**ORIGINAL ARTICLE**

# Comparison of the Incidence of Lower Segment Cesarean Section in Obese and Non-Obese Pregnant patients

WAJIHA RIZWAN[1], SABA ILYAS A. MALIK[2], AYESHA SAIF[3], HUMAIRA DURRANI4, NATASHA BUSHRA[5], AMBREEN NASIR[6], SHAHNAZ KOUSER[7]

*[1,2,4]Assistant Professor, Obstetrics & Gynaecology, Rahbar Medical & Dental College, Lahore.*
*[3]Assistant Professor, Obstetrics & Gynaecology, Lahore Medical & Dental College, Lahore.*
*[5]Assistant Professor, Obstetrics & Gynaecology, Services Institute of Medical Sciences, Lahore*
*[6]Senior Registrar, Obstetrics & Gynaecology, Rahbar Medical & Dental College Lahore.*
*[7]Professor of Obstetrics & Gynaecology, Rahbar Medical & Dental College Lahore.*
*Correspondence to Dr. Wajiha Rizwan, E-mail:drwajihazafar@gmail.com*

## ABSTRACT

**Aim:** To compare the incidence of lower segment cesarean section in obese and non-obese pregnant patients presenting in a tertiary care setting (Punjab Rangers Teaching Hospital Lahore).
**Study Design:** Cohort study.
**Place of study:** Obstetrics and Gynaecology Department of Punjab Rangers Teaching Hospital Lahore.
**Methodology:** 100 patients were selected and divided in two groups. In group I were included 50 obese pregnant patients and in group II, 50 non obese pregnant patients were included. After informed consent, detailed history taken regarding patient's profile, age, parity and LMP. Their weight and height checked.BMI was calculated at the time of admission. Both groups were followed till delivery and mode of delivery (SVD/LSCS) was noted.
**Results:** Total number of patients 100. 50 patients in group I and 50 in group II. In group I (obese, BMI>30Kg/$m^2$),there was an increased incidence og LSCS (41.8%) as compared to group II( non obese, BMI<30 kg/$m^2$) where LSCS rate was 21.8%.
**Conclusion:** Maternal obesity leads to increased incidence of LSCS in obese patients.
**Keywords:** Obesity, BMI (body mass index), LSCS( lower segment cesarean section)

## INTRODUCTION

Maternal obesity, which reflects obesity in females as a whole, is a very serious dilemma of current world, leading to so many health complications. Currently the prevalence of obesity (BMI>30) is 15-20% and it is responsible for 3-8% of total health cost[1].

There is no single definition of obesity. In obstetric literature, it has been defined as maternal weight of >90kg, >114kg, >135kg and 50% to 120% above ideal body weight or BMI equal to or greater than 30kg/$m^2$. The WHO report affirms that 1200million people throughout the world have overweight and obesity problems. Epidemiological studies show that 22% of adult population is obese[2]. WHO also recognizes obesity as a pandemic issue, with high prevalence in females than in males[3].

Pregnancy with obesity is considered high risk as it causes substantial fetomaternal morbidity and mortality. Maternal complications include early miscarriage, Pregnancy induced hypertension, gestational diabetes, infection, prolonged labour and increased risk of intervention like induction of labour, operative delivery, shoulder dystocia and PPH. Fetal complications include congenital malformations (especially neural tube defects), IUGR, preterm birth and need for ICU[3,4,5].

Increased use of technology, easy availability of economic food rich in calories plus sedentary life style, all have contributed to obesity[6].

Several studies have shown that obesity is associated with increased rate of induction of labour[7,8,9] also leading to failure of induction[10]. In primigravida, there was an increase in delivery time of 0.3 hours for every 10 kg increase of mother weight.[11].

The incidence of lower segment cesarean section also seemed to be increased in obese pregnant women[7,9]. The indication for LSCS in most obese females is cephalopelvic disproportion[11] (CPD) and failure to progress in labour[10]. It is suspected that obese females have sub-optimal uterine contractility and increased fat deposition in pelvic soft tissue[9].

The risk of intra uterine fetal death and stillbirth also increases with maternal obesity. The weight of newborns of obese pregnant females ranges between 4000gms to 4500gms[11].

Many studies have shown low umbilical cord pH<7.15 and APGAR <7 at 5 minutes[9]. Respiratory distress and a need for resuscitation are seen more often in newborns of obese parturients[5,8], increasing the rate of admission in neonatal ICU[12] and requirement for incubator[10].

Maternal obesity is a worldwide dilemma including Pakistan. Urbanization and an unhealthy ,energy dense diet as well as changing lifestyle in Pakistan are the main cause of obesity in Pakistan. Pakistan is ranked 165 out of 194 countries amongst the fattiest countries[11].

Many studies on adverse effects of obesity on pregnancy had conflicting results, so the aim of my study is to provide and strengthen the effect of obesity on mode of delivery.

