

Original Research Article

# To assess the diagnostic accuracy by using B-mode morphology in differentiating benign and malignant ovarian lesions

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## Abstract:

**Background & Method:** The aim of this study is to assess the diagnostic accuracy by using B-mode morphology in differentiating benign and malignant ovarian lesions. Criterion for patient exclusion from the study (after ultrasound and Doppler scanning) includes: Patients with pelvic mass that were determined to arise from uterus intraoperatively or on histopathology report, patients who did not undergo fine needle aspiration cytology (FNAC) or histopathology (HPE) or those were lost or follow-up. Patients with ectopic pregnancy were also excluded from the study.

**Result:** Majority of the malignant lesions were in the age group of 6<sup>th</sup> to 7<sup>th</sup> decade. Flow on Colour Doppler was present in 76 masses. No flow on colour Doppler was seen in 24 ovarian masses. By using B-mode morphological scoring system 28 lesions were categorized as benign (Score  $\leq 2$ ). Using morphology scoring system 12 lesion were categorized as equivocal (Score 3-4). 60 lesions were categorized as malignant by using the morphological scoring system (Score  $\geq 5$ ).

**Conclusion:** Hundred cases of masses of ovarian origin were evaluated using B-mode morphological scoring system, colour and Pulsed Doppler. Using B-mode morphological system the ovarian lesions was characterized as benign (score  $\leq 2$ ), equivocal (Score 3-4) and suspicious (Score  $\geq 5$ ). Most of the masses appeared to be mixed (cystic-solid) or multilocular. A small portion of the masses were solid which overwhelmingly favoured malignancy.

**Keywords:** morphology, benign & malignant & ovarian.

**Study Designed:** Observational Study.

## 1. INTRODUCTION

The ovaries are paired, almond-shaped structures situated one on each side of the uterus close to the lateral pelvic wall. In nulliparous women, the long axis of each ovary is in craniocaudal position. It occupies the ovarian fossa on the lateral pelvic wall between the external iliac vessels anteriorly and the internal iliac artery posteriorly[1]. Attached to its cranial pole, near the external iliac vein, are ovarian fimbria of the fallopian tube and peritoneal suspensory

ligament of the ovary, which contains ovarian vessels and nerves. Its caudal pole, is attached to the lateral uterus, by the ovarian ligament. The obturator vessels and nerves lie lateral to the ovary and the parietal peritoneum on the floor of the ovarian fossa. The fallopian tube largely covers the medial surface[2].

The mesovarium is a short peritoneal crease, joining the ovary to the back surface of the wide tendon, wherein vessels and nerves come to the ovarian hilum[3]. The ovarian course emerges from the horizontal aorta, only distal to the renal supply route, and plummets, ignoring the outside iliac vessels, to enter the pelvic cavity. It then runs medially in the suspensory tendon of the ovary and gains the expansive tendon of the uterus underneath the fallopian tube, where it anastomoses with adnexal parts of the uterine supply route. At the level of the ovary, branches run posteriorly through the mesovarium to enter the ovarian hilum and separate into branches to the ovary. In this way, ovary has a double blood supply. The ovarian veins structure a plexus in the wide tendon speaking with the uterine venous plexus. The right ovarian vein channels into the sub-par vena cava caudal to one side renal vein[4].

In young females, the ovary is covered by a solitary cuboidal layer of ovarian surface epithelium in an extreme collagenous coat, the tunica albuginea. The ovarian mass held inside this is separated into cortex and medulla. The cortex is made out of ovarian follicles at different transformative phases, and is implanted in thick fibrocellular stroma.

## 2. MATERIAL & METHOD

This study was carried out in the Department of Radio diagnosis, Shyam Shah Medical College, Rewa, M.P. from Nov 2021 to Dec 2022 on 100 patients. The patients included in the study were those referred with a palpable adnexal mass and with incidentally detected adnexal masses (irrespective of their age or menstrual status). After eliciting detailed history, clinical examination and routine laboratory investigations were carried out.

