

FREQUENCY OF INTRAPARTUM COMPLICATIONS IN PREGNANT OBESE WOMEN AT TERM

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ABSTRACT

Objectives: To determine the frequency of intrapartum complications in pregnant obese women at term.

Material and Methods: This study was conducted at Kalsoom Maternity Hospital, Peshawar, Pakistan. Study design was descriptive cross sectional which was done in the time period of 15 Months (from August 2010 to November 2011). The sample size was 126, using 95% confidence level, 11.1%³ proportion of instrumental delivery (as per CPSP rule the variable with minimum prevalence is to be taken for sample size calculation) and margin of error of 5.5%, under WHO software for sample size determination. More over non probability, consecutive sampling technique was used in this study.

Results: In this study mean age was 28 years \pm 3.92 SD. Mean BMI score was 33 Kg/m² with standard deviation \pm 1.82. thirty eight percent patients were primi gravida while 62% patients were multi gravida. More over 30% patients had cesarean section while 15% patients had instrumental deliveries in which 10% patients had vacuum delivery and 5% patients had forceps delivery.

Conclusion: Cesarean section, gestational diabetes, meconium stained liquor, macrosomic babies, pregnancy induced hypertension, reduced rate of vaginal birth after cesarean section, failure to progress of labour in first stage, failure to progress in 2nd stage of labour, stillbirth, and preeclampsia are the complications of obesity.

Key Words: Obesity, maternal morbidity, fetal risk factors, complications.

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INTRODUCTION

Obesity is known to be associated with serious obstetric complications like hypertension, gestational diabetes mellitus, still birth, prolonged labour, meconium stained amniotic fluid, cesarean section, macrosomia and shoulder dystocia. There has been a dramatic rise in worldwide prevalence of obesity, leading to world health organization declaration that obesity is a major killer disease of the millennium. Although there is a higher rate of men in the overweight category, globally more women are in the obese category.¹

The increasing rate of maternal obesity provides a major challenge to obstetric practice. Maternal obesity

can result in negative outcomes for both women and fetuses². Economic, technologic and life style changes have created an abundance of cheap, high caloric food coupled with reduction in the required physical activity. We are eating more and moving less. Obesity is a significant public health concern and is likely to remain so for the foreseeable future.²

Worldwide, the obesity, exists at a prevalence of 15-20% and accounts for 2-7% of total health care cost.³ Prevalence of obesity in Pakistani women is more than twice as high as in men (20% vs 7%)⁴. The World Health organization and National Institute of Health define normal weight as Body Mass Index (BMI) of 18.5-24.9, Overweight as a BMI of 25-29.9 and Obesity as a BMI of 30 or greater⁵.

Maternal obesity increases the risk of a number of pregnancy complications and as such, requires adjustment to routine prenatal care^{6,7}. There is a linear relationship between increasing body mass index and the risk of developing pre-eclampsia, gestational hypertension, gestational diabetes, thromboembolic disease, haemorrhage in third trimester, induction of labour, macrosomia, shoulder dystocia and emergency cesarean

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section.^{8,9} Macrosomia in infants of obese women is a recognized risk factor for shoulder dystocia⁹.

In obese women there is difficulty estimating fetal weight (even with ultrasonography), to assess fetal presentation, to obtain interpretable external fetal heart rate, uterine contraction patterns and difficulty performing an emergency cesarean section¹⁰. The rate of successful vaginal delivery decreases progressively as maternal BMI increases. The caesarean section rate is 36.4% in obese women in both primigravidas and multigravidas. The increase in caesarean section rate is more likely due to slow progress through the first stage of labour or lack of descent in second stage of labour. Maternal obesity also influences success rate of attempted vags. inal birth after caesarean (VBAC) with a rate of 54.6% to 68% in women with BMI > 29¹¹.

