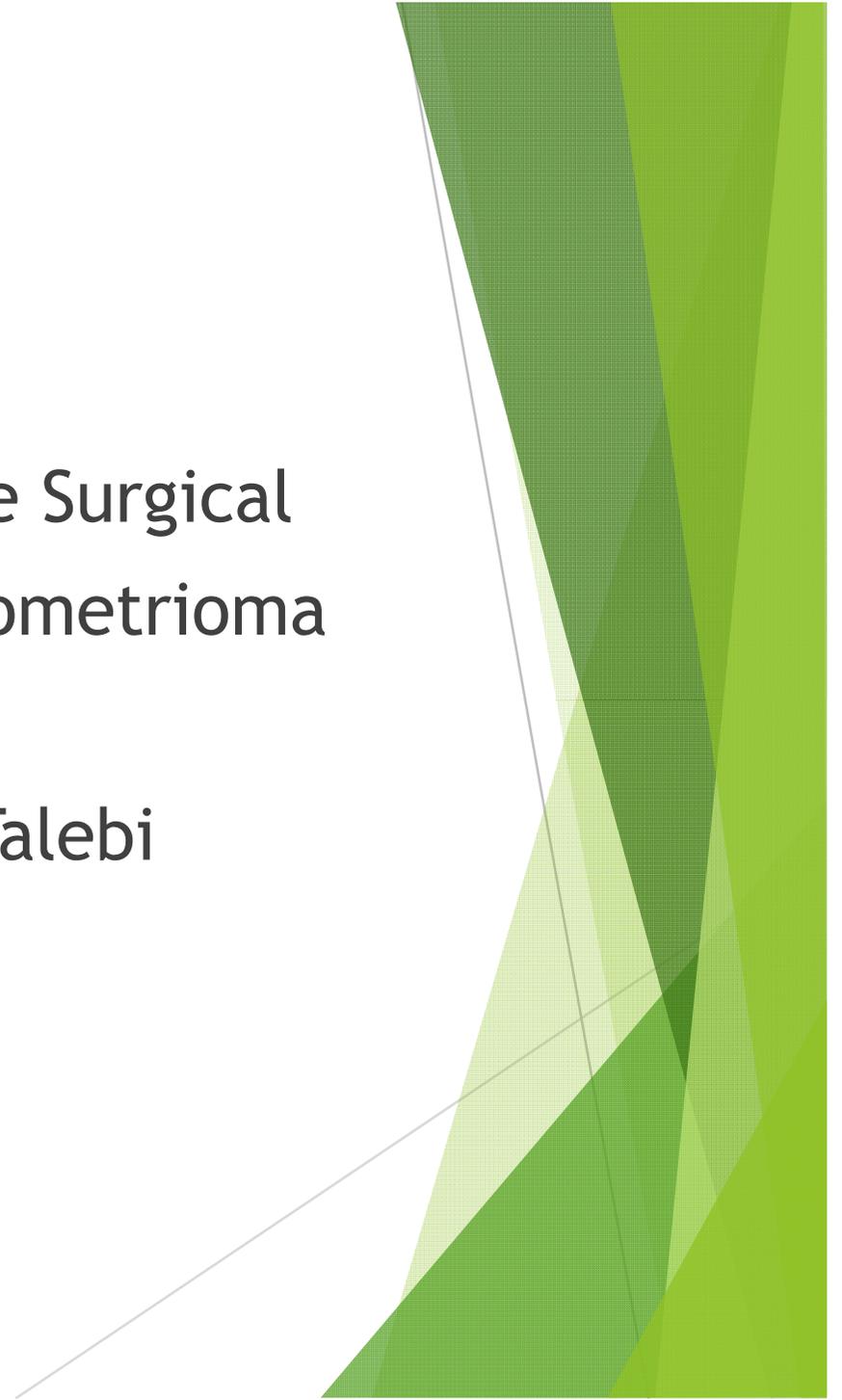


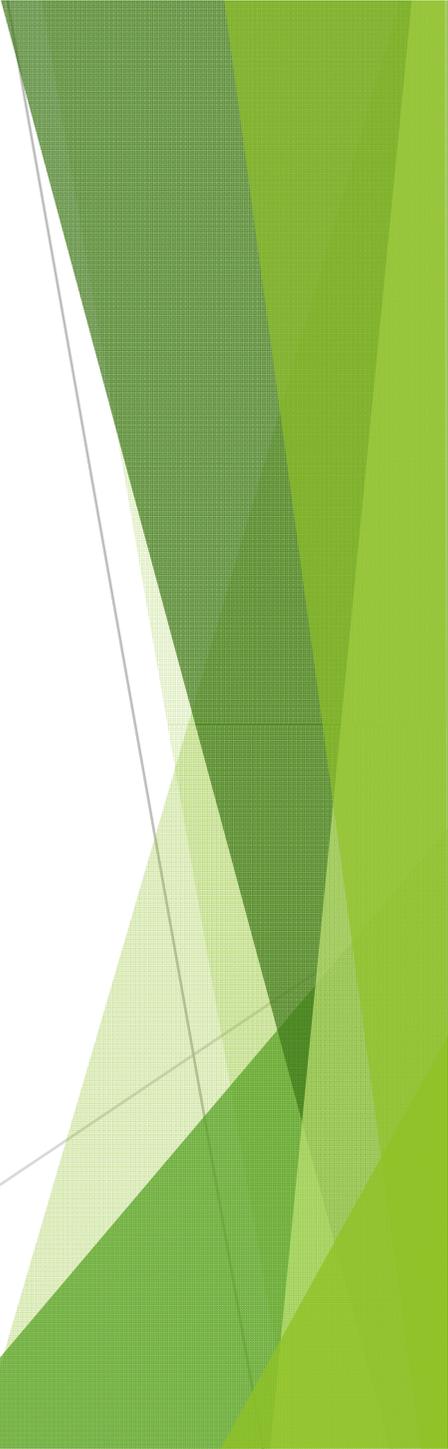
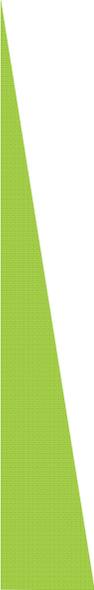
*In the name of
God*



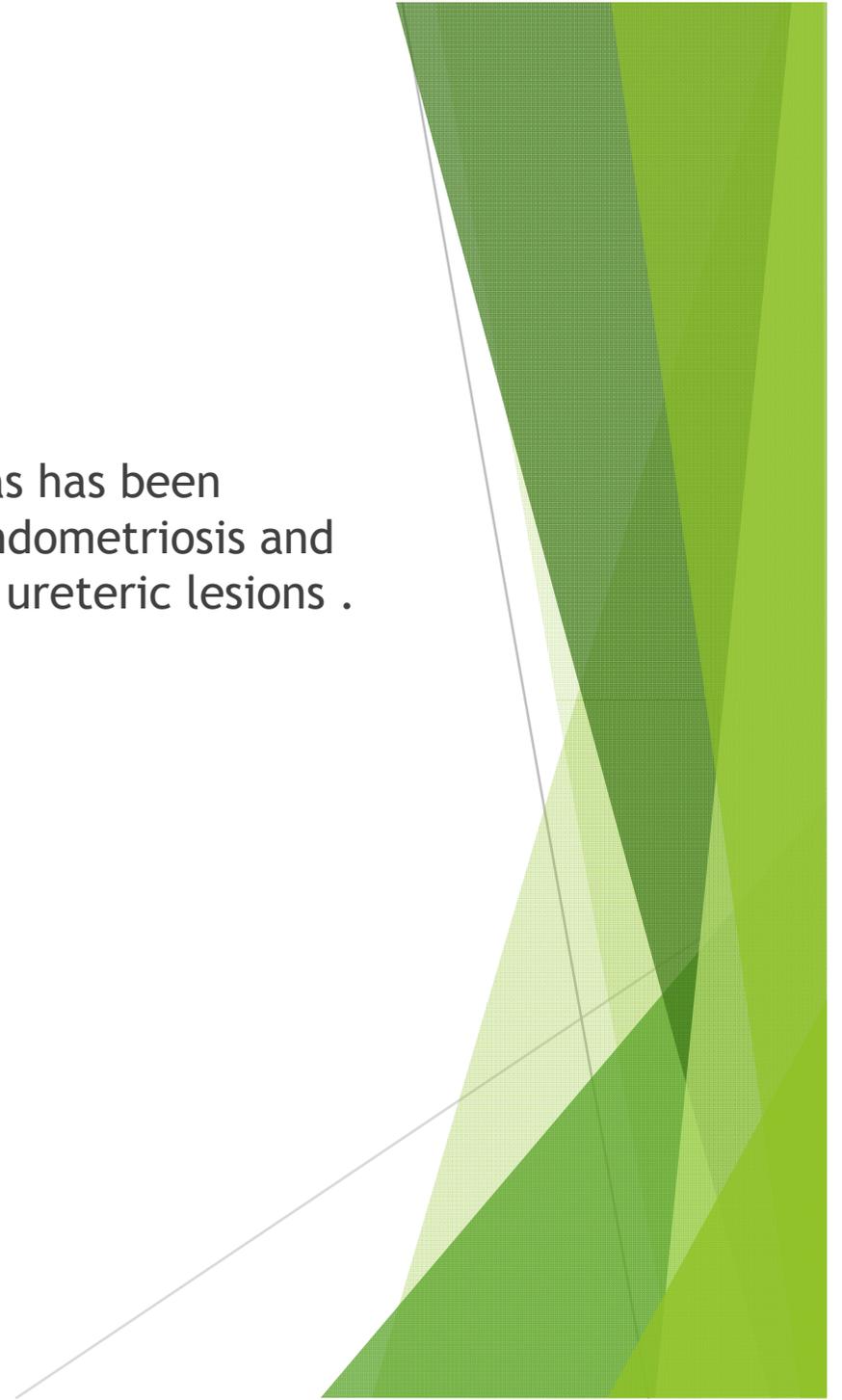
Recommendations for the Surgical Treatment of ovarian endometrioma

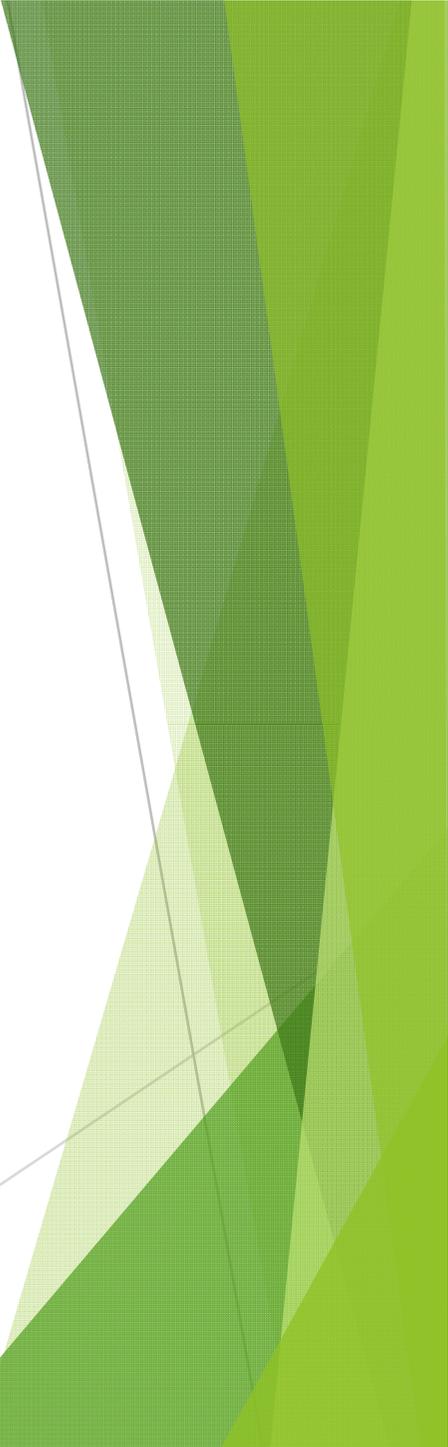
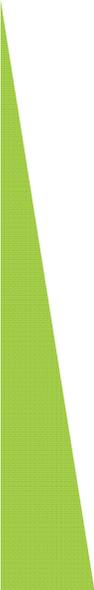
By Dr Maesoomah Talebi



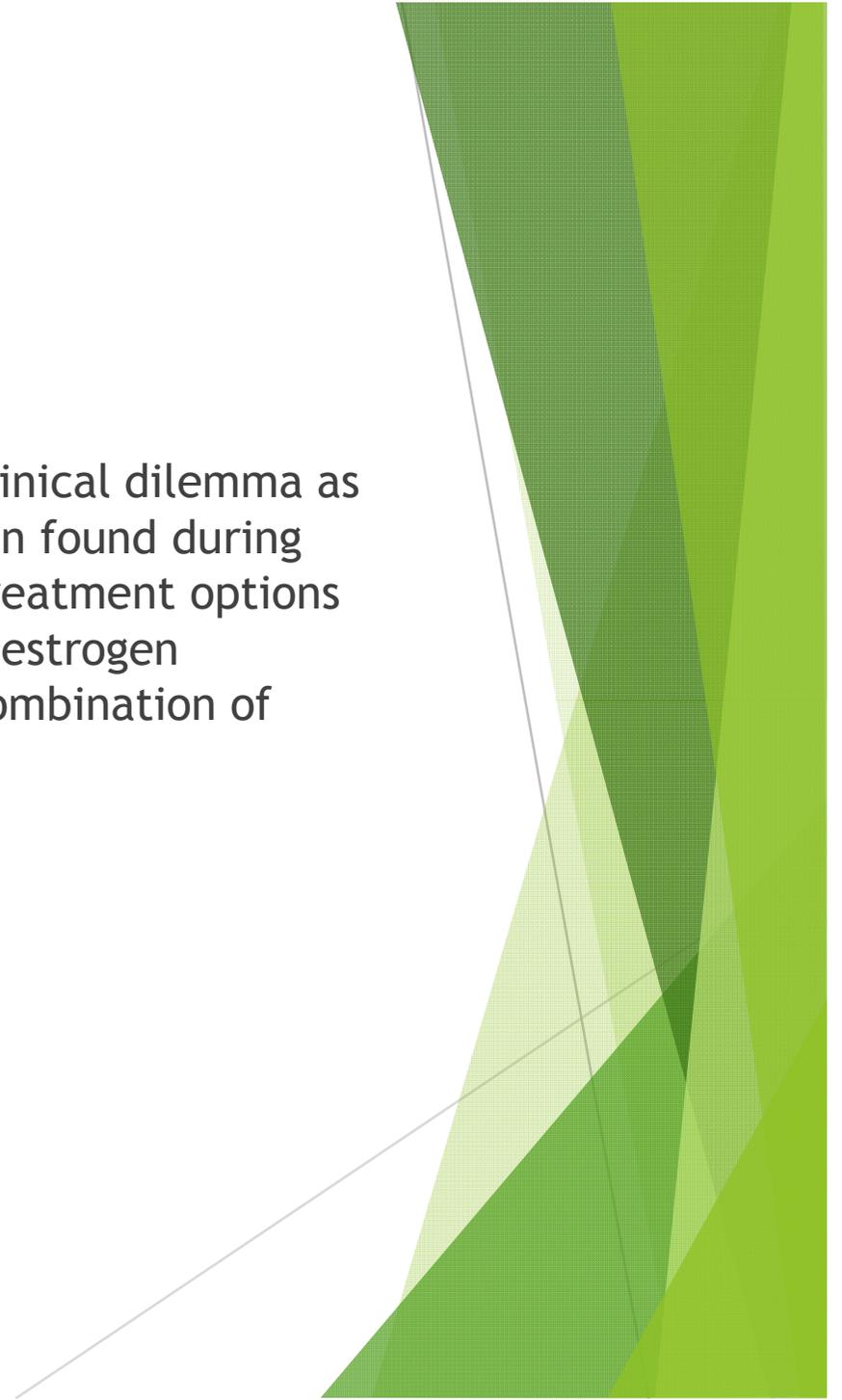
- 
- 
- ▶ Endometriomas are probably the most commonly diagnosed form of endometriosis because of the relative ease and accuracy of ultrasound diagnosis. Although their exact prevalence and incidence are not known, they have been reported in 17-44% of women with endometriosis.

- ▶ The presence of ovarian endometriomas has been reported as being a marker for deep endometriosis and multifocal deep vaginal, intestinal and ureteric lesions .

