

Guideline on the Management of Ovarian Masses

A clinical guideline recommended

For use in:	Gynaecology Services
By:	Gynaecologists, radiologists, sonographers, nurses
For:	Management of ovarian masses
Division responsible for document:	Women and Children's Division
Key words:	Ovarian masses, ovarian cysts, management
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Assessed and approved by the:	Gynaecology Guidelines Committee If approved by committee or Governance Lead Chair's Action; tick here <input type="checkbox"/>
Date of approval:	09 March 2020
Ratified by or reported as approved to (if applicable):	Clinical Safety and Effectiveness Sub-Board
To be reviewed before: This document remains current after this date but will be under review	20 December 2023
To be reviewed by:	Tim Duncan
Reference and / or Trust Docs ID No:	769
Version No:	3.1
Compliance links: (is there any NICE related to guidance)	RCoG Guidelines
If Yes - does the strategy/policy deviate from the recommendations of NICE? If so why?	No

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Version and Document Control:

Version Number	Date of Update	Change Description	Author
3.1	09/03/2020	Reloaded with amended spreadsheet	Tim Duncan, Consultant Gynaecological Oncologist, Sarah Scott-Barrett, Consultant Radiologist

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Introduction

During reproductive years, the majority of ovarian masses are benign with the risk of malignancy being less than 1% [1]. The incidence of ovarian cancer increases with advancing age. The risk of malignancy from an ovarian cyst in postmenopausal women is 29 - 35%. Ovarian cysts may be symptomatic, discovered incidentally or detected through screening.

Symptoms

Often asymptomatic

Symptoms have a very low predictive value for malignancy. In a recent study, seven symptoms were associated with ovarian cancer, including [3]:

- Abdominal distension.
- Urinary frequency.
- Abdominal pain.
- Postmenopausal bleeding.
- Loss of appetite.
- Rectal bleeding.
- Abdominal bloating.

Positive predictive values were less than 1% for each symptom, except abdominal distension, which had a value of 2.5%.

Where family history is significant, consider referral to the Regional Cancer Genetics Service.

Imaging with a pelvic mass

Ultrasound examination – Transvaginal ultrasonography (TVS) is the most valuable tool in the initial evaluation of an adnexal mass. Additional information can be obtained with transabdominal (TAS) ultrasound, especially when a mass is large or beyond the

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field of a TVS probe. Unless TVS is contraindicated, TAS should not be used in isolation.

Functional ovarian cysts are unilateral, unilocular and thin walled. They usually measure less than 5cm in diameter. A solid component is the most significant feature of malignancy in a grey-scale ultrasonography [4].

Sonographic characteristics that have been typically associated with ovarian malignancy are:

- Solid component, often nodular or papillary.
- Septations, if present, that are thick (>2 to 3 mm).
- Presence of ascites.
- Peritoneal masses.
- Enlarged lymph nodes.

NB Unilocular cysts with a single (<3mm) thin septum can be considered as simple [5].

MRI / CT / PETCT

If findings on ultrasound scan cannot clearly characterize the nature and origin of the adnexal mass, then further imaging studies should be discussed with a consultant radiologist. No specific imaging modality has proved superior to others, although MRI tends to be favoured to determine the origin of a pelvic mass i.e. uterine, ovarian or bowel.

Tumour markers

Tumour markers are not diagnostic but can help to characterise an ovarian mass

CA 125: CA 125 (normal <35 kU/L) is elevated in 80% of women with ovarian cancer; although 50% of early stage disease will have a normal level [2]. CA 125 is also increased in patients with other conditions, for example, endometriosis, pelvic infection, fibroids, diverticulitis, inflammatory bowel disease and hepatic dysfunction.

Ovarian germ cell tumours are more prevalent in women under 40 years, additional markers if suspected include:

AFP	Yolk sac tumour
LDH:	Dysgerminoma
Inhibin:	Granulosa cell tumour
hCG:	Non-gestational ovarian choriocarcinoma

Additional tumour markers:

These may be useful if there is a possibility that the pelvic mass represents a metastasis from a separate primary cancer.

Indication

CEA	Suspected colorectal primary
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- CA 19-9 Suspected colorectal and pancreatic primary
CA 153 Suspected breast primary

Management

The 'risk of malignancy index' (RMI) should be used to select those women at greater risk of malignancy. Using an RMI cut-off of 200, a sensitivity of 70% and specificity of 90% can be achieved [2]. International Ovarian Tumour Analysis (IOTA) classification can also be used by those with recognised training.

