

Correlation of Laparoscopically Managed Adnexal Masses with Clinical Examination and Ultrasound Findings

Jijisha Ali¹, Anita Eipe²

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ABSTRACT

Purpose: To analyze laparoscopic findings of adnexal masses and correlate them with clinical examination and ultrasound findings.

Study design: Retrospective observational study.

Setting: Department of Obstetrics and Gynaecology, Kasturba Medical College, Manipal, Karnataka, India.

Sample size: A total of 137 subjects.

Duration of study: From May 2012 to April 2013.

Inclusion criteria: All women admitted with clinical suspicion of adnexal masses.

Exclusion criteria: Women with suspicion of malignant ovarian masses.

Materials and methods: This is a retrospective observational study carried out in the Department of Obstetrics and Gynaecology, Kasturba Medical College, Manipal, Karnataka, India during the period from May 2012 to April 2013. A total of 137 patients who underwent laparoscopy for suspected adnexal masses were included in this study. Case records of these patients were retrospectively analyzed, and detailed clinical examination and ultrasound findings done were noted. These findings were correlated with laparoscopic findings.

Results: In the study group, 98.3% of cases of endometriosis clinically correlated with laparoscopic findings whereas ultrasound correlated with only 93.7% of endometriosis. Similar correlations were observed in benign ovarian masses on clinical examination and ultrasound, 89.3 and 96.4%, respectively. Similarly, ectopic pregnancies diagnosed by clinical examination correlated with laparoscopy in 93.8% of cases whereas ultrasound findings correlated only in 90.6% of cases. All the cases of paraovarian cysts were missed in clinical examination, whereas ultrasound detected 20% of cases. In suspected cases of pelvic inflammatory disease, ultrasound diagnosed hydrosalpinx in 66.7%, whereas clinical examination failed to diagnose. Ectopic pregnancy was either missed or not suspected when patients presented with acute abdomen to another specialty (Department of Surgery).

Conclusion: Laparoscopic findings correlated with clinical examination and ultrasound in endometriosis, ectopic, and ovarian masses. Paraovarian cysts were either not suspected or misdiagnosed as ovarian cysts during clinical examination whereas ultrasound diagnosed one-fifth of cases.

Take-home message: Laparoscopy is useful when simultaneous therapy can be offered, not as a diagnostic tool alone.

Keywords: Clinical examination, Endometriosis, Laparoscopy, Ovarian masses.

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INTRODUCTION

Adnexal masses are commonly encountered gynecological problems among women of reproductive age-group. The clinical manifestations of adnexal masses differ according to their nature. Pelvic ultrasound is the most useful technique for diagnostic evaluation of the adnexal masses. Transvaginal ultrasound provides a better resolution than abdominal ultrasound. Ultrasound scan is now used worldwide as one of the first-line investigations for diagnosing adnexal masses.¹ However, the findings of ultrasound are subjective and based on the sonographer's training and expertise in the field of ultrasound.² Detailed clinical examination is also very important as the majority of cases can be diagnosed by detailed clinical assessment.³ Advances in laparoscopic techniques have led to increased use of laparoscopy in gynecologic surgery, as low complications have been reported. The aim of this study is to analyze laparoscopic findings of adnexal masses and to correlate them with clinical examination and ultrasound findings.

MATERIALS AND METHODS

This is a retrospective observational study carried out in the Department of Obstetrics and Gynaecology in Kasturba Medical

^{1,2}Department of Obstetrics and Gynaecology, Mediclinic Welcare Hospital, Dubai, United Arab Emirates

Corresponding Author: Jijisha Ali, Department of Obstetrics and Gynaecology, Mediclinic Welcare Hospital, Dubai, United Arab Emirates, Phone: +971 556880877, e-mail: jijishaji@gmail.com

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College, Manipal, Karnataka, India, which is a tertiary care hospital. The project was approved by the institutional ethics committee. The study population included all women undergone laparoscopy for clinical suspicion of adnexal masses during the period from May 2012 to April 2013. Case records of patients were reviewed and detailed clinical history including chief complaints, obstetrical, menstrual, and gynecological history, and past and family history was noted. Clinical examination findings at the time of presentation including detailed abdominal and pelvic examination were noted.