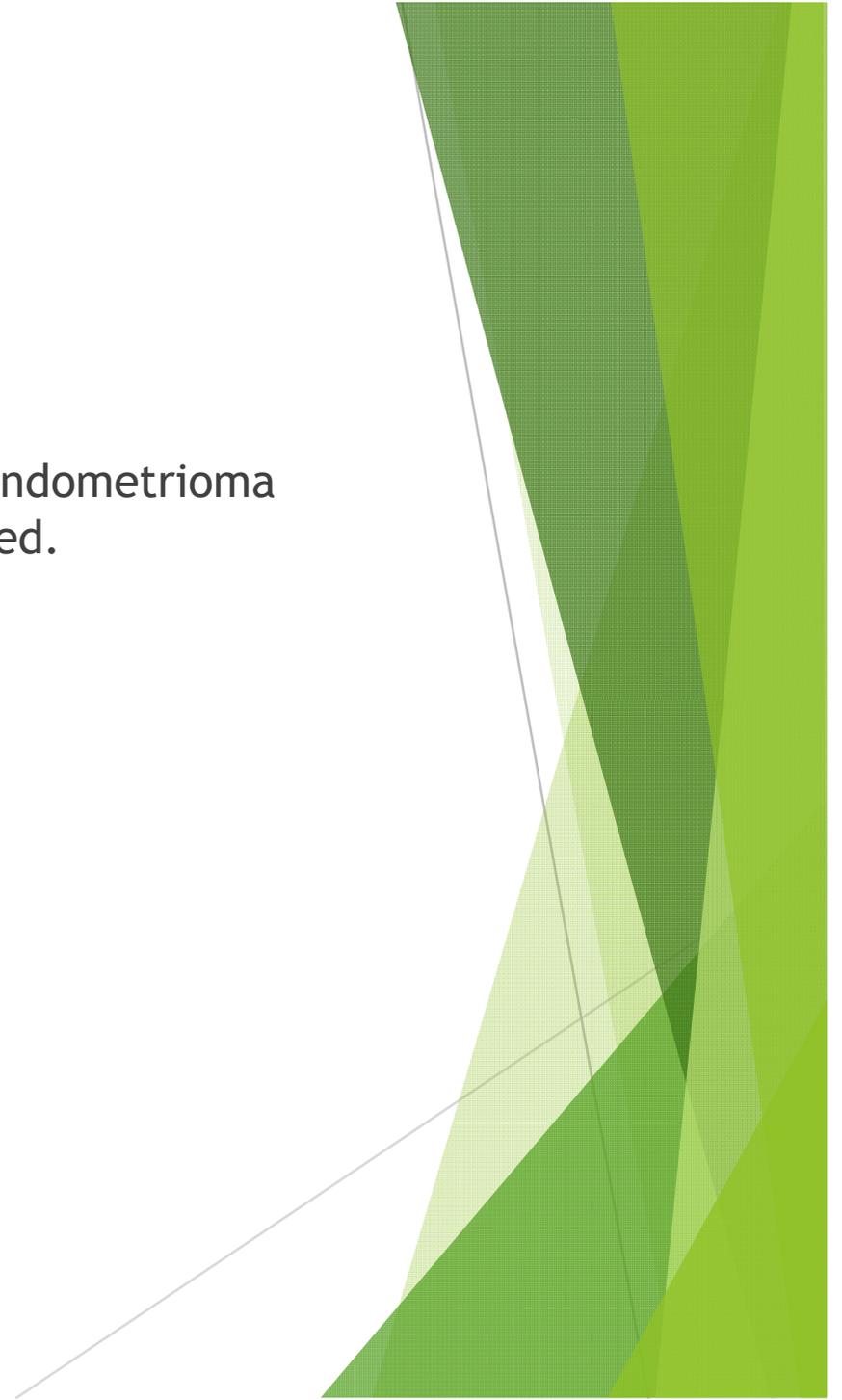


- 
- 
- ▶ The pathogenesis of endometriomas remains contentious, with a variety of theories proffered, including: invagination and subsequent collection of menstrual debris from endometriotic implants, which are located on the ovarian surface and adherent peritoneum, colonization of functional ovarian cysts by endometriotic; coelomic metaplasia of the invaginated epithelial inclusions.

- ▶ Endometriomas frequently present a clinical dilemma as to whether and how to treat them when found during imaging. Overall, currently available treatment options for all types of endometriosis include oestrogen suppression, progestins, surgery or a combination of these.



- ▶ Surgical treatment is the mainstay of endometrioma management when treatment is required.
- ▶ Sufficient tissue without min. damage



- ▶ It has been shown that surgical treatment of endometriotic cysts is associated with the unintentional removal or destruction of ovarian follicles
- ▶ Amh or AFC will be decreased

Materials and Methods

- ▶ Previously published guidelines have provided recommendations on the management of endometriosis, based on the best available evidence
- ▶ This document is the first in a series of recommendations covering technical aspects of different methods of surgery for different entities of endometriosis, and will focus on endometriomas in women of reproductive age.

WHAT DOES THIS MEAN FOR PATIENTS?

- ▶ This paper was produced by a European working group looking at the different types of surgery for endometriosis, a common condition where tissue, which is similar to the lining of the womb, is found elsewhere in the body.
- ▶ The paper discusses in detail how different types of surgery should be performed taking potential risks into consideration and stresses that careful planning is essential to ensure the best outcomes

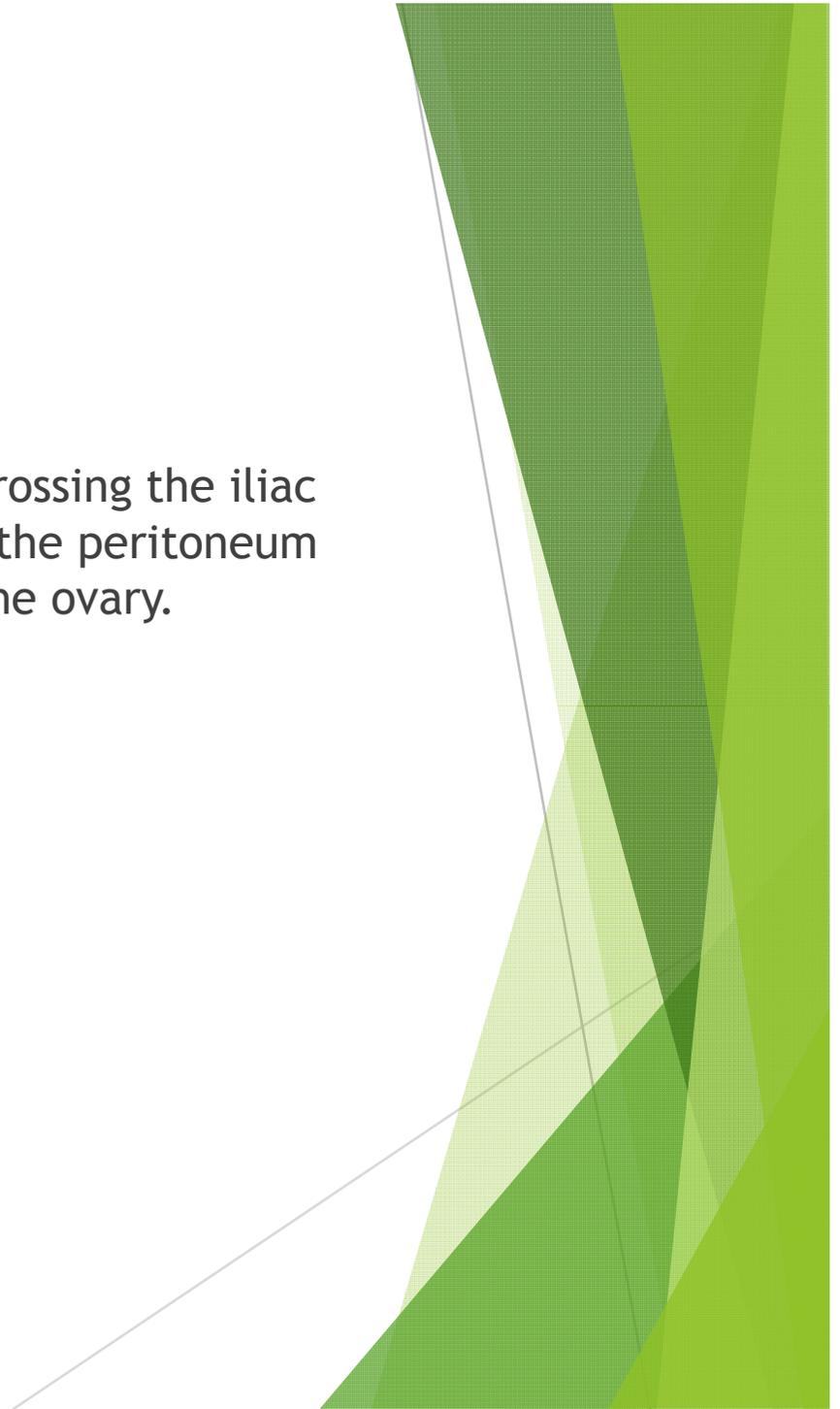
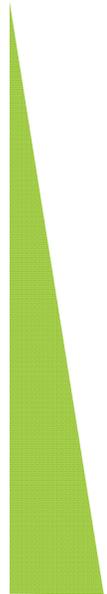
Recommendations

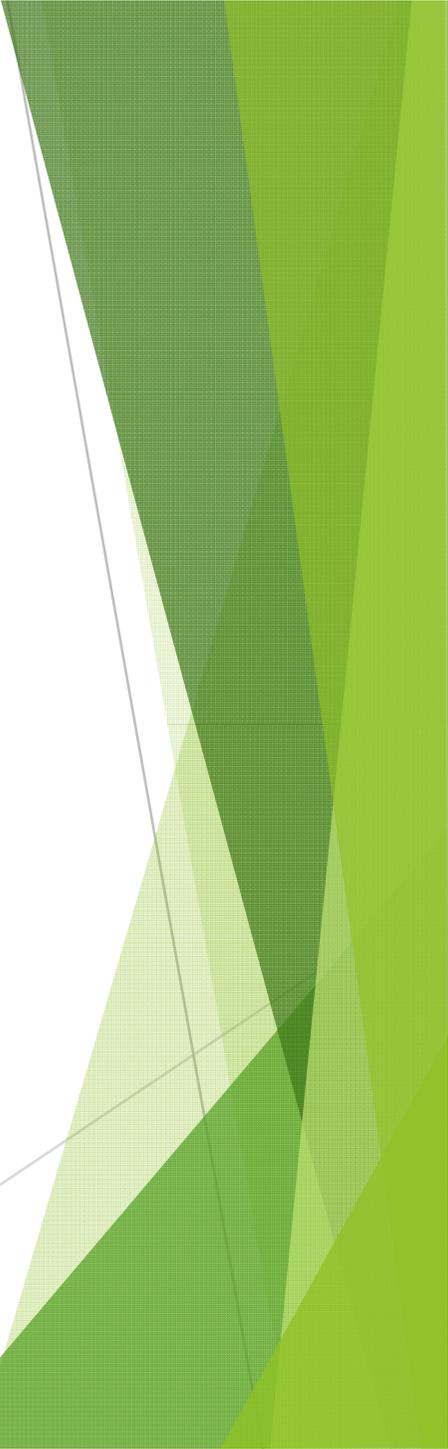


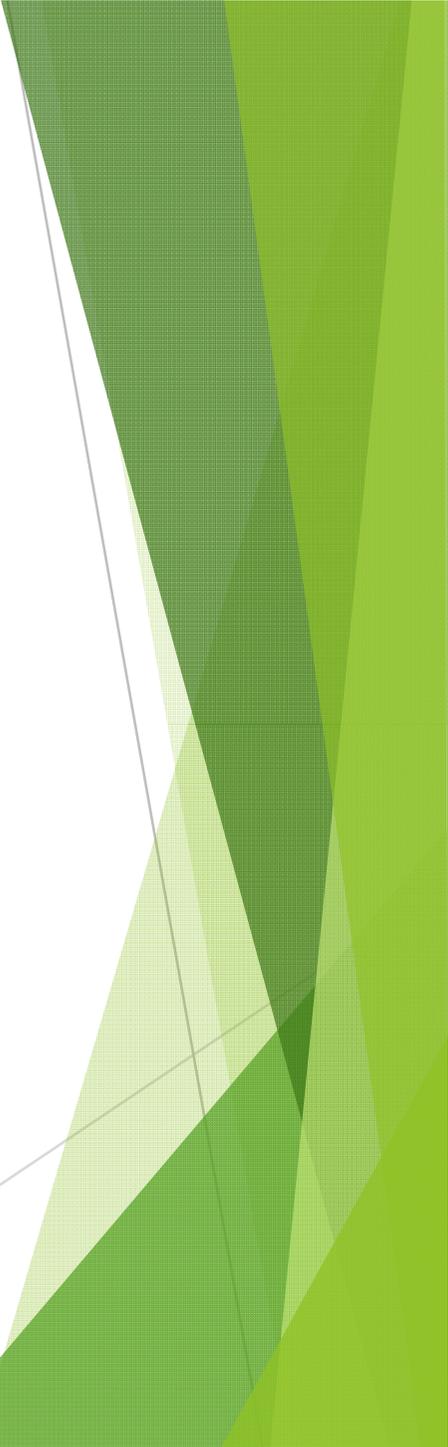
Anatomical considerations

- ▶ Endometriomas are frequently stuck densely to surrounding structures such as the ipsilateral pelvic side-wall, the fallopian tube, the posterolateral uterus and the bowel.
- ▶ As part of preoperative planning, the surgeon should consider the possibility of hydro-ureters and asymptomatic hydronephrosis.

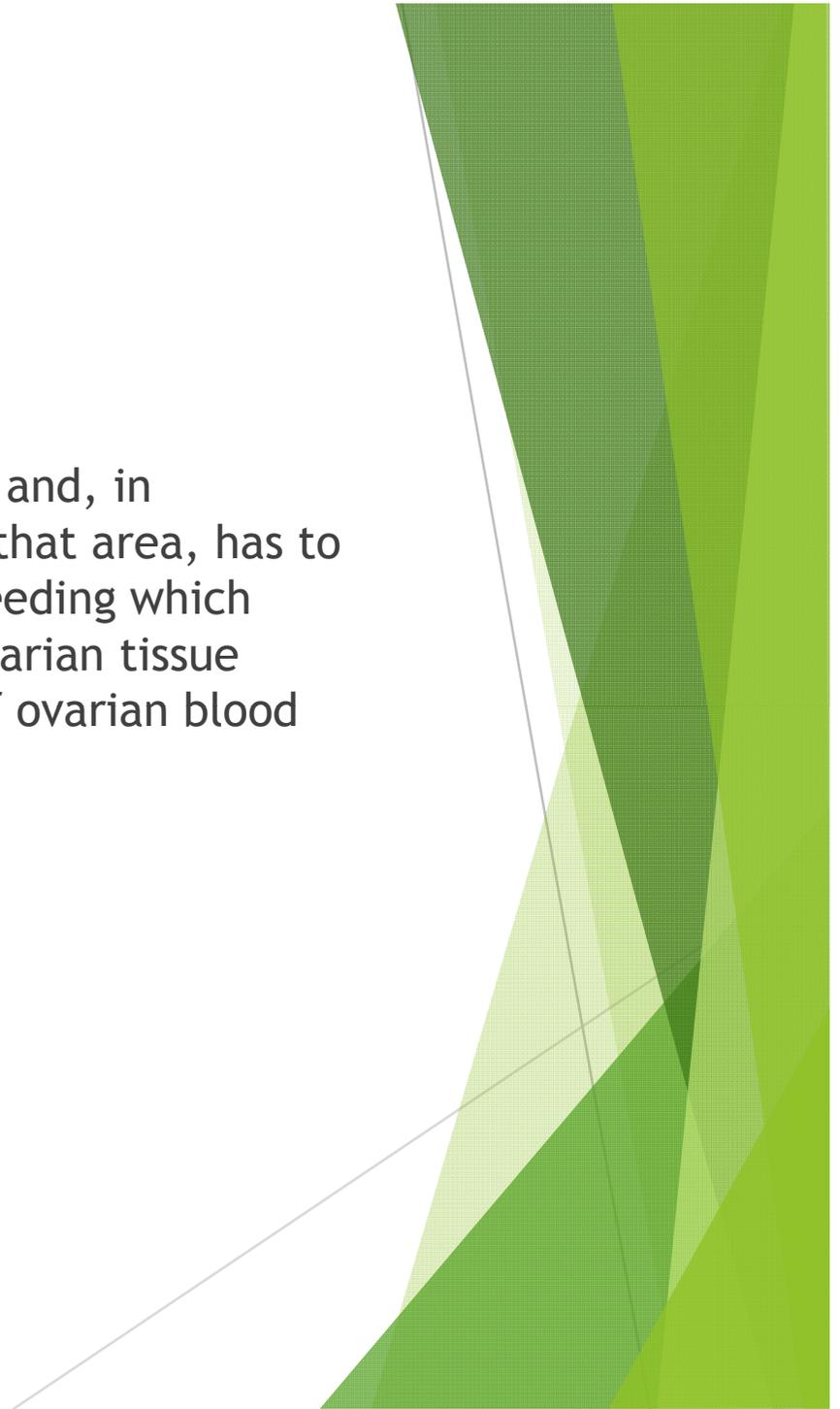
- ▶ The ureter enters the small pelvis by crossing the iliac vessels, and then courses anteriorly in the peritoneum of the pelvic side-wall directly under the ovary.



