Adnexal Masses in Pregnancy

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Objective: *To determine incidence and maternal and fetal outcomes of pregnant women undergoing surgical management for adnexal mass.*
Material and Method: *A cohort study was performed in patients who presented with adnexal masses in pregnancy that required surgical management during April, 1986 to March, 2001. The maternal and fetal outcomes were analyzed.*
Results: *One hundred eighteen patients of 116,323 deliveries were identified with adnexal masses that required surgical management. The incidence was 1 in 986 deliveries. One hundred and three cases had complete data for analysis. A malignant tumor or a tumor of low malignant potential was found in 3 cases (2.9%). In 4 patients, the only finding at the time of operation were leiomyomas. Eighty-four of 103 cases (81.6%) had an elective operation and 19 cases (18.4%) had an emergency operation. There were 3 spontaneous abortions, 3 preterm deliveries, and 1 intrauterine growth restriction in all patients. Patients who underwent elective and emergency operation had the same adverse pregnancy outcome.*
Conclusion: *The incidence of an adnexal mass during pregnancy in our population was consistent with what has been reported in the literature. The percentage of malignant tumors or tumors of low malignant potential was 2.9%. Patients who underwent elective operation had the same adverse pregnancy outcome compared with those who underwent emergency operation.*

Keywords*: Adnexal mass, Pregnancy, Maternal outcome, Fetal outcome*

J Med Assoc Thai 2005; 88 (Suppl 2): S37-40
Full text. e-Journal: *http://www.medassocthai.org/journal*

Adnexal masses occur frequently during the reproductive age and during pregnancy. Investigators have studied the incidence of adnexal masses in each trimester of pregnancy, at the time of cesarean section or termination of pregnancy[1-4]. The management of adnexal masses during pregnancy presents a difficult clinical decision. The abdominal surgery during pregnancy is risky to the mother and fetus[5]. On the contrary, conservative management may result in the spread of cancer or serious complications such as the torsion or rupture of ovarian cysts. Most small ovarian cysts in pregnancy are usually functional and can be managed expectantly. Adnexal masses larger than 6 cm or symptomatic are generally considered significant and need intervention[6]. The overall incidence of malignancy is approximately 3%[7]. The lastest published data before the widespread use of routine ultrasonography was more than 20 years ago. Because of the widespread use of ultrasonography, as well as the increased cesarean delivery rate, one would anticipate that the reported incidence of adnexal masses would increase compared with the incidence in earlier series. Additionally, few reports showed maternal and neonatal outcome in pregnant women undergoing surgical management of adnexal masses. Our study was designed to assess the incidence of adnexal masses during pregnancy and to determine maternal and fetal outcome of those undergoing surgical management.

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Material and Method

During the period between April 1, 1986 and March 31, 2001, there were 116,323 deliveries at Department of Obstetrics and Gynaecology, Ramathibodi Hospital, Bangkok, Thailand. We conducted a cohort study of 118 pregnant women with adnexal masses that

required surgical management during this period. Of the 118 cases, 15 cases had incomplete data (12.7%), so only 103 cases were enrolled in this study.

The baseline data, operative, pathology, and labor records of the patients were reviewed. Pregnant women with adnexal masses that resolved spontaneously and did not require surgical management were excluded. Data collection included age, gravidity, parity, gestational age (at the time of diagnosis, surgery, and delivery), ultrasonographic findings, maternal and neonatal outcome. Statistical analysis was performed. The chi-square test and Fisher's exact test were used for statistical analysis. The P-value < 0.05 was considered significant. This sutdy was approved by the ethical committee of the Faculty of Medicine, Ramathibodi Hospital, Mahidol University.

