Research Article

Rate of malignancy in indeterminate ovarian cyst: A process audit

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Background

1. Adnexal lesions can accurately be classified as benign or malignant with imaging modalities.
2. Between these two ends of the spectrum are the cysts that cannot be characterized, and are considered as Indeterminate.
3. Frequencies of ovarian cancer ranges from 5 to 40% within this indeterminate spectrum
4. These indeterminate cysts can be classified as benign or malignant only through surgery, hence these may lead to overtreatment to a benign or undertreatment/staged for a malignant cyst.
5. Recently French National College of Obstetricians and Gynecologists (CNGOF) introduced the term PBOT (Presumed benign ovarian tumor) for such indeterminate lesions.
6. Since there is very little data on these Indeterminate cysts, we have done an Audit in our institute (Department of Gynecology and Surgical Oncology both in Cantonment and Tennur) for 3 years.

Methods and Materials

Study Method: Retrospective (collected from electronic Database).

Study Period: 3 years (From August 2020 to August 2023).

Those patients who were indeterminate on ultrasonogram were further imaged with contrast-enhanced CT or MRI scan and tumour markers were taken to further characterize the lesion and offered surgery, either Pfannenstiel, midline laparotomy or laparoscopy.

Inclusion criteria: All the patients who underwent surgery for indeterminate cysts either laparoscopy/ laparotomy/Pfannenstiel.

Exclusion criteria: Those patients who were operated for simple cysts, malignant ovarian mass, and those with inadequate documents.

What we consider as Indeterminate Cyst

1. Unilocular cyst >10 cm in size, or with irregular walls,
2. Multilocular cyst, Multilocular cyst with solid component.
3. Unilocular cyst with 1to3 papillary projections or solid components
4. Solid lesion with smooth outer contour.

A total 265 patients were taken for study

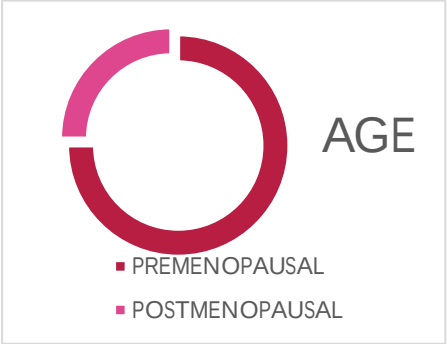
- 74 patients were considered as indeterminate ovarian cyst preoperatively
- 52 patients had all reports, hence considered for analysis

Results

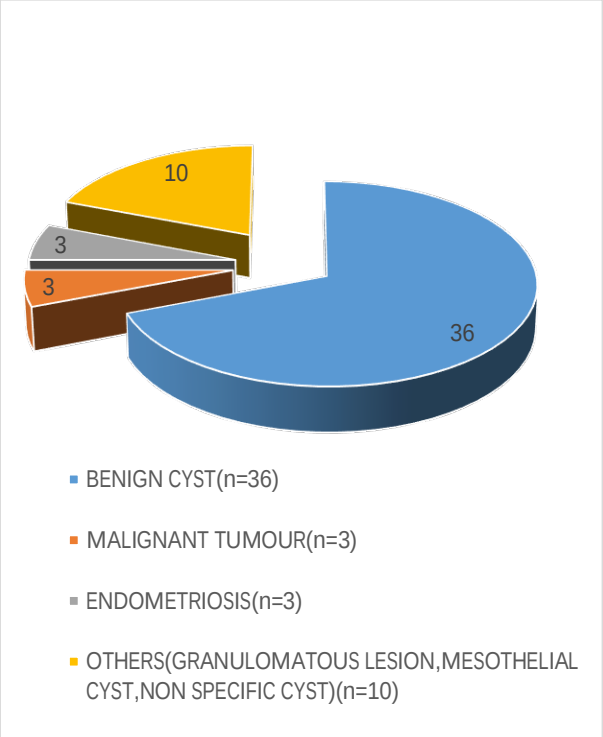
The incidence of indeterminate cyst was 27.9%

