

# Fetal Outcome of Pregnancy Associated with Adnexal Masses

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## ABSTRACT

**Aim:** To determine fetal outcome of pregnancy associated with adnexal masses.

**Methods:** Descriptive, case series study was performed in the Department of Obstetrics and Gynecology, Services Hospital, Lahore over period of 15 months. Study enrolled 280 pregnant patients and were followed till 37 completed weeks of gestation. Fetal outcome of pregnancy was observed in terms of spontaneous miscarriage and preterm birth. Results were interpreted via SPSS version 23.0. Mean  $\pm$  standard deviation was used for quantitative variables i.e., age (years), gestational age (weeks) at time presentation, adnexal mass size (centimeters) on ultrasonography and parity, while frequency and percentage for qualitative data i.e. preterm birth and spontaneous miscarriage. Stratification was done with respect to age, gestational age, and parity.

**Results:** 25.2  $\pm$  4.88 years was the mean age along with mean gestational age (weeks) at time of presentation 14.79  $\pm$  2.85, mean adnexal mass size on ultrasonography was 5.61  $\pm$  1.57 cm and mean parity of 2.85  $\pm$  1.18. Spontaneous miscarriage was seen in 1 case (0.36 %) while preterm birth was seen in 2 cases (0.71 %).

**Conclusions:** Adnexal masses during pregnancy were not associated with adverse fetal outcome in terms of preterm birth and spontaneous miscarriage.

**Keywords:** Pregnancy, adnexal mass, preterm birth, spontaneous miscarriage

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## INTRODUCTION

Adnexal masses are seen in approximately 2 – 10 % pregnancies. <sup>[1]</sup> Exact incidence depends on diagnostic method used, operating definition and gestational age. Spontaneous resolution of many of adnexal masses is responsible for gradual decrease in incidence as pregnancy progresses<sup>2,3</sup>.

Detection of incidental adnexal masses in early pregnancy on sonography is on rising trend<sup>4</sup>, although ovarian cancer seen in pregnancy is still low<sup>5</sup>.

Performing surgery before 23 weeks' gestation is associated with less chance of adverse fetal outcomes in terms of preterm delivery and fetal loss<sup>6</sup>. According to studies conducted by Turkuoglu I et al<sup>7</sup>, Duic Z et al<sup>8</sup> and Moore RD et al<sup>9</sup>, none (0%) of females presenting with pregnancy-associated adnexal masses had preterm birth. While on other hand studies conducted by Baser E et al<sup>10</sup> and Usui et al<sup>11</sup> concluded that 15.9% and 12% of females presenting with pregnancy-associated adnexal masses had preterm birth, respectively.

Studies conducted by Shirin N et al<sup>12</sup> and Turkuoglu I et al<sup>7</sup> showed that none (0%) of females presenting with pregnancy-associated adnexal masses had spontaneous miscarriage. On contrary, studies conducted by Usui et al<sup>11</sup> and Sherad GB et al<sup>13</sup> showed that 3.3% and 4.7% of females presenting with pregnancy-associated adnexal masses had spontaneous miscarriage, respectively.

Rationale of this study was to find the fetal outcome of pregnancy in females presenting with adnexal masses. Few studies concluded that adnexal masses can cause adverse fetal outcome in comparison to others studies (mentioned above) which showed that adnexal masses do not have adverse fetal outcome. This generated contradiction regarding fetal outcome of pregnancy associated with adnexal masses. So this study was conducted to find the incidence of adverse fetal outcome

with adnexal masses as to improve our knowledge and practice and in future this will help us to implement the use of regular screening and check- up of females before conception to prevent adverse outcome of pregnancy.

## METHODS

Descriptive, case series study was done in Department of Obstetrics and Gynecology, Services Hospital Lahore, from February 2016 to May 2017. Sample size of 280 cases was calculated with 95% confidence level and 2.5% margin of error. Non-probability consecutive sampling technique was used.

Pregnant females of age 18 - 40 years with parity < 6, gestational age  $\geq$  10 completed weeks (according to 1<sup>st</sup> day of last menstrual period) and adnexal mass (defined as enlarged (>3cm maximum dimension), swollen ovary associated with mass or cyst (>2cm size) on ultrasonography) were included in this study. Patients with multiple pregnancy (on ultrasound), abnormal placenta like previa or accrete (on ultrasound), gestational diabetes (blood sugar random >186mg/dL), gestational hypertension (blood pressure  $\geq$ 140/90mmHg), preeclampsia (above + proteinuria + 1 on dipstick method), eclampsia (above + convulsions), already diagnosed ovarian / intrauterine / cervical malignancy (on medical record), recurrent adnexal masses (from previous medical record) were excluded from this study. 280 patients were recruited from Out Patient Department obstetrics clinic as per inclusion criteria. Informed consent and confidentiality were ensured. Demographics (name, age, parity, gestational age, address) were also be noted. Then females were followed-up till 37 completed weeks of gestation.