Results

During the study period, there were 118 pregnant women with adnexal masses that required surgical management among a total of 116,323 deliveries. The incidence of an adnexal mass requiring surgical intervention in pregnancy was 1 in 986 deliveries. Of the 103 cases, 84 patients (81.6%) underwent elective exploratory laparotomy before delivery; 19 patients (18.4%) underwent emergency exploratory laparotomy (18 cases from torsion and 1 case from rupture). The persistent adnexal mass after 12 week's gestation was the reason for operation in the elective cases. The median gestational age of elective and emergency exploratory laparotomy were 16, and 11 weeks, respectively. Among 84 elective cases, 5 cases (5.9%) were operated before or at 12 weeks of gestation because of clinically torsion of mass with asymptomic features and 79 cases (94.1%) were operated after 12 weeks of gestation. In 19 emergency cases, 12 cases (63.2%) were operated before or at 12 weeks of gestation and 7 cases (36.8%) were operated after 12 weeks of gestation. Laparotomy was performed in the first trimester in 17 (16.5%) patients (mean gestational age, 9 weeks), during the second trimester in 86 (83.5%) patients (mean gestational age, 16.09 weeks). The mean age of all patients was 28.9 ± 4.8 years (range, 18 – 41 years). The median gravidity was 2 (range, 1 – 7), and the median parity was 1 (range, 0 – 5). Fifty-one patients (49.5%) were nulliparous. The distribution of mass sizes are shown in Table 1. The ultrasonographic findings were 5 cases of hyperechogenic masses, 38 cases of hypoechogenic masses, and 61 cases of mixed echogenic masses.

The histological findings are summarized in Table 2. Histological diagnoses were available only for 101 patients, while the rest 2 leiomyoma cases were absent. Two patients had bilateral masses and one patient had two histological types in one specimen, for a total of 104 pathologic specimens. The three common pathological findings were mature cystic teratoma, endometrioma, and cystadenoma. Four cases of uterine leiomyoma were noted at laparotomy but only two specimens were received.

Table 1. Distribution of sizes of adnexal masses

Diameter (cm)	Number (%)
6 or less	39 (37.8)
7 - 10	44 (42.8)
11 - 15	18 (17.5)
> 15	2 (1.9)

Table 2. Histological diagnosis of 104 cases

Histologic diagnosis	Elective operation (n)	Emergency operation (n)	Total	
			no	%
Malignancy				
Ovarian malignancy	2	0	2	1.92
Borderline mucinous cyst	1	0	1	0.96
Benign				
Mature cystic teratoma	38	3	41	39.42
Endometrioma	19	1	20	19.22
Serous cystadenoma	6	6	12	11.54
Mucinous cystadenoma	8	1	9	8.64
Corpus luteum cyst	6	3	9	8.64
Hydratid cyst	2	3	5	4.81
Follicular cyst	2	1	3	2.91
Leiomyoma	1	1	2	1.92
Total	85	19	104	100

Table 3. Pregnancy outcome for elective operation versus emergency operation

	Emergency operation(n=19)	Elective operation(n=84)	p-value
Mean age at laparotomy (years)	29.10	28.88	> 0.05
Mean time of laparotomy (minutes)	53.73	53.69	> 0.05
Mean mass diameter (cm)	7.62	7.96	> 0.05
Spontaneous abortion	2 (10.5%)	1 (1.2%)	> 0.05
Preterm delivery	0	2 (2.4%)	-
Intrauterine growth restriction	0	1 (1.2%)	-

A total of 3 malignant tumors or borderline malignant tumors (2.91%) was encountered. Two malignant tumors were papillary serous cystadenocarcinoma stage IIc, and metastasis mucin producing adenocarcinoma (well differentiated type). One was borderline mucinous malignant tumor.

Pregnancy and fetal outcome were analyzed on the basic of elective and emergency lapalotomy. There were 6 cases with bad outcomes (3 spontaneous abortions, 2 preterm deliveries, and 1 intrauterine growth restriction) both in emergency and elective cases with no significantly different. There was no maternal morbidity and mortality as shown in Table 3.

Discussion

Adnexal masses occur frequently during the reproductive years and during pregnancy. Pathologically confirmed adnexal masses occur in between 1 in 81 and 1 in 2200 deliveries[8,9]. Our study revealed the incidence 1 in 986 deliveries which is consistent with the recent report in the literature 1 in 1,312 deliveries[10]. In 1963, Munndell suggested that removal of an ovarian cyst during pregnancy was indicated for 3 reasons: (1) elimination of a possible cause of dystocia, (2) danger of torsion, rupture, or hemorrhage, and (3) danger of malignancy[11]. In our series, the risk of dystocia can not be evaluated. Our study revealed 18 patients with torsion and one with ruptured mass. Torsion of mass occured almost 20% of cases. Scheduling elective surgery to excise an adnexal mass during the second trimester would appear to have impact on preventing adnexal torsion. More than half of emergency operative cases was operated in first trimester. It could be due to the change in site and position of the uterus.