Prevalence of malignancy in these lesions was 5.7%

Parameters	Values
Median CA 125	20.3 u/ml
Median cyst size	6.8 cm
Premenopausal (n = 39)	75%
Post menopausal (n = 13)	25%
Median Age	37.5 (11 to 67)

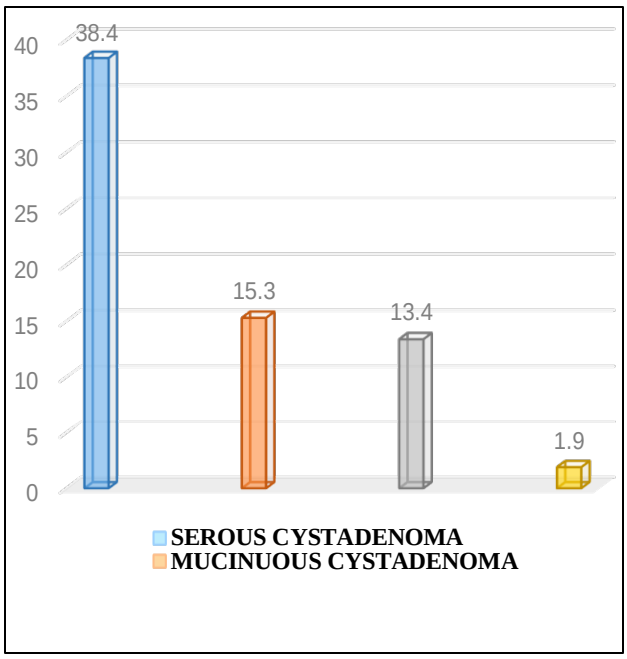


Histological Diagnosis



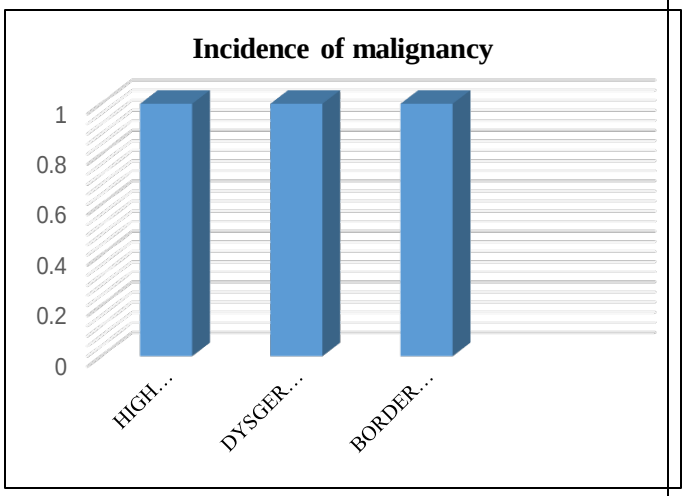
Incidence of Benign Cyst - 69%

Types	Percentage
Serous cystadenoma	38.4%
Mucinous cystadenoma	15.3%
Teratoma	13.4%
Fibroma	1.9%