- 
- 
- ▶ Ovaries with endometriotic cysts are usually adherent to the ovarian fossa, where the ureter may also be involved in the disease. Occasionally, ureteric obstruction can be seen at this point.
 - ▶ This will need to be taken into account during surgery.

- 
- ▶ The ovary receives its blood supply from two sources: -
 - the ovarian artery, which arises from the abdominal aorta below the renal artery and laterally approaches the ovary through the suspensory ovarian (infundibulopelvic) ligament
 - an anastomosis between the ovarian artery and the ascending branch of the uterine artery (tubal artery) in the ovarian ligament.
 - ▶ the larger intra-ovarian vessels are found in the anterolateral aspect of the ovary—the hilum at the insertion of the mesovarium.

- ▶ The surgeon needs to be aware of this and, in particular for endometrioma involving that area, has to possess the skills to avoid excessive bleeding which might lead to destruction of healthy ovarian tissue through cauterization and disruption of ovarian blood supply.



General recommendations

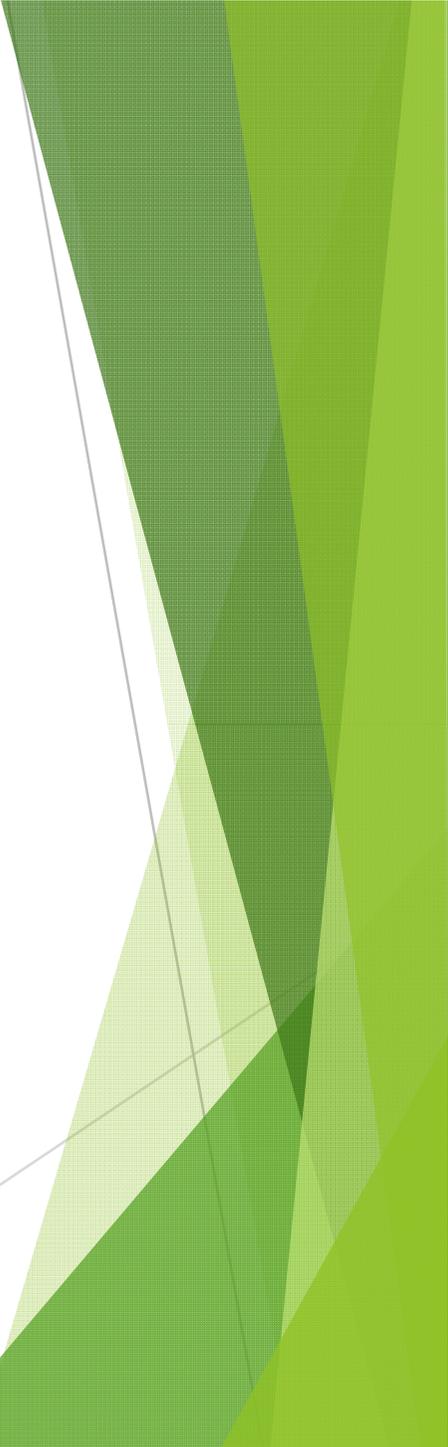
- ▶ Assess the possible extent of disease
 - a bimanual examination to check adnexal masses and endometriotic nodules;
 - pelvic ultrasound (and/or MRI) to determine
 - the number, size, and location (unilateral or bilateral) of the cysts,
 - presence of endometriotic nodules,
 - extent of Pouch of Douglas obliteration,
 - presence of hydronephrosis,
 - presence of hydrosalpinx;

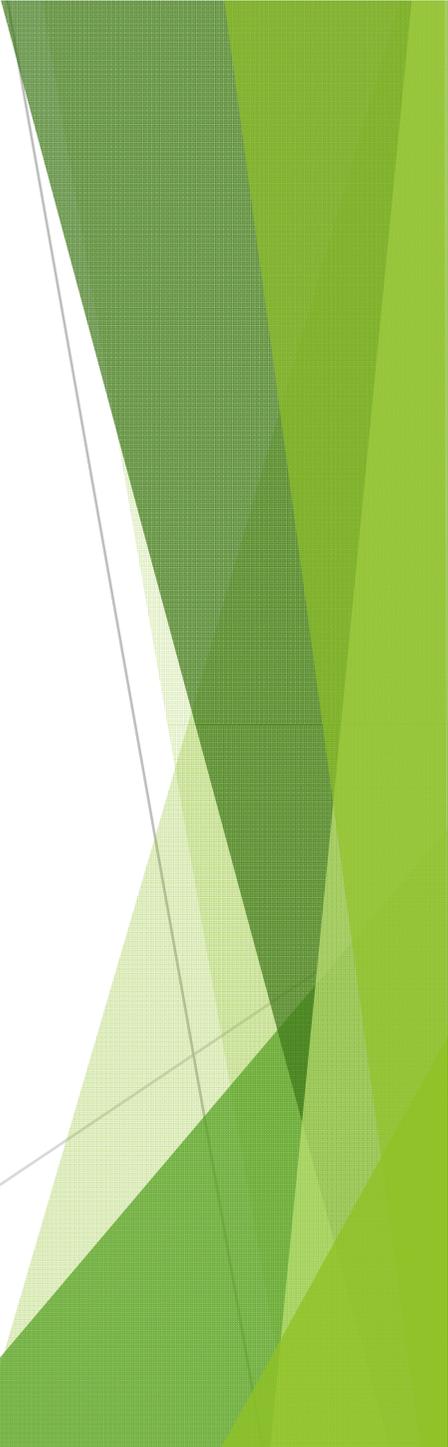
- ▶ ovarian reserve tests (AFC, AMH) when future fertility is a concern.



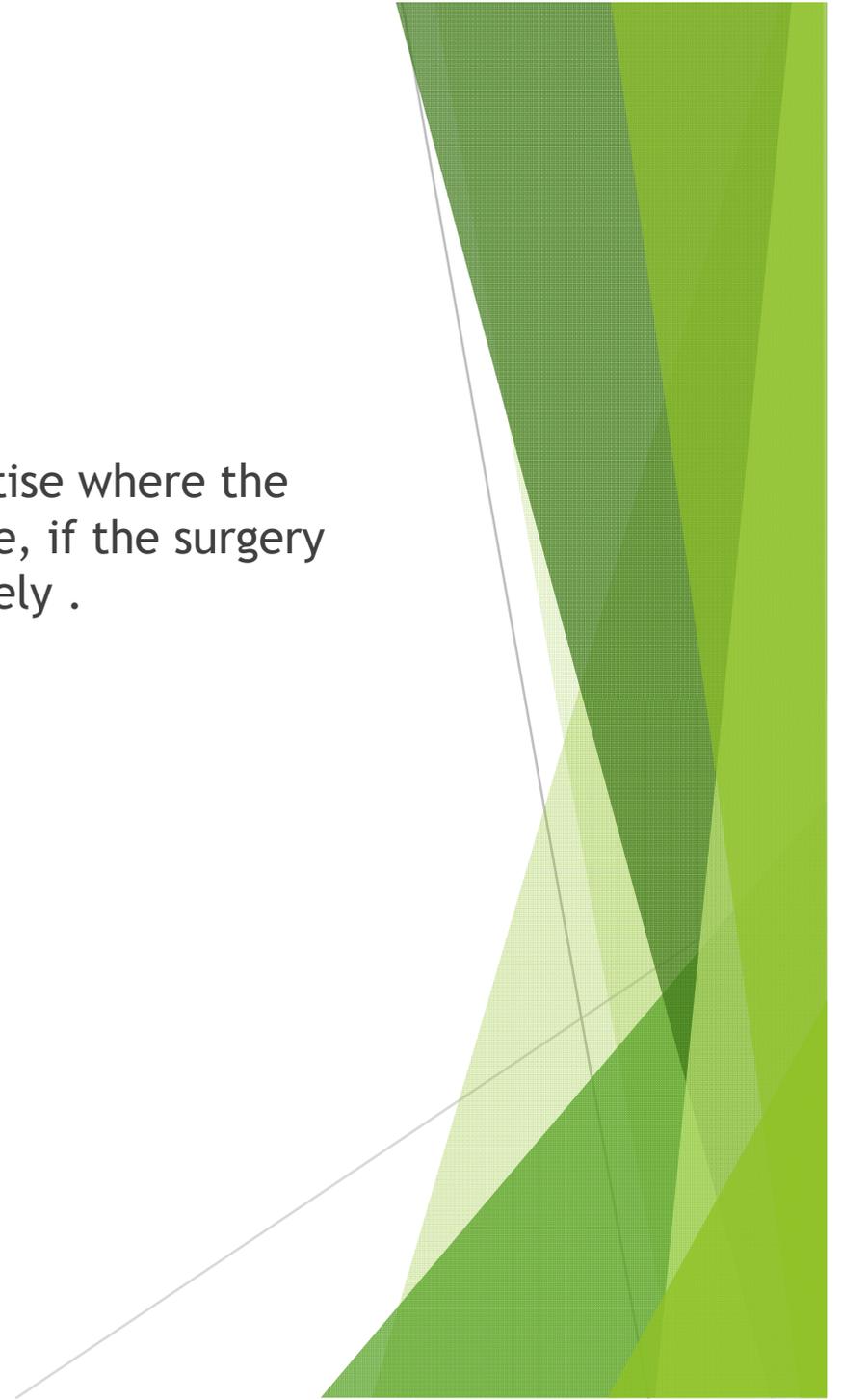
- ▶ Assess serum tumour markers in case of suspicion of malignancy at imaging

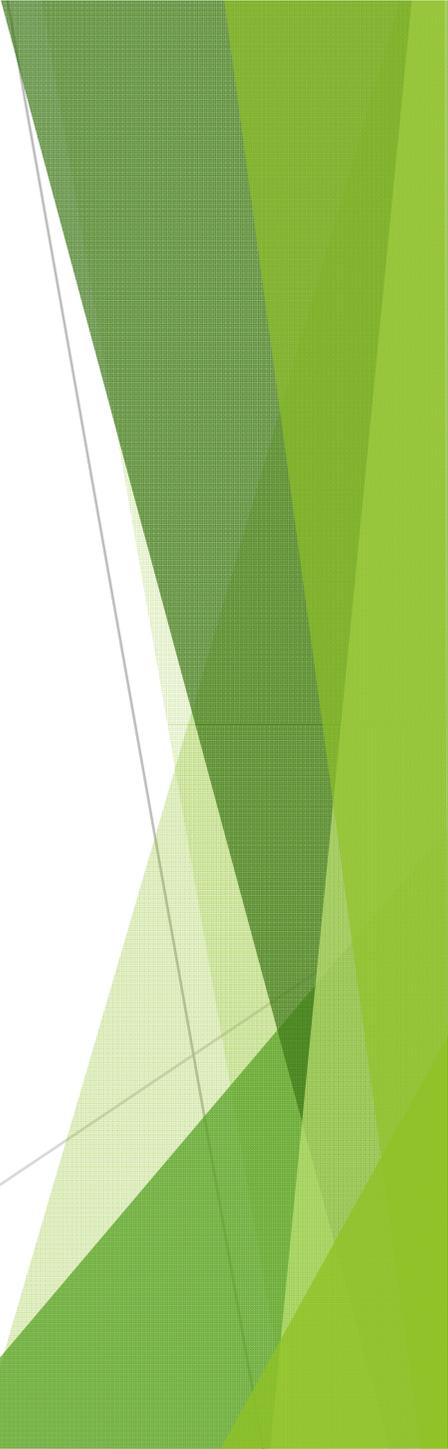
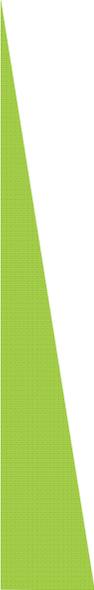


- 
- ▶ Obtain appropriate consent from the woman before surgery:
 - all possible risks associated with the surgical procedure, including general risks of laparoscopic surgery
 - a potentially reduced ovarian reserve, and the (albeit small) risk of loss of the ovary and consequences thereof.

- 
- 
- ▶ Although still controversial, the woman should also be informed about the possibility of preoperative freezing of oocytes, especially in case of bilateral disease.
 - ▶ Fertility preservation should be considered when the reserve is already compromised.

- ▶ Refer the woman to a centre of expertise where the necessary surgical expertise is available, if the surgery cannot be performed or completed safely .

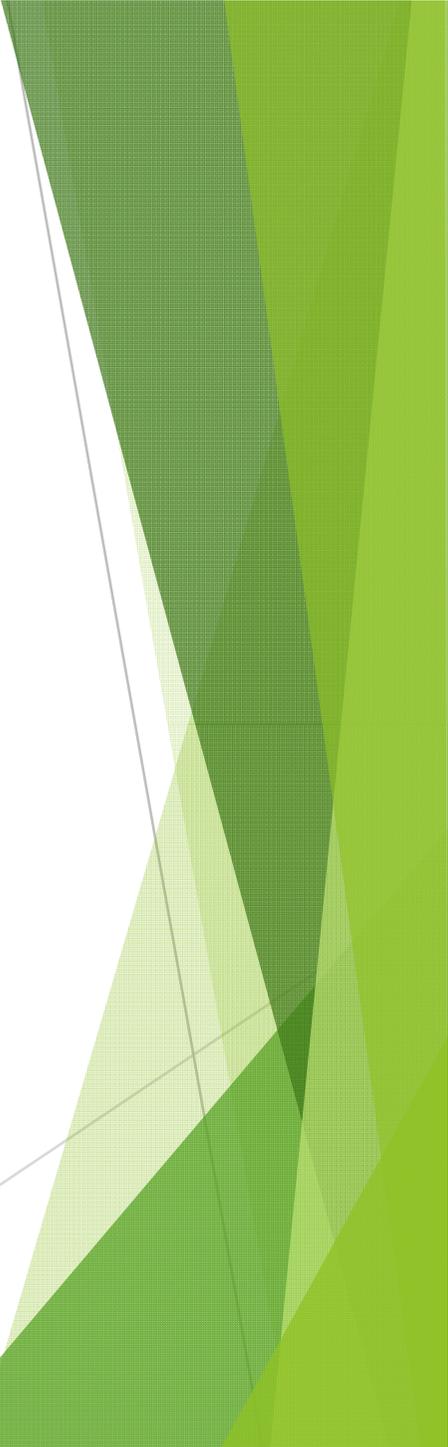


- 
- 
- ▶ Handle the ovarian tissue as atraumatically as possible.
 - ▶ Consider using anti-adhesion measures such as oxidized regenerated cellulose, polytetrafluoroethylene surgical membrane, and hyaluronic acid products

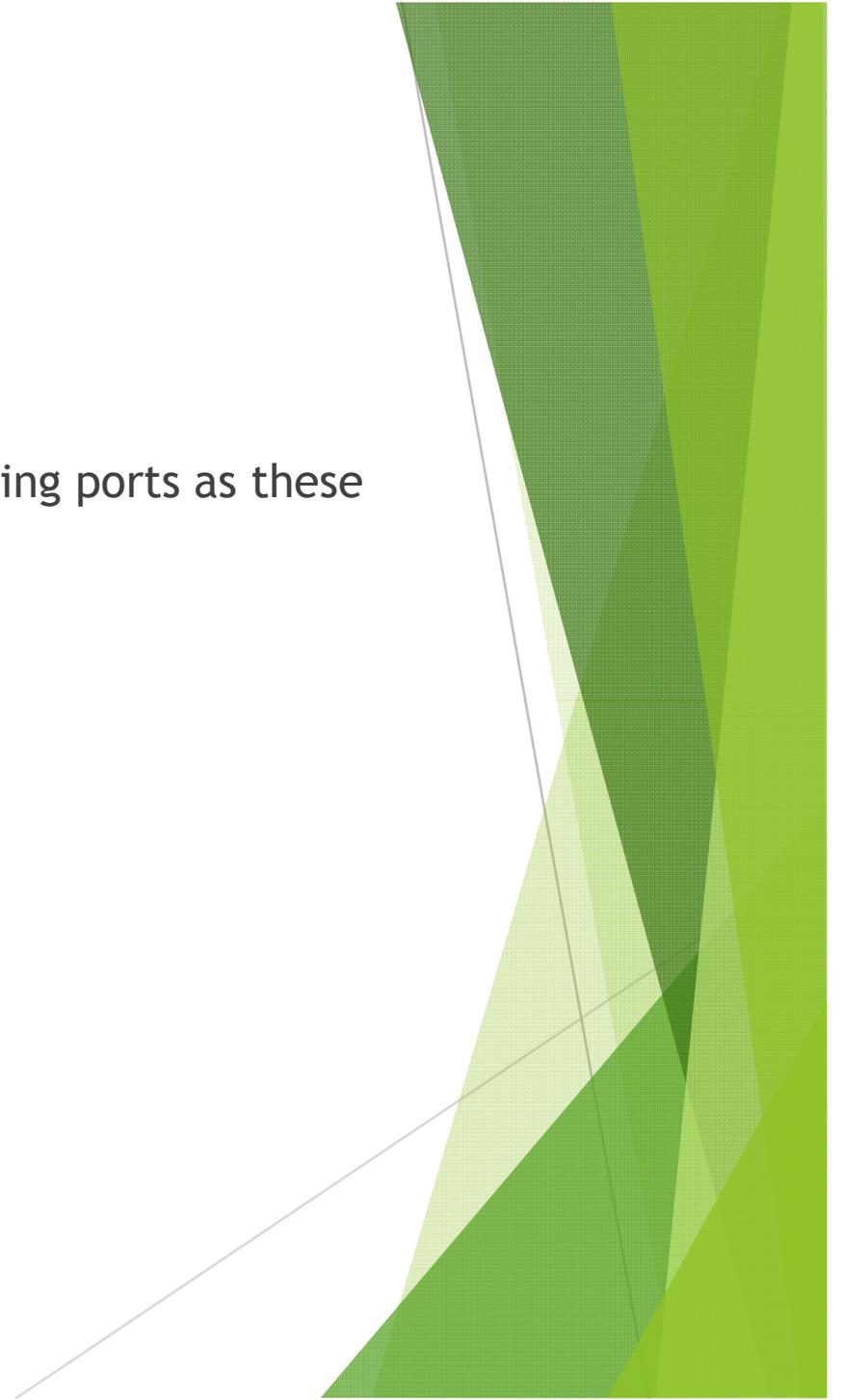
Initial stages of laparoscopic surgery for ovarian endometriomas

- ▶ Inspect the pelvic organs, upper abdomen and appendix.

