

ENDOMETRIOSIS

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Disclosure



G E S E A

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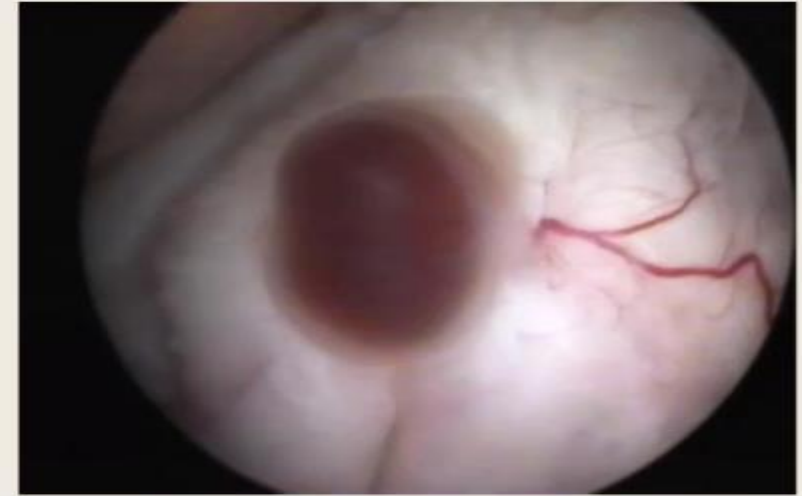
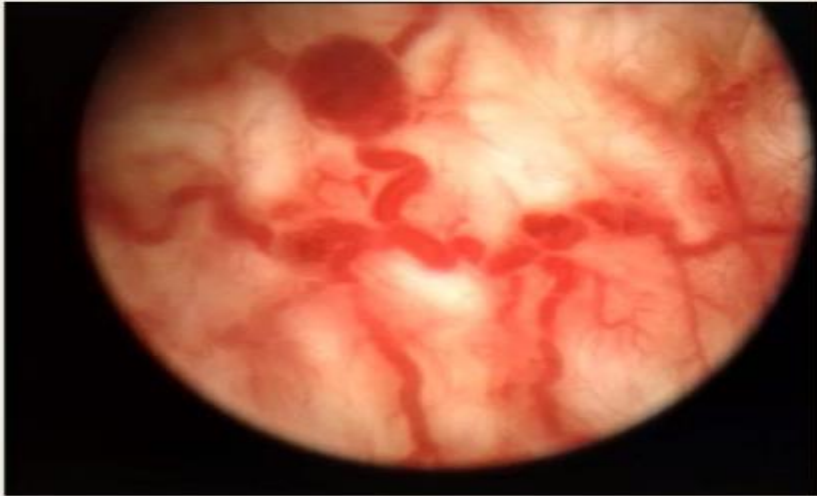
www.eshre.eu

Endometriosis presents in 3 different entities frequently found together

- peritoneal lesions
- rectovaginal deep endometriosis
- endometriomas [\(Nisolle and Donnez, 1997\)](#)

- Endometriomas the most commonly diagnosed form of endometriosis due to US accuracy
- Prevalence and incidence in 17- 44% of women with endometriosis [\(Busacca and Vignali, 2003\)](#)
- ovarian endometriomas **as marker** for DIE [\(Redwine, 1999\)](#) &
- multifocal deep vaginal, intestinal, ureteric lesions [\(Chapron et al., 2009\)](#)

Subtle lesions and subclinical diagnosis



I Brosens Fert Steril 2001 Gordts et al *JAAGL* 2000 R Campo et al. Fert. Steril. 1999

Facts of Endometriosis

- Chronic inflammatory condition
- Affects women mostly in reproductive years
- Cause abdominal pain, dysmenorrhoea, infertility
- Affects negatively
 - life quality of patients and their families
 - enormous socioeconomic burden on society

Diagnosis - Symptoms

- Endometrioma diagnosis is suspected by TVU
- Established diagnosis by biopsy and histopathology
- There is no correlation between endometrioma size and number and extension of the disease