A higher BMI is associated with reduced likelihood of spontaneous labour at term and increased rate of intrapartum complications. Vigilant and intensified management strategies are needed to encourage the women to have a normal BMI before considering pregnancy and to prevent various adverse outcomes of obesity in pregnancy.^{6,10}

The rationale of the study is to determine the frequency of various intrapartum complications in pregnant women with BMI of >30 and to develop guidelines based on the results of my study in order to share them with obstetric care provider so that obese women should be regarded as "High Risk" when counselling and risk assessment is done in antenatal clinic. Moreover it will help to recognize clinicians to improve communication regarding pre-pregnancy counseling about sensible weight reduction, including diet, exercise and referral to a dietician and enter pregnancy with BMI of < 30 and more ideally <25 in an attempt to optimize pregnancy outcome and providing information to such women regarding early warning signs of complications.

MATERIAL AND METHODS

This study was conducted at Kalsoom Maternity Hospital, Peshawar, Pakistan. Study design was descriptive cross sectional study. Duration of study was 15 Months (from August 2010 to November 2011) in which a total of 126 patients were observed by using 95% Confidence Level, and margin of error of 5.5%, under WHO software for sample size determination. More over Non probability, consecutive sampling technique was used for sample collection. All pregnant women whether primigravidas or multigravidas, hospital booked with alive singleton pregnancy at term with BMI greater than 30 calculated at 8 to 12 weeks of gestation. Patients who were either known diabetic were included in the study, while those patients with chronic hypertension, known cardiac diseases with thyroid disorders, contracted per- vils with major placenta previa were excluded as these

patients may act as confounders and may introduce bias in the study.

RESULTS

This study was performed on 126 patients with a BMI > 30 Kg/m². They were followed regularly in ante-natal clinic as well as during labour and in post-partum period. Age distribution among 126 patients is shown in Table 1.

Gestational age among 126 patients was analyzed as most of the patients n=96(76%) were in POG ranged from 37 to 40 weeks followed by n=30(24%) patients were in POG ranged from 41 to 42 weeks. Mean gesta-

Table 1: Age distribution (n=126)

Age ranges (in years)	Frequency & Percentage
15 – 20	8(6%)
21 – 30	80(64%)
31 – 35	38(30%)
Total	126(100%)

Mean age = 28.87 ± 3.92 years

Table 2: Complications versus gestational age (n=57)

Complications	37-40 weeks	41-42 weeks	Total	
Cesarean section	22	16	38	
Instrumental delivery	Vacuum	7	6	13
	Forceps	3	3	6
Total	30	30	57	

Chi Square test was applied in which P value was 0.01

Table 3: Complications versus BMI (n=57)

Complications	37-40 weeks	41-42 weeks	Total	
Cesarean section	30	8	38	
Instrumental delivery	Vacuum	11	2	13
	Forceps	4	2	6
Total	45	12	57	

Chi Square test was applied in which P value was 0.00

Table 4: Complications versus Gravida (n=57)

Complications	Primi Gravida	Multi Gravida	Total	
Cesarean section	16	22	38	
Instrumental delivery	Vacuum	5	8	13
	Forceps	2	4	6
Total	23	34	57	

Chi Square test was applied in which P value was 0.03

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tional age of 38 weeks with standard deviation ± 2.47 . Status of BMI among 126 patients was analyzed as most of the patients $n=98(78\%)$ had BMI ranged from 30 to 35 Kg/m² while $n=28(22\%)$ patients had BMI ranged from >35 to 40 Kg/m². Mean BMI score was 33 Kg/m² with standard deviation ± 1.82 .

Status of gravida among 126 patients was analyzed as $n=48(38\%)$ patients were primi gravida and $n=78(62\%)$ patients were multi gravida. In which $n=41(32\%)$ patients were in G2 to G4, $n=26(21\%)$ patients were in G5 to G7 and $n=11(9\%)$ patients were in G8 or more. In this study intrapartum complications among 126 patients were analyzed as $n=38(30\%)$ patients had cesarean section while $n=19(15\%)$ patients had instrumental deliveries in which $n=13(10\%)$ patients had vacuum delivery and $n=6(5\%)$ patients had forceps delivery.