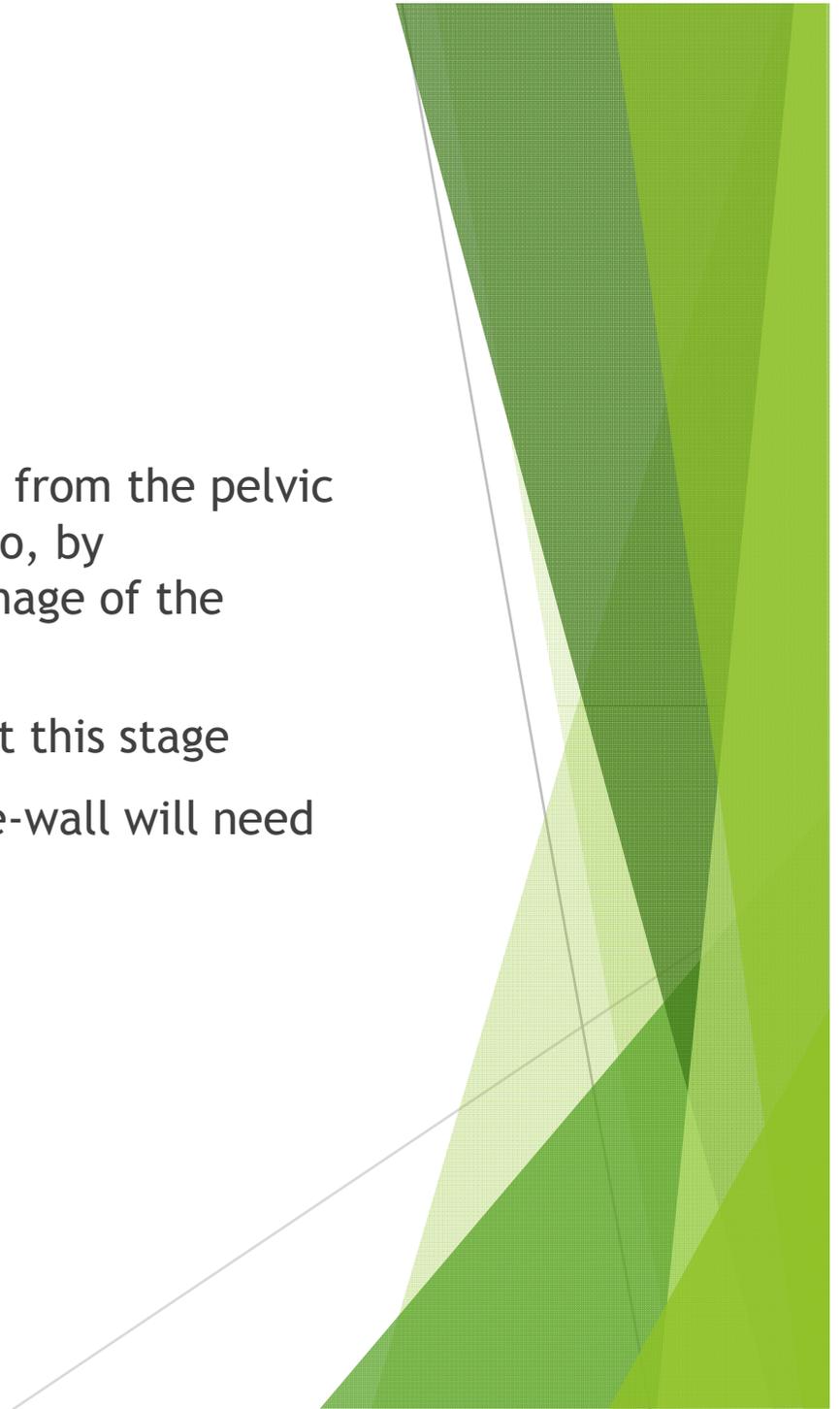


- 
- ▶ Obtain peritoneal washings and biopsies before mobilizing the ovary with endometrioma in the presence of clinically relevant ascites, suspicious peritoneal lesions or ovarian cysts of abnormal appearance.
 - ▶ for a presumed endometrioma, peritoneal washing is not routinely recommended

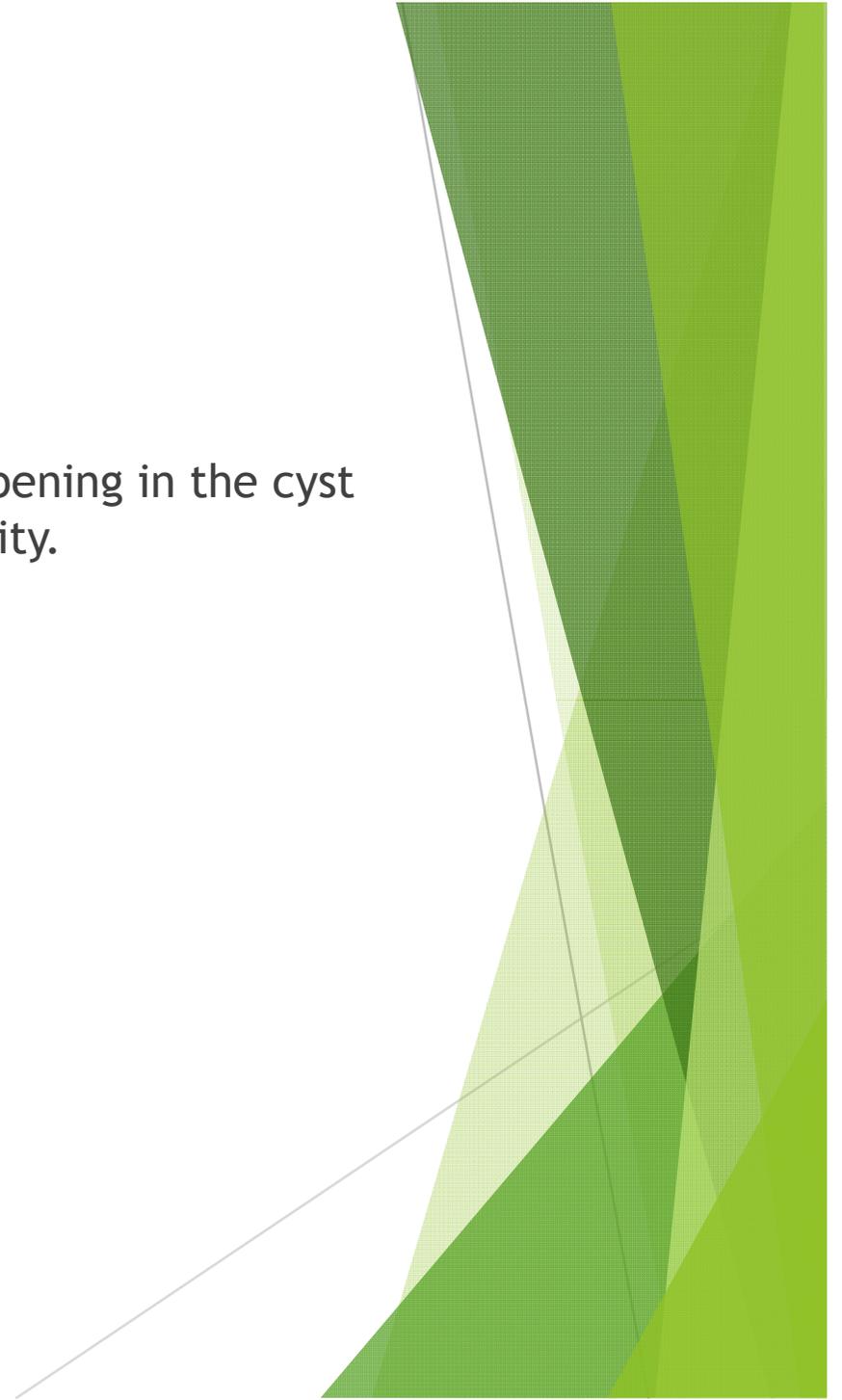
- ▶ Consider using three laparoscopic working ports as these may facilitate surgery.



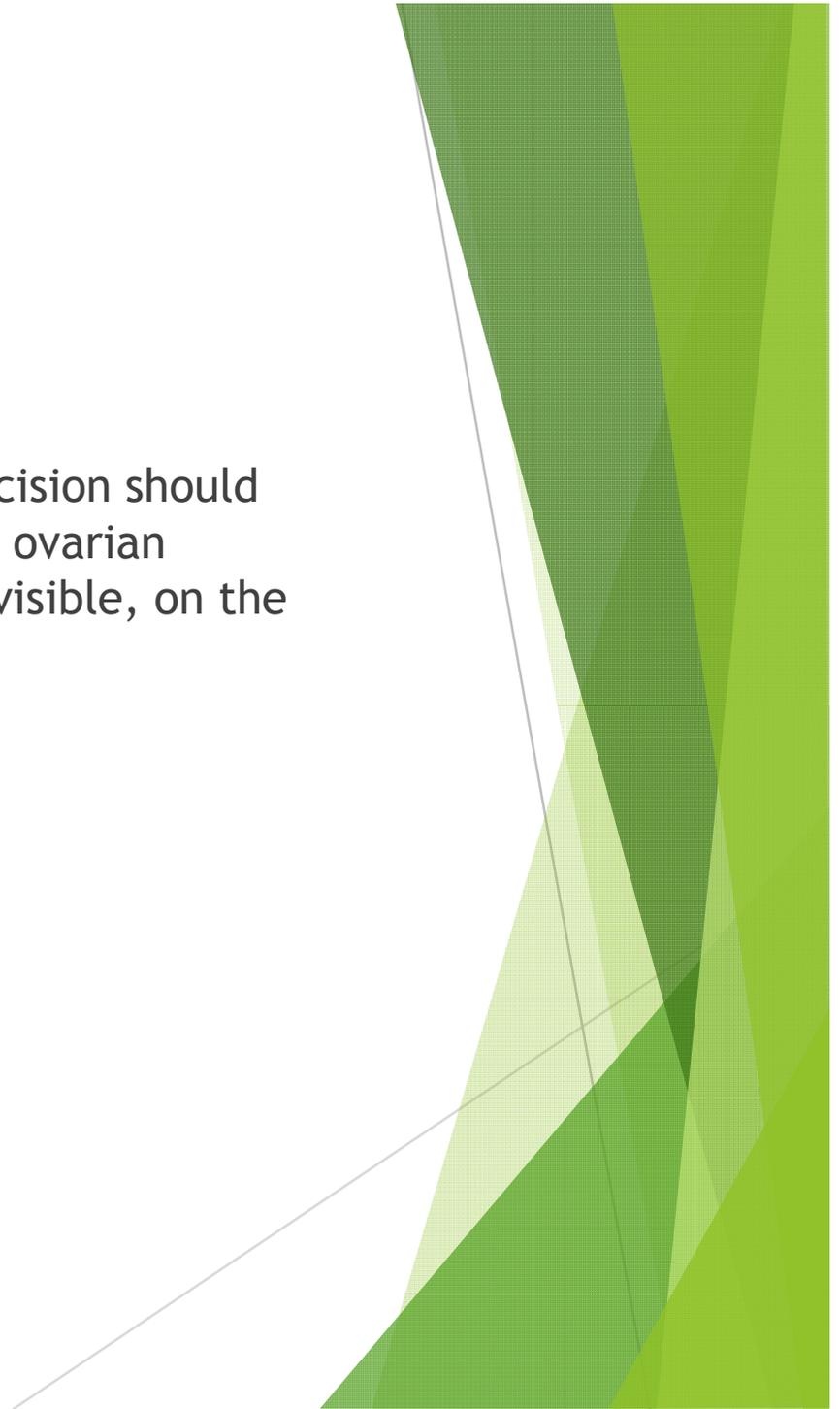
- ▶ Separate the ovary with endometrioma from the pelvic side-wall, where it is usually adherent to, by adhesiolysis. This usually results in drainage of the endometrioma.
- ▶ It is important to visualize the ureter at this stage
- ▶ Endometriotic tissue on the pelvic side-wall will need to be removed as well

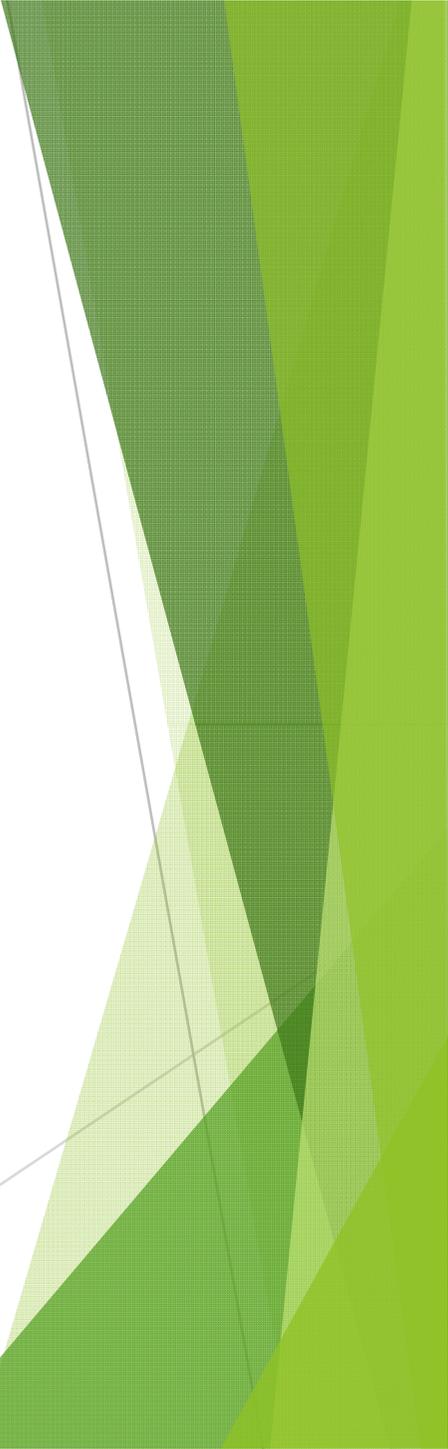


- ▶ Where the cyst ruptures, extend the opening in the cyst wall adequately to expose the cyst cavity.
- ▶ Multiple incisions and excessive opening should be avoided.