Edgardo Somigliana et al 2010

- Symptoms deterioration and fertility prognosis are unpredictable and strange “wired”
- Hyperestrogenism, stress, immunological and other factors induce disease aggravation
- Timing, degree of symptoms and spread are dubious and lack scientific evidence **(DGGG Sept 2013)**

Treatment of Endometriosis

- ❑ frequently present a clinical dilemma as to whether and how to treat them when found in imaging
- ❑ treatment options for all endometriosis include local and systemic oestrogen suppression, progestins and surgery
- ❑ Surgical treatment is the mainstay and aims at the elimination of endometriotic tissue
 - provide sufficient tissue for histological assessment
 - preserve maximum possible of normal ovarian tissue (where fertility is desired and /or avoid premature ovarian failure (POF))
- ❑ surgical treatment of endometriosis cysts is associated with the unintentional removal or destruction of ovarian follicles as shown by AMH and AFC

On TVE for elucidating pathogenesis and treatment of ovarian endometrioma

Michelle Nisolle Gynecol Surg 2014 11:1-2

Implantation of regurgitated endometrial cells on ovarian surface

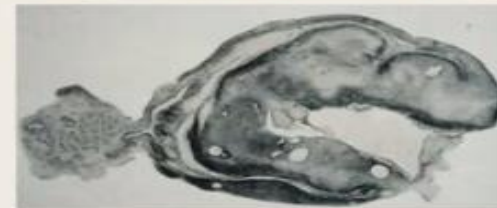
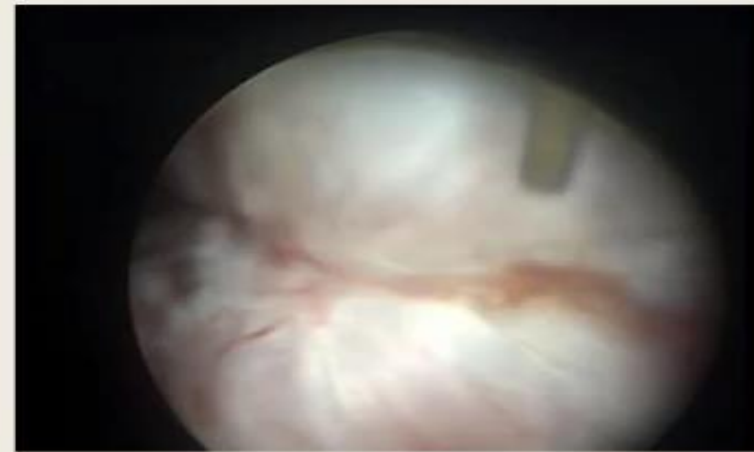
Persistent inflammation

Bleeding at implantation site and invagination of the cortex

Adhesions and CYST formation

Tissue alterations & Deformity

Gordts S : formation of 10mm ov surface endometrioma formation without adhesions or peritoneal endometriosis



Hughesdon. J Obst.Gynec Br Emp 1957

Decision for surgery and type of technique

recommendations on endometriosis management based on the best available evidence but not on the technical details of surgical procedures

(Johnson et al. 2013, Dunselman et al 2014, Ulrich et al 2014)

ESGE, ESHRE and WES experts work to provide a series of recommendations on the practical aspects of the different surgical procedures for endometriosis treatment

There are different levels of efficacy & should individualise surgery goals

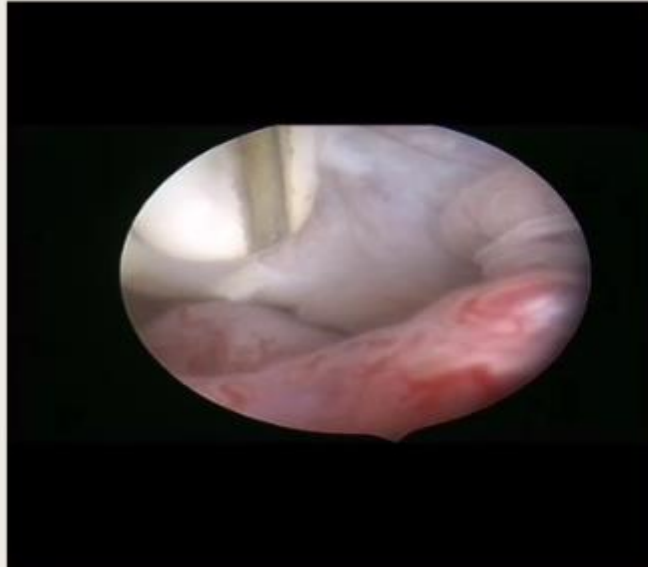
Factors influencing decision and way of treatment:

- patients' age and symptoms (pain, fertility)
- primary aim of the treatment (eliminating pain, improving fertility, R/o Mg)
- ovarian reserve, unilateral /bilateral, number and size of the cyst
- history of previous surgery (recurrence)
- *Which technique in which condition is still unknown*

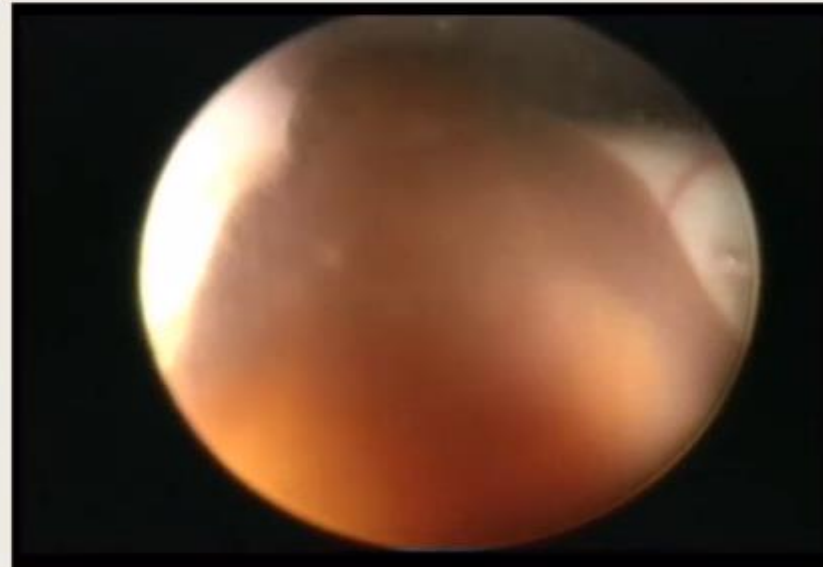
What is the reason not to operate small endometriomas < 3cm

- Lack of scientific evidence about disease prognosis
- No correlation between the size of endometrioma/s, symptomatology and extension of the disease either in short or in long term.
- No studies about small endometrioma <3cm excision and PR after IVF
- Ignorance of microsurgery potential and benefits, via trans vaginal laparoscopy
- Lack of training in RS and operative techniques
- Conventional surgery techniques on small endometrioma might cause more destruction to healthy ovarian tissue

Trans vaginal laparoscopy for endometriosis and <3cm endometriomas ablation treated as subtle lesions in infertility patients



TVHL ovarian cortex endometriosis ablation using bipolar probe by TVHL



TVHL 2cm endometrioma evacuation using bipolar needle and ablation



Excision of endometrioma using scissors by Trans Vaginal Hydro Laparoscopy

Endometriomas treatment prior to ART

Surgery

Minimizes the risk for

- OPU difficulties
- Contamination with endometrioma content
- Endometriosis progression
- Ruptured endometrioma
Pelvic abscess
- Occult malignancy

Expectant management

Minimizes the risk for

- Surgical damage minimized
- No Operation complications
- Not clear evidence that surgery improves ART – PR
- Cost Vs Benefit

Endometrioma and Pre-operative planning

Endometriomas usually adherent to

- ipsilateral pelvic side wall
- Fallopian tube
- Posterolaterally of the uterus
- small or large bowel

- possibility of hydroureter/s & hydronephrosis
(since ureter enters the small pelvis by crossing the common iliac vessels and courses anteriorly in the peritoneum of the pelvic side wall directly under the ovary)

Endometriosis surgery vital cautions

- Aware of the **risk of ovarian damage** in endometrioma surgery
- Ovarian tissue should be handled **as atraumatic as possible**
- If surgery cannot be performed or completed, **refer patient** to a specialized centre