Women at high risk of malignancy (usually RMI > 200 or clinical suspicion) need to be discussed with a gynaecological oncologist and at the gynaecological oncology multidisciplinary team meeting.

The RMI is a clinical prediction rule based on ultrasound, CA-125, and menopausal status defined as follows [6]:

$$\text{RMI} = \text{U} \times \text{M} \times \text{CA-125}$$

The ultrasound score is calculated by awarding 1 point for each of the following characteristics:

- Multilocular cyst
- Evidence of solid areas
- Evidence of metastases
- Presence of ascites
- Bilateral lesions

U = 0, if none of the above listed features is found

U = 1, for ultrasound score of 1

U = 3, for ultrasound score ≥ 2

CA-125 = Serum CA-125 in kU/L

Menopausal status (M = 1 if premenopausal and M = 3 if postmenopausal)

Asymptomatic ovarian cysts will require no action, observation or surgery depending on specific features. The potential risks of surgical intervention need to be balanced with the risk of malignancy attributable to an individual case.

No further action required

- Premenopausal simple ovarian cysts less than 5cm. These cysts are almost certainly benign [5].
- Postmenopausal simple ovarian cysts less than 1cm. These cysts are almost certainly benign [5].

Conservative management

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- Ultrasound features are suggestive of a functional ovarian cyst. NB Functional ovarian cysts do not occur in late postmenopausal women.
- Premenopausal simple cysts ≤ 7 cm with no other features of malignancy [7-10]. The risk of malignancy with such features is less than 1% [8]. There is no need to perform tumour markers (22). There is concern regarding accurate assessment of the cyst wall beyond 7cm. Papillary projections and intramural nodules may be overlooked, leading to the incorrect labeling of the cyst as “simple”. Papillary projections within a unilocular cyst increase the risk of malignancy up to 6 fold and therefore should not be managed conservatively. Approximately 7% of “simple” cysts greater than 7cm, in pre- and postmenopausal women are borderline or malignant [7] .
- Postmenopausal simple cysts ≤ 5 cm with no other features of malignancy and normal CA 125. The risk of malignancy with such features is less than 1% [2].

- Asymptomatic.

Or

- Risks of surgery outweigh the benefits of cyst removal.
- Patient preference (after counselling regarding risks).

Follow up of conservatively managed ovarian cysts

Premenopausal simple cysts

- <5cm
No further investigation as there is no significant risk of malignancy [11,22].
- 5-7cm
Over 50% of ovarian cysts detected in premenopausal women are functional and 90% of functional cysts will have resolved within 2 months [11]. Therefore, repeat ultrasound scan at 6 months, with CA 125 only if cyst still present. A CA 125 is not required at presentation [5, 22].

Non-functional benign cysts usually remain unchanged [12].

If the cyst has resolved then no further follow up is required.

If the cyst remains unchanged, an annual scan or surgery could be offered [1]. There is no current evidence to determine the duration of follow up [5] and patients could be discharged as appropriate.

Those cysts that increase in size or complexity should be considered for removal [11].

Combined oral contraceptive pills appear to be of no benefit for the treatment of functional ovarian cysts, although stopping progesterone methods may be useful [13].

Postmenopausal

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- Ultrasound and CA 125 should be performed every six months until the cyst has resolved. If there is no change in the size of the cyst after one year of follow up, then the patient can be discharged [2].

Asymptomatic, simple, unilateral, ovarian cysts (less than 5 cm in diameter) have a low risk of malignancy (<1%) [7]. However, the overall risk of malignancy in simple cysts in postmenopausal women (regardless of size) may be up to 10% [14].

Surgery

Consideration of surgery should be made if the cyst does not meet the criteria for conservative management. Conservative management may be appropriate in selected cases. The laparoscopic approach to surgery in presumed benign ovarian masses is preferred to laparotomy due to lower morbidity and shorter recovery time [1]. The risks, benefits and potential complications of surgery should be individualised. Large ovarian cysts may still require laparotomy, although no robust data on size and type of approach to surgery exists [1].

- Complex ovarian cysts (unless thought to be haemorrhagic or corpus luteum). NB Functional ovarian cysts do not occur in late postmenopausal women.
- Postmenopausal simple cysts >5cm. The risk of malignancy is thought to be between 2% [7] and 9% [14].
- Premenopausal simple cysts >7cm. There is concern regarding accurate assessment of the cyst wall beyond 7cm. If conservative management is preferred, an MRI of the cyst may be of value to characterise the cyst wall and exclude complex features [5].
- Symptomatic.
- Suspicion of malignancy.