If expulsion of fetus had occurred before 24 completed weeks of gestation, then spontaneous miscarriage was labeled. If baby had been delivered from 24 completed weeks of gestation until before 37 completed weeks, then preterm birth was labeled. All this information was recorded in Performa. SPSS version 23.0 was used to assess data. Mean $\pm$ standard deviation was used for quantitative

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variables like age (years), gestational age (weeks) at time presentation, adnexal mass size (centimeters) on ultrasonography and parity, while qualitative variables like preterm birth and spontaneous miscarriage were analyzed as frequency and percentage.

Data stratification was done in terms of age ( $\leq 25$  years or  $> 25$  years), gestational age ( $\leq 15$  weeks or  $> 15$  weeks), adnexal size ( $\leq 5$ cm or  $> 5$ cm) and parity ( $\leq 2$  or  $> 2$ ). Chi-square was applied to compare stratified group taking P value  $\leq 0.05$  as significant.

**RESULTS**

Mean age was calculated as  $25.2 \pm 4.88$  years with mean gestational age at time of presentation  $14.79 \pm 2.85$ , mean adnexal mass size on ultrasonography was  $5.61 \pm 1.57$  cm and mean parity of  $2.85 \pm 1.18$ . Spontaneous miscarriage was seen in 1 cases (0.36%) while preterm birth was seen in 2 cases (0.71 %). Age stratification showed that no spontaneous miscarriage and preterm birth was seen in patients of age  $\leq 25$  years. While only 1 case of spontaneous miscarriage (P-value = 0.254) and 2 case of preterm birth (P-value=0.106) were seen in patients of age  $> 25$  years (Table 1 and 2).

Table 1: Age stratification of spontaneous miscarriage

Age of patient (yrs)	Spontaneous miscarriage		Total
	Yes	No	
$\leq 25$	0	158	158
$> 25$	1	121	122

P value=0.254

Table 2: Age stratification of preterm birth

Age of patient (years)	Preterm birth		Total
	Yes	No	
$\leq 15$	0	158	158
$> 25$	2	120	122

P value=0.106

Gestational age stratification showed that no spontaneous miscarriage and preterm birth was seen in patients of gestational age  $\leq 15$  weeks. While only 1 case of spontaneous miscarriage (P-value = 0.241) and 2 case of preterm birth was seen in patients of gestational age  $> 15$  weeks (P-value = 0.096). (Table 3 and 4)

Table 3: Gestational age stratification of spontaneous miscarriage

Adnexal mass size (cm)	Spontaneous miscarriage		Total
	Yes	No	
$\leq 15$	0	162	162
$> 15$	1	117	118

P value=0.241

Table 4: Gestational age stratification of preterm birth

Gestational age of pt (weeks)	Preterm birth		Total
	Yes	No	
$\leq 15$	0	162	162
$> 15$	2	116	118

P value=0.096

Adnexal mass size stratification showed that no spontaneous miscarriage and preterm birth was seen in patients of adnexal mass size  $\leq 5$  cm. While only 1 case of spontaneous miscarriage (P-value = 0.296) and 2 case of

preterm birth (P-value = 0.139) was seen in patients of adnexal mass size  $> 5$  cm. (Table 5 and 6)

Table 5: Adnexal mass size stratification of spontaneous miscarriage

Adnexal mass size (cm)	Preterm Birth		Total
	Yes	No	
$\leq 5$	0	146	146
$> 5$	1	133	134

P value=0.296

Table 6 : Adnexal mass size stratification of preterm birth

Adnexal mass size (cm)	Preterm Birth		Total
	Yes	No	
$\leq 5$	0	146	146
$> 5$	2	132	134

P value=0.139

Parity stratification showed that no spontaneous miscarriage and preterm birth was seen in patients of parity  $\leq 2$ . While only 1 case of spontaneous miscarriage ((P-value= 0.403) and 2 case of preterm birth (P-value = 0.236) was seen in patients of parity  $> 2$  (Table 7 and 8)