(Johnson et al., 2013)

- **Anti-adhesion measures** (oxidised regenerated cellulose, polytetrafluoroethylene surgical membrane, hyaluronic acid)
(Dunselman et al 2014, Ulrich et al 2014)
- **Appropriate consent**
 - inform of risks associated with the surgical procedure
 - general risks of MIGS, potential reduced ovarian reserve,
 - risk of unexpected Mg and risk of loss of the ovary & consequences

Initial stages of MIGS for endometriomas

- Inspect the **pelvic organs, upper abdomen, appendix**
- For a presumed endometrioma, peritoneal washing is **not routinely** recommended
- When ascites, suspicious peritoneal lesions, or ovarian cysts with abnormal appearance, **peritoneal washings and biopsies** should be obtained **before mobilising** the presumed endometrioma
- Frozen section is not always readily available
- ureteric identification and mobilisation** away from the endometrioma facilitates safe surgical removal of endometriotic tissue on the pelvic side wall concomitantly

Endometrioma *pseudocapsule* - entry

- ❑ Endometrioma *pseudo-capsule* ruptures during surgical manipulations extend the opening adequately to expose the cyst cavity
(multiple incisions and excessive opening should be avoided to prevent damaging the ovarian cortex, functional ovarian tissue, and the hilus)
- ❑ Endometrioma *pseudo-capsule* kept Intact - when ovary is not adherent the *incision should be over the thinnest part* of the ovarian endometriotic surface away from the blood vessels and the hilus
- ❑ Irrigate and aspirate thoroughly – control haemostasis and remove any remaining cyst fluid or blood clots from the abdominal-pelvic cavity
- ❑ Where feasible, the *cyst bed may be turned inside out* to facilitate further treatment

Endometriotic tissue destruction surgical treatment options

- cystectomy - stripping and / or only
- ablation by CO₂ laser
- plasma energy, or
- electrocoagulation (monopolar, bipolar, combination)

- combined techniques (2 or 3 steps)
 [GnRHa] / Surgery + GnRHa + Surgery

Surgeon's skills and experience are necessary to avoid unnecessary bleeding which may lead to destruction of healthy ovarian tissue through excessive cauterisation

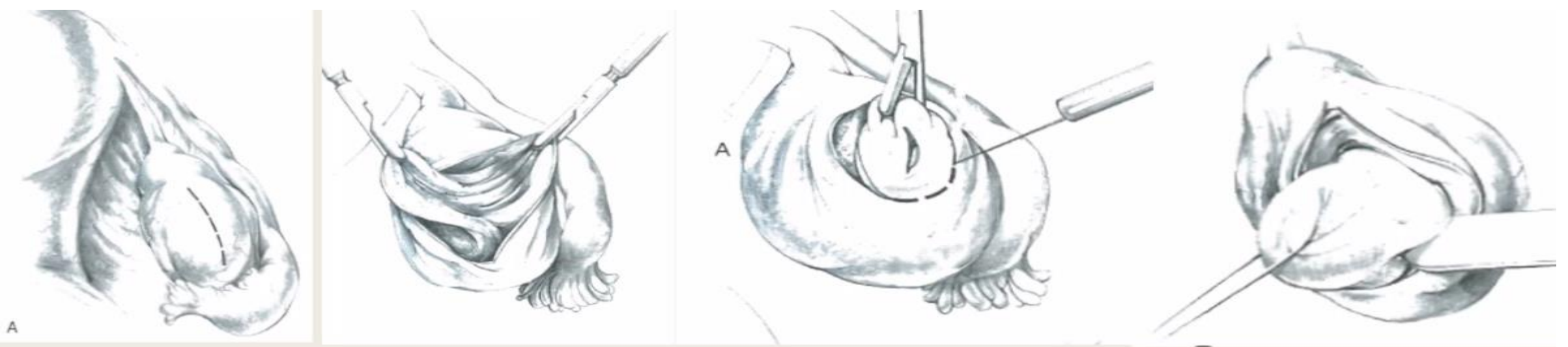
Cleavage plane identification

When cleavage plane is not easily identified

- may be better to take a small part of the cyst wall for histological diagnosis
- Avoid ovarian damage from persistent attempt to perform cystectomy