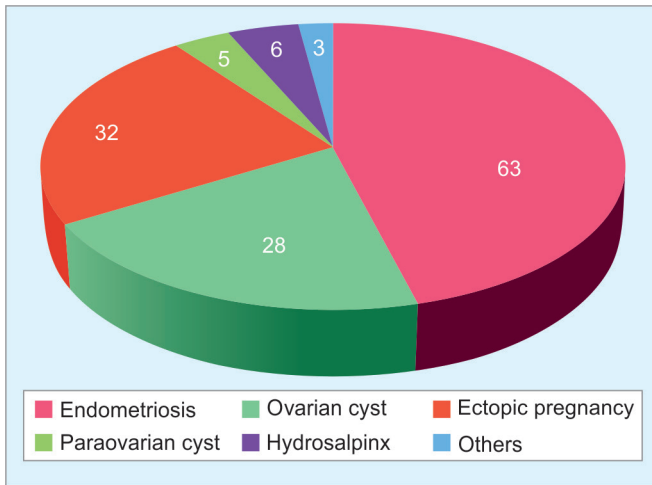


Fig. 1: Pie chart depicting the diagnosis-wise distribution of adnexal mass

Table 1: Correlation of laparoscopic findings with clinical examination ($p = 0.001$)

Preoperative findings (laparoscopy)	Laparoscopy findings correlating with examination		Total N = 137
	Correlating, n (%)	Not correlating, n (%)	
Endometriotic cyst	62 (98.4)	1 (1.6)	63
Ovarian cyst	25 (89.3)	3 (10.7)	28
Ectopic pregnancy	30 (93.8)	2 (6.3)	32
Paraovarian cyst	0 (0)	5 (100)	5
Hydrosalpinx	0 (0)	6 (100)	6
Others	0 (0)	3 (100)	3
Total	117 (85.4)	20 (14.6)	137

Laparoscopic findings were correlated with clinical examination and ultrasound findings. All women with suspicion of malignant ovarian masses were excluded from this study. A total of 137 patients were allotted in this study. Statistical package for the Social Sciences (SPSS), version 16, was used for the evaluation and analysis of the data. Figure 1 pie chart depicting the diagnosis-wise distribution of adnexal mass.

RESULTS

Among the total of 137 cases studied, 63 (45.98%) were endometriosis, 32 (23.35%) were ectopic pregnancies, 28 (20.43%) were ovarian cysts that included dermoid cysts and simple ovarian cysts, 5 (3.64%) of paraovarian, and 6 (4.37%) of hydrosalpinx, others include two cases of peritoneal inclusion cyst and one fimbrial cyst.

Endometriosis was the most common condition seen among women presenting with adnexal masses.

In our study as depicted in Tables 1 and 2, about 98.3% (62/63) of the cases of endometriosis clinically correlated with laparoscopic findings whereas ultrasound correlated with only 93.7% (59/63) of endometriosis. These findings can be clearly seen in Figures 2 and 3. Similar correlations were observed in benign ovarian masses on clinical examination and ultrasound, 89.3% (25/28) and 96.4% (27/28), respectively. Similarly, ectopic pregnancies diagnosed by

Table 2: Correlation of laparoscopy findings with ultrasound ($p = 0.001$)

Preoperative findings (laparoscopy)	Laparoscopy findings correlating with ultrasound		Total N = 137
	Correlating, n (%)	Not correlating, n (%)	
Endometriotic cyst	59 (93.7)	4 (6.3)	63 (100)
Ovarian cyst	27 (96.4)	1 (3.6)	28 (100)
Ectopic pregnancy	29 (90.6)	3 (9.4)	32 (100)
Paraovarian cyst	1 (20)	4 (80)	5 (100)
Hydrosalpinx	4 (66.7)	2 (33.3)	6 (100)
Others	2 (66.7)	1 (33.3)	3 (100)
Total	122 (89.1)	15 (10.9)	137

