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Assessment of suspicious ovarian masses by using USG & CT

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Abstract
The aim of this study is to compare the diagnostic value of trans abdominal ultrasonography (TAUS) and computed tomography (CT) in evaluation of suspicious ovarian masses whether being malignant or not former to surgical intervention This will help to a greater degree, in choice of type of surgery either conservative or radical.
The study was planned in the Department of Gynecology and Department of Radiology in Katihar medical college and Hospitals. The data from the 100patients were collected and presented as below. All patients underwent abdominal Ultrasonography and CT scan with determination of the ovarian mass characteristics.
In our study there were significant differences in the two methods i.e USG & CT. CT is showing more advantages regarding tumor localization, characterization. Hence CT can be advised if the unusual abnormalities were observed in routine USG scan inthe diagnosis of ovarian masses.

Keywords: ultrasound, CT scan, ovarian tumors etc.

Introduction
In ovarian cyst is a fluid-filled sac within the ovary. Often they cause no symptoms. Occasionally they may produce bloating, lower abdominal pain, or lower back pain. The majority of cysts are harmless. If the cyst either breaks open or causes twisting of the ovary, it may cause severe pain. This may result in vomiting or feeling faint. Most ovarian cysts are related to ovulation, being either follicular cysts or corpus luteum cysts. Other types include cysts due to endometriosis, dermoid cysts, and cystadenomas. Many small cysts occur in both ovaries in polycystic ovarian syndrome. Pelvic inflammatory disease may also result in cysts. Rarely, cysts may be a form of ovarian cancer. Diagnosis is undertaken by pelvic examination with an ultrasound or other testing used to gather further details [1].
Often, cysts are simply observed over time. If they cause pain, medications such as paracetamol (acetaminophen) or ibuprofen may be used. Hormonal birth control may be used to prevent further cysts in those who are frequently affected. However, evidence does not support birth control as a treatment of current cysts [2]. If they do not go away after several months, get larger, look unusual, or cause pain, they may be removed by surgery [1].
Most women of reproductive age develop small cysts each month. Large cysts that cause problems occur in about 8% of women before menopause [1]. Ovarian cysts are present in about 16% of women after menopause and if present are more likely to be cancer [1, 3].
Some or all of the following symptoms may be present, though it is possible not to experience any symptoms [4]:

- Abdominal pain. Dull aching pain within the abdomen or pelvis, especially during intercourse.
- Uterine bleeding. Pain during or shortly after beginning or end of menstrual period; irregular periods, or abnormal uterine bleeding or spotting.
- Fullness, heaviness, pressure, swelling, or bloating in the abdomen.
- When a cyst ruptures from the ovary, there may be sudden and sharp pain in the lower abdomen on one side.
- Change in frequency or ease of urination (such as inability to fully empty the bladder), or difficulty with bowel movements due to pressure on adjacent pelvic anatomy.
- Constitutional symptoms such as fatigue, headaches
- Nausea or vomiting
- Weight gain

Ovarian cysts are usually diagnosed by ultrasound, CT scan, or MRI, and correlated with clinical presentation and endocrinologic tests as appropriate.
Follow-up imaging in women of reproductive age for incidentally discovered simple cysts on ultrasound is not needed until 5 cm, as these are usually normal ovarian follicles. Simple cysts 5 to 7 cm in premenopausal females should be followed yearly. Simple cysts larger than 7 cm require further imaging with MRI or surgical assessment. Because they are large, they cannot be reliably assessed by ultrasound alone because it may be difficult to see the soft tissue nodularity or thickened septation at their posterior wall due to limited penetrance of the ultrasound beam. For the corpus luteum, a dominant ovulating follicle that typically appears as a cyst with circumferentially thickened walls and crenulated inner margins, follow up is not needed if the cyst is less than 3 cm in diameter. In postmenopausal patients, any simple cyst greater than 1 cm but less than 7 cm needs yearly follow-up, while those greater than 7 cm need MRI or surgical evaluation, similar to reproductive age females [5].
An Axial CT demonstrating a large hemorrhagic ovarian cyst.

The cyst is delineated by the yellow bars with blood seen anteriorly.