When cleavage plane is identified

- **gentle traction and counter-traction** is effective during the initial part of the dissection to separate cyst capsule from the ovarian parenchyma
- **When a more fibrotic plane, difficult dissection use a 3rd instrument**, either grasping or bipolar forceps or scissors, slowly and gradually develop the plane
- **avoid excessive force** to separate a highly adherent cyst from the ovary as this will likely cause tearing of ovarian tissue, excessive bleeding, need for coagulation or diathermy and thus further damage to normal ovarian tissue



German Guidelines on endometriosis

Geburtsh Frauenheilk, Urlich U et al 2013; 73: 890-898

Recommendation: The cyst wall should be removed surgically. Fenestration alone is considered insufficient. Endocrine drug treatment alone is neither effective in eliminating an ovarian endometrioma nor can it replace surgery. Incomplete surgical removal therefore is not recommended.

Ovarian Endometrioma Surgery

- Meticulous dissection to expose the correct cleavage plane preserving the ovarian hilum is recommended as the optical technique [Canis M et al FS 3013](#), [Donnez J et al Front Biosci 2012](#) [Bourdel N et al Gyn Obst Fertil 2011](#)
- AMH decrease 24% after unilateral surgery
- AMH decrease upto 67% after bilateral surgery
[Urman B et al Rep Biomed Online 2013](#)
[Celik HG et al Fertl & Steril 2012](#)

Recurrence ranges from 9.6 -45.5%

[Porpora MG et al FS 2010](#), [Hayasaka S et al Jobst Gyn Res 2011](#)

Benefits excision vs ablation

- [Dan H and Limin F in Gyn Obst Investigation 2013](#)
- meta – analysis of 7 RCTs.
- Excision associated with significant reduction of symptom ($p < 0.001$) and rate ($p < 0.04$) of recurrence as compared to ablation and laser vaporization
- PR were significantly better $p = 0.3$ with excision but not with vaporisation
- AMH not analyzed in this meta analysis

Unilateral Endometrioma Surgery and Haemostasis techniques

Author	Refer	Study Type	Endoma Unilateral	Haemostasis Technique	Marker	PoP mths	P value
Kitajima et al	FS 2011	Prospective	19 Vs 13 Bg cysts	Stripping only	AMH	3	Significantly Higher
Lee DY et al.	Gyn Endoc 2010	Prospective	13 excisio 14	Bipolar oophorectom	AMH AMH	1, 3	0.001 0.002
Zaitun MM et al	J Ov Res 2013	Prospective	61 60	Lpic Bipolar Lmy suturing	AMH, FSH	6, 8, 12	0.000 0.000
Biacchiardi PM	RBMO 2011		43	Lpic striping and Bipolar	AMH, Ov vol FSH Inhib E2 AFC	3, 9	0.0001 Unchanged No SS change
Urman B	RBMO 2013		25	Lpic stripping	AMH, AFC	1, 6	0.01
Uncu G et al	HR 2013		30 30 healthy	Lpic stripping	AMH, AFC	1, 6	0.02 0.01
Celik HG et al	FS 2012		65	Lpic Stripping Bipolar	AMH FSH LH E2 AFC	6w, 6	61% fall SS
Ercan CM et al	EJ OG RB 2011	Prospective	36	Lpic stripping	AFC Doppler Flow AMH	3	Significantly low Same No SS change
Tsolakides et al	FS 2010	PRT	20	Lpic stripping Laser CO2	AMH, AFC FSH LH E2	6 ,12	0.026 0.002
Asgari Z et al	Arch Gyn 2015	PRT	109	57 bipol Lpic 52 sut Lpic	AMH FSH	3	Signific higher Signific higher