A laparoscopic approach can be used when the risk of malignancy is considered to be low. Thorough inspection of the peritoneal cavity should be performed and if features suggestive of malignancy are encountered, a gynaecological oncologist should be consulted regarding further evaluation and staging.

Spillage of cyst contents should be avoided where possible, this may involve the use of retrieval bags. Where spillage does occur, extensive peritoneal lavage with warmed fluid should be performed [1].

Laparoscopic specimen retrieval should, where possible, be through the umbilical port [1]. This technique is associated with less postoperative pain, quicker retrieval time, improved cosmesis and fewer incisional hernias.

Laparoscopic management of ovarian cysts in postmenopausal women should involve salpingoophorectomy (usually bilateral) rather than cystectomy. Women should be counselled preoperatively that if features of malignancy are suspected during laparoscopy, then the procedure may have to be abandoned with recourse to a laparotomy under the oncology team at a later date.

Ovarian cystectomy and preservation of ovarian tissue is preferred when surgery is performed for benign disease in women wishing to retain their fertility. The risk of

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oophorectomy, for example to control bleeding, should be mentioned during consent.

Special situations

Suspected endometrioma

Endometriomas can appear complex on ultrasound and can be associated with a raised CA 125. MRI can be useful when the diagnosis is unclear using ultrasound. Malignant transformation occurs in 1%, with the majority occurring in cysts over 9cm and in women over 45 years of age [15], although it is recommended that histology should be obtained from endometriomas of greater than 30mm diameter [16]. Endometriomas should be managed within the spectrum of endometriosis and influenced by symptomatology. Development of solid elements should raise concern [5].

Pregnancy

Incidence- 30% in 1st trimester, of which 90% represent corpus luteum of pregnancy and resolve spontaneously. The majority can be managed conservatively.

Complications:

Torsion
Rupture
Haemorrhage
Malignancy (<1%) [17]

Tumour markers tend to be elevated in pregnancy and are of limited use.

Indications for surgery:

Complex cyst- with suspicion of malignancy (not obviously a dermoid cyst)
Increasing size
Symptoms suggestive of torsion, rupture or bleeding

MRI may be useful when evaluating suspicious cysts.

If surgery is necessary, this can be most safely performed early in the second trimester [18]. In experienced hands a laparoscopic approach appears safe [19].

An ovarian cyst diagnosed at the time of caesarean section should be removed (cystectomy or oophorectomy) rather than aspirated, unless it is obviously functional when it should be left intact. Consultant involvement is recommended.

Indications for conservative management:

Asymptomatic
Simple
Less than 10cm

If the cyst has not increased in size at the detailed 20 week scan, no further scan is necessary until after delivery

Follow up ultrasound scan 6 weeks postpartum

Patients with suspicious adnexal masses detected during pregnancy should be

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discussed at the gynaecological oncology multidisciplinary team meeting.

Follow up of borderline tumours

All decisions should be made following discussion at the Gynaecological Oncology MDT. Robust data relating to the management of borderline tumours is limited at present, which needs to be conveyed to the patient during management discussions.

If both ovaries are removed:

Stage I - no follow up required as prognosis is excellent (5 year survival- 99%) [20].

Stage II-IV- individualised.

If contra-lateral ovary or both remain (following cystectomy):

Stage I - Risk of recurrence is approximately 40% [21]. Six monthly, ultrasound for 2 years, then annually (with CA 125, if elevated at presentation (25%)). Patients should be offered removal of remaining ovarian tissue +/- hysterectomy when family complete.

Stage II - IV - individualised

Follow up of ovarian cancers

See Anglia Cancer Network guidelines

Aspiration of ovarian cysts

This should not be performed routinely since:

Neoplastic cysts will recur

Malignant cysts will be upstaged

Image guided aspiration can be considered if:

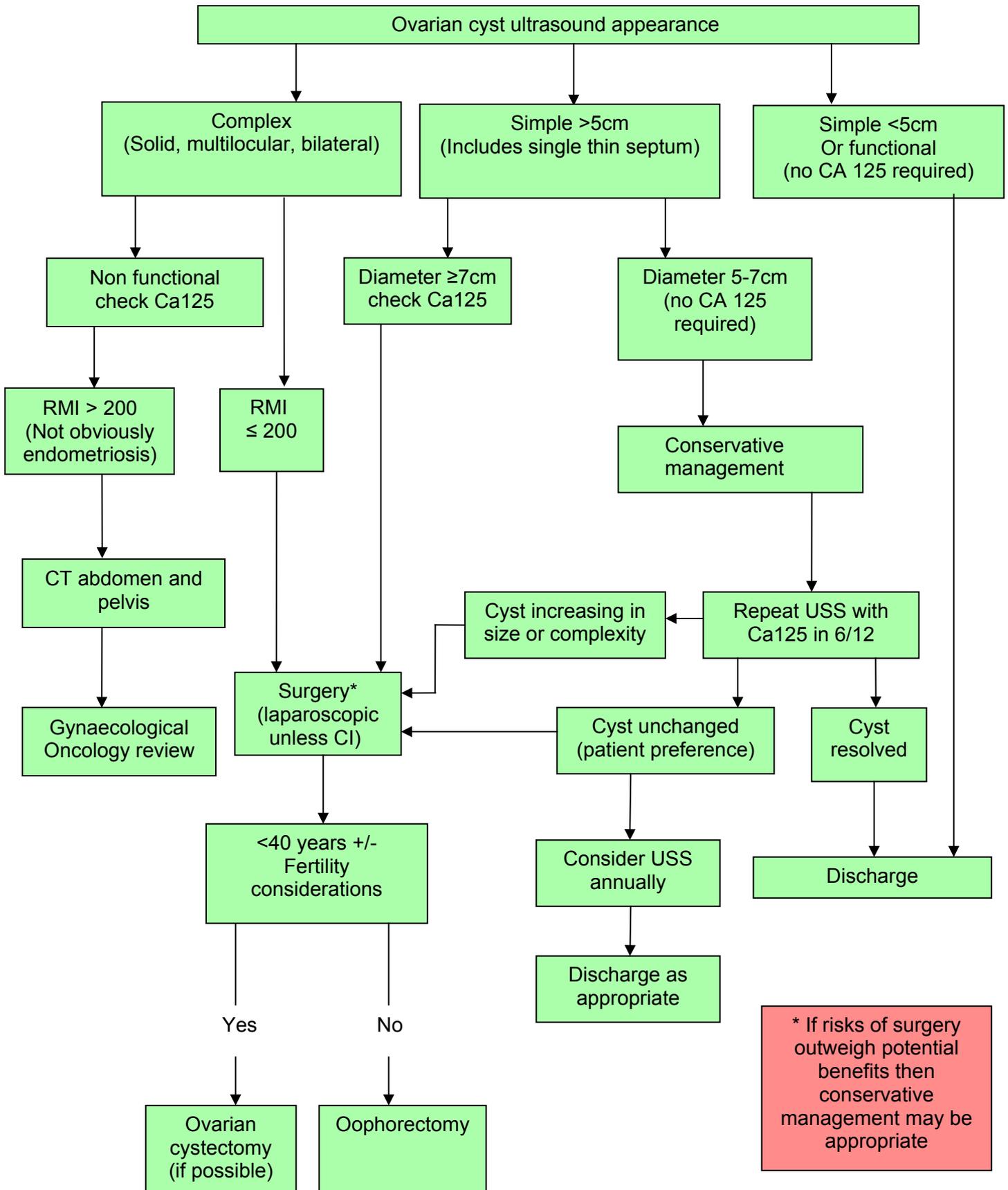
Significant medical co-morbidities contraindicating surgery

The cyst is causing significant symptoms

If a cyst is aspirated, fluid should not be sent for cytology as sensitivity and specificity are so poor as to render the result meaningless.

