian's surface and fimbriae are intimately connected

Fimbriae are complex and numerous infoldings of tubal mucosa

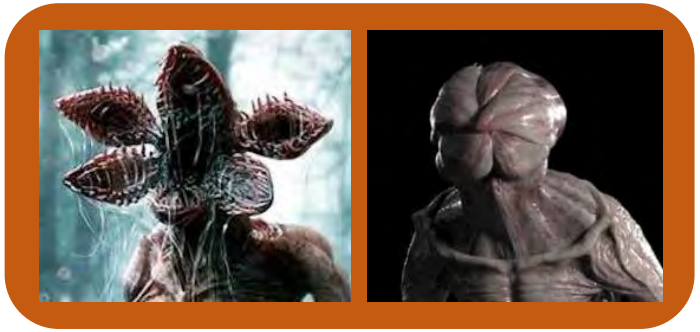
Salpingectomy- incidental findings

What you might see often:

- little (<1cm) cyst at the infundibulum
- sterilisation procedures (metal clips (1 or 2) or threads)



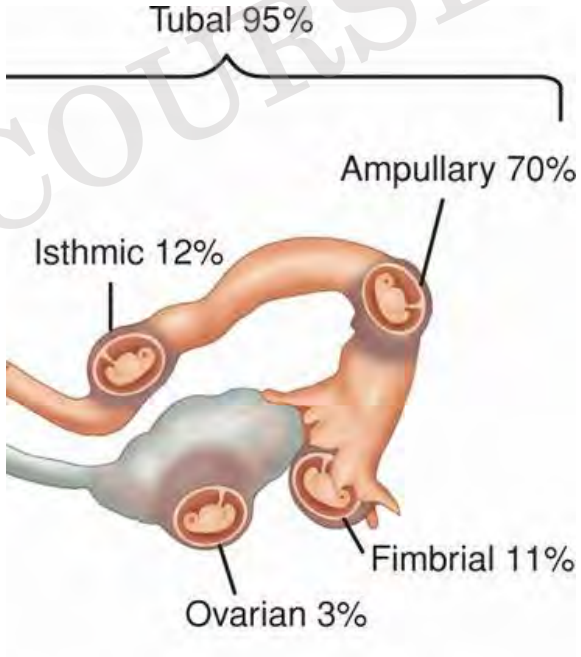
What you might see sometimes:
- tubal phymosis



Salpingectomy- clinical context n°1

Tubal pregnancy

- Pregnancy can be found in any segment of the salpinx
- Specify number of fragments
- Integrity of tubal surface
- Report not 2 but 3 dimensions (smallest and largest diameters)
- Describe content if identified (blood, placental villi, embryonal remnants…)



What's at stake?

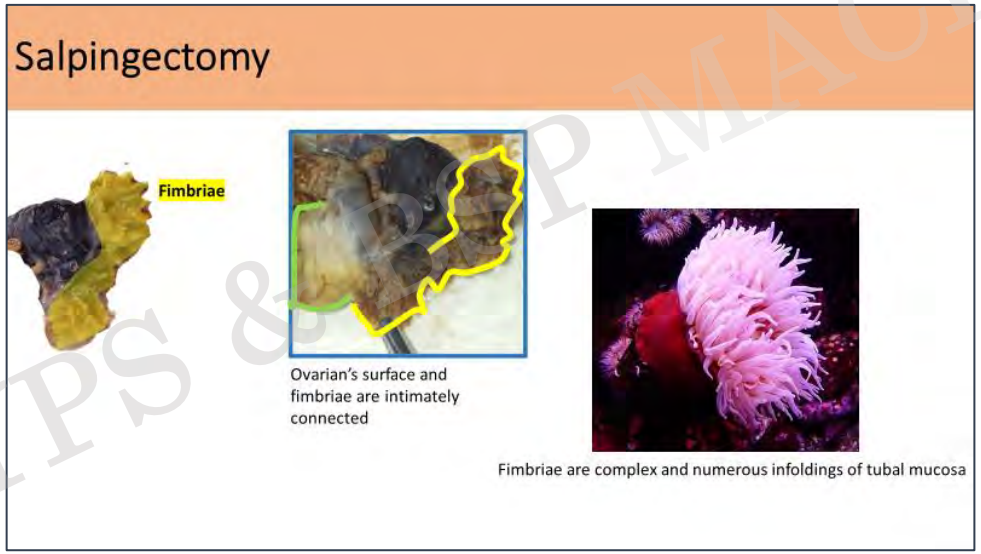
- Identify the tubal implantation of the pregnancy
- Exclude a placental pathology (hydatiform mole)

Salpingectomy- clinical context n°2

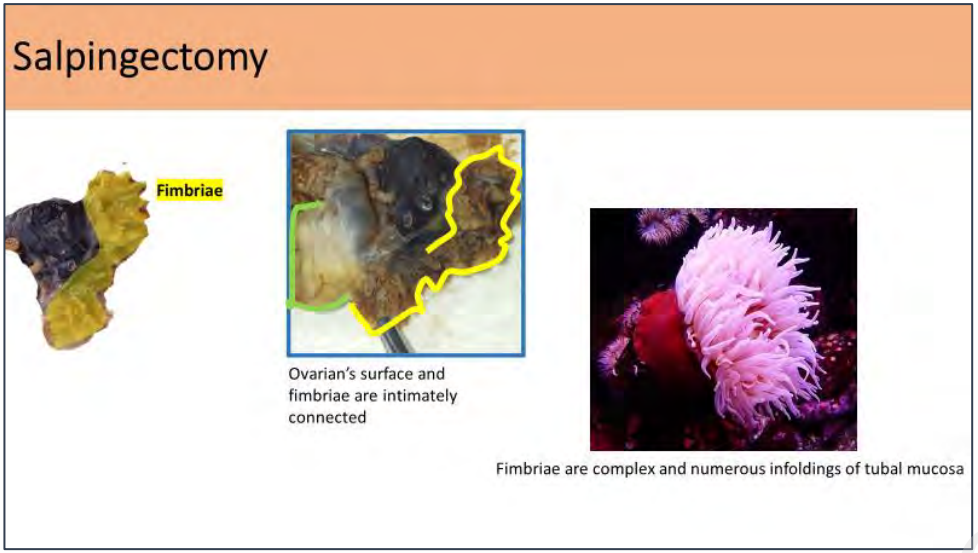
Prophylactic bilateral salpingectomy:

- Hereditary context linked to a high risk of ovarian cancer
- Mutation of BRCA gene
- Ovarian cancer comes from … the fimbriae of the salpinx!

Remember…?



Salpingectomy- clinical context n°2



Very early cancer will not translate macroscopically: **occult malignancy**

You're dealing with a complex tridimensionnal structure : the fimbriae

You are going to analyze on slide in a bidimensional way

Remember our concept of peritoneal cavity, anything happening in the adnexa can very quickly spread !

Salpingectomy- clinical context n°2

How to cut your specimen in a way to maximize your chances to find Nemo?

Salpingectomy- clinical context n°2

SEEFIM

S **E** **E** **FIM**

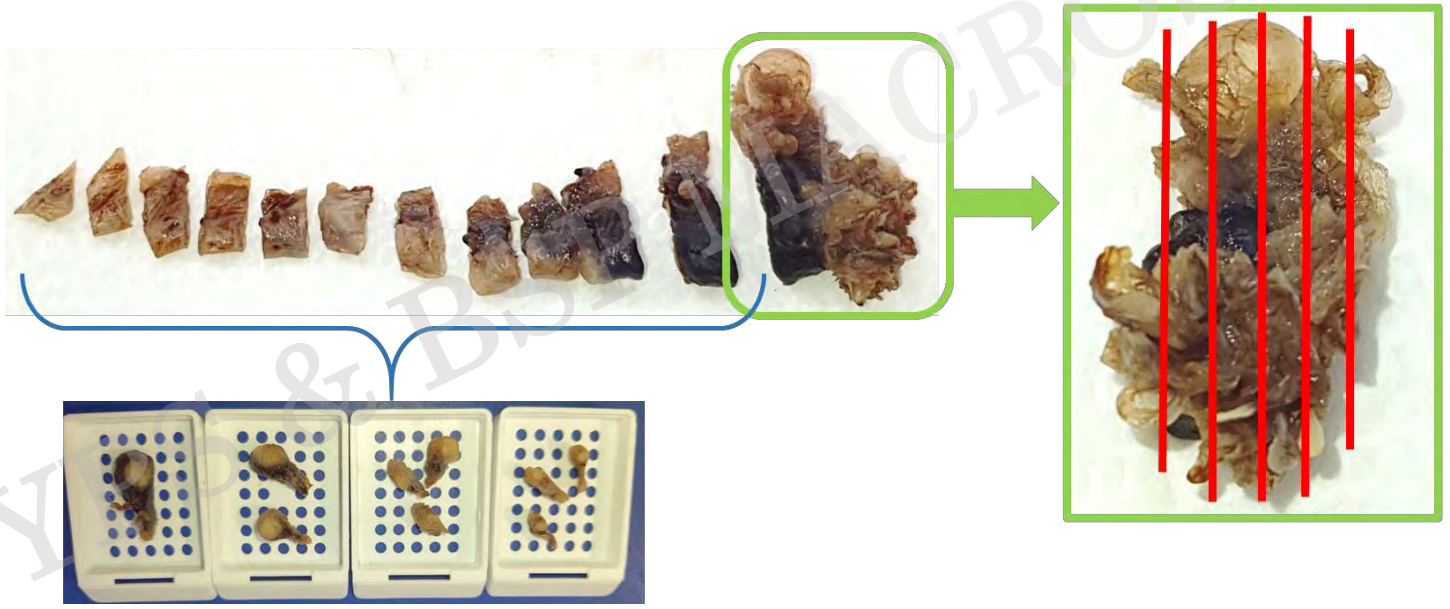
Sectioning and Extensively Examining the FIMbriated End