Bilateral Endometrioma Surgery and Haemostasis

Author & Study type	Pts, Ctl	Endoma Unilateral	Endoma Bilateral	Haemostasis Technique	Marker	PoP mths	P value
Alborzi et al. FS 2014, Cohort		121	72	Bipolar Suturing	FSH, AMH AFC	1,3,9	Signif lower
Hwu YM et al RB E 2011 Cohort + Ctl	1323 infertility	141 pop 31 new	147 pop 6m unil/bil		AMH	3	
Ercan CM et al Gyn Endocr 2010 prospective	17 healthy ovulatio	33	14	Lpic Stripping	AMH	1	Non signific. changes
Var T et al FS 2011 PRCT	FS 2011		48	Lpic stripping Coagulation	AMH Ovar vol	6	0.01 0.2
Li CZ et al FS 2009 prospective	191 pts 50.3% endomas	18 17 23	11 12 15	Bipolar US scalpel Lmy suturing	FSH AFC MOD Doppler	1,3,6 ,12	signific high signific low Reduced Flow reduced by Bip/Scalp

Meta - analysis and Systematic reviews on Endometrioma Surgery, Haemostasis techniques and pop ovarian reserves

	Raffi F et al 2012	Somigliana E et al 2012	Mucii L et al 2014	Ata B et al 2015
Journal	Clin Endo Metab	FS	HR	JMIG
Selected studies	8 out of 21	11 out of 47	13 out of 24	4 out of 6
Polled patients	237	344	597	213
Study weakness	High Heterogeneity		High heterogeneity	
Marker examined before & after opn	AMH	AMH	AFC	AMH
Primary outcome and analysis	significant Pop fall in circulating AMH	Surgery related ovarian reserve damage	lower AFC in affected ovary after surgery	Bipolar is detrimental moder-quality eviden favors sealants and low-quality evidence favor sutures over BD
Conclusive Comments	excision has negative impact on ovarian reserves	No further research needed Innovative surg measures are needed	AFC is not reduced after surgery	Bipolar should be cautiously limited, even avoided

Combined technique

- **both excision and ablation**
can be used to prevent excessive bleeding and ovarian tissue removal/damage from the ovarian hilus, particularly for larger endometriomas
- **Strip 80 to 90% of the cyst wall or as much is done easily**
without severe effort
perform a partial cystectomy, up to the ovarian hilus Laser, plasma energy, or bipolar can then be applied to treat the remaining endometriotic tissue

Plasma energy

- Ablate the inner surface of the cyst wall in coagulation mode set at 10 to 40
- at a distance averaging 5 mm from the tip of the hand piece
([Roman et al., 2013](#))
- Plasma is applied for 1 to 2 seconds on each site
- Aim to vaporise the endometriotic cyst lining
[endometriosis is only superficially]
until haemosiderin pigment stained tissue is no longer visible and colour changes from reddish to yellow-white
- Ablate all areas and edges of the invagination site
- when cyst reversion is not feasible, expose the cyst interior to apply the plasma at an angle perpendicular to the inner surface of the cyst

Further options for surgery

- Laparotomy and oophorectomy rarely indicated for the treatment of Bg endometrioma whatever the diameter and/or the associated adhesions
- If the procedure is too difficult to perform by laparoscopy, better to stop the procedure after the endometrioma drainage prescribe GnRHa for 3 months and re-operate 3-6 months later alternatively, refer patient to a centre with surgical expertise ([Johnson et al., 2013](#))
Johnson, 2013 #110
- Oophorectomy may be a treatment of choice in older women particularly in the presence of recurrent or large unilateral endometriomas or suspicion of potential malignancy
- Informed consent needs to be obtained in these cases

Conclusive Remarks

Endometriosis /oma treatment and Ovarian Reserves

- The size of the endometrioma and the surgical technique are the most important factors affecting ovarian function
- Haemostasis should be selective and very careful. Stripping should be avoided when infertility cases
- Coagulation of the entire endometrioma bed should never be performed
- The first operation is probably the most crucial for the prognosis
- Incomplete and/or unduly traumatic procedures probably greatly reduce the ovarian reserve and chance of spontaneous pregnancy and increase the risk of endometrioma recurrence and /or persistence
(*Vercellini et al. 2004*)
- Alternative solutions, identify patients at HR for progressive disease by genetic profile, ... vaccination ?!! ... *are more than necessary*

Thanks for Your attention