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Maternal-neonatal Outcome in Pregnancies with Non-Obstetric Laparotomy During Pregnancy

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Abstract: In this study maternal and neonatal outcome evaluated in each trimester of pregnancies with non obstetric laparotomies. In this descriptive-analytic study, 100 pregnant women operated during pregnancy were evaluated. Based on available data a questionnaire comprising general information, kind of surgery as well as the maternal-neonatal outcome was fulfilled. These outcomes were compared in the different gestational ages. In this study, 28 (28%), 48 (48%) and 24 (24%) patients had been operated in the first, second and third trimester, respectively. The patients of these three groups were matched for general characters. Sixty one patients had appendectomy, 30 adnexal mass or torsion, 6% cholecystectomy, 3% abdominal mass. Maternal complications were recorded in 6, 3 and 9% patient in 3rd, 2nd and 1st trimester of pregnancy, respectively. Abortion in first trimester was 8.2%. Low apgar in fifth minute and asphyxia were higher in third trimester. Appendectomy was the most common surgery in the pregnancy. Maternal and fetal complications were higher in third and first trimester. Besides obstetric and pediatric consultation before surgery are necessary for optimal safety of the woman and the fetus.

Key words: Surgery, fetal outcome, maternal complication, pregnancy outcome

INTRODUCTION

The rate of Non-obstetric abdominal surgery in pregnancy is about 1 every 500-635 pregnancy (Goldust and Rezaee, 2013; Lotti *et al.*, 2013; Shah *et al.*, 2011). There are some differences between pregnant and non pregnant patients according to these surgeries (Goldust *et al.*, 2013a; Goldust *et al.*, 2013b; Mohebbipour *et al.*, 2012). Anatomical displacement of the pregnant uterus and other organs, pelvic organ congestion, hypercoagulability, physiological symptoms of normal pregnancy such as nausea, vomiting, mild abdominal pain and constipation and finally fetus exposure with drugs and anesthesiology situation are the causes of these differences. (Burger *et al.*, 2011; Goldust *et al.*, 2013c; Ngu *et al.*, 2011) Limitation for laboratory and imaging diagnostic test in pregnancy are other problems in pregnant patients who need surgery (Gerli *et al.*, 2011; Goldust *et al.*, 2013d; Vafae *et al.*, 2012). In a previous study (Gurbuz *et al.*, 2004) authors asked about the role of laparoscopy in pregnancy, while another study (Roux *et al.*, 2011) gave us pressure numbers. In a previous study (Reedy *et al.*, 1997) authors

defined fetal outcomes and surveyed laparoscopic surgeons. Authors in a previous study (Gheorghiu, 2009) defined safety in appendectomies in pregnancy and in another study authors (Carter and Soper, 2004) compared laparoscopy with laparotomy. Therefore, there are some difficulties in the diagnosis and management of these patients (Goldust *et al.*, 2012; Milan *et al.*, 2011; Sadighi *et al.*, 2011). Poor fetal outcome and maternal mortality from these surgeries are usually due to delay in diagnosis and surgical intervention (Agholor *et al.*, 2011; Golfurushan *et al.*, 2011; Sadeghpour *et al.*, 2011). Complications and technical problem are different in each trimester (Fardiazar *et al.*, 2012; Goldust *et al.*, 2011; Nikanfar *et al.*, 2012). A few studies about maternal and prenatal mortality in pregnant patient with non obstetric abdominal surgery have been done in our country (Ganjpour Sales *et al.*, 2012; Kim *et al.*, 2011; Sadeghpour *et al.*, 2012). This study was conducted to establish the pattern of sign and symptom of disease and identify the factors that are associated with fetal and maternal outcome in nonobstetric abdominal surgery during pregnancy. The second objective was to determine the complications of the surgeries in each trimester.

The result of this study can help us to notice about special factors in pregnancy and prevent of fetal and maternal complication.

MATERIALS AND METHODS

In this descriptive-analytic study, 100 patients who had non-obstetric abdominal surgery during pregnancy were selected at Alzahra Obstetric and Gynecology hospital, Tabriz from 2007-2012. Most of these patients with surgical problem were admitted in obstetric unit and then referred to surgical unite for operation. Written consent was obtained from all the patients. This study was approved by ethic committee of Tabriz university of medical sciences. Medical records were evaluated for demographic information, clinical presentation, preoperative management, preterm labor and maternal and fetal morbidity and mortality. SPSS version 16 was used as analysis software. All variables were compared in each 3 trimester in pregnancy by using Chi-square and fisher’s exact test. The student’s t test was used for association between continuous variables and the outcome measures. P values were obtained in this respect to determine the strength and statistical significance of the association. Statistical significance was determined at the 5% level (p<0.05).