For incidentally discovered dermoids, diagnosed on ultrasound by their pathognomonic echogenic fat, either surgical removal or yearly follow up is indicated, regardless of patient age. For peritoneal inclusion cysts, which have a crumpled tissue-paper appearance and tend to follow the contour of adjacent organs, follow up is based on clinical history. Hydrosalpinx, or fallopian tube dilation, can be mistaken for an ovarian cyst due to its anechoic appearance. Follow-up for this is also based on clinical presentation. For multiloculate cysts with thin septation less than 3 mm, surgical evaluation is recommended. The presence of multiloculation suggests a neoplasm, although the thin septation implies that the neoplasm is benign. For any thickened septation, nodularity, or vascular flow on color doppler assessment, surgical removal should be considered due to concern for malignancy [5].

The aim of this study is to compare the diagnostic value of trans abdominal ultrasonography (TAUS) and computed tomography (CT) in evaluation of suspicious ovarian masses whether being malignant or not former to surgical intervention. This will help to a greater degree, in choice of type of surgery either conservative or radical.

Methodology

The study was planned in the Department of Gynecology and Department of Radiology in Katihar medical college and Hospitals. The data from the 100patients were collected and presented as below. The approval of the institutional ethic committee had been taken before the study. All the patients were informed consent. The aim and the objective of the study are conveyed to all patients. All patients underwent abdominal Ultrasonography and CT scan with determination of the ovarian mass characteristics.

Inclusion Criteria: Patients presented with suspicious ovarian masses detected clinically or by ultrasound examination. Patients with ovarian masses and scheduled for surgery.

Exclusion Criteria: patients with ovarian masses managed conservatively were excluded.

Complete history of all ergywas taken before doing CT scan and if there washistory of allergy then non-ionic contrast was used.

Result & Discussion

The data from the 100 patients reported to the hospital were collected and presented as below. The table 1 shows the Benign and Malignant Masses on Histopathology in Pre & Post-menopausal patients.

Table 1: Type of Masses

	Pre-menopausal	Post-menopausal
Malignant	15	28
Benign	42	15
Total	67	43

There are total 67 cases of Pre-menopausal stage and 43 cases of Post-menopausal stage having ovarian cyst. Out of 67 cases of Pre-menopausal conditions have 15 number of malignant and 42 number of benign type of ovarian mass. In the Post-menopausal group there are 28 cases of malignant and 15 cases of benign ovarian mass was observed.

Table 2: Test performance characteristics of USG & CT

	USG Study (No. of Cases)		CT Study (No. of Cases)	
	Benign	Malignant	Benign	Malignant
Sensitivity	86	62	97	84
Specificity	62	89	92	89
Positive Predictive Value	87	61	96	76
Negative Predictive value	62	85	93	95

From the above data it can be seen that CT is showing more sensitivity for the detection of the abnormal ovarian mass in the present population. Ovarian tumours present a greatest clinical challenge of all gynecological cancers and ovarian. Carcinoma is the second most common gynaecological carcinoma in incidence. As most of them present in a late stage, clinical diagnosis alone is difficult and as benign ovarian tumours greatly outnumber malignant ones, determination of a degree of suspicion for malignant is critical and is based largely on imaging modalities. The determination of a degree of suspicion for malignancy in an ovarian mass is the most significant step in its management as the decision to perform radical surgery or conservative surgery depends on accurate pre-operative diagnosis [6].Clinical evaluation with regards to site (unilateral or bilateral), fixity, consistency, presence of nodules in Douglas pouch and presence of as cites increase the suspicious of malignancy to certain extent but if combined with other tools as tumor markers and two dimensional ultrasounds, the sensitivity for malignancy increases [6,7]. Among women with ovarian disorders, CT has been used primarily in patients with ovarian malignancies, either to assess disease extent prior to surgery or as a substitute for second look laparotomy. CT is preferred for identification of peritoneal implants, lymphadenopathy and extent of the disease. However, studies failed to demonstrate that CT is significantly superior to other modalities in characterization of ovarian cancer [8]. And moreover, simple ovarian cysts are better evaluated by ultrasound. Jeong *et al*. showed that morphological characteristics associated with strong probability of malignancy were the presence of solid component (63%), papillary projection (92%), and free fluid in peritoneal cavity (56%) [9]. Onyka *et al*. found the sensitivity of CT scan for all ovarian cancer detection greater than that of US 83% vs. 67%, but US was more specific. He found both the methods were equally efficacious in detecting and staging advanced ovarian cancer cases [10].

Conclusion

In our study there were significant differences in the two methods i.e USG & CT. CT is showing more advantages regarding tumor localization, characterization. Hence CT can be advised if the unusual abnormalities were observed in routine USG scan in the diagnosis of ovarian masses.

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