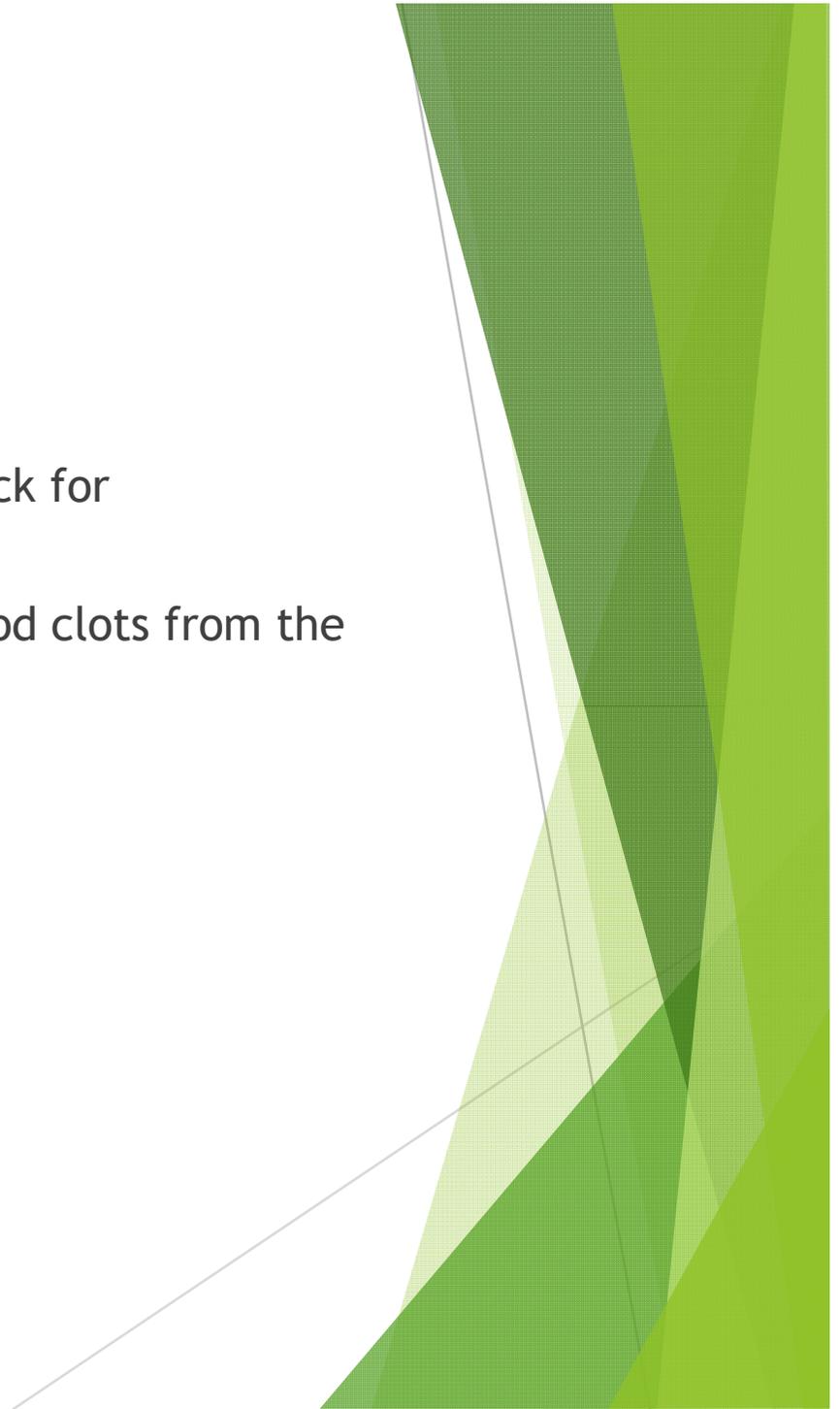


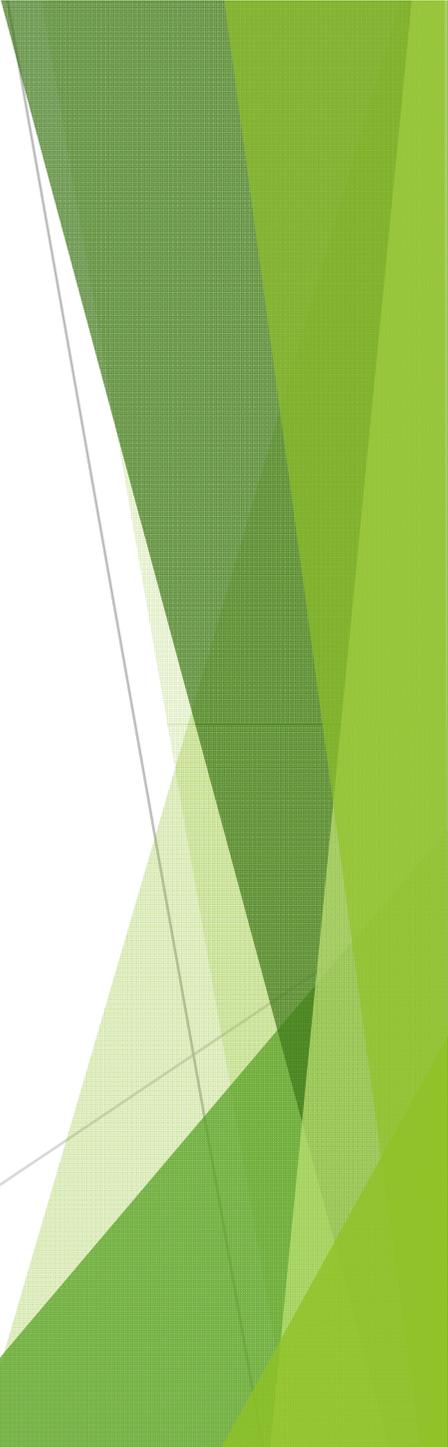
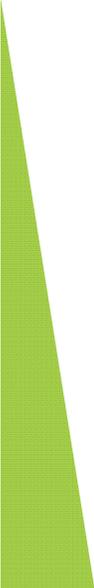
- ▶ When the ovary is not adherent, the incision should ideally be over the thinnest part of the ovarian endometriotic surface or if this is not visible, on the antimesenteric border



- 
- 
- ▶ Irrigate and inspect the cyst cavity to rule out malignancy.
 - ▶ Any suspicious area should be biopsied for histological confirmation
 - ▶ If suspicious for malignancy, local guidelines for further management should be followed.

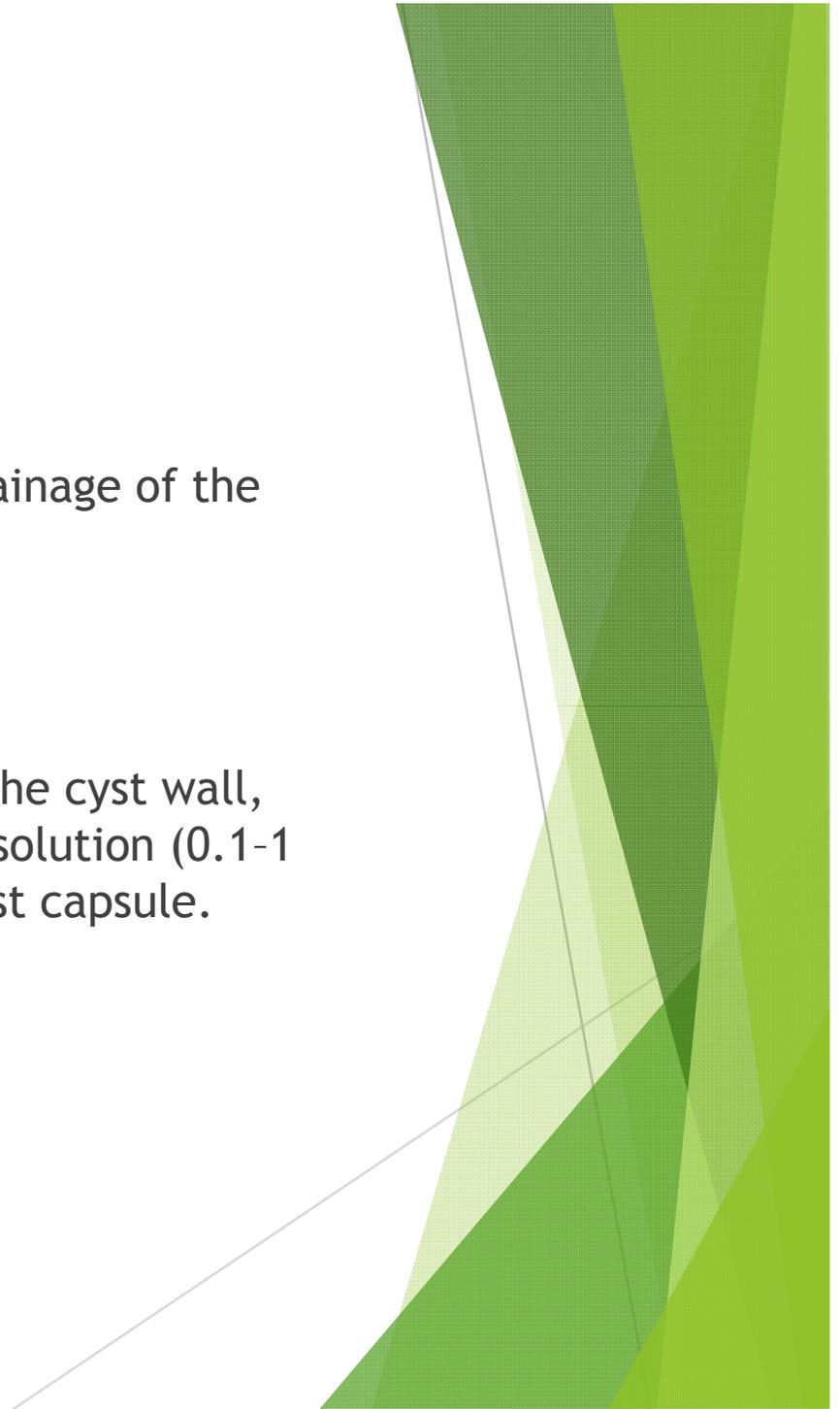
- ▶ Irrigate and aspirate thoroughly to check for haemostasis and to
- ▶ remove any remaining cyst fluid or blood clots from the pelvic cavity



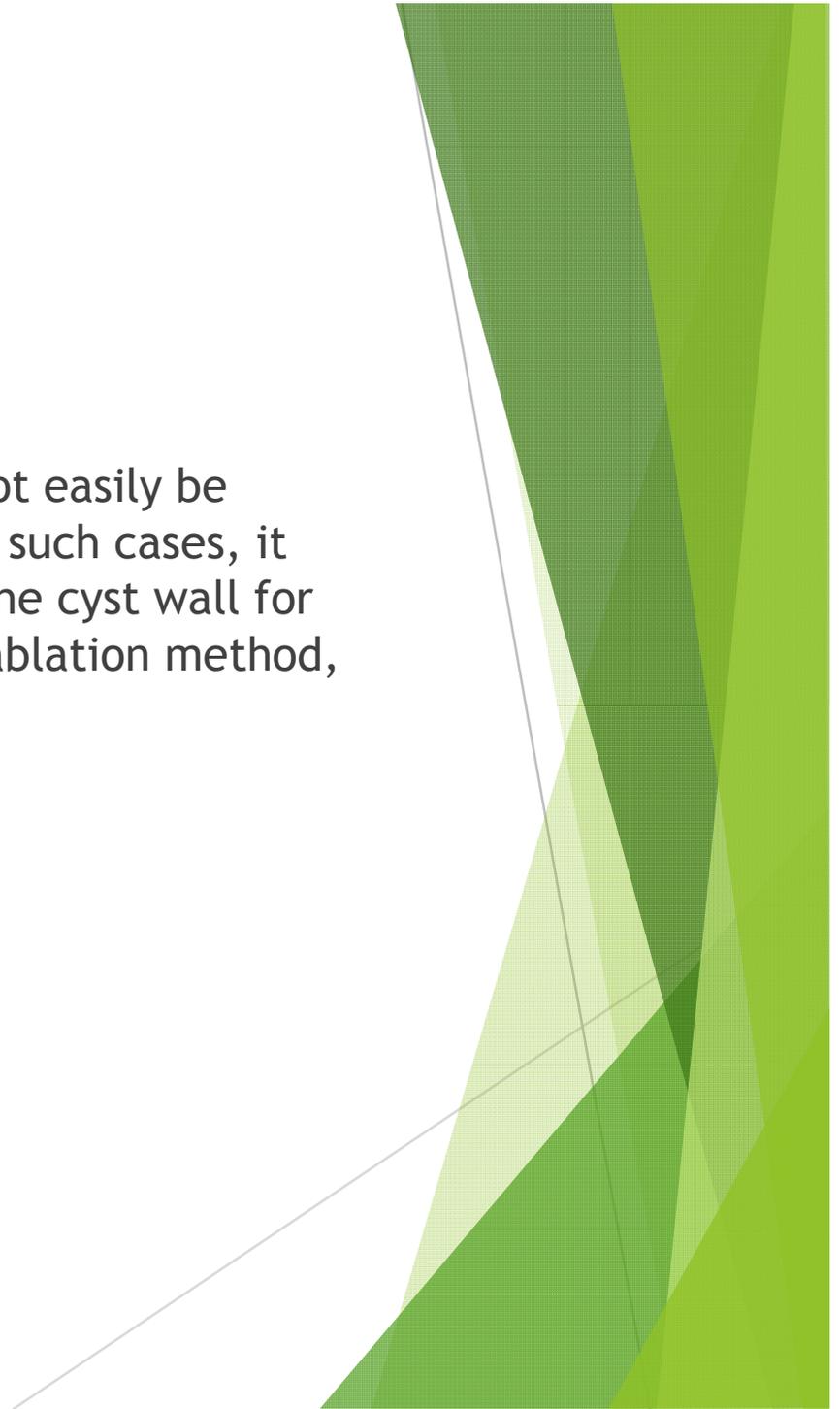
- 
- 
- ▶ The following options are available for surgical treatment of ovarian endometrioma:
 - cystectomy,
 - ablation by laser or by plasma energy or electrocoagulation.

Cystectomy

- ▶ After mobilization of the ovary and drainage of the cyst, make an incision
- ▶ the incision should be away from the blood vessels in the hilum/meso-ovarium.
- ▶ To aid dissection and identification of the cyst wall, saline or diluted synthetic vasopressin solution (0.1-1 unit/ml) may be injected under the cyst capsule.

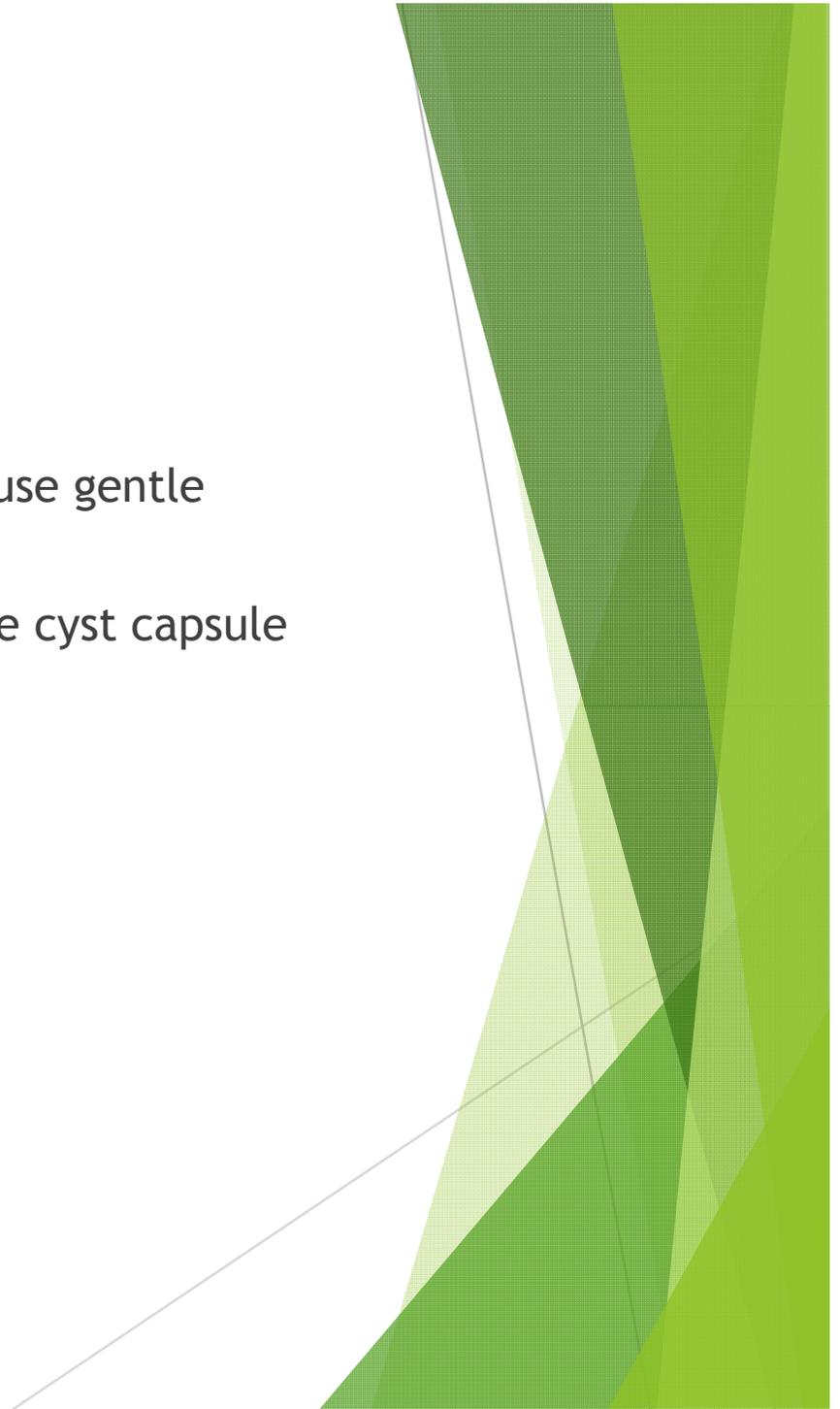


- ▶ In some cases, a cleavage plane may not easily be identified after the ovarian incision. In such cases, it may be better to take a small part of the cyst wall for histological diagnosis and then use an ablation method,
- ▶ .