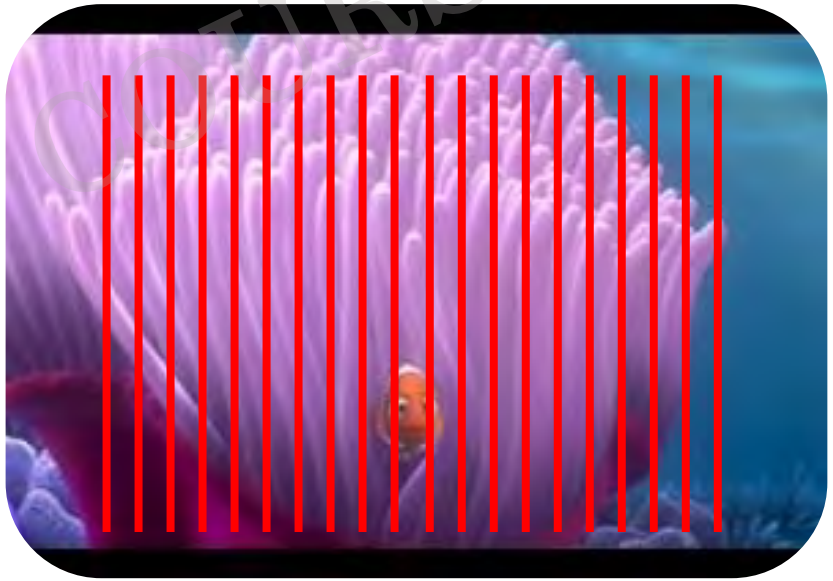
Salpingectomy- clinical context n°2

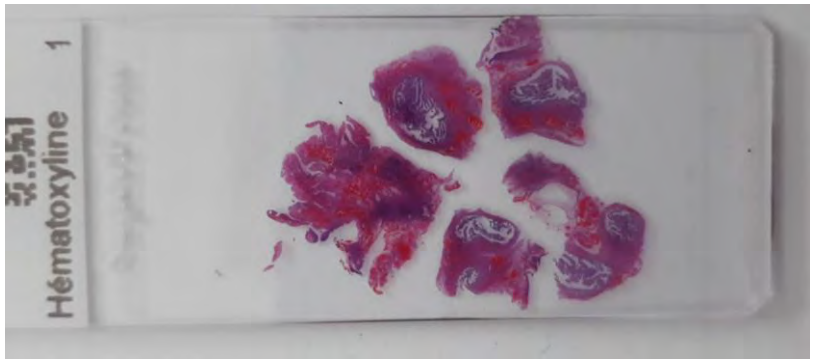
SEEFIM

S **E** **E** **FIM**

Sectioning and Extensively Examining the FIMbriated End





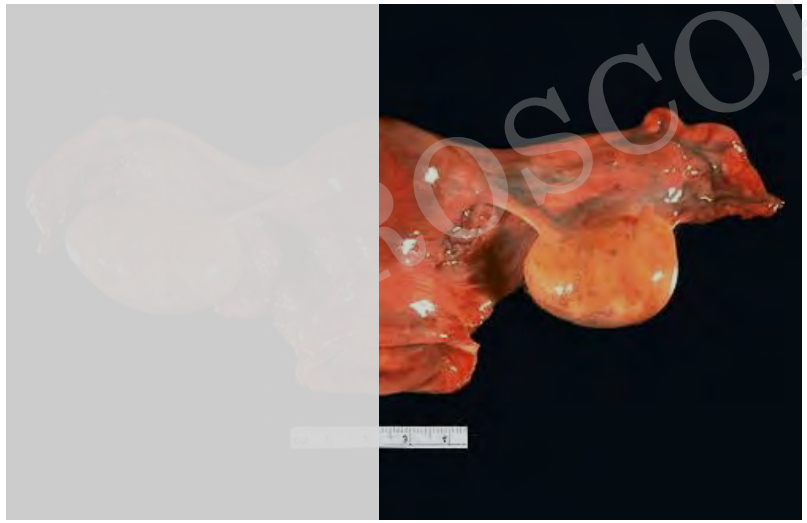


Adnexectomy – Focus on the ovary

What is a normal ovary? … depends of the age of the patient

Wide range of morphologically different but normal gross aspects depending on the age

Expected size of an adult ovary:



3.0 to 5.0 cm

1.5 to 3.0 cm

0.6 to 1.5 cm

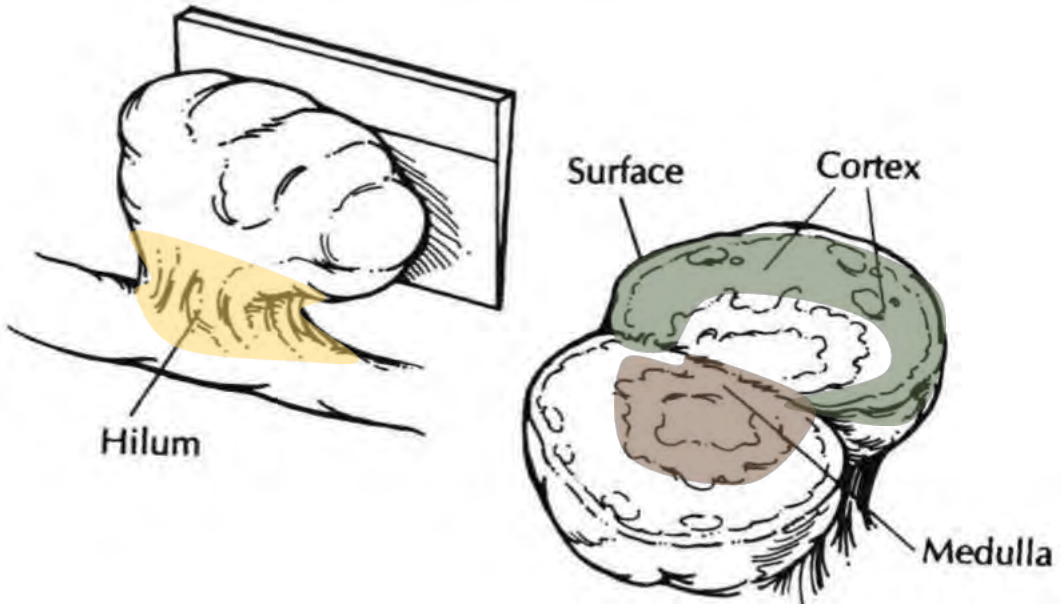
Adnexectomy – Focus on the ovary

What is a normal ovary? … depends of the age of the patient

Wide range of morphologically different but normal gross aspects depending on the age