Table 7: Parity stratification of spontaneous miscarriage

Parity	Preterm Birth		Total
	Yes	No	
$\leq 2$	0	115	115
$> 2$	1	164	165

P value=0.403

Table 8: Parity stratification of preterm birth

Parity	Spontaneous miscarriage		Total
	Yes	No	
$\leq 2$	0	115	115
$> 2$	2	163	165

P value=0.236

**DISCUSSION**

Approximately 2% to 10% of pregnancies are associated with adnexal masses<sup>1</sup>. Actual incidence depends on many factors including diagnostic modality used, definition of “mass” etc. Use of ultrasonography in 1<sup>st</sup> trimester has drastically increased the incidence of adnexal masses, although most of them resolve spontaneously<sup>14,15</sup>.

Low malignant potential tumor or carcinoma is seen in 2.1 – 6% of adnexal masses encountered during pregnancy<sup>6,16</sup>. Torsion, rupture, bleeding/infection, or labor obstruction are common complications associated with adnexal mass<sup>6</sup>.

Adnexal masses are classified into 4 major groups according to morphology seen on ultrasound i.e., simple, complex, solid (benign) and solid (malignant)<sup>17</sup>.

Ultrasound is initial imaging modality used for confirming the diagnosis and also helps in morphological classification. Thus allowing risk stratification without compromising maternal or fetal safety<sup>18</sup>. Ultrasound assessment helps in decision making regarding management plan (conservative versus surgery)<sup>19</sup>. Masses with internal septations, papillary component, size  $> 5$ cm<sup>20</sup>, heterogeneous structure with solid component, bilateral, irregular margins, and high vascularity are more likely to be malignant<sup>1,21,22</sup>.

Tumor markers including CA 125, inhibin, human chorionic gonadotropin ( $\beta$ -hCG),  $\alpha$ -fetoprotein (AFP) have

been measured during pregnancy associated with adnexal masses but with limited diagnostic utility. Factors predicting need for intervention include size, gestational age, morphology, resources and patients preference. Controversy exists regarding the optimal treatment<sup>23</sup> as most will resolve naturally requiring no intervention<sup>24-27</sup> Royal College of Obstetrics and Gynecology (RCOG) guidelines<sup>28</sup>, American society of Radiologists<sup>15</sup>, along with several others studies<sup>5,11,16,27,29-31</sup> supports conservative approach.

Adnexal masses suspicious for malignancy clinically or on imaging should undergo surgery (open or laparoscopic) keeping in view the risk to pregnancy (reduced if surgery is performed at <23 weeks)<sup>6</sup>.

According to studies conducted by Turkcuoglu I et al<sup>7</sup>, Duic Z et al<sup>8</sup> and Moore RD et al<sup>9</sup>, none (0%) of females presenting with pregnancy-associated adnexal masses had preterm birth. While on other hand studies conducted by Baser E et al<sup>10</sup> and Usui et al<sup>11</sup> concluded that 15.9% and 12% of females presenting with pregnancy-associated adnexal masses had preterm birth, respectively. In this study preterm birth was seen in only 2 cases (0.36%) out of total 280 cases (favoring studies conducted by Turkcuoglu I et al<sup>7</sup>, Duic Z et al<sup>8</sup> and Moore RD et al<sup>9</sup>. Studies conducted by Shirin N et al<sup>12</sup> and Turkcuoglu I et al<sup>7</sup> showed that none (0%) of females presenting with pregnancy-associated adnexal masses had spontaneous miscarriage. On contrary, studies conducted by Usui et al<sup>11</sup> and Sherad GB et al<sup>13</sup> showed that 3.3% and 4.7% of females presenting with pregnancy-associated adnexal masses had spontaneous miscarriage, respectively. In this study, spontaneous miscarriage was seen in only 1 case out total 280 cases i.e., 0.72% (favoring studies conducted by Shirin N et al<sup>12</sup> and Turkcuoglu I et al<sup>7</sup>).

Before implicating the results of this study in clinical practice, it is recommended to conduct similar studies at larger scale involving different hospitals all around the country and of larger sample size, as this study is limited to single tertiary care hospital and 280 cases.

## CONCLUSION

Adnexal masses during pregnancy were not associated with adverse fetal outcome in terms of preterm birth and spontaneous miscarriage.

**Recommendation:** It is recommended to conduct similar studies at larger scale involving different hospitals all around the country and of larger sample size.

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