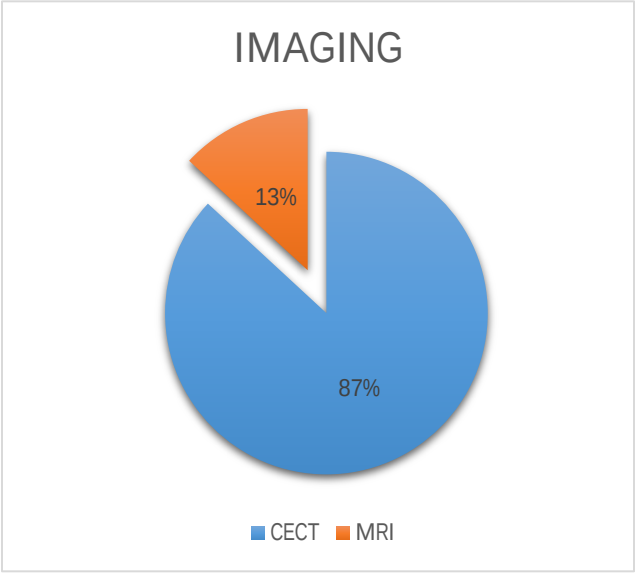
Incidence of Malignancy 5.7%

1. High grade serous carcinoma (n = 1)
2. Dysgerminoma (n = 1)
3. Borderline malignant tumour (n = 1)



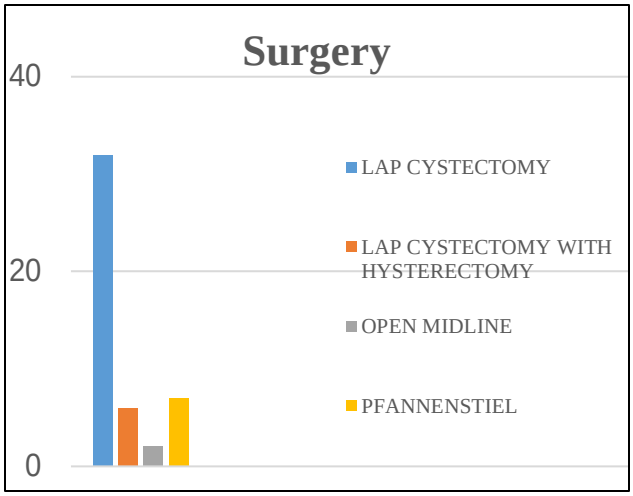
Imaging

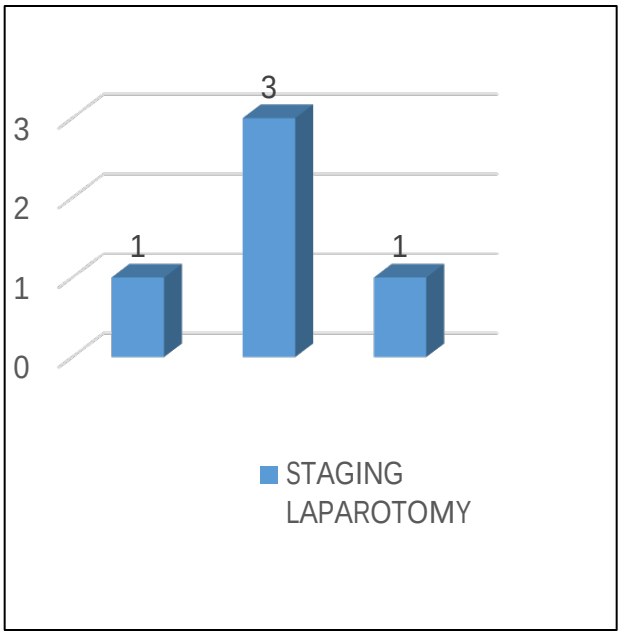
86% had CECT and 13% had MRI as additional images for further characterizing the cyst



Surgery

Laparascopic cystectomy	32
Laparascopic cystectomy with hysterectomy	6
Open midline	2
Pfannenstiel	7





Staging Laparotomy

Staging laparotomy was done for 5 cases

Borderline malignant tumour(n=1)

Benign ovarian neoplasms (serous cystadenoma(n=2), 1 fibroma(n=1))

Poorly differentiated Adenocarcinoma (n=1)

Other than Staging laparotomy (n = 47)

Primary outcome

Appropriately managed:

- 45/47 benign cases (95.7%)
- 2/5 malignancy cases (40%)

2 out of 47 patients who underwent only TAH+BSO came as malignant (4.2%) (under- done)

3 out of 5 patient who underwent proper staging laparotomy had benign pathology (60%) (over - done).

Discussion

With a review of various literature, the incidence and the rate of malignancy in the indeterminate lesion in our institute (27.9% & 5.7%) were comparable with the global data [1,2].

We have managed appropriately in most cases (95.7%).

We have done staging laparotomy (overdone) (60%) for benign lesions which was quite high compared with other studies. (The reason for this might be intraoperative findings, lack of frozen section, age of patient, or menopausal status).