Inspection: pink to whiter exterior surface that can be smooth or convoluted

Three ill defined zones are discernible

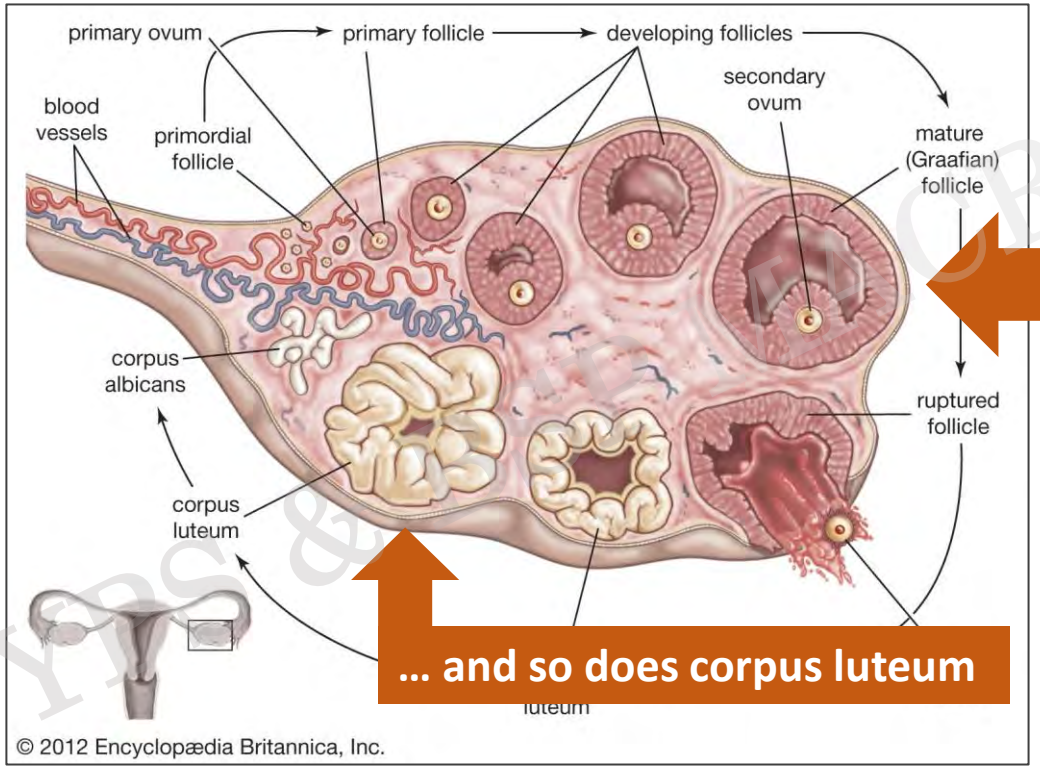


Adnexectomy – Focus on the ovary

What is a normal ovary? … depends of the age of the patient

Wide range of morphologically different but normal gross aspects depending on the age

Cut section



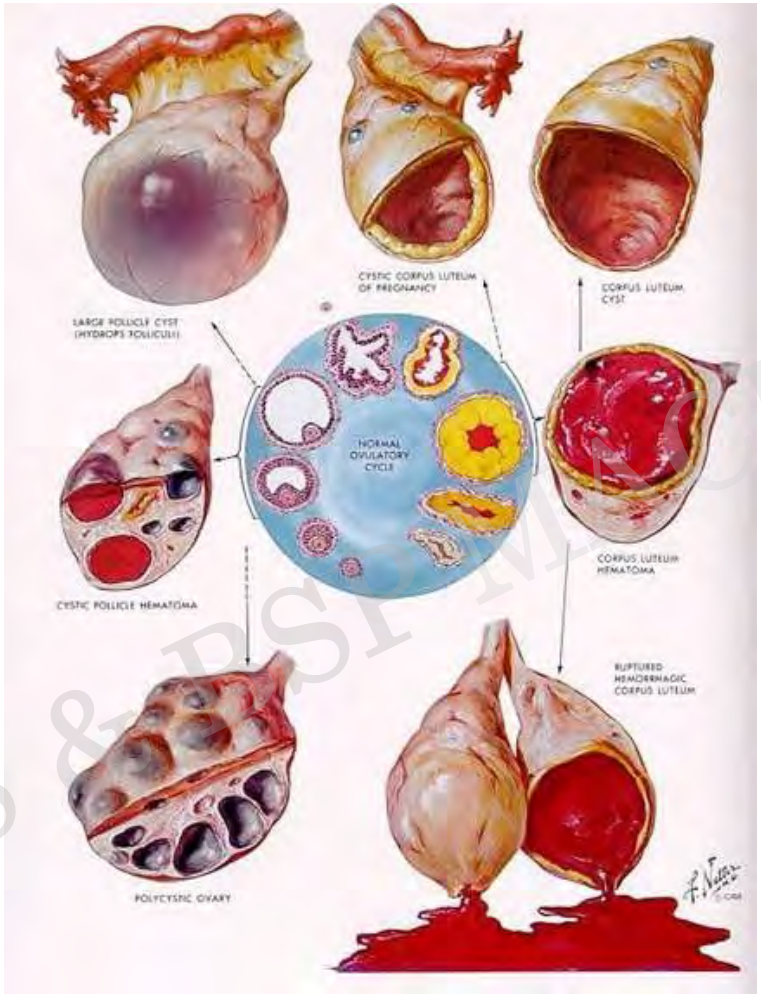
Pre-ovulatory follicle reaches up to 25 mm physiologically

… and so does corpus luteum

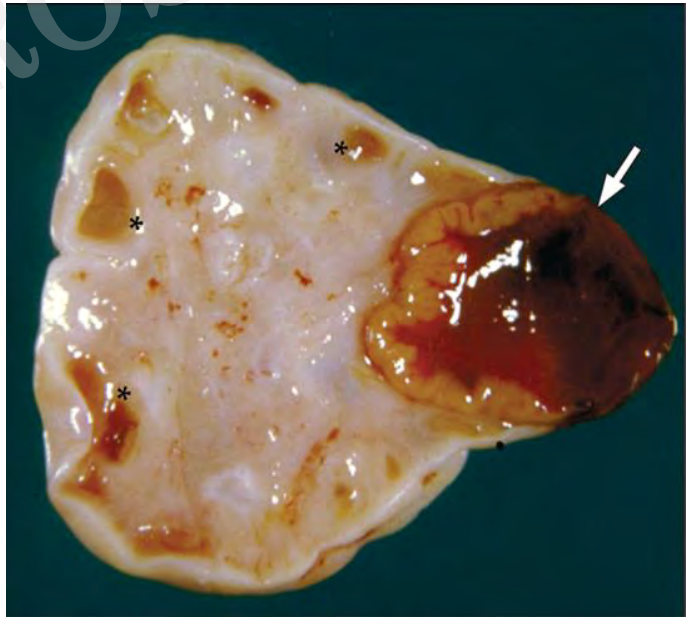
Adnexectomy – Focus on the ovary

Wide range of morphologically different but normal gross aspects depending on the age

Cut section



It means you are going to see « cyst » !
And it's NORMAL
Clues in favour of physiological: cortical, unilocular,gelatinous content, around one centimeter
If in doubt: check your patient AGE + take PHOTOS



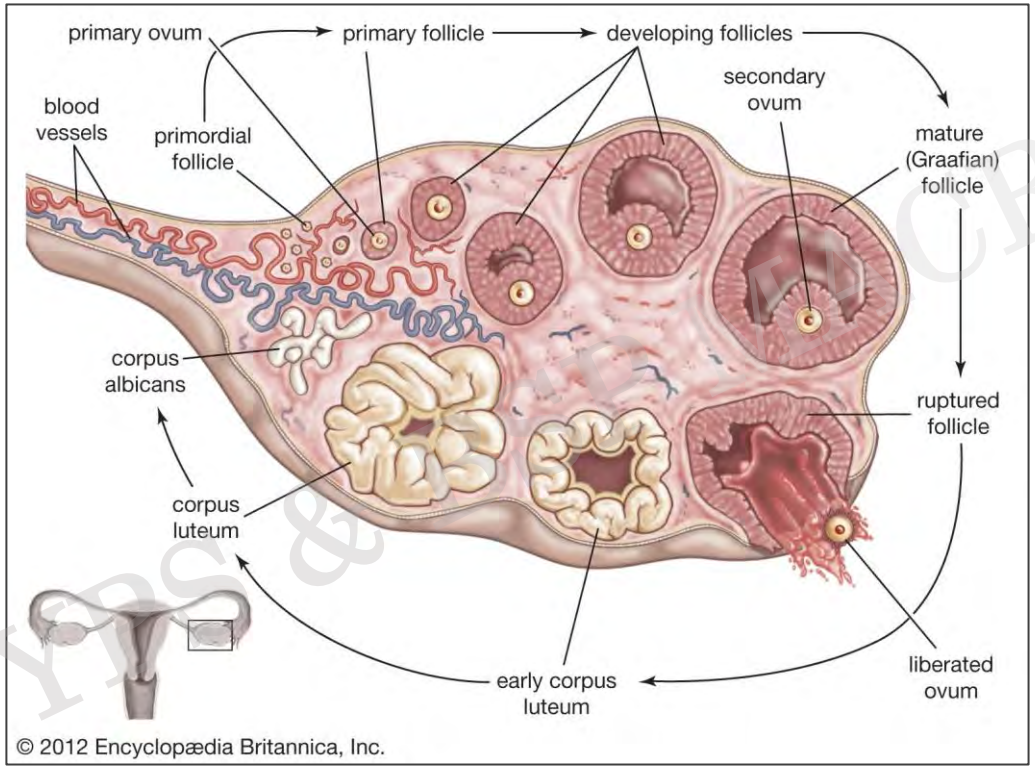
« Usual suspect »:
The Corpus luteum

Scalopped/festooned contours
Yellowish ribbon
Hemorragic content

Adnexectomy – Focus on the ovary

Wide range of morphologically different **but** normal gross aspects depending on the age

Cut section



Nevertheless…..