- ▶ Once the cleavage plane is identified, use gentle traction and countertraction

with appropriate instruments to dissect the cyst capsule from the ovarian parenchyma

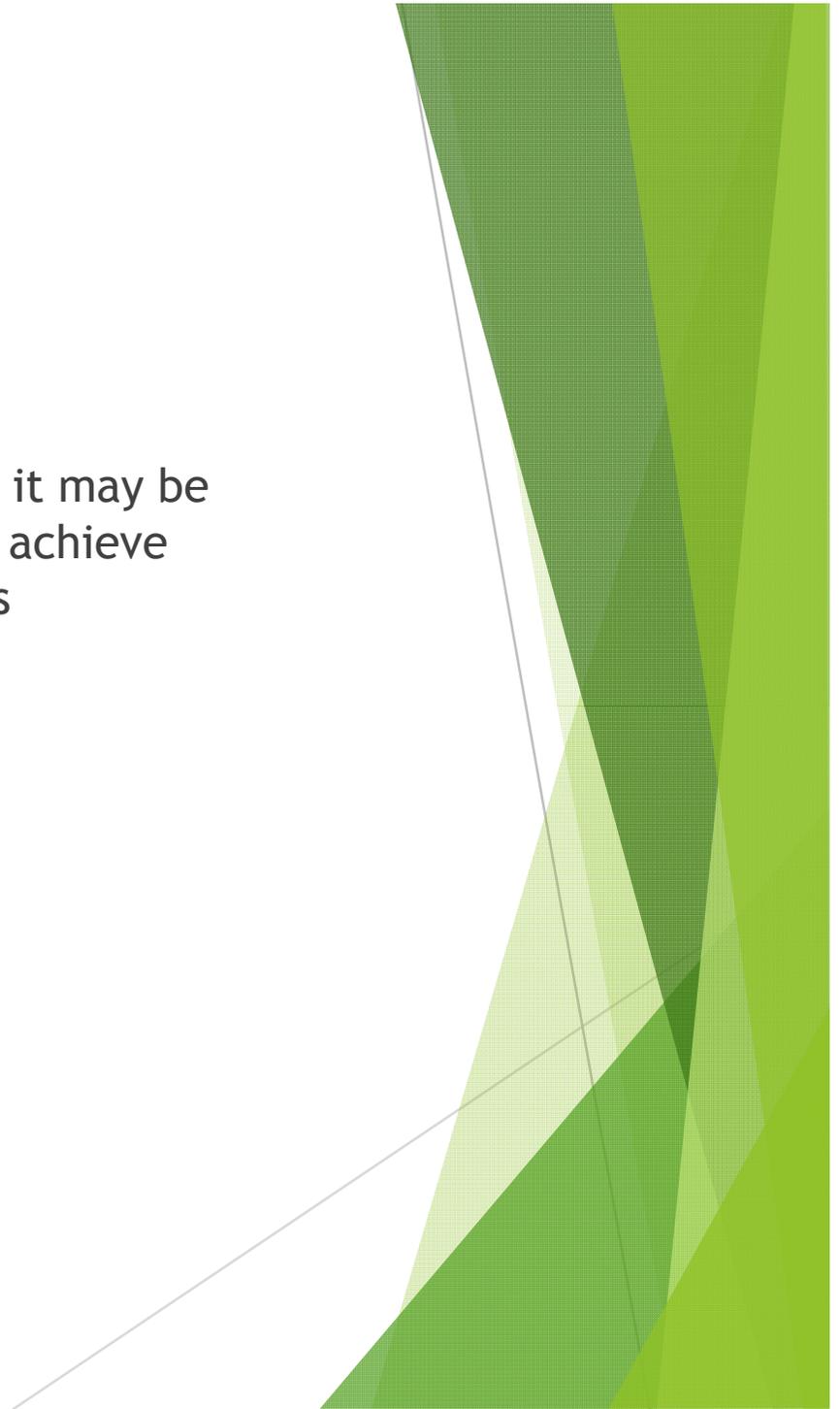


- ▶ Careful identification of the cleavage plane and precise spot bipolar coagulation is the key to achieve haemostasis, to prevent unnecessary damage to healthy tissue.



- ▶ Ensure final haemostasis after complete removal of the cyst capsule.
- ▶ Bipolar coagulation, suturing, or intra-ovarian haemostatic sealant agents may also be used for this purpose.
- ▶ It is important to avoid
damaging the major blood supply at the hilum

- ▶ After removal of large endometriomas, it may be necessary to reconstruct the ovary and achieve haemostasis with monofilament Sutures



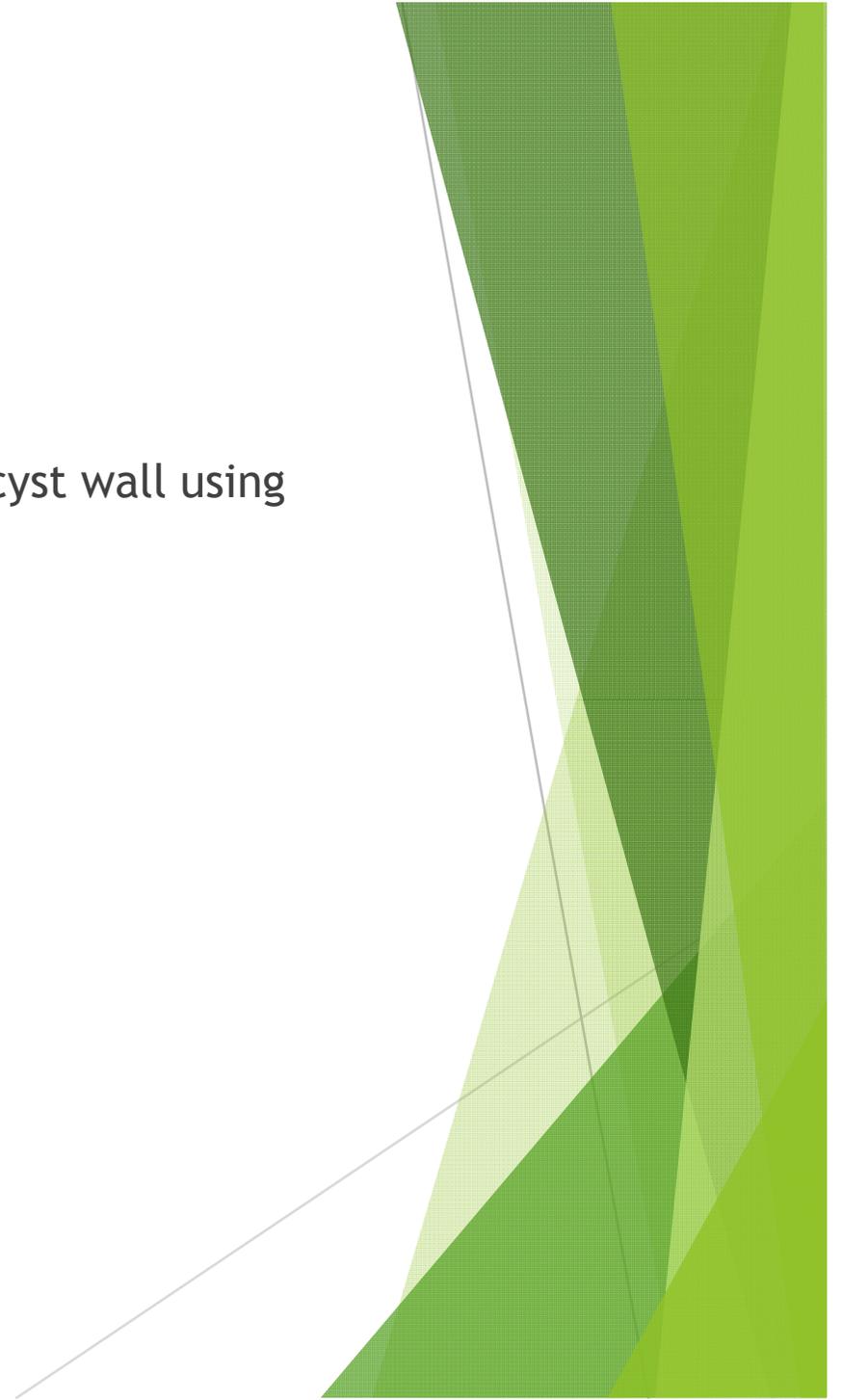
Laser ablation

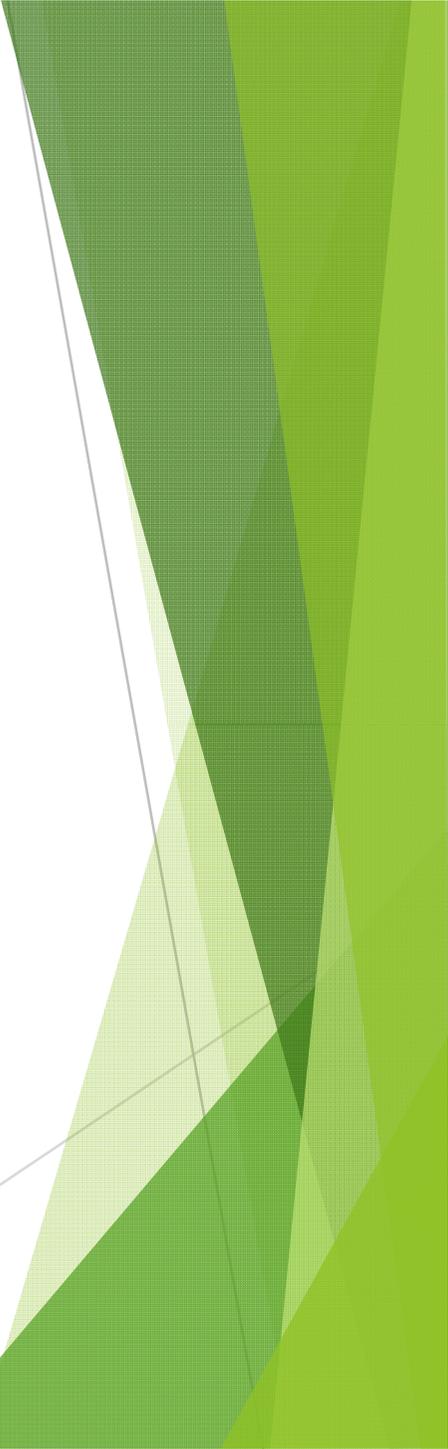
- ▶ Ablate the entire inner surface of the cyst wall using the laser beam.

Power settings of:

*30-55W for CO₂ laser beam

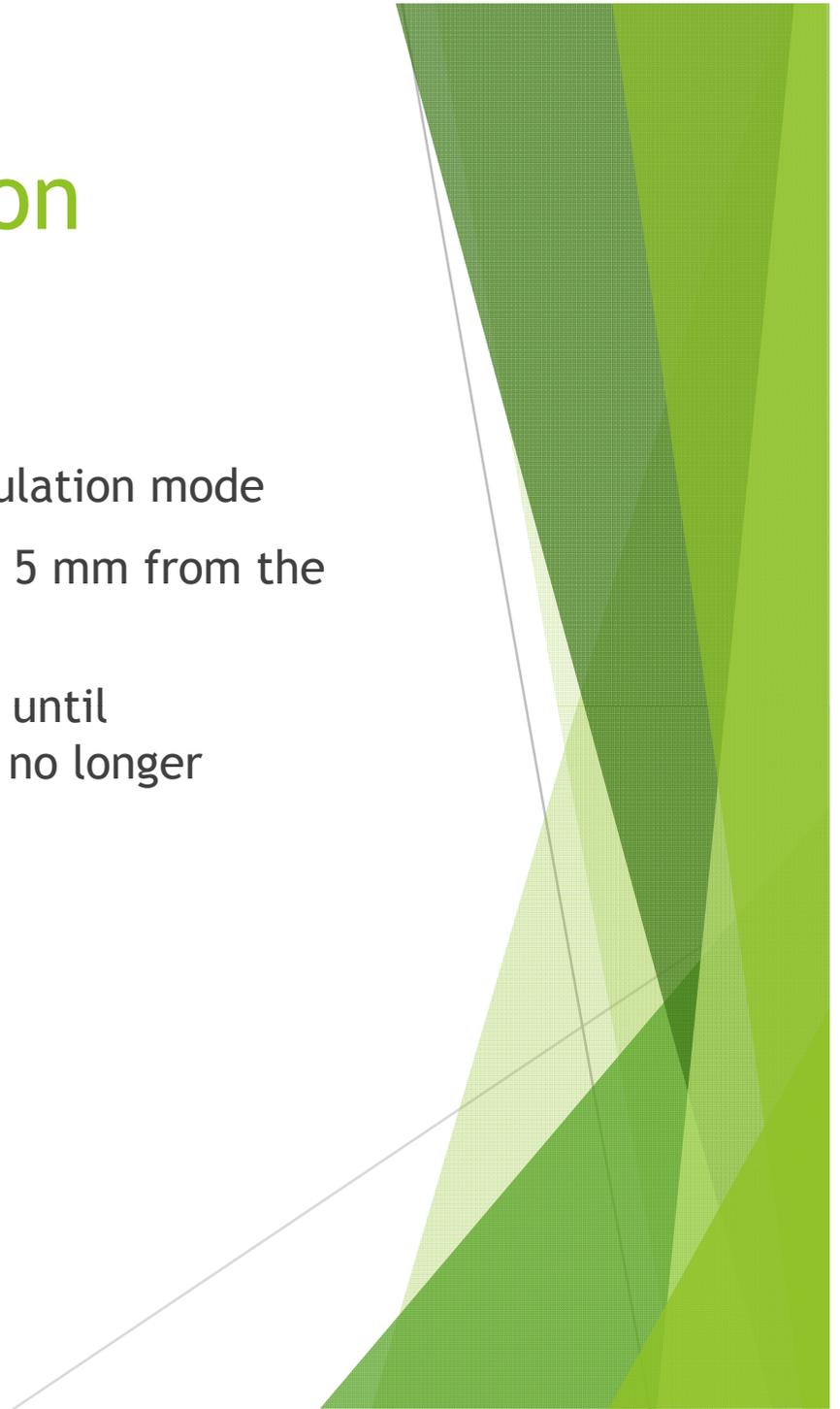
*6-10W for CO₂ fibre .