Association of complications in age distribution was analyzed in 38 patients who had cesarean section, 24 patients were in age ranged 21-30 years and 14 patients were in age range 31-35 years. Where as in 13 patients who had vacuum deliveries, 9 patients were in age ranged 21-30 years and 4 patients were in age range 31-35 years. Similarly as in 6 patients who had forceps deliveries, 4 patients were in age ranged 21-30 years and 2 patients were in age range 31-35 years. Association of complications in gestational age are documented in Table 2. Association of complications in BMI are elaborated in Table 3. Association of complications in gravida are shown in Table 4.

DISCUSSION

Obesity and overweight, the most prevalent nutritional disorders in prosperous communities, are results of an incorrect energy balance leading to increased store of energy mainly as fat. It is a chronic multifactorial disease, has numerous causes. Increased obesity rates among pregnant women are a significant public health concern with various implications for prenatal care and supervision of delivery. In pregnancy, BMI is calculated using pre-pregnant weight. If this is unknown, the first weight measurement at prenatal care is used. In a local study the instrumental delivery rate has been 11.1%, shoulder dystocia risk has been 4% and the risk of macrosomia has been 16.2%.³ Research has shown that obesity is associated with a higher rate of perinatal complications. Results of this study are comparable with observations of other studies.^{12,13}

We also observed increased frequency of cesarean section in our cases i.e. 30%, which is consistent with other studies.¹³ Sherrard A studied maternal anthropometric risk factors for cesarean delivery in a Canadian University Hospital and found that pre-pregnancy BMI > 30 Kg/m² increases the risk in all women irrespec-

tive of age, parity, socioeconomic factors, gestational diabetes, pregnancy induced hypertension and other obstetric factors.¹² It is suggested that a reduced rate of cervical dilatation and increased depot of soft tissues in maternal pelvis may obstruct labour and lead to dystocia or cephalopelvic disproportion. Cesarean delivery was observed in 36% of cases in a study conducted by Jaleel R¹³ and in 20% of cases in study by Sebrie NJ.¹⁴

Instrumental delivery was observed in 15% of our cases. Davies GAL et al¹⁵ observed that in women weighing more than 136.3 Kg, instrumental delivery was observed in only 13% of cases, which is lower than that cited for the general population at 60-80%. The commonest reason for morbidly obese women failing a trial of labour was a non-reassuring fetal heart rate tracing. In support of this Sheiner et al¹⁶ found that obese women were more likely to have labour induction, failure to progress of labour, meconium stained amniotic fluid, malpresentation and cesarean section than non-obese women. In this study the incidence of complications was found more in 37-40 weeks of POG as in cesarean section 22 patients were found in POG 37-40 weeks while in instrumental delivery 10 patients were found in POG 37-40 weeks.

Stillbirth was observed in 8% of our study population. Another study showed that obese parous women had a significantly increased risk of late fetal death relative to women of normal weight after adjustment for obesity related disease in pregnancy. Also Cedergren¹⁴ found that morbidly obese women had an almost 3-fold increased risk of antepartum stillbirth. Increased risk of stillbirth could be related to rapid fetal growth due to fetal hyperglycemia which may place the fetus at risk of death, by hypoxia if the placenta can not transfer sufficient oxygen for metabolic requirement. Other studies suggest that the presence of some intrauterine growth restriction rather than excess fetal growth in the causative factor.¹⁸

Higher mean birth weight and macrosomia was found in 22% of other studies which is comparable with studies conducted by Leticia VP et al¹⁹.

In other studies meconium stained amniotic fluid was observed in 24.4% of cases which is consistent with 21.5% in a study conducted by Jarve EV.²⁰ Results of our study highlight that being overweight and obesity is an important public health issue in our country. Owing to the increasing prevalence of childhood and adolescent obesity, larger number of obese pregnant women are likely to be encountered. Large studies are therefore required to further investigate the results.

CONCLUSION

Obesity can lead to more ceaserian sections, gestational diabetes, meconium stained liquor babies,

reduce rate of vaginal birth rate, failure to progression in first and second stage of labour, stillbirths and pre-eclampsia.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Abrar S: Concept, design, acquisition of data and drafting the script.

Abrar T: Helped in analysis and interpretation of data collection.

Sayyed E: Bibliography.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.