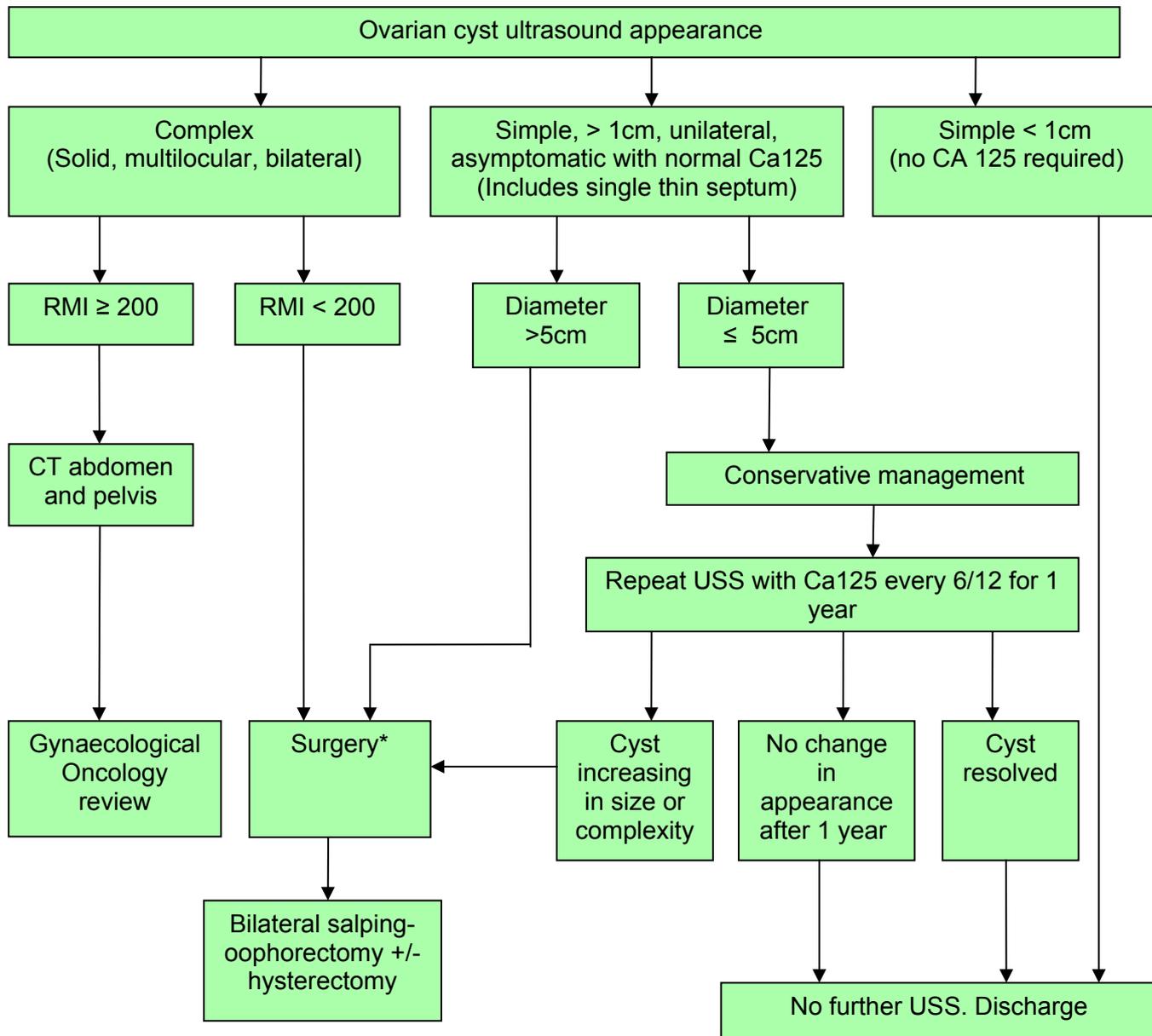
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Management of premenopausal ovarian cysts



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Management of postmenopausal ovarian cysts



* If risks of surgery outweigh potential benefits then conservative management may be appropriate

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Appendix

Ovarian Cysts - Reporting Guidelines

Premenopausal

- Simple unilocular thin walled cyst/ follicle
 - < 3 cm - do not report.
 - 3 - 5cm report as dominant follicle and state that no follow up is needed.
 - 5 - 7cm - State almost certainly benign consider initial follow up scan at 6 months.
 - >7cm, consider further follow imaging with MRI or surgical intervention.
- Corpus Luteum / Haemorrhagic cysts
 - Post ovulation typically thick walled with crenulated margin, inner echoes and peripheral vascularity. Up to 3cm is normal. Do not report or report and indicate no routine follow up required.
 - Haemorrhagic cysts are due to expanding haemorrhage in Corpus Luteum and result in complex cystic mass with reticular internal echoes or cobweb appearance or solid area, concave margins. Peripheral but no central Doppler flow. Do not need follow up.
 - If 3 - 5cm describe in report but state routine F/U is not required.
 - >5cm describe and suggest short interval (6-12 week, preferably follicular phase days 3-10) F/U to ensure resolution.

- Polycystic ovaries (PCO)

Only for requests that specifically specify ?PCO.

Measure volume (3 dimensions x 0.5).

If volume >10mL or > 12 follicles 2-9mm.

State volume calculation invalid if follicle > 10mm.

State that findings may occur in absence of PCOS and must be correlated with blood test results and clinical features.

Postmenopausal

- Simple follicles / cysts 2-5cm – If CA 125 levels normal advise follow up at 6 monthly intervals with CA 125 for up to 1year.