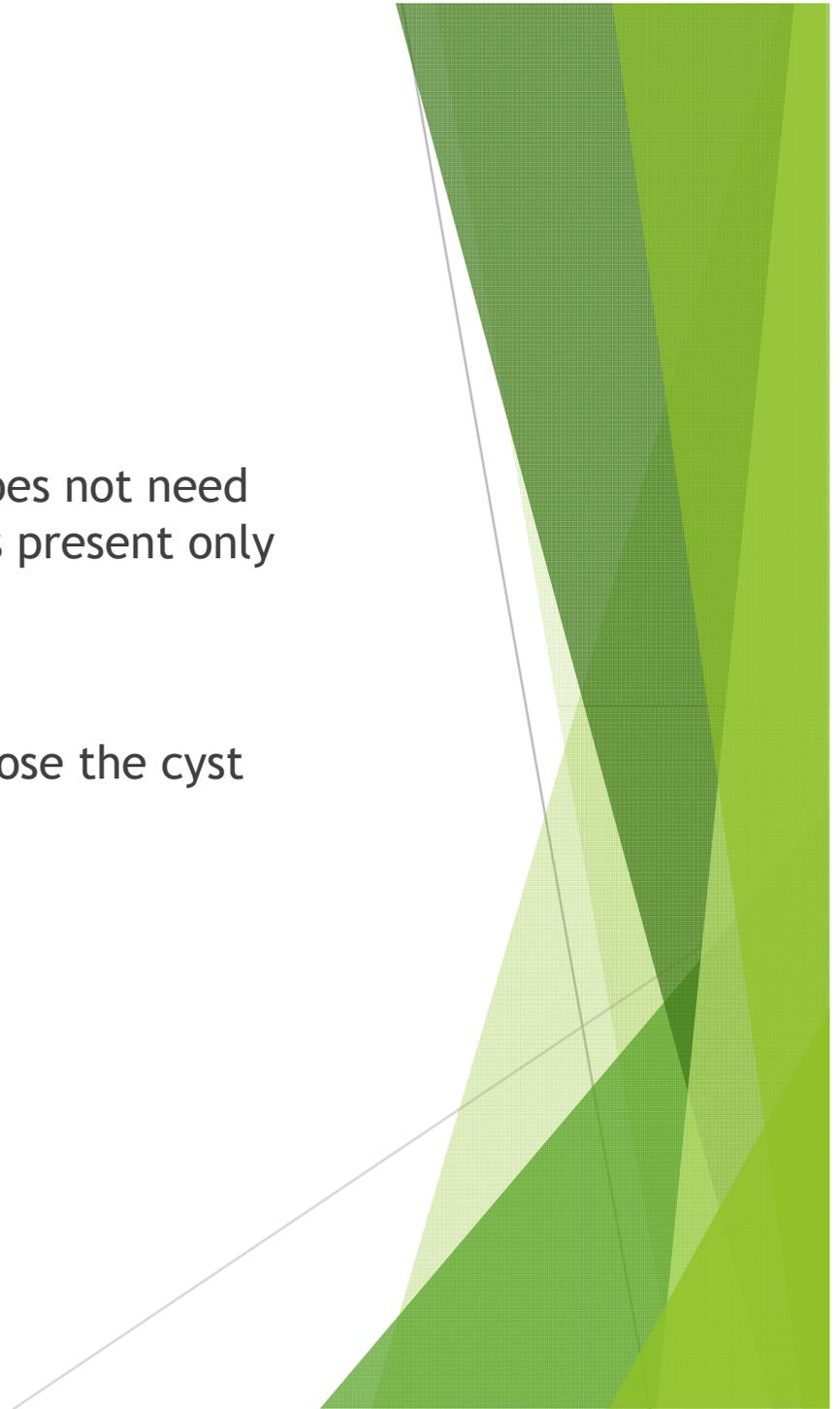
- 
- 
- ▶ The laser should be applied in such a mode that it can ablate the tissue while preserving the underlying healthy tissue.
 - ▶ Aim to vaporize the endometriotic cyst lining only until haemosiderin pigment-stained tissue is no longer visible
 - ▶ The entire depth of the cyst capsule does not need vaporization, as endometriotic tissue is present only superficially.
 - ▶ intermittent irrigation for a good visibility

Plasma energy ablation

- ▶ Ablate the entire inner surface in coagulation mode
- ▶ set at 10 to 40, at a distance averaging 5 mm from the tip of the hand piece.
- ▶ Aim to vaporize the endometriotic cyst until haemosiderin pigment-stained tissue is no longer visible.



- ▶ The entire depth of the cyst capsule does not need vaporization, as endometriotic tissue is present only superficially.
- ▶ Take care to treat all areas
- ▶ When cyst eversion is not feasible, expose the cyst interior progressively



Electrocoagulation

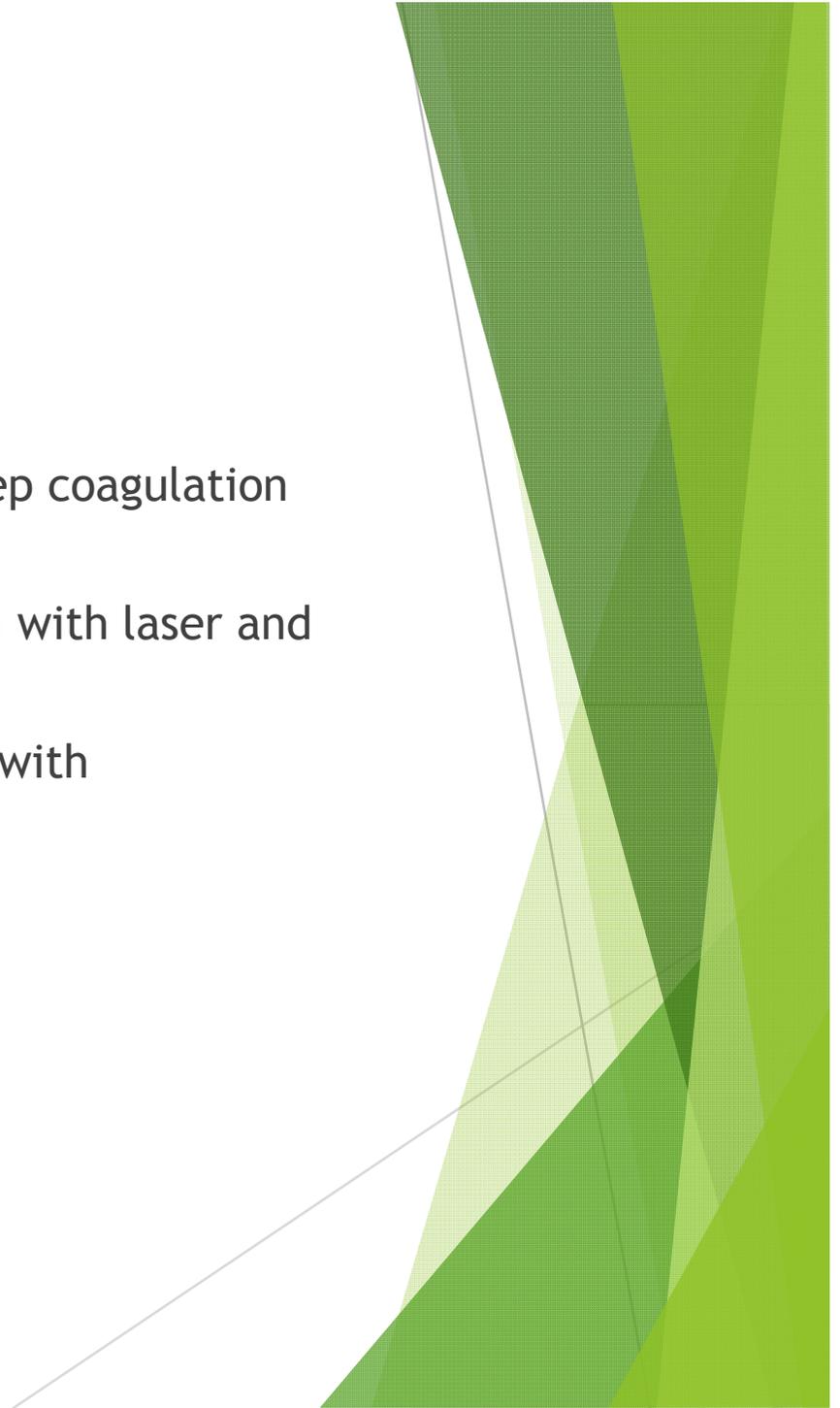
- ▶ Electrosurgery is widely used for the treatment of ovarian endometrioma.
- ▶ Coagulation modes with different techniques and electrodes lead to different voltage levels, including modulation of high frequency (HF) current with soft coagulation, forced coagulation or spray coagulation.



Electrosurgery application

- ▶ The thickness of the capsule of an endometrioma can be up to 3.0 mm and varies between cysts, but may also change within the same cyst.
- ▶ During the application of HF energy for destruction of an endometriotic lesion by a thermal effect, it is difficult to assess the changes in the tissue.
- ▶ Coagulation of the cyst should inactivate endometriotic lesions superficially and respect the underlying tissue.

- ▶ Uncontrolled application of heat or deep coagulation should be avoided
- ▶ Tissue damage tends to be deeper than with laser and plasma energy ablation
- ▶ The ovary should be cooled frequently with irrigation fluid.



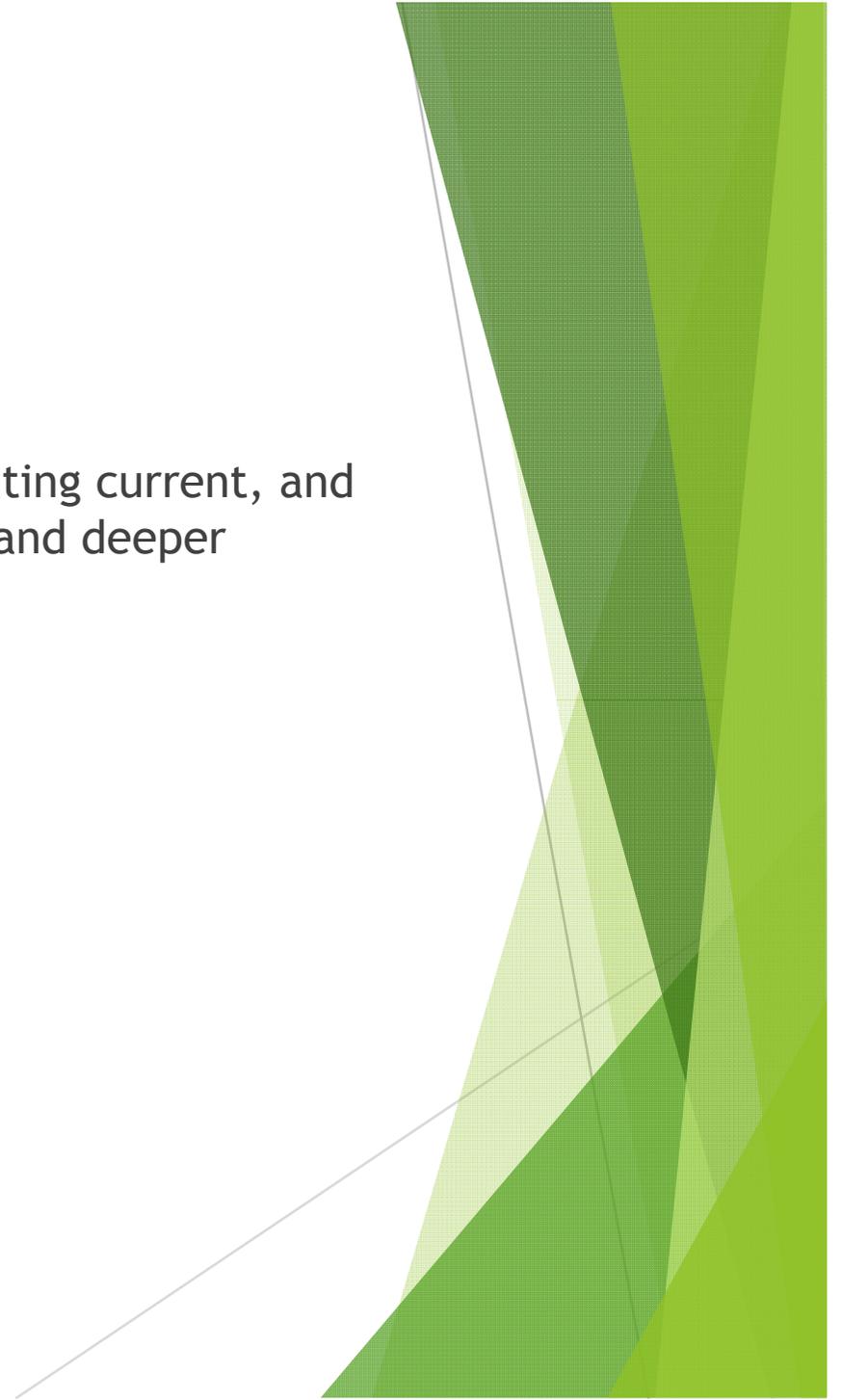
- **Monopolar energy:**

may be used in selected areas with fibrotic endometriotic tissue located at the hilum.

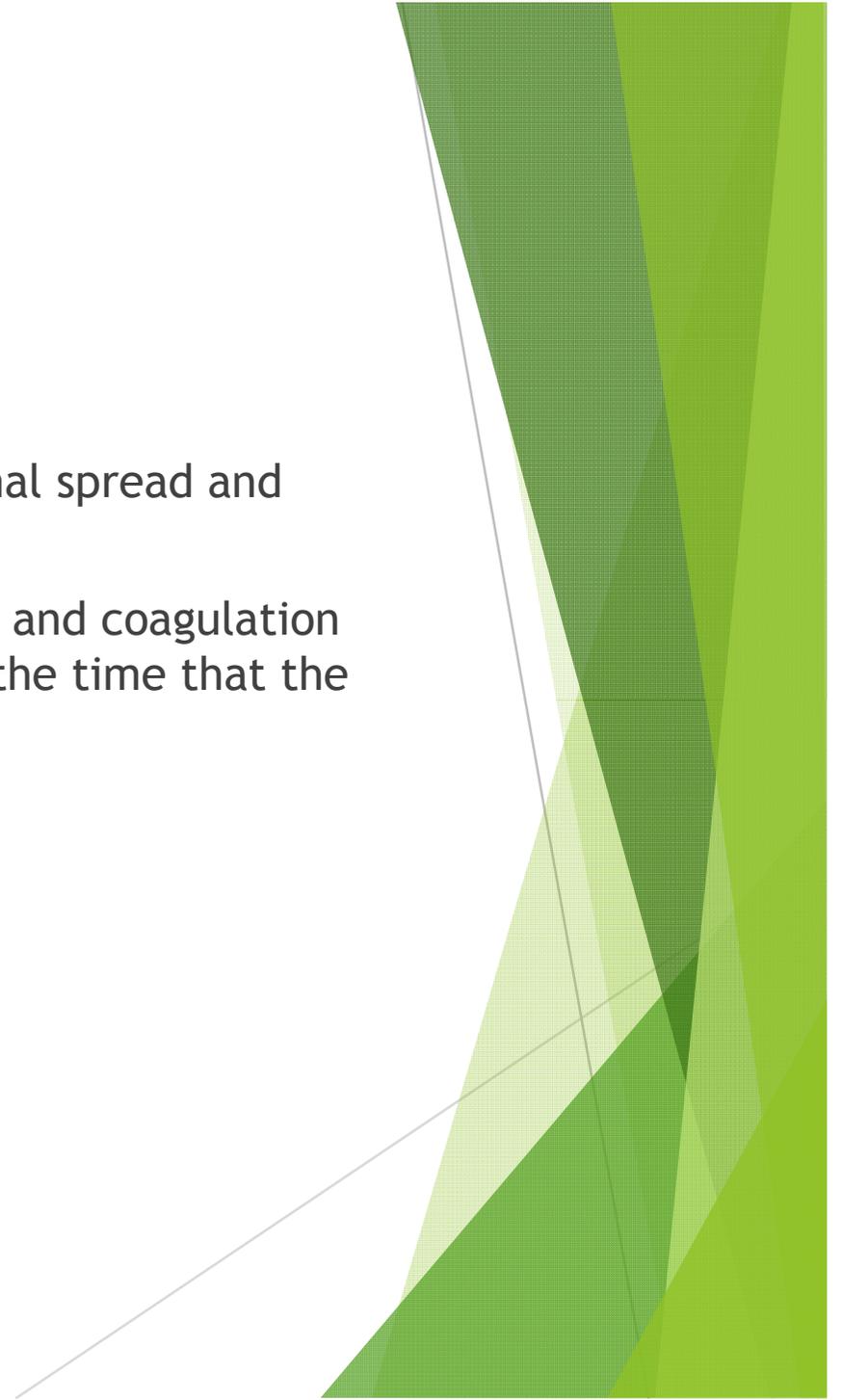
- ▶ 15-20W is frequently used.



- ▶ Cutting current is unmodulated alternating current, and cuts the tissue for superficial ablation and deeper coagulation effect.