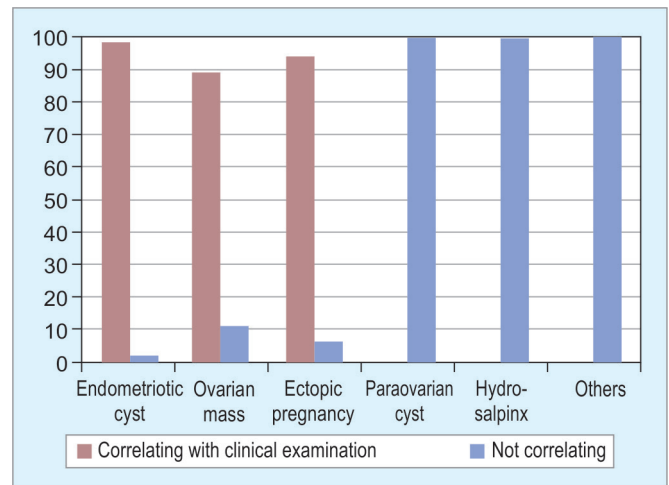


Fig. 2: Correlation of laparoscopic findings with clinical examination

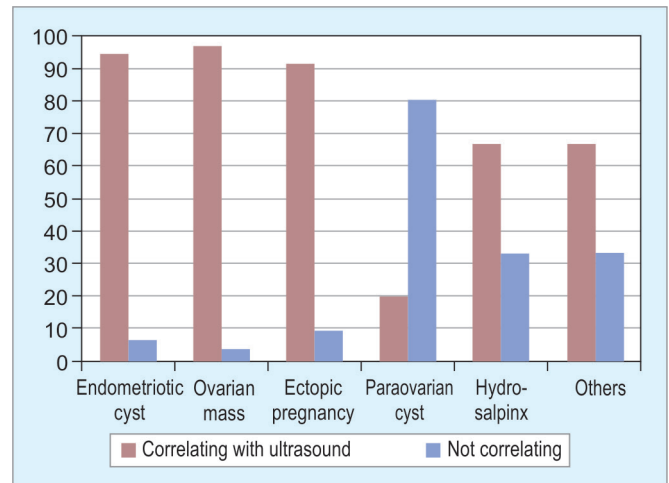


Fig. 3: Correlation of laparoscopy findings with ultrasound

clinical examination correlated with laparoscopy in 93.8% (30/32) of cases whereas ultrasound findings correlated only in 90.6% (29/32) of cases. All the cases (5/5) of paraovarian cysts were missed in clinical examination, whereas ultrasound detected 20% (1/5) of cases. In suspected cases of pelvic inflammatory disease, ultrasound diagnosed hydrosalpinx in 66.7% (4/6), which clinical examination failed to diagnose.

Table 3: Correlation of combined ultrasound and clinical examination with laparoscopy ($p = 0.001$)

Preoperative findings	Combined ultrasound and clinical examination correlating with laparoscopy		Total N = 137
	Correlating, n (%)	Not correlating, n (%)	
Endometriotic cyst	58 (92.1)	5 (7.9)	63 (100)
Ovarian cyst	25 (89.3)	3 (10.7)	28 (100)
Ectopic pregnancy	28 (87.5)	4 (12.5)	32 (100)
Paraovarian cyst	0 (0)	5 (100)	5 (100)
Hydrosalpinx	0 (0)	6 (100)	6 (100)
Others	2 (66.7)	1 (33.3)	3 (100)
Total	113	24	137

DISCUSSION

Adnexal mass is a common entity in gynecological patients, masses arising either from the uterus, tubes, ovaries or adjacent pelvic organs can present as adnexal masses.

A high index of suspicion, detailed history, physical examination, and careful attention to subtle historical clues are required in the initial detection and evaluation of adnexal masses.⁴ Taking a complete history and performing a thorough clinical examination is the hallmark of a good clinician. In our study, the majority of the adnexal masses were endometriosis followed by ectopic pregnancy and benign ovarian cysts. All the women were in the reproductive age-group.

Most of them presented with lower abdominal pain, dyspareunia, and dysmenorrhea.

Few of them had infertility issues. Most of the cases of ectopic pregnancies presented with acute abdomen. In this case series, as shown in Table 1, the history and physical examination correlated with laparoscopic findings in 117/137 (85.4%) cases of an adnexal mass, giving a p -value of 0.001, which is statistically significant as depicted in Figure 2. Pelvic ultrasonography has become an integral part of routine clinical examination in gynecological practice. Transvaginal ultrasonography remains the standard for the evaluation of adnexal masses. Combined clinical and ultrasound examination as shown by Table 3 detected 58/63 cases of endometriosis, 28/32 cases of ectopic pregnancy, and 25/28 cases of benign ovarian cysts. While the bimanual pelvic examination was found non-contributory in detecting paraovarian cyst and hydrosalpinx, pelvic ultrasound detected 20% (1/5) cases of paraovarian cyst and 66.7% (4/6) cases of hydrosalpinx. These findings are plotted on a bar diagram as shown in Figure 4.

Clinical findings were correlated with ultrasound findings as depicted in Table 4 and Figure 5, and a statistically significant p -value was obtained ($p = 0.001$). When combined clinical and ultrasound examination findings correlated with laparoscopic findings, a p -value of 0.001 is obtained which again is statistically significant.