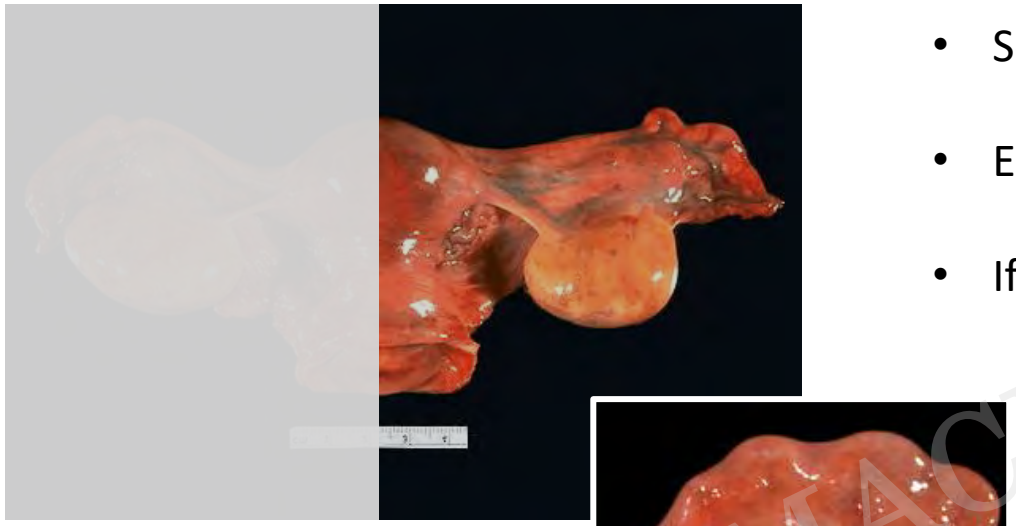
The « normal » ovary of hormonally active woman
is NOT what you ’re gonna see the most,
because we try not to remove them!

You’ll see a lot of:
-perimenopausal
-post menopausal ovary > atrophic

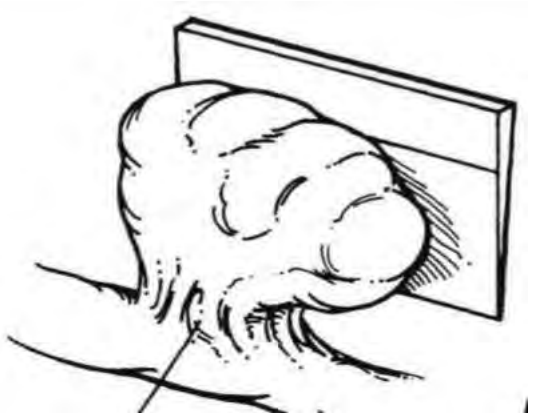
Whitish, smaller
Medulla and hilum expand to the detriment of cortex

Adnexectomy – Focus on the ovary

How to sample a « normal » ovary:



- Serial sagittal section, 3 to 4mm thick
- Examine cut surface
- If normal: one or two sections where cortex/medulla and hilum are visible



Adnexectomy – Let's talk about cyst

Cyst.. I mean a mass in general
Remember, often, no prior histological diagnosis.
Remain vigilant! It could be anything !

ALWAYS look for clinical and radiological information

INTEGRITY of the specimen: INTACT or COLLAPSED or FRAGMENTED

SURFACE

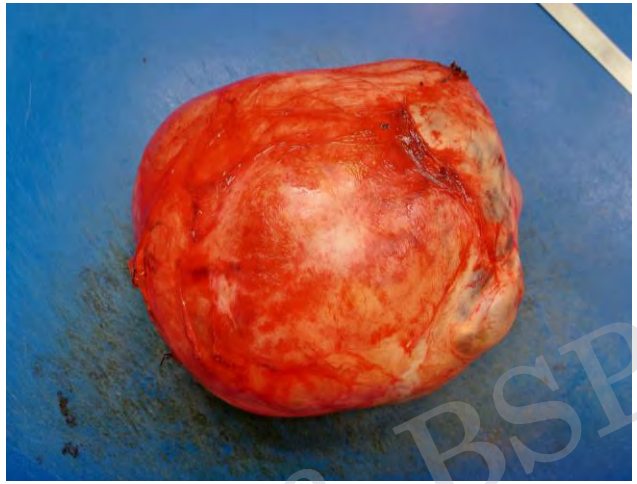
SIZE and WEIGHT

When in doubt : take a PHOTO !

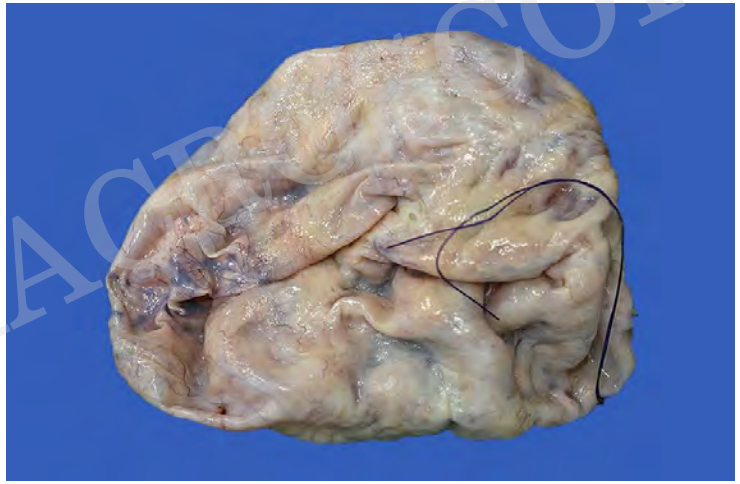
Adnexectomy – Let's talk about cyst

INTEGRITY of the specimen

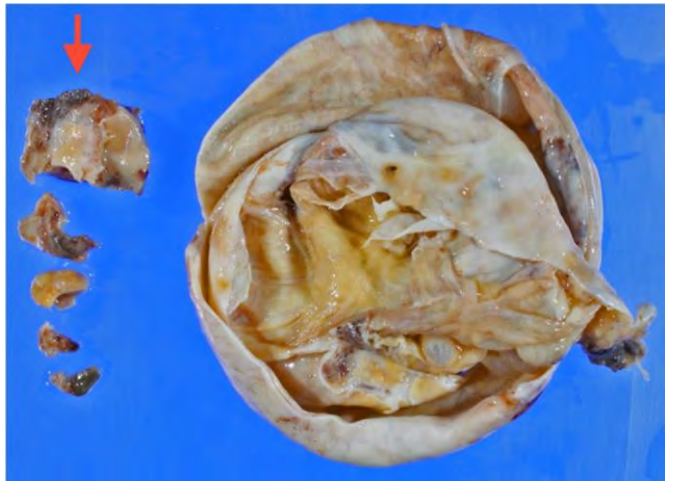
INTACT



COLLAPSED



FRAGMENTED or
overtly OPENED/BREECHED



Adnexectomy – Let's talk about cyst

INTEGRITY of the specimen

INTACT

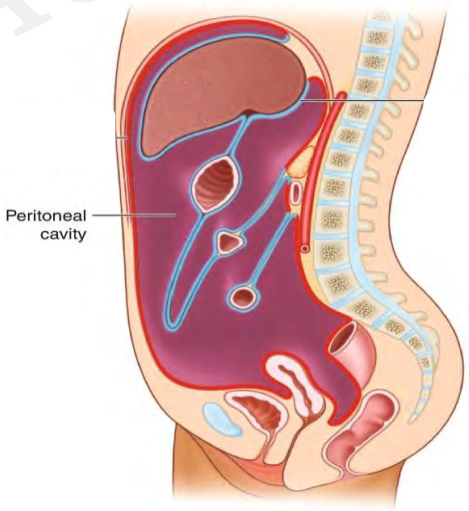
COLLAPSED

FRAGMENTED or overtly OPENED

Why is it so important?

You don't know what you're looking at yet!

Keep in mind the concept of peritoneal cavity and quick spreading of adnexal tumor



IF it is a tumor, staging will rely on YOUR observations!

- IC Tumour limited to 1 or both ovaries or fallopian tubes with any of the following:
  - IC1 Surgical spill
  - IC2 Capsule ruptured before surgery or tumour on ovarian or fallopian tube surface
  - IC3 Malignant cells in the ascites or peritoneal washings

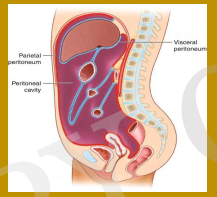
A 2014 meta-analysis assessed the impact of intraoperative rupture on prognosis, after analysing nine eligible studies which included 2,382 patients.[13] Patients with preoperative capsular rupture showed poorer progression-free survival (PFS) than those with no rupture or intraoperative rupture. In sub-analyses, preoperative rupture was associated with a worse prognosis, and intraoperative rupture had a poorer PFS than no rupture.