We had incidence of unexpected malignancy (4.2%) (2/47) in this lesion which was lower compared to various studies (11 to 14%), but few studies showed an incidence rate as low as 1.5% [3,4].

We used CECT as the imaging modality in most cases (85%), which was significantly different compared with others, where MRI was commonly done [5-7].

These MRIs have more sensitivity and specificity compared with CECT (94% and 97% vs. 81%, 87%respectively) in diagnosing the malignant lesion in the indeterminate lesions [6,7].

In 2/47 patient (1. Borderline malignant tumour, 1. High grade serous carcinoma infiltrating the sigmoid colon), where we had not done staging laparotomy neither the stage, treatment modality, nor the prognosis changed.

The most commonly used risk stratification index, RMI (Risk malignancy index) developed by RCOG , was not useful in these indeterminate ovarian cyst ,as this depends heavily on the Pre operative CA125 level which is generally normal in those Indeterminate lesion as well as early stage ovarian cancer

Our study showed median CA 125 level of 20.3ng/ml which made RMI risk index less useful in borderline or early-stage Epithelial ovarian cancer which is common seen in this indeterminate lesion

Various surgical approach

Pfannenstiel:

1. Less pain
2. Cyst can be delivered without spillage but
3. Difficult for node dissection & omentectomy

Midline laparotomy:

1. Best for large cyst,
2. Ideal for nodal dissection &omentectomy
3. Least chance for spillage

Laparoscopy

1. Least pain
2. Smaller lesions can be removed without spillage with endo-bag, nodal dissection& omentectomy can be done
3. High chance for cyst spillage

Conclusion

Radical surgical intervention in young women for a cyst that is inappropriately characterized and failing to recognize a cyst as malignant significantly impact on prognosis. We have situations to be improved/changed.

1. To minimize the staging laparotomy (Radical Treatment) for benign cyst (60% in our institute), and also to achieve the unexpected malignancy rate as low as 1.5% (4.2% in our institute) utilization of frozen section can be made

2. We can change to MRI imaging over CECT for these lesion (only 13% were imaged with MRI in our institute), which has better sensitivity and specificity

3. Reporting can be made as per Ovarian-Adnexal Reporting and Data System Magnetic Resonance Imaging (O-RADS MRI)

4. To Follow the below flowchart when we come across such lesions

Interpretation

O-RADS MRI 0: N/A; incomplete evaluation

O-RADS MRI 1: N/A; normal ovaries

O-RADS MRI 2: <0.5%; almost certainly benign

O-RADS MRI 3: ~5%; low risk

O-RADS MRI 4: ~50%; intermediate risk

O-RADS MRI 5: ~90%; high risk

References

1) Brown DL, et al. Benign and malignant ovarian masses: selection of the most discriminating gray-scale and Doppler sonographic features. Radiology 1998;208(1):103–110.
2) Ekerhovd E, et al. Preoperative assessment of unilocular adnexal cysts by transvaginal ultrasonography: a comparison between ultrasonographic morphologic imaging and histopathologic diagnosis. Am J

Obstet Gynecol. 2001;184(2):48–54.

3) Fishman DA, et al. The role of ultrasound evaluation in the detection of early-stage epithelial ovarian cancer. Am J Obstet Gynecol. 2005;192(4):1214– 1221.
4) Mohaghegh P, et al. Imaging strategy for early ovarian cancer: characterization of adnexal masses with conventional and advanced imaging techniques. RadioGraphics 2012;32(6):1751–1773.
5) Sayasneh A, et al. The characteristic ultrasound features of specific types of ovarian pathology (review). Int J Oncol. 2015;46(2):445–458.
6) Sharma A, et al. Risk of epithelial ovarian cancer in asymptomatic women with ultrasound-detected ovarian masses: a prospective cohort study within the UK collaborative trial of ovarian cancer screening (UKCTOCS). Ultrasound Obstet Gynecol. 2012;40(3):338–344.
7) Timmerman D, et al. Simple ultrasound rules to distinguish between benign and malignant adnexal masses before surgery: prospective validation by IOTA group. BMJ 2010;341:c6839.