Prevalence of Maternal Complications after Caesarean Section in Women with Abnormal BODY MASS INDEX (BMI)

Shahida Karamat [a#], **Sana Mubarik** [bφ], **Naeem Akhtar Khokhar** [c†], **Resham** [d#],
Asifa Abdul Jabbar [e*#] **and Nusrat Khatoon** [f‡]

[a] *Department of Gynecology and Obstetrics, Bahria University Medical & Dental College, Karachi, Pakistan.*
[b] *Department of Gynecology and Obstetrics, Kharadar General Hospital, Karachi, Pakistan.*
[c] *Department of Gynecology and Obstetrics, Taluka Hospital Mehar, Ghazi Mohalla Mehar, Dadu District, Pakistan.*
[d] *Department of Gynecology and Obstetrics, Peoples University of Medical and Health Sciences For Women (PUMHSW), Pakistan.*
[e] *Department of Gynecology and Obstetrics, Gambat Institute of Medical Sciences (GIMS), Khairpur Mirs, Safeer Autos, Agra Road, Gambat, Pakistan.*
[f] *Department of Gynecology and Obstetrics, Pakistan Air Force Hospital, Fazaia Medical College Masroor, Karachi, Pakistan.*

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Objective: To determine the frequency and maternal complications of cesarean section in women with BMI >25 kg/m^2.
Methodology: This descriptive Case series was done at the Gynaecology and Obstetric Unit III, Civil Hospital Karachi for 6 months i.e. May - Nov 2013. Total 164 obese pregnant women who

[#] *Assistant Professor;*
[φ] *Senior Registrar;*
[†] *Gynaecologist;*
[‡] *Senior Registrar;*
Corresponding author: E-mail: kiran.abbas @scholar.aku.edu;

presentedat gestational age >37 weeks, singleton pregnancy with cephalic presentation were included. Data consists of information on demographic items, gestational age, and parity. BMI was calculated by taking weight in kg divided by height in m^2. Patients were monitored for progress of labour and mode of delivery was recorded. Maternal complications were identified and noted in pre design proforma.

Results: Frequency of maternal complications in women with BMI >25 kg/m^2 was found in 57.14%women.Induced labour was the commonest i.e. 35.1% women followed by primary post-partum hemorrhage (PPH) 13% and shoulder dystocia was observed in 9.1%.

Conclusion: The burden of overweight and obesity in pregnant females belong to local population is high. So it is concluded that pre pregnancy normal body weight females with high BMI during pregnancy require special follow-ups and counselling sessions during pregnancy and delivery.

1. INTRODUCTION

Body mass index > 30 kg/m^2 is the globally accepted definition for obesity while overweight is defined as BMI 25 - 29.9 kg/m^2 [1]. It is classified as the sixth most important risk factor contributing to overall burden of disease. In the U.K, about 28% females are overweight during pregnancy i.e. BMI = 25 - 29.5 kg/m^2 while about 11% are obese [2] However, in U.S the incidence of obesity during pregnancy ranged from 18.5% to 38.3% [3]. Yazdani et al. showed that caesarean section rate of 19.9% in overweight women [4].

Changing lifestyle, growing urbanization, consumption of high caloric food and diminished physical exercise are the key factors responsible for increased body weight and obesity in developing nations [5,6]. Overweight women were 2-7 times more likely to have a cesarean delivery compared to normal weight women. Obesity significantly increases the frequency of caesarean section especially in primigravida [7,8].

The biological pathway through which obesity affects the labour process is not well understood; although accumulation of fat in pelvic region causes obstruction during delivery for the birth passage, reduced myometrial contractility leading to subsequent poor labour functioning, have been notified as essential phenomena. Another pathway in which obesity could affect the caesarean delivery is increasing the risk of diabetes, macrosomia & pregnancy induced hypertension [9-11].

In a study maternal outcomes were studied and found c-section rate of 31.1% in overweight women and 38.16% in obese women, induced labour in 36.7% of overweight and 48.4% of obese women, instrumental vaginal delivery in 18.3% of overweight and 14.4% of obese women, shoulder dystocia in 1.02% of overweight and 1.35% of obese women [12].