Adnexectomy – Let's talk about cyst

Surface of the specimen

Why is it so important?

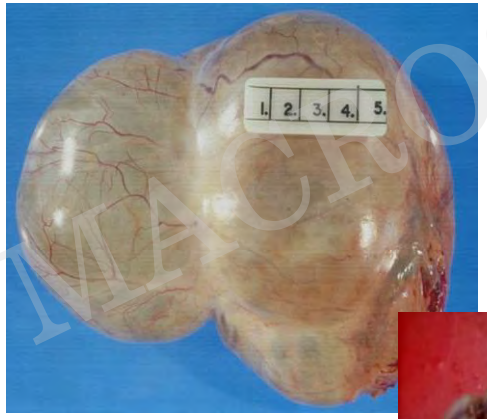
Pretty much the same reasons as for the integrity…



- ◯ IC Tumour limited to 1 or both ovaries or fallopian tubes,with any of the following:
  - ◯ IC1 Surgical spill
  - ◯ IC2 Capsule ruptured before surgery or tumour on ovarian or fallopian tube surface
  - ◯ IC3 Malignant cells in the ascites or peritoneal washings

Surface aspect:

Smooth
Roughened
Adhesions
Excrescences
Cyst

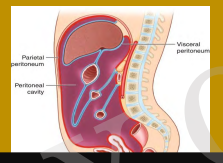


Adnexectomy – Let's talk about cyst

Surface of the specimen

Why is it so important?

Pretty much the same reasons as for the integrity…



- IC Tumour limited to 1 or both ovaries or fallopian tubes, with any of the following:
  - IC1 Surgical spill
  - IC2 Capsule ruptured before surgery or tumour on ovarian or fallopian tube surface
  - IC3 Malignant cells in the ascites or peritoneal washings

Should we ink the surface?

Surface aspect:

Smooth
Roughened
Adhesions
Excrescences
Cyst

Adnexectomy – Let's talk about cyst

Opening of the specimen !!!

Broadly speaking two main appearances/aspects

Cystic

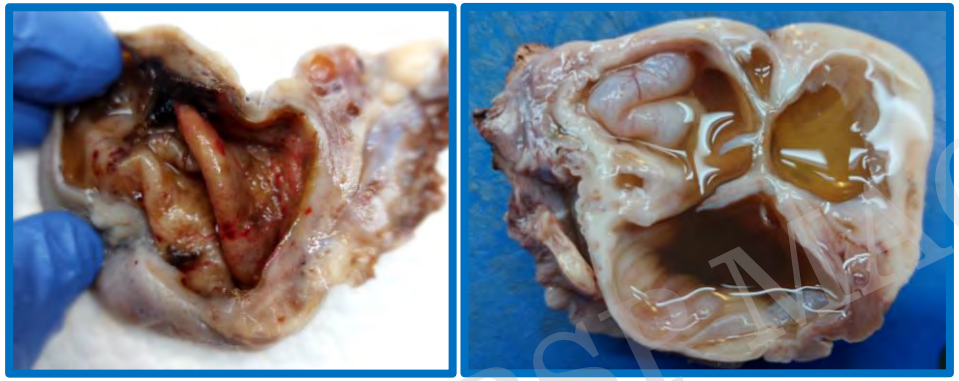
Solid

Adnexectomy – Let's talk about cyst

Opening of the specimen !!!

Cystic

Unilocular or multilocular?



Septations separating locules

Content?

Clear/watery/serous

Blood-filled

Old blood « chocolate »

Gelatinous/mucoid

Colloïd

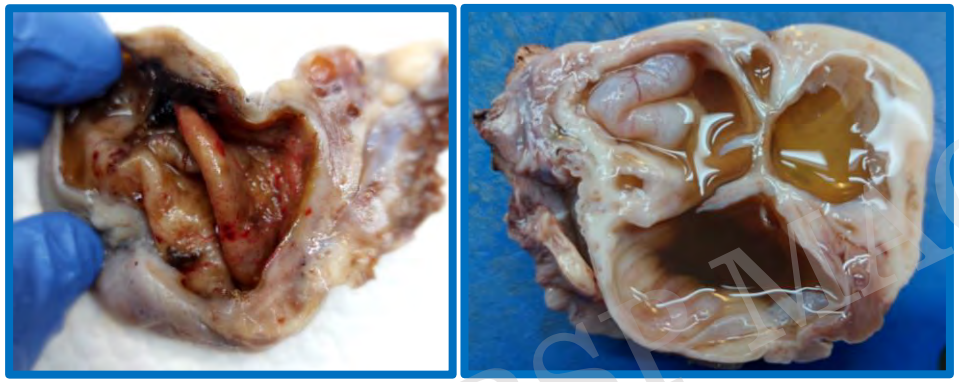
Thickness of the cyst wall:
thin and delicate, thick and irregular

Adnexectomy

Opening of the specimen !!!

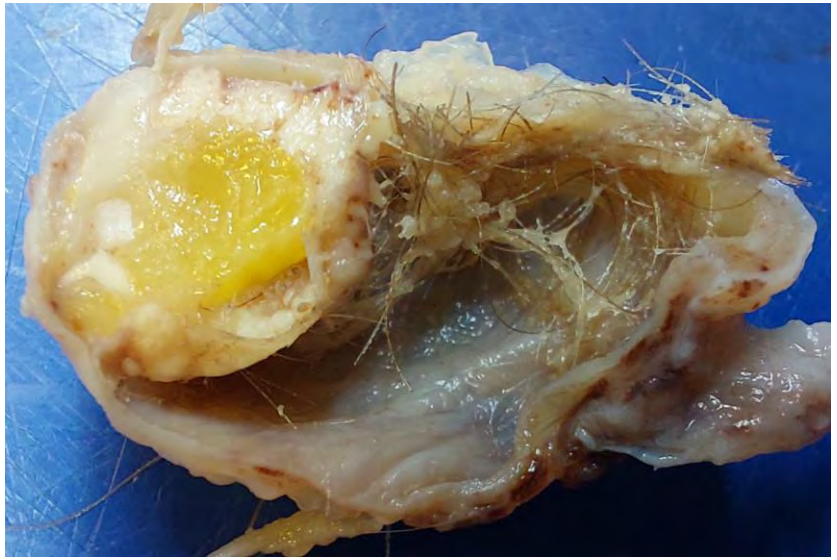
Cystic

Unilocular or multilocular?



Content?

Keratinous debris
Hair

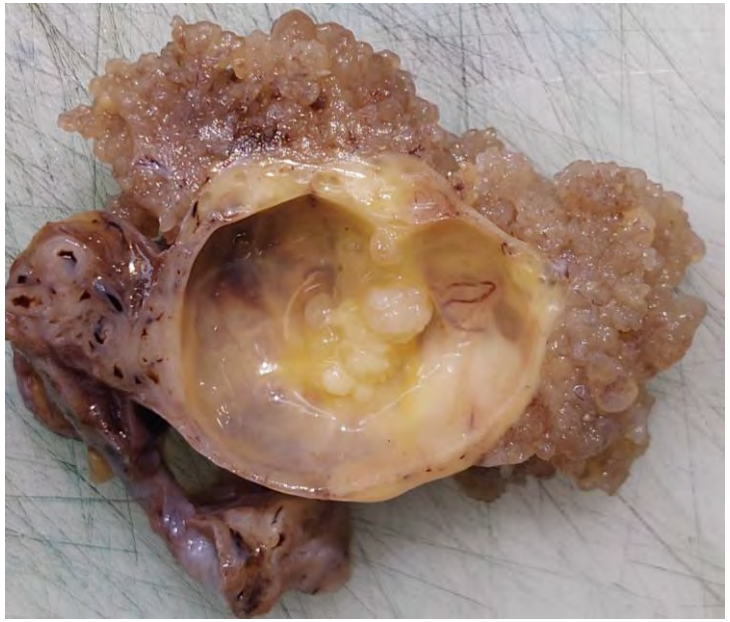


Adnexectomy

Opening of the specimen !!!

Cystic

Examine the inner surface

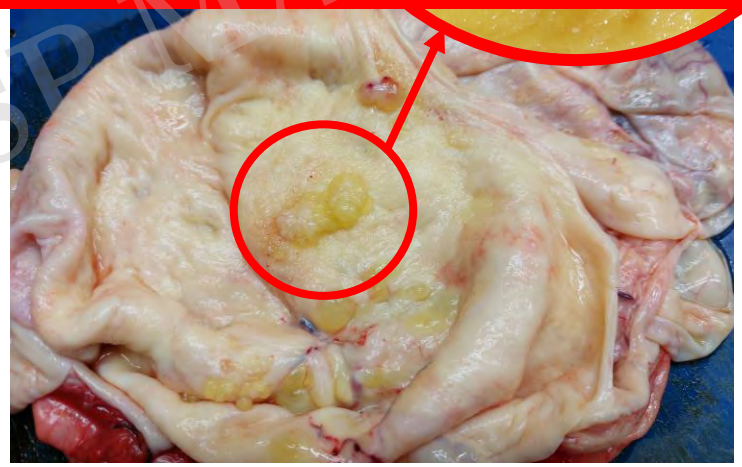


Adnexectomy

Opening of the specimen !!!