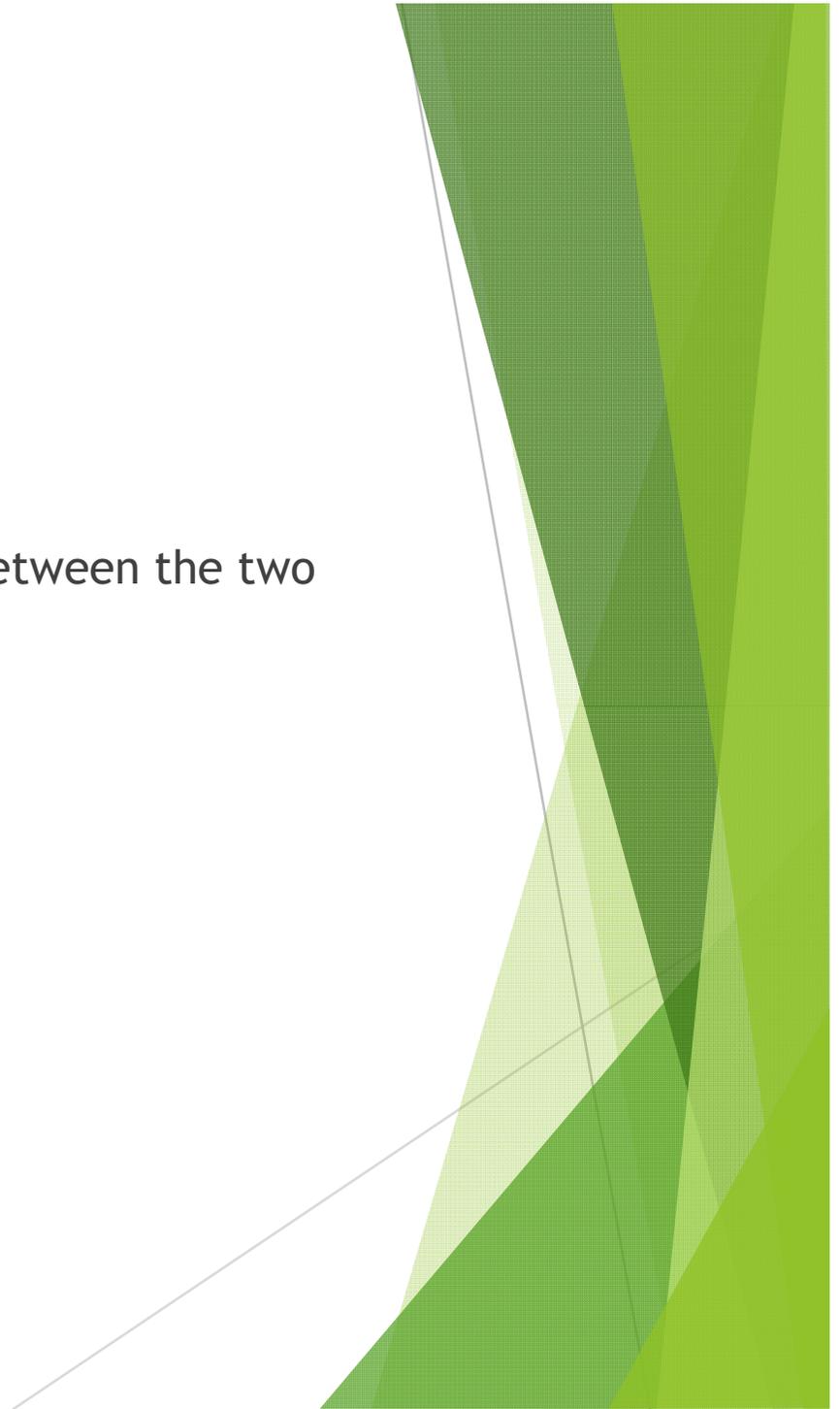
- ▶ Coagulation current has a higher thermal spread and deeper coagulation
- ▶ Blended current is a mixture of cutting and coagulation currents, and is generated by altering the time that the current is applied.



- ▶ The more concentrated the energy, the greater is the thermodynamic effect.
- ▶ a smaller electrode may require a lower power setting
- ▶ Use of monopolar diathermy, with a low power setting and small contact surface, provides better control of the tissue effect.

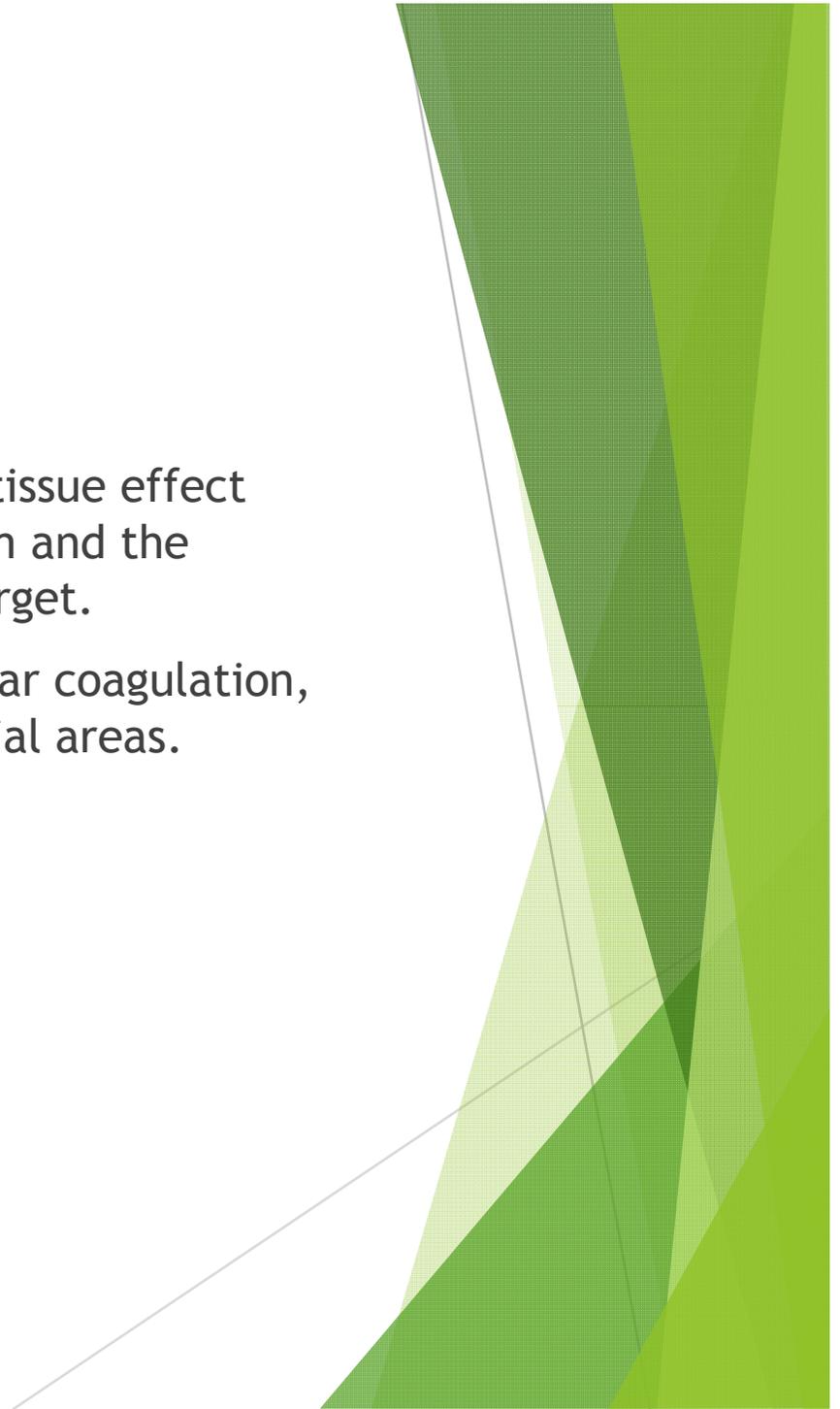
Bipolar energy:

- ▶ Safer than monopolar
- ▶ The current passes across the tissue between the two jaws of the instrument.
- ▶ 25-40w
- ▶ 300-400° C
- ▶ The penetration 10 -12 mm
- ▶ Very short coagulation time



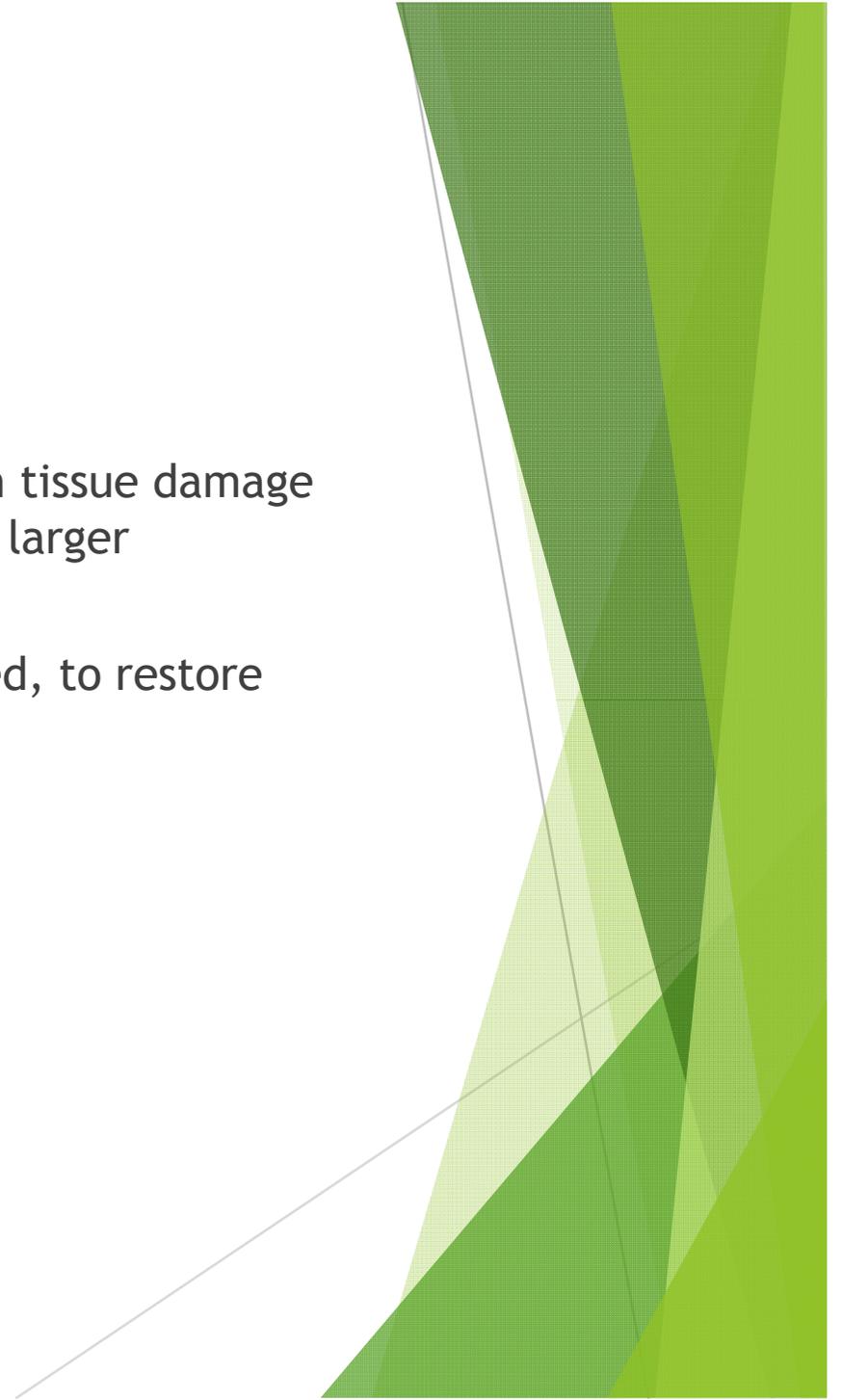
Argon beam

- ▶ The gas stream produces a monopolar tissue effect depending on the diameter of the beam and the distance between the beam and the target.
- ▶ The tissue effect is similar to monopolar coagulation, but allows treatment of wider superficial areas.



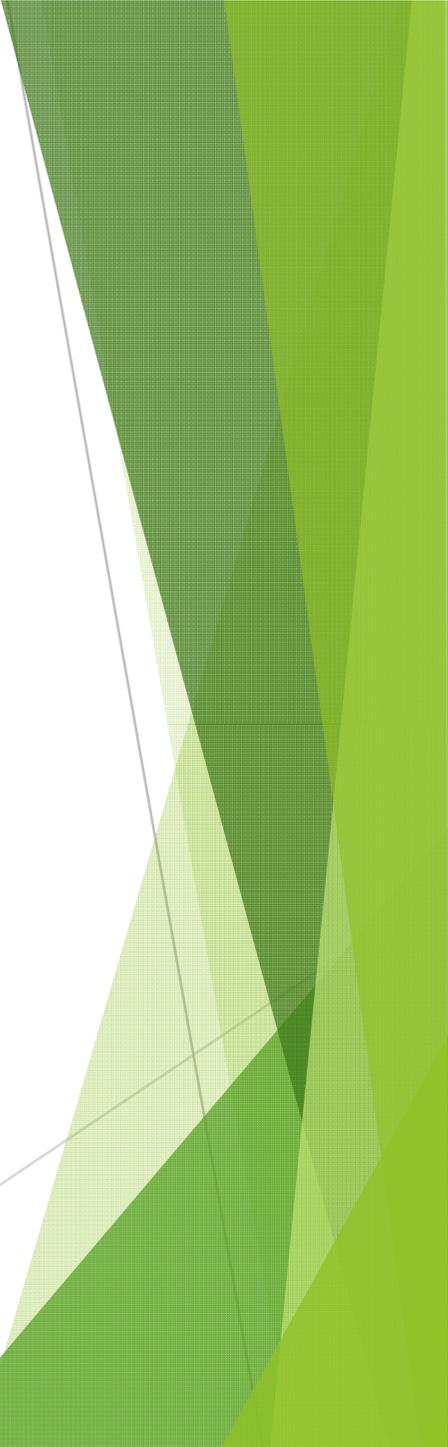
Combined technique

- ▶ prevent excessive bleeding and ovarian tissue damage from the ovarian hilum particularly for larger endometriomas.
- ▶ Suturing of the ovary may be considered, to restore anatomy.



Two- or three-step approach for large endometriomas

- ▶ For large endometriomas
- ▶ The first step involves opening and draining the endometrioma
- ▶ Inspect the cyst cavity and take a biopsy.
- ▶ administer GnRH agonist for 3 months
- ▶ Complete the surgery with a second laparoscopy

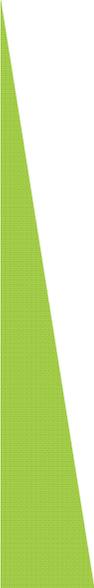


► the potential benefit:

*facilitate the management of large endometriomas,

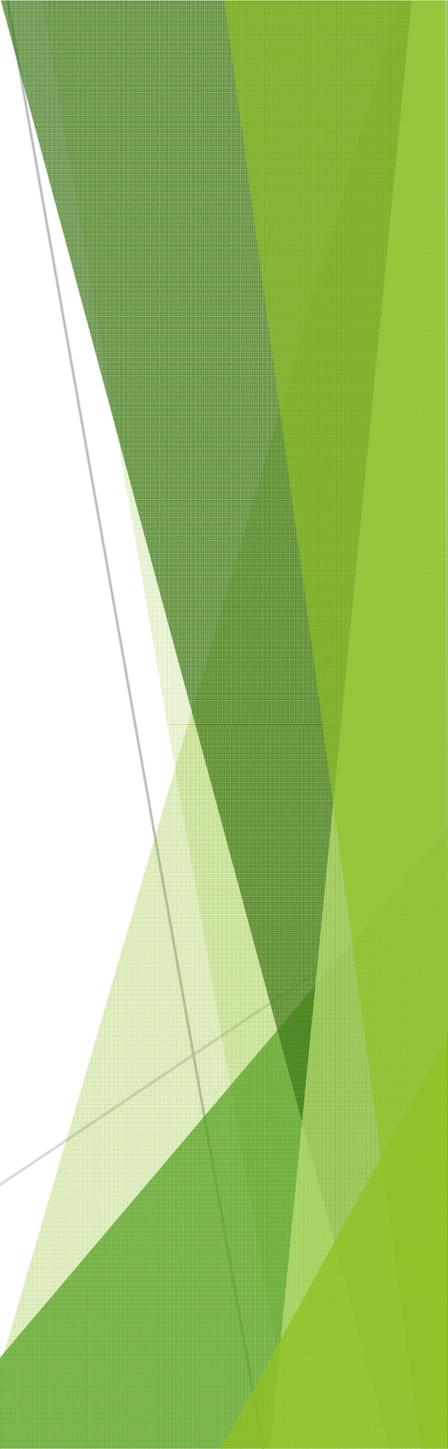
*reduce recurrence rates

*limit decrease in ovarian reserve.



Further considerations

- ▶ Laparotomy is rare
- ▶ If the procedure is too difficult to perform by laparoscopy, it is better to stop the procedure after the drainage of the endometrioma, prescribe GnRHa for 3 months, and re-operate 3-6 months later
- ▶ the woman may be referred to a centre with the necessary surgical expertise.



▶ Oophorectomy

*recurrent

*large unilateral endometriomas

*suspicion of potential malignancy

▶ Informed consent needs to be obtained in all cases, and fertility concerns need to be discussed.



Tnx for your attention