A study conducted by Jaleel et al., in Karachi found that women with increased BMI were associated with caesarean delivery of 36%, instrumental delivery of 11%, PPH 7% and shoulder dystocia of 4% [13]. Various retrospective studies have shown different outcomes in pregnancies associated with obesity. There is uncertainty in these studies about the rates of various complications therefore the present study is designed to assess the actual magnitude of outcome furthermore strategies could be developed to minimize the morbidity associated with pregnancies with obesity.

The present study aimed to assess the frequency and maternal complications related to cesarean section in obese women.

2. MATERIALS AND METHODS

This Descriptive Case series was conducted at the Department of Gynecology and Obstetrics, Civil Hospital Karachi between May to Nov 2021. By taking the least proportion of 4%, sample size of 164 was calculated with 95% confidence level and 3% margin of error. All patients were included through Non probability consecutive sampling technique.

All pregnant women having BMI > 25 kg/m^2 upto Para 3, presenting after completion of 37 weeks were included. Pregnant women, twin pregnancy, previous Caesarean section, placenta previa, abnormal presentation, pre-eclampsia,

gestational diabetes mellitus and medical disorders such as diabetes mellitus, chronic hypertension, cardiac or endocrine disorders were not included in the study. Informed consent was taken before filling the Proforma. Proforma was filled in by post graduate trainees on call. Gestational age was estimated by using the date of the first day of the last menstrual period and an ultrasound scan of the first trimester was also taken. Data consists of information on demographic items, gestational age, and parity. Patients were monitored for progress of labour and mode of delivery was recorded. Maternal complications like induced labuor (planned initiation of labour prior to its spontaneous onset), prolonged labour (>12hours), shoulder dystocia (failure of Additional obstetric maneuvers to release the shoulder after gentle down: ward traction on the head) and primary PPH were identified and noted. PPH was noted as excess blood loss after delivery which is >500 ml measured by pre-weighed 5 pads soaked with blood after normal delivery and >1000 ml measured by pre-weighed 10 pads soaked with blood after caesarean section within the first 24 hours. A change in weight of pads of 100 gm is taken as 100 ml of blood loss. All collected data was stored and analyzed using SPSS version 17. Mean and standard deviation were calculated for continuous variables like age, height, weight and BMI. Frequency and percentage for categorical variables like parity, family monthly income status and mode of delivery and maternal complications.

3. RESULTS

A total of 164 pregnant women having body mass index (BMI) > 25 kg/m^2 with singleton pregnancy with cephalic presentation were included in this study. Most of the pregnant women were below 30 years of age as presented in Table 1. The average age and BMI of the women were 26.88 ± 3.77 years, 30.37±4.02 kg/m^2. Similarly the average weight and height of the women is also given in table 1. More than 65 percent of the women had multiparity, 18.29% were nullipara and 15.24% had primipara. Regarding the family history of the family, most of the women belonged to middle and lower status.

Out of 164 women, 77(46.95%) were delivered by caesarean section. Out of 77 cases, the frequency of maternal complications in women with BMI above 25 kg/m2 was found in 57.14% (44/77) women. Induced labour was the commonest maternal complication that was observed in 35.1% women followed by primary postpartum haemorrhage (PPH) 13% and shoulder dystocia was observed in 9.1% cases as given in Table 2.

Table 1. Characteristics of women

Parameters	Mean ± SD
Age (Years)	26.88±3.77
Height (cm)	154.59±5.42
Weight (kg)	72.58±10.24
BMI (kg/m2)	30.37±4.02
Parity	
Nullipara	30 (18.3%)
Primipara	25 (15.2%)
Multipara	109 (66.5%)
Socioeconomic status	
Low	62 (37.8%)
Middle	87 (53.1%)
Upper	15 (9.2%)
Cesarean section	77 (47%)
Vaginal delivery	87 (53%)

Table 2. Maternal complications in women with BMI >25kg/m^2

Complications	Frequency
Maternal Complications	44 (57.1%)
Induced Labour	27 (35.1%)
Shoulder dystocia	7 (9.1%)
Primary PPH	10 (13%)

4. DISCUSSION

The prevalence of obesity is increasing in well-developed as well as in developing countries. It is considered a hazard for the health system. Obesity during pregnancy causes noteworthy hazards for both mother and neonate. It is thought to be an obstetrical risk factor that increases the rate of antepartum complications, and also raises the hazard of many hazardous obstetrical consequence [14]. So this study was conducted to determine the pregnancy outcome of obese females and complications of labour associated with obesity. Obesity during pregnancy is defined as BMI increased during pregnancy i.e. ≥25 kg/m^2 Several studies worked on pre-pregnancy high BMI as the significant risk factor for the adverse pregnancy consequences [15-17]. It is the fact that pre-pregnancy obesity is significantly associated with high incidence of obstetrical complications during antepartum, labour and postpartum period [18].