Cystic

Examine the inner surface



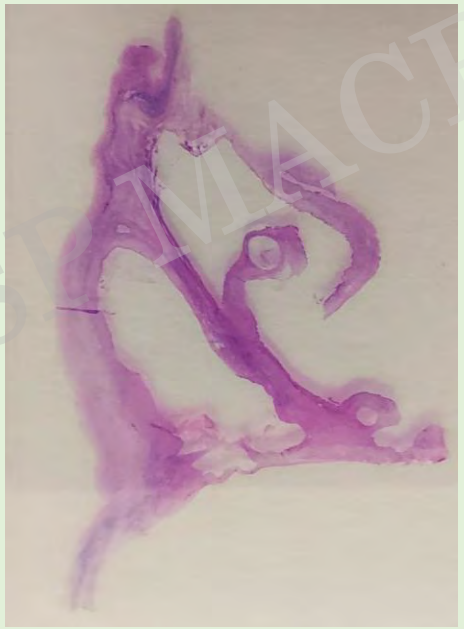
BUT …. WHY ????

Adnexectomy

Opening of the specimen !!!

Cystic

Examine the inner surface



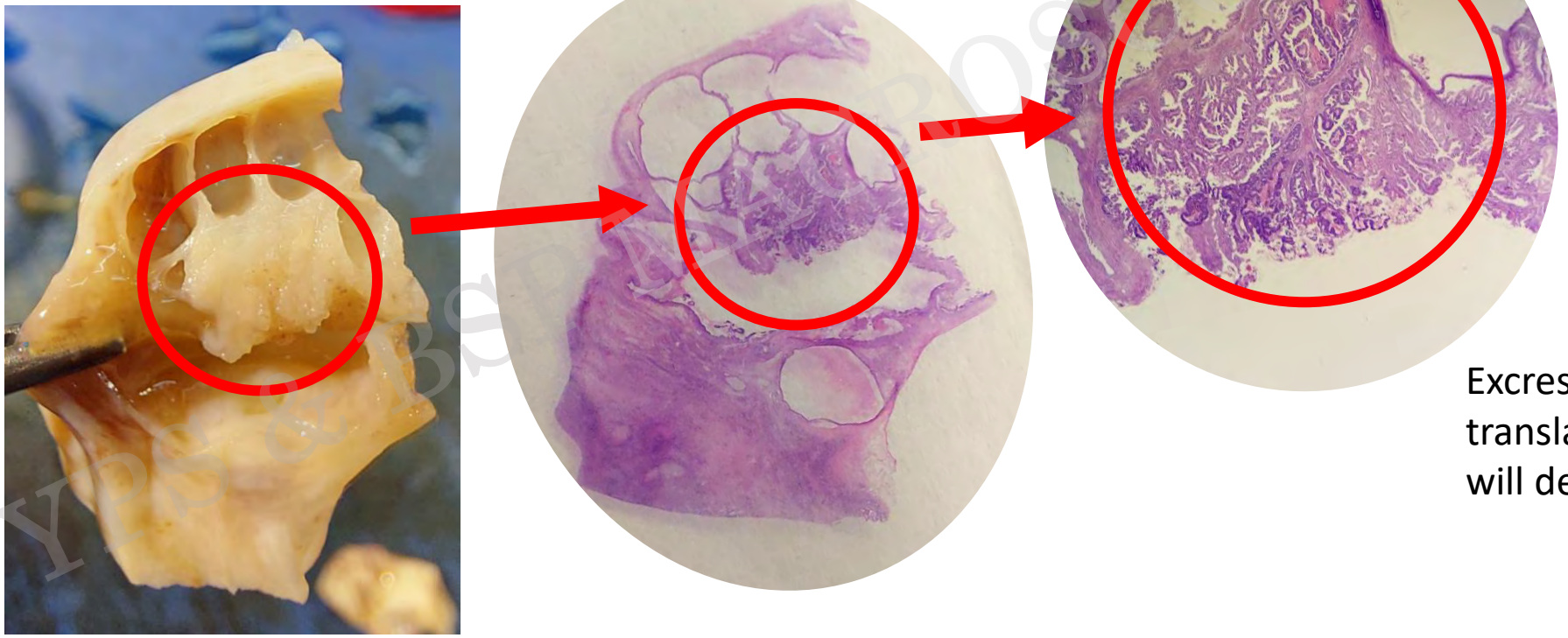
We all know that this is rather benign

Adnexectomy

Opening of the specimen !!!

Cystic

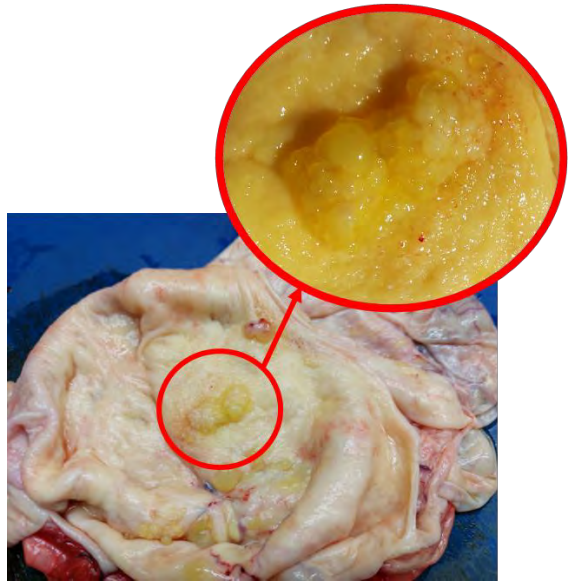
Examine the inner surface, why? Somehow you already know

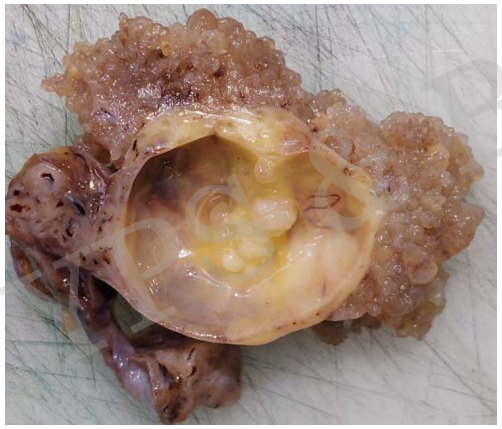


Excrescences you see grossly will translate by cellular proliferation that will define the diagnosis of malignancy !

Adnexectomy

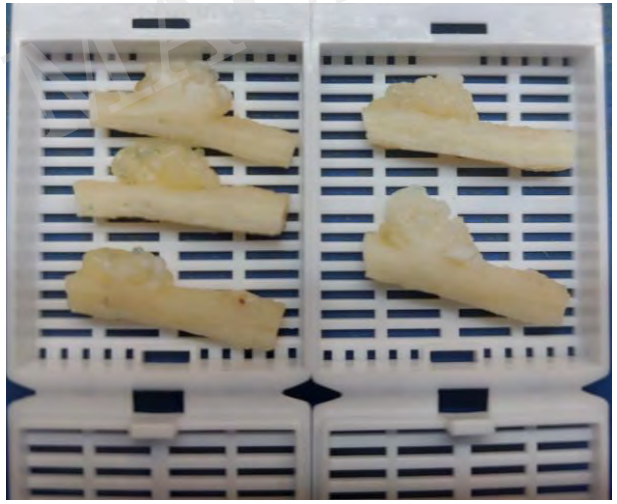
Opening of the specimen !!!





Cystic

How to sample?