The risk of malignancy alone appears to justify surgical intervention of the persistent adnexal masses in pregnancy. Three out of 103 (2.91%) cases with an adnexal mass had a malignant tumor or a tumor of low malignant potential in our series. This finding is not different from the previous studies (range 3% - 6.1%)[7,10]. Several investigators have found that the sonographic characterization of the adnexal masses can be sufficient to determine which patients are truly at increased risk for malignancy versus those who can be followed up expectantly[12,13]. Some investigators have strongly recommended the excision of all adnexal masses persisting into the second and third trimester owing to the risk of malignancy[14]. In the clinical point of view, the risk of malignancy and inability to differentiate between benign tumors and those of malignant potential, laparotomy should be performed during pregnancy for persistent adnexal masses.

Our study showed good pregnancy outcome of patients after surgery. There were lesser adverse pregnancy outcome in 6 patients (5.82%), those found in the previous study[10]. This may be the difference of population group and gestational age at operation. There was no maternal mortality during pregnancy, this result might reassure the surgeon to perform operation in pregnant woman with adnexal mass. There was to difference in adverse pregnancy outcome in both elective and emergency groups. This finding was different from the previous study, which revealed the higher adverse pregnancy outcome in emergency group[10]. The reason may be our study group too small to evaluate this aspect.

In conclusion, the incidence of adnexal mass during pregnancy in our population was consistent with what has been reported in the literature. The percentage of malignant tumors or tumors of low malignant potential was 2.9%. Patients who underwent elective operation had the same adverse pregnancy outcome compared with those who underwent emergency operation.

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ก้อนที่ปีกมดลูกในสตรีตั้งครรภ์

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วัตถุประสงค์: *เพื่อศึกษาถึงอุบัติการณ์และผลต่อมารดาและทารกในสตรีตั้งครรภ์ที่ได้รับการผ่าตัดก้อนที่ปีกมดลูกออก*

วัสดุและวิธีการ: *โดยการศึกษารวบรวมข้อมูลของสตรีตั้งครรภ์ที่ได้รับการวินิจฉัยว่ามีก้อนที่ปีกมดลูกในขณะตั้งครรภ์และได้รับการผ่าตัดในโรงพยาบาลรามาธิบดี ระหว่างเดือน เมษายน พ.ศ. 2529 ถึง มีนาคม พ.ศ. 2544 โดยทำการวิเคราะห์ผลการคลอดของสตรีตั้งครรภ์และทารกที่คลอด*

ผลการศึกษา: *สตรีตั้งครรภ์ที่ได้รับการผ่าตัดก้อนที่ปีกมดลูกพบจำนวน 118 รายในจำนวนการคลอดทั้งหมด 116,323 ราย อุบัติการณ์คิดเป็น 1 ต่อ 986 การตั้งครรภ์ ในจำนวนนี้ 103 ราย มีข้อมูลครบถ้วนในการวิเคราะห์ข้อมูล ผลทางพยาธิวิทยาพบมะเร็งรังไข่ จำนวน 3 รายคิดเป็นร้อยละ 2.9 มีสตรีตั้งครรภ์จำนวน 4 รายที่พบว่าเป็นเนื้องอกในมดลูกใน 103 ราย มี 84 รายที่ได้ทำการผ่าตัดโดยการนัดมาผ่าตัด และมี 19 รายได้รับการผ่าตัดแบบฉุกเฉิน ภายหลังการผ่าตัดมีการแท้งบุตร 3 ราย การคลอดก่อนกำหนด 2 ราย ทารกเติบโตช้าในครรภ์ 1 ราย สตรีตั้งครรภ์ที่ได้รับการผ่าตัดแบบนัดมาผ่าตัดพบภาวะแทรกซ้อนที่เกิดขึ้นภายหลังการผ่าตัดไม่แตกต่างกับสตรีตั้งครรภ์ที่ได้รับการผ่าตัดแบบฉุกเฉิน*

สรุป: *อุบัติการณ์ของการวินิจฉัยก้อนที่ปีกมดลูกในขณะตั้งครรภ์ไม่แตกต่างจากการศึกษาที่เคยมีรายงานไว้ พบภาวะมะเร็งของรังไข่คิดเป็นร้อยละ 2.9 สตรีตั้งครรภ์ที่ได้รับการผ่าตัดแบบนัดมาผ่าตัดพบภาวะแทรกซ้อนที่เกิดขึ้นภายหลังการผ่าตัดไม่แตกต่างกับสตรีตั้งครรภ์ที่ได้รับการผ่าตัดแบบฉุกเฉิน*