We observed that BMI during the first trimester on the 1st antenatal visit, in our set up, is rarely present for pre-pregnancy examination. One study showed that the relationship between weight at 1st antenatal visit and eight before pregnancy is very high (r = 0.95) [19]. In our study, the mean age of females was 26.88 ± 3.77 years. This showed that there were more young ones who gained weight [20]. We also noted that the high rate of caesarean section was constant with previous studies. Sherrord et al., observed the maternal anthropometric risk factors for delivery via cesarean section in the Canadian University Hospital. It was revealed that BMI > 25 kg/m^2 before pregnancy raised the chances of all females irrespective of their age, parity, socio-demographic factors, pregnancy associated diabetes, hypertension and other obstetrical factors [21]. It is proposed that less cervical dilatation and high depot of soft-tissues of maternal pelvis may cause obstruction of labor and can cause shoulder dystocia or cephalo-pelvic disproportion. This is another reason that can explain the high rate of instrumental deliveries, but this observation has not been discussed in previous studies.

Results of this study agreed with few previous studies which indicated that there is a significant relationship between high BMI and interventions including labor induction [22-24]. It has also been observed that there is a significant relationship between postpartum hemorrhage and increased BMI. In our study, we also observed that the mean postpartum blood loss was high in females with high BMI, the hazard of postpartum hemorrhage i.e. blood loss ≥ 500 ml after vaginal delivery or 1000 ml after cesarean section, was found to be significantly associated with obesity. But few studies presented contradictory data. Bianco et al. [25] did not find any difference in the incidence of postpartum hemorrhage in any BMI category. This may be because of subjective assessment of blood loss while the definition of postpartum hemorrhage varies, it is hard to make appraisals through studies. Spontaneously, it seems that females having high BMI must have more bleeding, but in those cases who received labour induction or have operative deliveries.

Our finding of shoulder dystocia which was 9.1% is also in conformity with the observation of Abenhaim et al. [22] and Usha et al. [26] Another case control study, conducted by Robinson et al., it was revealed that after obesity, fetal macrosomia is a significant risk factor for shoulder dystocia during labor [27] And among obese pregnant females, fetal macrosomia is very common. Weight gain in pregnancy need more research, thru current guidelines [28] recommending that obese females should be examined at monthly intervals during antenatal period, to confirm the effective and proper care management. A further inclusive understanding of obesity as an ailment itself, and also the relationship to the obstetrical outcomes, is important. Practices must emphasis on the importance of the following to the normal range of weight before pregnancy, via pre-pregnancy session and continuing advices [28].

There is increasing indication that preventive approaches can and must be applied or used in a better way. Irwin et al., suggested that midwives are in the place that helps to empower the females, via providing them information and educating them about obesity and its consequences. However, guidance about diet, controlling weight & physical activity might be more properly counselled to the females before conceiving the pregnancy.[28] For such obese pregnant females, it is necessary to plan or develop operational policies and strategies to apply the in local setup and reduce the hazard of adverse outcome and guarantee the welfare of both; the obese female and her neonate.

5. CONCLUSION

The frequency of overweight and obesity among pregnant females is high in our population. There

is a very strong relationship determined between obese BMI and obstetrical complications as well as also related to high caesarean deliveries. It must be considered as the high risk condition as it is highly related to the adverse obstetrical outcomes. Hence it was concluded that pre-pregnancy normal weight women, if increases abruptly and leads to high BMI, then it needs special care and follow-ups to improve the outcome of pregnancy.

It is believed that thorough counseling to pregnant females and data on nutritional requirements in pregnancy can have positive effects on dietary patterns of pregnant females and might be helpful in preventing the fetomaternal complications. Assessment of maternal weight during pregnancy needs to be measured and recorded carefully during antenatal care visits and used regularly, as an increase in BMI during pregnancy of overweight or obese females is a significant risk factor for fetomaternal complications in pregnancy, labor and postpartum.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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