Criterion for patient exclusion from the study (after ultrasound and Doppler scanning) includes: Patients with pelvic mass that were determined to arise from uterus intraoperatively or on histopathology report, patients who did not undergo fine needle aspiration cytology (FNAC) or histopathology (HPE) or those were lost or follow-up. Patients with ectopic pregnancy were also excluded from the study.

## 3. RESULTS

**Table No. 1: Age Wise Distribution of Cases**

Age Range	Non-Malignant		Malignant	
	No.	%	No.	%
10 – 20 years	04	6.67	04	10
21 – 30 years	24	40.00	-	-
31 – 40 years	14	23.33	-	
41 – 50 years	10	16.67	04	10
51 – 60 years	08	13.33	08	20
61 – 70 years	-	-	22	55

71 – 80 years	-	-	02	5
Total	60		40	

Majority of the malignant lesions were in the age group of 6<sup>th</sup> to 7<sup>th</sup> decade.

**Table No. 2: B-Mode Morphology**

	No.
Mass	
• Unilocular	20
• Multilocular	22
• Cystic solid (mixed)	44
• Solid	14
Fluid	
• Clear	38
• Internal echoes	48
Inner margin (if cystic / margin in solid lesions)	
• Smooth	40
• Irregular	60

#### Mass

- 20 masses were of unilocular nature
- 22 masses were of multilocular nature
- 44 masses were of cystic-solid nature
- 14 masses were of solid nature

#### Fluid

- Fluid with internal echoes were seen in 48 lesions
- Clear fluid were seen in 38 lesions

#### Inner Margin (cystic) / margin (solid)

- Smooth margins were seen in 40 lesions
- Irregular margins were noted in 60 lesions

**Table No. 3: Doppler Flow Study**

	Number
Total Number	76
Normal flow	34
Abnormal flow	42

Flow on Colour Doppler was present in 76 masses.

No flow on colour Doppler was seen in 24 ovarian masses.

**Table No. 4: Classification of masses on the basis of B-mode (Morphological Scoring)**

Benign	Equivocal	Malignant
28	12	60

By using B-mode morphological scoring system 28 lesions were categorized as benign (Score  $\leq 2$ ).

Using morphology scoring system 12 lesion were categorized as equivocal (Score 3-4).

60 lesions were categorized as malignant by using the morphological scoring system (Score  $\geq 5$ ).

#### 4. DISCUSSION

In our study the majority of ovarian neoplasms occur between 4<sup>th</sup> to 7<sup>th</sup> decade , malignant tumours occurring predominantly in the between 6th to 7th decade. The result of our study was in concordance with the study of Lynch et. al.[5] The authors also reported that hereditary ovarian cancer syndromes have earlier age of (10 to 15 years) onset, however no hereditary syndromes were reported in our study.

In our study germ cell tumours both benign and malignant were the most common ovarian neoplasms in children and young adults (age group 10 to 20). Similar findings were reported by the study conducted by Brammer et. al.[6]

Cystic ovarian lesions such as functional cysts and other predominantly solid lesions such as those of inflammatory origin are usually found in 3<sup>rd</sup> and 4<sup>th</sup> decade. A study conducted by Hall DA[7] found that functional cysts are most common in young woman. In our study the majority of ovarian neoplasms occur between 4<sup>th</sup> to 7<sup>th</sup> decade , malignant tumours occurring predominantly in the between 6th to 7th decade.

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In using the aforesaid morphological scoring system, we obtained a sensitivity of 85% and specificity of 53.33% although the PPV was low at 54.83%, negative predictive value was high at 84.21%. The sensitivity and specificity of our study correlated well with that of Stein SM et. al[9].

#### 5. CONCLUSION

Hundred cases of masses of ovarian origin were evaluated using B-mode morphological scoring system, colour and Pulsed Doppler. Using B-mode morphological system the ovarian lesions was characterized as benign (score  $\leq 2$ ), equivocal (Score 3-4) and suspicious (Score  $\geq 5$ ). Most of the masses appeared to be mixed (cystic-solid) or multilocular. A small portion of the masses were solid which overwhelmingly favoured malignancy.

## 6. REFERENCES

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