RESULTS

A total of 100 patients had non obstetric abdominal surgery in pregnancy, 28 were in first, 48 second, 24 third trimester. The patients’ age ranged from 23 years to 39 years and the mean of age was 25.01±3.1. There were no significant differences among groups for demographic and obstetric characters. Table 1 and 2 shows the summary of clinical presentation of pregnant patients who had abdominal surgeries. Abdominal pain is the most common reason for presentation (100%). Other symptoms include nausea and vomiting (77%) and fever (33.9%). The common signs seen in these patients include generalized tenderness (78%), localized tenderness (38%),

abdominal mass (4%) and vaginal bleeding (2%). Appendectomies were done in 61 patients, including 46.4, 56.2 and 87.5% in each trimester respectively. Appendectomy was higher significantly in third trimester (p = 0.035) 30 patients had adnexal mass or torsion, including 42.8, 35.4 and 4.1% in each trimester respectively. Surgery for adnexal mass or torsion was higher significantly in the first trimester (p = 0.025) Other surgeries include cholecystectomy (6%), abdominal mass(3%) and bowel obstruction (1%). Preoperative and postoperative diagnosis was similar in all patients but there was adnexal torsion in one patient who diagnosed appendicitis before surgery. The mean duration of surgery was 72.61±22.69 min in the first group, 67.08±22.38 min in the second group and 72.08±12.76 in the third group. There was no significant difference among these groups (p = 0.149) Complications of the first day after surgery were seen in 7 patients and complications of the second to seventh days after surgery were seen in 10 patients. Complication of the second to seventh days after surgery was significantly higher in the third trimester (p = 0.002) There were no uterine or other organ damage and fetal death during surgeries. All patient had taken prophylactic or treatment antibiotic. Nine (32.1%) of patients in the first group, 14 (9.2%) patients in the second group and 16 (66.7%) patients in the third group had taken tocolytic therapy (mostly progesterone supp) for prevention of preterm labor. Prescription of tocolytic was significantly higher in the third group (p = 0.006). No corticosteroid prescription was recorded for lung maturation of fetus. Maternal complications following surgical procedure during pregnancy were reported in 7 patients in first hours after surgery and 10 patients in 2nd to 10th days post operative. Complications between 2nd to 10th days were significantly higher in third groups (p = 0.002). Maternal death was no recorded in these patients. The delivery of first group was in 37.21±2.69 weeks, second group in 38.56±1.60 and third group in 37.54±2.00. There was no significant difference between three groups (p = 0.523) 32.1% in first group. 22.9% in sec group and 41.6%

Table 1: Comparison of demographic and medical characters among pregnant women with non obstetric abdominal surgery

Variable	1st trimester	2nd trimester	3rd trimester	All patient	p-value
Age	24.07±4.20	24.73±5.36	25.54±5.88	25.01±3.1	0.598
Gravity	1.46±0.84	1.45±0.64	1.58±0.72	1.41±0.71	0.434
Previous preterm labor	0	0	0	0	0
Previous abortion	14.3%	18.8%	17.5%	16.2%	0.099
Mean of pregnancy age	9.57±2.30	18.40±4.24	29.08±5.99	25.01±3.1	0.542

Table 2: Signs and Symptoms in pregnant patient with non bstetric abdominal surgery

Variable	1st trimester (%)	2nd trimester (%)	3rd trimester (%)	All patient
Abdominal pain	28 (100)	48 (100)	24 (100)	100
Nausea and vomiting	23 (82.1)	33 (68.8)	21 (87.55)	77
Vaginal bleeding	0	2 (4.2)	0	2
Tenderness	21 (75)	35 (72.9)	22 (91.6)	78
Rebound tenderness	7 (25)	10 (20.8)	21 (45.8)	38

Table 3: Neonatal outcome in pregnancies with non obstetric abdominal surgery

Variable	1st trimester	2nd trimester	3rd trimester	p-value
Meconium staining	1(3.65)	1(2.1%)	1(4.2%)	0.052
Mean of 1th m appgar	8.8±0.6	8.6±0.7	8.0±1.7	0.062
Mean of 5th m appgar	9.8±0.4	9.8±0.5	9.3±0.1	0.251
Documented fetal distress	0	2(4.2%)	2(8.3%)	0.050
Asphyxia	1(3.6%)	1(2.1%)	3(12.5%)	0.001
Intra uterine growth restriction	0	0	0	0
Fetal anomaly	0	0	0	0
FetalIcteros	0	0	0	0

in third group had cesarean section. Operative delivery was not significant difference between three group ($p = 0.251$) Ante partum or intra partum asphyxia was recorded in 3 patients in third trimester. Fetal heart rate monitoring was used in 15% of patients after surgery. Continue FHR monitoring was not used in patients (Table 3).