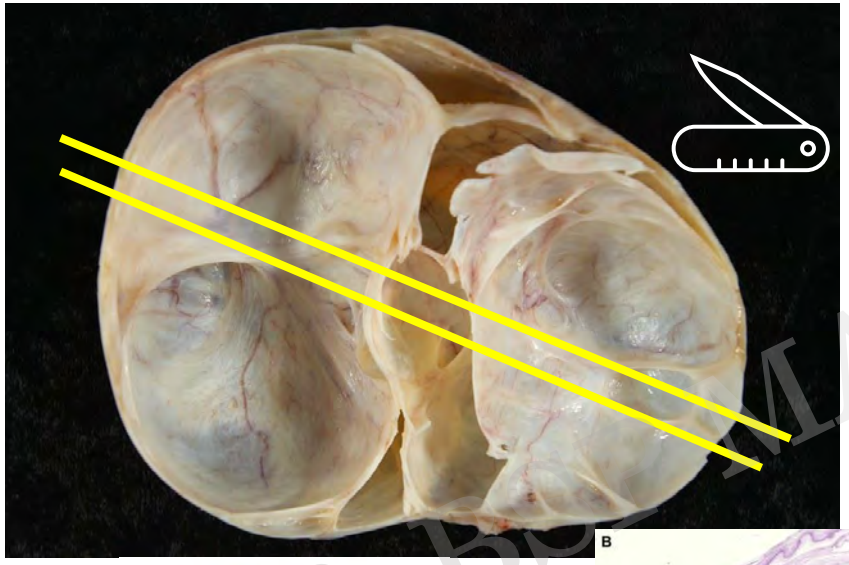


- Sample both thin walled part and excrescences (to illustrate continuum of the disease)
- Focus on breaches of the capsule, adhesion
- If small: embed entire tumour
- If <10cm: at least one block per cm
- If > 10cm: 2 blocks per cm

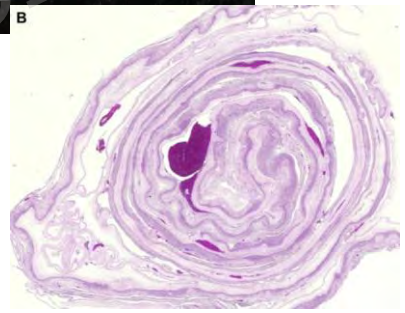
Adnexectomy

Opening of the specimen !!!

Cystic



- Trick to sample thin walled cyst
- Swiss roll technique, a bit like with placental membrane
- Carefull embedding on the edge to make sure to analyze the full thickness of the cyst wall

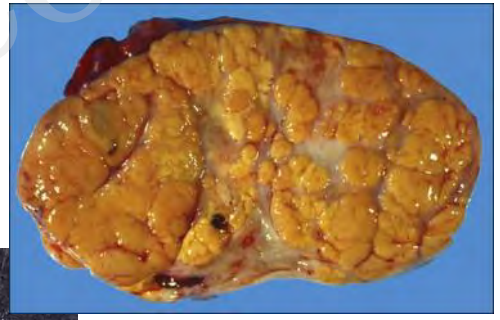


Adnexectomy

Opening of the specimen !!!

Solid

- Fibrous
- Whorly
- Firm
- Fleshy
- Gritty



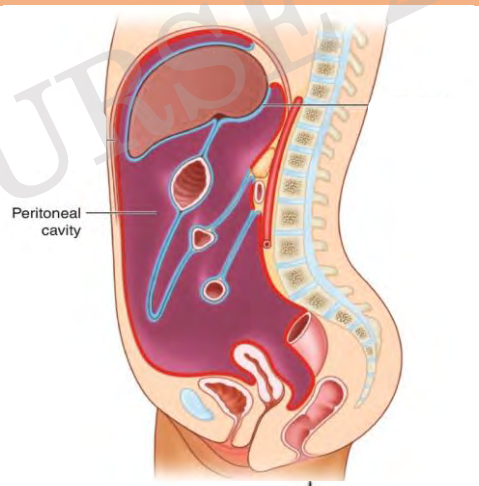
Tan
Yellow
Brown
Whitish

Describe zones of necrosis, hemmorhage…

Debulking

Definition:

When cancer is at an advanced stage, there is spreading in the peritoneal cavity and on the surface of viscera

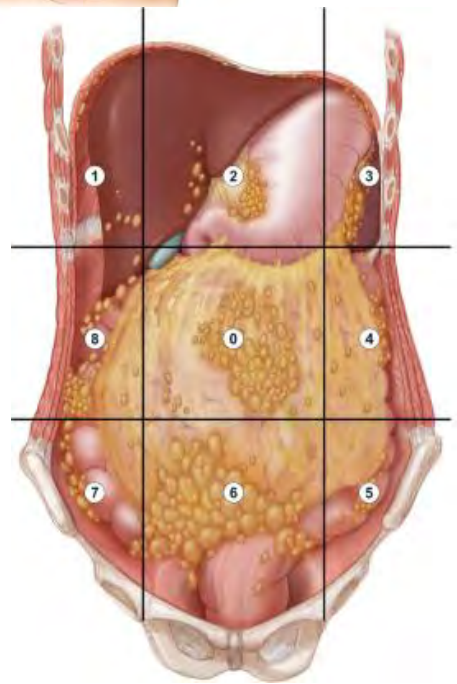


Aim of the surgeon:

If cancer is obvious: to remove as much cancer as possible

If cancer is not obvious: to make sure there's no microscopic spreading and evaluate staging

Long and tedious surgery and long and tedious gross examination



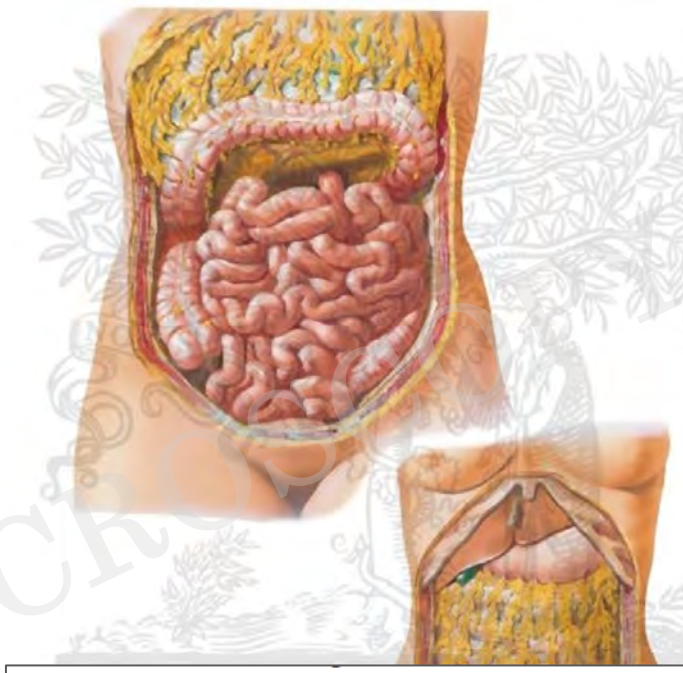
Type of specimen in a debulking (beside hyterectomy with BSO):

- Omentum
- Patches of peritoneal membrane sampled by the surgeon at different level of the peritoneal cavity
- Peritoneum covering diaphragm, liver, guts, pelvic floor….

Debulking - Omentum

Definition:

Apron like structure of adipose and fibrous peritonealized tissue that is covering the viscera

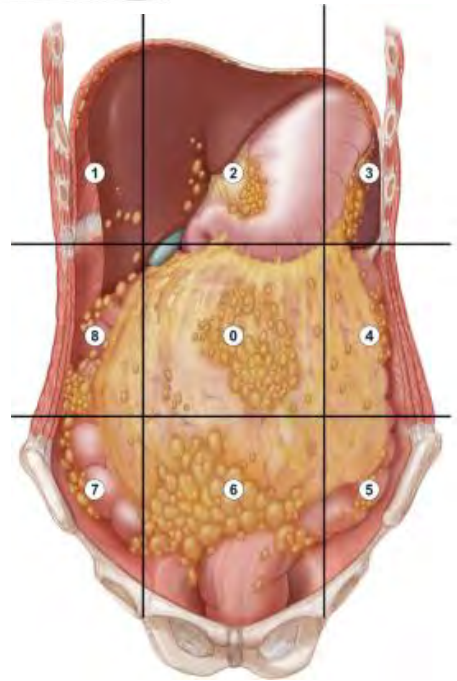


Weight
Measure

Describe if present metastatis deposit and their SIZE

20 mm limit

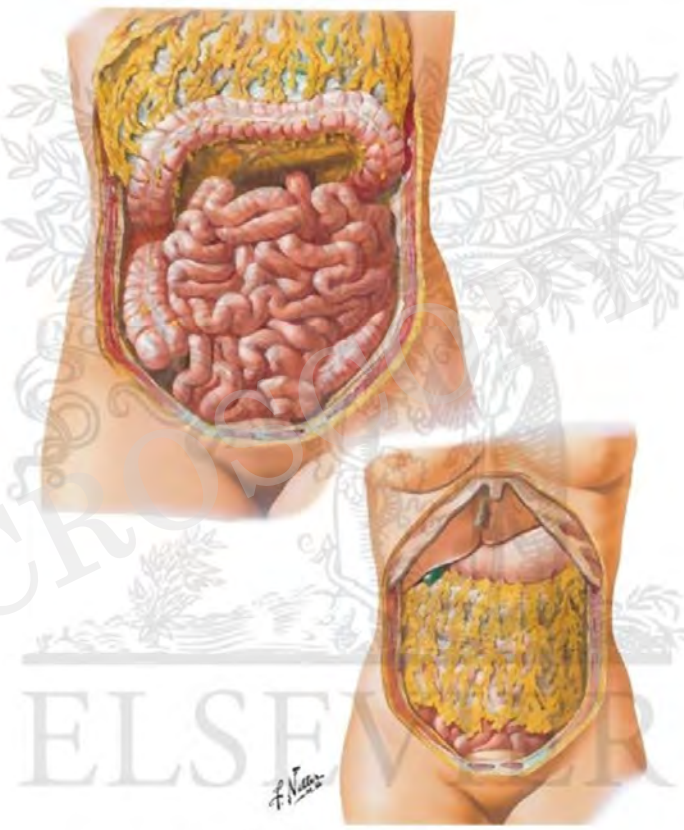
◯ IIIA2	Microscopic extrapelvic (above the pelvic brim) peritoneal involvement with or without positive retroperitoneal lymph nodes
◯ IIIB	Macroscopic peritoneal metastasis beyond the pelvis up to 2 cm in greatest dimension, with or without metastasis to the retroperitoneal lymph nodes
◯ IIIC	Macroscopic peritoneal metastasis beyond the pelvis more than 2 cm in greatest dimension, with or without metastasis to the retroperitoneal lymph nodes (includes extension of tumor to capsule of liver and spleen without parenchymal involvement of either organ)



