

# FREQUENCY OF OPERATIVE DELIVERY IN PREGNANT OBESE PATIENTS

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## ABSTRACT

**Background:** The increasing rate of maternal obesity provides a major challenge to obstetric practice. Maternal obesity can result in negative outcomes for both women and fetuses. The objective of this study was to determine the frequency of various types of operative and assisted deliveries in pregnant obese women at term.

**Material & Methods:** This cross-sectional study was conducted at Department of Gyne/Obs, Lady Reading Hospital, Peshawar from 25<sup>th</sup> August 2010 to 25<sup>th</sup> November 2010. Pregnant women whether primigravida or multigravida with alive singleton pregnancy at term with BMI >30 calculated at 8 to 12 weeks of gestation were included in the study. Patients who with diabetes, hypertension and other major medical illnesses were excluded. Patients with absolute indications for cesarean section like contracted pelvis and major type placenta previa were also excluded. These patients were divided into two groups; Group A with BMI 30-35 kg/m<sup>2</sup> and Group B with BMI 36-40 kg/m<sup>2</sup>. Pevic examination was done to confirm labour and presentation. Routine investigations like complete blood picture, blood group, random blood sugar and virology was sent. All labours were plotted on the partogram and patients were followed till delivery. Labour progress was followed till delivery and if progress delayed then instrumental delivery /caesarean section was decided. Patients' data was recorded on a pre-designed proforma.

**Results:** The mean age of 126 patients included in the study was 28±3.92 years. The mean gestational age was 38±2.47 weeks. Most of the patients 96 (76%) were in 37-40 weeks, followed by 30 (24%) in 41-42 weeks. Status of gravida was analyzed as 48 (38%) primigravida and 78 (62%) multigravida. Among multigravida, 41 (32%) patients were in G2 to G4, 26 (21%) in G5 to G7 and 11 (9%) in G8 or more. The mean BMI was 33±1.82 kg/m<sup>2</sup>. Out of these patients 98 (78%) were in Group A and 28 (22%) were in Group B. Among these 126 patients, 38 (30%) had C-section while 19 (15%) had instrumental deliveries in which 13 (10%) patients had vacuum delivery and 6 (5%) patients had forceps delivery. Comparing the two groups, there were 30 (30.60%) patients in Group A undergoing C-section as compared to 8 (28.57%) patients in Group B. Assisted delievery was also higher in group A 11 (11.22%) as compared to group B 2 (7.14%). The difference between the C-section and assisted delivery among the two groups was statistically not significant (p>0.05).

**Conclusion:** It is concluded that there is high rate of cesarean section and instrumental delivery in obese women. However, there is no significant difference among the moderately obese and severely obese ones.

**KEY WORDS:** Obesity; Body mass index; Complications; Cesarean section; Obstetric extraction; Obstetric surgical procedures.

**This article may be cited as:** Liaqat N, Yasmeen S, Shahid T, Rahim R. Frequency of operative delivery in pregnant obese patients. Gomal J Med Sci 2014; 12:161-4.

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## INTRODUCTION

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.<sup>1</sup> The increasing

rate of maternal obesity provides a major challenge to obstetric practice. Maternal obesity can result in negative outcomes for both women and fetuses. 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.<sup>2</sup>

Worldwide, the obesity, exists at a prevalence of 15-20% and accounts for 2-7% of total healthcare costs.<sup>3</sup> Prevalence of obesity in Pakistani women is more than twice as high as in men (20% vs. 7%).<sup>4</sup>

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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 greater.<sup>5</sup>

Maternal obesity increases the risk of a number of pregnancy complications and as such, requires adjustment to routine prenatal care.<sup>2,3,7</sup> 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 section.<sup>3,6,8,9</sup> Macrosomia in infants of obese women is a recognized risk factor for shoulder dystocia.<sup>9</sup>

The rate of successful vaginal delivery decreases progressively as maternal BMI increases.<sup>2</sup> The caesarean section rate is 36.4% in obese women in both primigravidas and multigravidas<sup>3</sup>. 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.<sup>10</sup> Maternal obesity also influences success rate of attempted vaginal birth after caesarean (VBAC) with a rate of 54.6% to 68% in women with BMI >29.<sup>10</sup> In a local study the instrumental delivery rate has been reported as 11.1%, shoulder dystocia risk as 4% and the risk of macrosomia as 16.2%.<sup>3</sup>

The rationale of the study was to determine the frequency of various types of operative deliveries in pregnant women with BMI of >30 and to share them with obstetric care provider so that obese women should be regarded as "High Risk" when counseling and risk assessment is done in antenatal clinic. Moreover it will help to motivate clinicians for improved pre-pregnancy counseling about sensible weight reduction, including diet, exercise and referral to a dietician and enter pregnancy with normal BMI in an attempt to optimize pregnancy outcome and providing information to such women regarding early warning signs of complications.

The objective of this study was to determine the frequency of various types of operative and assisted deliveries in pregnant obese women at term.

## MATERIAL AND METHODS

This cross-sectional study was conducted at Department of Gyne/Obs, Lady Reading Hospital, Peshawar from 25<sup>th</sup> August 2010 to 25<sup>th</sup> November 2010.