DISCUSSION

Common causes of hospitalization were abdominal pain and tenderness. Although physiological changes that normally occur during pregnancy alter the physical findings and laboratory features of abdomen problem, these signs and symptoms were detected commonly in other studies (Carter *et al.*, 2009; Shakeri *et al.*, 2013; Vahedi *et al.*, 2012). In a previous study, authors reported that abdominal pain and tenderness were common in appendicitis in pregnancy. In their study signs and symptoms of patients were pain, nausea and vomiting, fever, dysuria, abdominal tenderness, respectively (Malzoni *et al.*, 2010). In our study pre and post operative diagnosis were the same in most cases (except 1 patient) and there was no delay in diagnosis in most cases (except 2 patients). Surgical problem in pregnancy can result in potential delay in diagnosis and management. It is important to differentiate abdominal pain due to general surgical problem from labor pain in late pregnancy (Karzar *et al.*, 2012; Nourizadeh *et al.*, 2013; Seyyednejad *et al.*, 2012). In this study most frequent surgery was appendicitis, mass and torsion of adnexa and cholecystectomy. These causes are in accordance to other studies (Duru *et al.*, 2007; Farhodi *et al.*, 2012; Schietroma *et al.*, 2007). In a previous study, authors reported appendicitis, GB disease, renal calculuria and trauma as the causes of abdominal surgery in pregnancy (Ahmad *et al.*, 2007). In another study, appendicitis was reported in 50% of patients and ovarian cysts, mesenteric adenitis and uterine myoma were causes of 50% of rest patient (Huber *et al.*, 2007). About 46% of the women in our study were in the trimester of the pregnancy at presentation. Recent studies have shown a preponderance of acute abdominal emergency in pregnancy in the second trimester (Drozgyik *et al.*, 2007;

Salehi *et al.*, 2013c; Salehi *et al.*, 2013a). As shown in this study, the gestational age significantly affect the fetal loss ($p = 0.048$). At the second trimester, the uterus is big and may not be safely manipulated during surgery. As noted in previous studies, appendicitis is the most common cause of non-obstetric surgical emergency in our series (Fardiazar *et al.*, 2013; Ganjpour Sales *et al.*, 2013; Mossa *et al.*, 2005). However, we observed more cases of complicated appendicitis than uncomplicated ones. Maternal and fetal health is in serious jeopardy as a result of generalized peritonitis that set in quickly because of reduced space for the omentum to contain the spread (Daghigh *et al.*, 2013; Salehi *et al.*, 2013b; Soleimanpour *et al.*, 2013). The high incidence of maternal and fetal mortality recorded in this study can easily be explained by the increased complicated cases in our study. The high incidence of complicated cases could be due to late presentation to the health facility. Most women may confuse the symptoms of pregnancy with symptoms of abdominal catastrophe, in addition, to poor health seeking behaviors already documented in previous studies (Nemati *et al.*, 2013; Qadim *et al.*, 2013; Wiegierinck *et al.*, 2005). In support of this issue, poor health seeking behavior is the fact that only about 30% of our patients booked in any health facility before the illness started. It was not surprising to find that fetal outcome was significantly affected by the booking status ($p < 0.0001$). Majority of the mothers that died and those with adverse pregnancy outcome were not booked before presentation. This underscores the significance of improved advocacy of early booking in pregnancy in our country. Cost of hospital services is another important factor which may be responsible for late presentation in the hospital (Razi *et al.*, 2013; Salehi *et al.*, 2013d; Yousefi *et al.*, 2013).

CONCLUSION

Appendectomy was the most common surgery in the pregnancy. Maternal and fetal complications were higher in third and first trimester; therefore best time for surgery is second trimester. Rate of abortion was higher in first trimester; therefore prophylaxis of abortion is suggested. Fetal complications were higher in third trimester; so fetal

monitoring during and after surgery and prevention of maternal hypothermia and hypovolemia were recommended too. Besides obstetric and pediatric consultation before surgery are necessary for optimal safety of the woman and the fetus.

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