Debulking - Omentum

Definition:

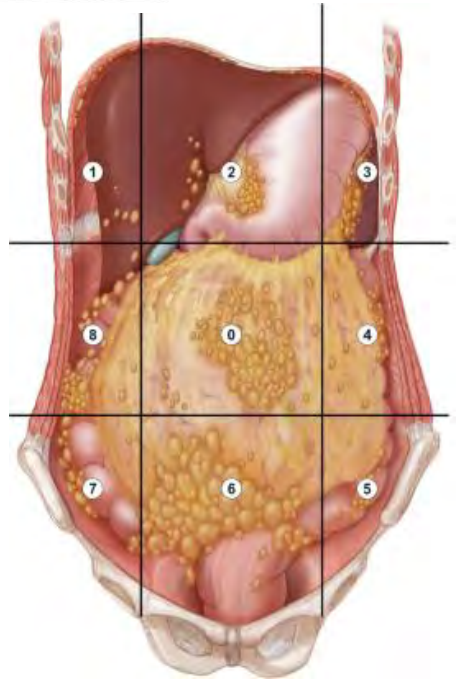
Apron like structure of adipose and fibrous peritonealized tissue that is covering the viscera



Weight
Measure

IF omentum is macroscopically normal after carefull inspection and palpation of cut section:

5 to 6 blocks are necessary



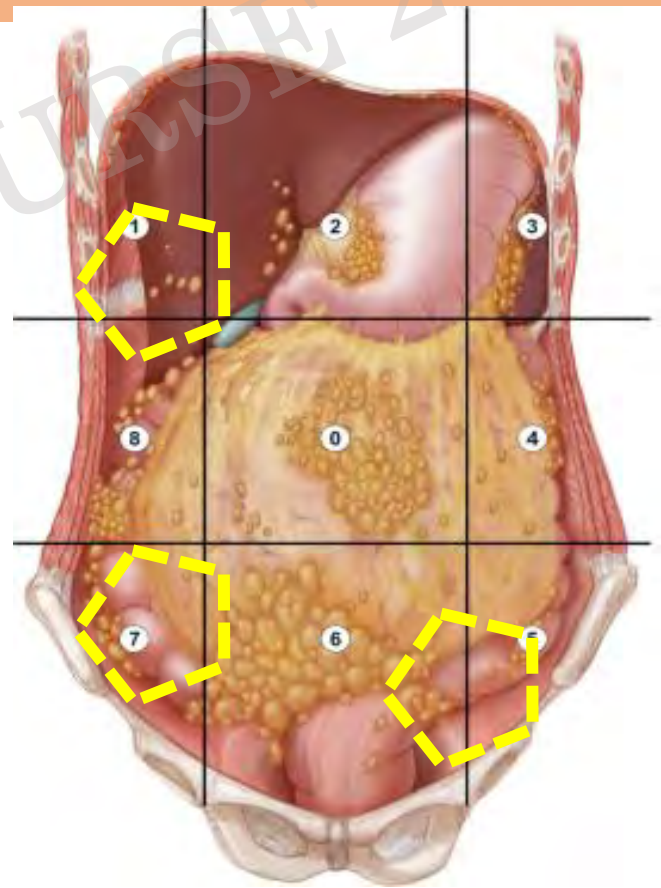
Debulking – Peritoneal biopsy /patches

Simple specimen

No orientation, no anatomical structures to consider

Measure

DESCRIBE, if nodule suspicious for tumor deposit : MEASURE (20mm cut off)



How to sample ?

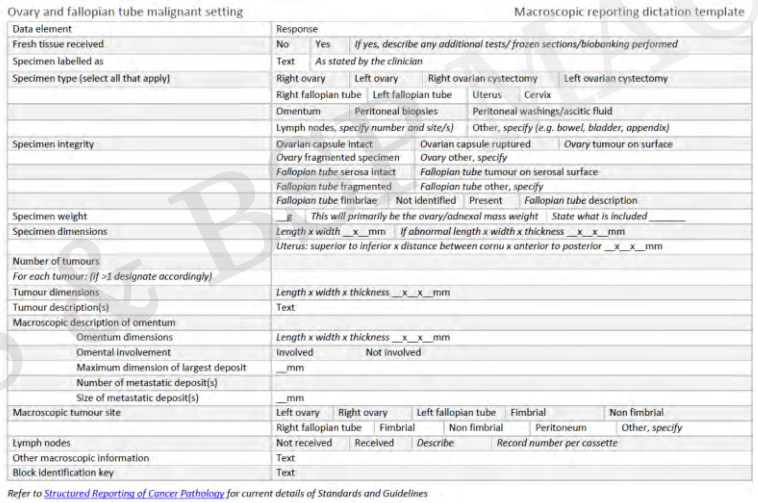
General principal:

If you see something obvious macrocopically > Your gross examination is the most important. Sample the largest nodule

If you don't see anything > Microscopy is going to be the most important.
Entire embedding is legit if number of blocks is reasonnable.

References (free access):

- https://www.rcpa.edu.au/Manuals/Macroscopic-Cut-Up-Manual/Gynaecology-and-perinatal/Ovary-and-fallopian-tube-benign-setting
- https://www.iccr-cancer.org/datasets/published-datasets/female-reproductive/ovary-ft-pp/



Ovary and fallopian tube malignant setting — Macroscopic reporting dictation template

Data element	Response
Fresh tissue received	No / Yes — *If yes, describe any additional tests/ frozen sections/biobanking performed*
Specimen labelled as	Text — *As stated by the clinician*
Specimen type (select all that apply)	Right ovary / Left ovary / Right ovarian cystectomy / Left ovarian cystectomy
	Right fallopian tube / Left fallopian tube / Uterus / Cervix
	Omentum / Peritoneal biopsies / Peritoneal washings/ascitic fluid
	Lymph nodes, *specify number and site/s)* / Other, *specify (e.g. bowel, bladder, appendix)*
Specimen integrity	Ovarian capsule intact / Ovarian capsule ruptured / *Ovary* tumour on surface
	Ovary fragmented specimen / *Ovary* other, *specify*
	Fallopian tube serosa intact / *Fallopian tube* tumour on serosal surface
	Fallopian tube fragmented / *Fallopian tube* other, *specify*
	Fallopian tube fimbriae / Not identified / Present / *Fallopian tube* description
Specimen weight	__g / *This will primarily be the ovary/adnexal mass weight* / *State what is included* _____
Specimen dimensions	*Length x width* __x__mm / *If abnormal length x width x thickness* __x__x__mm
	Uterus: superior to inferior x distance between cornu x anterior to posterior __x__x__mm
Number of tumours	
For each tumour: (if >1 designate accordingly)	
Tumour dimensions	*Length x width x thickness* __x__x__mm
Tumour description(s)	Text
Macroscopic description of omentum	
Omentum dimensions	*Length x width x thickness* __x__x__mm
Omental involvement	Involved / Not involved
Maximum dimension of largest deposit	__mm
Number of metastatic deposit(s)	
Size of metastatic deposit(s)	__mm
Macroscopic tumour site	Left ovary / Right ovary / Left fallopian tube / Fimbrial / Non fimbrial
	Right fallopian tube / Fimbrial / Non fimbrial / Peritoneum / Other, *specify*
Lymph nodes	Not received / Received / *Describe* / *Record number per cassette*
Other macroscopic information	Text
Block identification key	Text

Refer to Structured Reporting of Cancer Pathology for current details of Standards and Guidelines

Thank you for your attention

Thank you to the wonderful macrocopy team in St Luc and to my colleagues in gynecopathology:
Dr Aline François and Dr Mieke Van Bockstal
Etienne Auquier
Mallaurie Wauman
Tim Neirinckx

Thank you to Dr Koen Van de Vijver for his advises and support