A study by Yogini et al. published in 2017 established Ultrasound as a gold standard in preoperative evaluation to ascertain the benign nature of adnexal mass.⁵

In a study by Yadav P et al. in 2017, transvaginal ultrasound particularly in the setting of high-frequency utilization of transvaginal probes, remains the least expensive of all imaging modalities, currently available.⁶

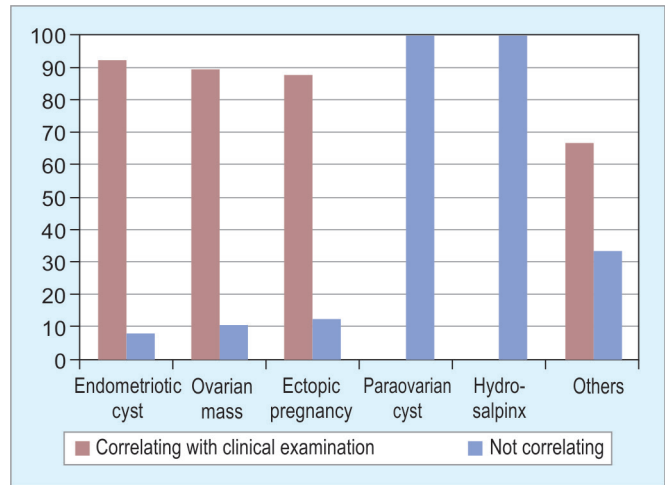


Fig. 4: Correlation of combined ultrasound and clinical examination with laparoscopy

Table 4: Correlation of ultrasound findings with clinical examination ($p = 0.001$)

Ultrasound findings	Ultrasound findings correlating with examination		Total N = 137
	Correlating, n (%)	Not correlating, n (%)	
Endometriotic cyst	58 (98.3)	1 (1.7)	59 (100)
Ovarian mass	28 (71.8)	11 (28.2)	39 (100)
Ectopic pregnancy	27 (96.4)	1 (3.6)	28 (100)
Paraovarian cyst	0 (0)	1 (100)	1 (100)
Hydrosalpinx	0 (0)	4 (100)	4 (100)
Others	1 (16.7)	5 (83.3)	6 (100)
Total	114	20	137

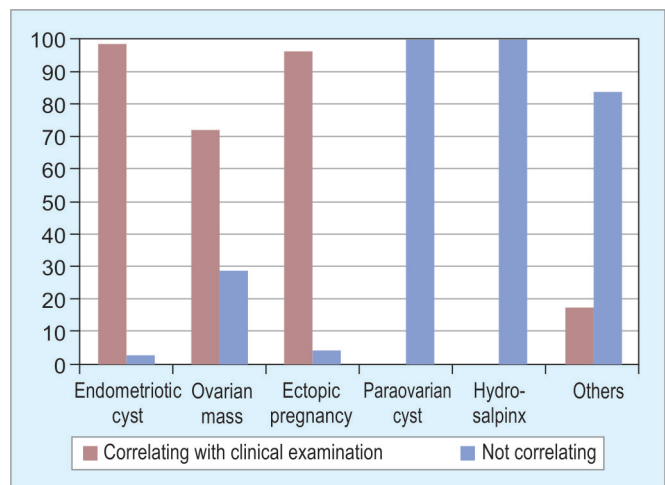


Fig. 5: Correlation of ultrasound findings with clinical examination

Another study by Wakhloo A et al. in 2018 reported correlation of ultrasound findings with physical examination in diagnosing ovarian cysts was 75 and 86.9% in endometriosis, 100% in ectopic pregnancy, and 25% in tubo-ovarian masses.⁷ Their findings were almost similar to our findings as depicted by Table 4.

Another study published by Gupta H et al.⁸ in 2015 correlating preoperative screening with laparoscopic findings also had similar results as compared to our study.

In our study combined clinical history, physical and ultrasound examination showed high diagnostic accuracy in endometriosis and benign ovarian cysts. Clinical examination alone showed poor diagnostic accuracy in paraovarian cyst and hydrosalpinx, whereas pelvic ultrasound detected 20% (1/5) cases of paraovarian cyst and 66.7% (4/6) cases of hydrosalpinx.

Hence by doing a proper preoperative evaluation, we can select appropriate patients for laparoscopy.

Laparoscopy is useful when simultaneous therapy and treatment in the same sitting can be offered, not as a diagnostic tool alone. In symptomatic women, adnexal masses are about 7.15–12%, whereas in asymptomatic women it is about 0.17–5.9%.⁹ Only 5–10% of women undergo surgical treatment of these adnexal masses.¹⁰

The limitation of this study is that only clinical examination, ultrasound, and laparoscopy findings were correlated. The study would have been more beneficial if correlation with histopathological diagnosis had also been done.¹¹ Other modalities such as computed tomography (CT) abdomen and pelvis and MRI could have been used for diagnosis which is not included in our study.

CONCLUSION

Ultrasound is a noninvasive and readily available diagnostic tool and when used together with detailed clinical examination, the accuracy of preoperative evaluation of patient improves and it also helps in the careful selection of patients for laparoscopy.

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