Ethical clearance was obtained from the hospital ethical committee and informed consents were taken from all patients included in the study. Pregnant women whether primigravida or multigravida, hospital-booked with alive singleton pregnancy at term with BMI >30 calculated at 8 to 12 weeks of gestation

were included in the study. Patients who were either known diabetics (diagnosed cases of diabetes before 20 weeks of gestation with fasting blood sugar  $\geq 126$  mg/dl determined from past medical record) or had gestational diabetes (diabetes after 20 weeks of gestation with fasting blood sugar  $\geq 126$  mg/dl) were excluded. Patients with hypertension (Blood pressure (BP)  $\geq 140/90$  mmHg before conception and before 20 weeks gestation) or gestational hypertension (BP  $\geq 140/90$  mmHg after 20 weeks with previously normal BP) and other major medical illnesses were also excluded from the study. Patients with absolute indications for cesarean section like contracted pelvis and major type placenta previa were also excluded. These patients were divided into two groups; Group A with BMI 30-35 kg/m<sup>2</sup> and Group B with BMI 36-40 kg/m<sup>2</sup>.

Fetal presentation by per abdominal examination and fetal heart rate by stethoscope /sonicaid / ultrasound was confirmed. Pelvic examination was done to confirm labour and presentation. Routine investigations like complete blood picture, blood group, random blood sugar and virology was sent. All labours were plotted on the partogram and patients were followed till delivery. All the observations were made by a single observer to control inter observer bias and all the deliveries whether spontaneous or operative were conducted under supervision of single consultant. Instrumental deliveries whether vacuum or forceps delivery was recorded in the proforma. Labour progress was followed till delivery and if progress delayed then instrumental delivery / caesarean section was decided by a senior obstetrician and were performed under supervision.

Patients' data was recorded on a pre-designed proforma. Detailed history including patient's profile and gestational age was recorded. A detailed general and systemic examination was carried out. BMI was calculated by taking weight at 8 to 12 weeks. They were followed regularly in antenatal clinic as well as during labour and in postpartum period.

## RESULTS

The mean age of 126 patients included in the study was  $28 \pm 3.92$  years. The mean gestational age was  $38 \pm 2.47$  weeks. Most of the patients 96 (76%) were in 37-40 weeks, followed by 30 (24%) in 41-42 weeks. Status of gravida was analyzed as 48 (38%) primigravida and 78 (62%) multigravida. Among multigravida, 41 (32%) patients were in G2 to G4, 26 (21%) in G5 to G7 and 11 (9%) in G8 or more.

The mean BMI was  $33 \pm 1.82$  kg/m<sup>2</sup>. Out of these patients 98 (78%) were in Group A and 28 (22%) were in Group B.

Among these 126 patients, 38 (30%) had C-section while 19 (15%) had instrumental deliveries

**Table 2: Frequency of operative deliveries in various categories of obese pregnant ladies.**

Complications	Group A (BMI 30-35) n(%)	Group B (BMI 36-40) n(%)	p-value
C-section	30(30.60%)	8(28.57%)	>0.05
Vacuum delivery	11(11.22%)	2(7.14%)	>0.05
Forceps delivery	4(4.08%)	2(7.14)	>0.05

in which 13 (10%) patients had vacuum delivery and 6 (5%) patients had forceps delivery.

Table 2 shows group-wise distribution of complications in obese pregnant ladies. There were 30 (30.60%) patients in Group A undergoing C-section as compared to 8 (28.57%) patients in Group B. Assisted delivery was also higher in group A 11 (11.22%) as compared to group B 2 (7.14%). The difference between the C-section and assisted delivery among the two groups was statistically not significant ( $p>0.05$ ).

## DISCUSSION

Increasing rate of obesity and overweight among pregnant women is a significant public health concern with various implications for prenatal care and supervision of delivery.<sup>3</sup> This study was conducted on 126 obese patients. We measured BMI on first antenatal visit at 8-12 weeks of gestation, as patients in our setup seldom report for pre-pregnancy evaluation.

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. We also observed increased frequency of C-section in our cases i.e. 30% which is consistent with other studies. Sherrard et al<sup>11</sup> studied maternal anthropometric risk factors for cesarean delivery in a Canadian University Hospital and found that pre-pregnancy BMI  $>30$  kg/m<sup>2</sup> increases the risk in all women irrespective of age, parity, socio-economic factors, gestational diabetes, pregnancy induced hypertension and other obstetric factors.<sup>12</sup> 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 R<sup>3</sup> and in 20% of cases in a study by Sebric et al.<sup>13</sup>

Instrumental delivery was observed in 15% of our cases. Chuhan et al<sup>14</sup> observed that in women weighing more than 136.3 Kg, instrumental delivery was observed in 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 al<sup>9</sup> 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.

Results of our study highlight that being obese is an important public health issue in our setup. Owing to the increasing prevalence of childhood and adolescent obesity, larger number of obese pregnant women are likely to be encountered. However, there was no significant difference among the moderately obese ladies (BMI 30-35) and severely obese ones (BMI 35-40). Large studies are required to further strengthen the results.

## CONCLUSION

It is concluded that there is high rate of cesarean section and instrumental delivery in obese women. However, there is no significant difference among the moderately obese and severely obese ones.

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**CONFLICT OF INTEREST**

Authors declare no conflict of interest.

**GRANT SUPPORT AND FINANCIAL DISCLOSURE**

None declared.