## METHODOLOGY

This cohort study was carried in pregnant women( obese and non obese) admitted from 36 weeks of gestation for delivery at Punjab Rangers Teaching Hospital (PRTH)

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Lahore from 1st January 2020 to 30th June 2020 (6 months). Total number of patients was 100,50 0bese and 50 non-obese. A non probability purposive sampling was used. All patients with single cephalic presentation at 36 weeks were included.

Patients with multiple gestation, malpresentation, placenta previa, CPD and patients with previous cesarean section were excluded.

One hundred patients fulfilling exclusion, inclusion criteria were enrolled. Informed consent was taken. Detailed history taken. BMI calculated .Patients were divided into 2 groups, obese and non obese. Both were followed till delivery and outcome parameters like induction of labour and LSCS (decided by senior consultant) were noted.

All data was analysed by using SPSS version 12. Quantitative variables like age,gestational age and BMI were presented in the form of mean+SD. Frequency and percentages were used to describe qualitative variables like induction of labour and LSCS.

Chi square test was used to compare the outcome variables in both groups. P value <0.05 was considered as significant. The confounding variables like hypertension and diabetes in pregnancy were addressed as effect modifiers.

## RESULTS

Total 100 patients, 50 in group I (BMI> 30Kg/m$^{2)}$ and 50 in group II (BMI<30Kg/m$^{2)}$ fulfilling inclusion/exclusion criteria were enrolled from OPD after taking informed consent, in 3rd trimester of pregnancy. Patients were between 20-35 years belonging to low socio-economic class including 35% of primigravidas and 65 % of multigravidas. Patients were followed till delivery and outcome parameters were noted in form of mode of delivery(SVD/LSCS).

Out of these patients, 36% were induced in group I (obese) due to prolonged pregnancy, preterm rupture of membranes, pregnancy induced hypertension, gestational diabetes, polyhydramnios and oligohydramnios. LSCS rate in group I was 44%, done due to failed induction, failure to progress, fetal distress and good size baby.

In group II, 90.8% were induced due to prolonged pregnancy, gestational diabetes with macrosomia, pregnancy induced hypertension with intra uterine growth retardation and premature rupture of membranes.22.6% LSCS were done.

Frequency and percentages in both groups for induction of labour and LSCS are shown in table I, represented by bar charts. quantitative variables (age in years, gestational age, weight and BMI ) of both groups are presented in the form of mean+SD.

Chi square test was applied to check the association between induction of labour, LSCS and BMI. It is concluded that induction of labour and LSCS are dependent on BMI of patient, high in obese as compared to non obese patients.

Table 1: Quantitative variables in Group I and II Presented in the form of mean+SD

| | Mean | Group I S.D | Mean +S.D | %age of data | Group II Mean | S.D | Mean+ S.D | %age of data |
|---|---|---|---|---|---|---|---|---|
| Age | 26.56 | 4.24 | 22.31<br>30.80 | 59 | 26.54 | 3.88 | 22.65<br>30.42 | 63 |
| Gest. age | 39.09 | 1.14 | 39.09<br>40.34 | 80 | 38.76 | 1.60 | 37.15<br>40.36 | 83 |
| BMI | 32.39 | 1.95 | 30.44<br>34.34 | 81 | 23.59 | 1.05 | 22.54<br>24.65 | 77 |

Table 2: LSCS & BMI cross tabulation

| | | BMI | | Total |
|---|---|---|---|---|
| | | Non obese | Obese | |
| LSCS | No | 176 | 131 | 307 |
| | Yes | 49 | 94 | 143 |
| | Total | 225 | 225 | 450 |

Table 3: Chi Sq Test (LSCS and BMI)

| | value | Df | Asymp.sig 2 sided |
|---|---|---|---|
| Pearson Chi Sq test | 20.757 | 1 | .000 |

## DISCUSSION

Worldwide the prevalence of obesity is 15-20% and it is responsible for for 3-8% of health costs[1]. Maternal obesity is associated with adverse maternal and perinatal outcomes. Obesity in Pakistan is a health issue. Pakistan is ranked 165 out of 194 in terms of obesity in a list of fattiest countries published on Forbes[12].

The overall outcome of pregnancy is dependent on the mode of delivery and neonatal outcome. So this study aims at strengthening the effect of obesity on mode of delivery in our local population.

In our study, its small sample size, so results cant be generated for whole population. However it is expected that these results will not be very much different if the study is done with the probability sample for the whole city.

Most of the studies have been done on pre pregnancy BMI or BMI calculated during first 14 weeks of pregnancy. In this study, BMI was calculated during 3rd trimester (weight gain during pregnancy may bias results). Similar study conducted by Galtier et al concluded that maternal obesity is related to high risk of cesarean section and post operative complications.

Our study has shown double the incidence of LSCS in obese group. Delivery by LSCS also seemed to be increased in obese women in many studies[7,9,12].

The indication of LSCS in obese females are failed inductin[10,11],failure to progress[16].

Our study showed better results than other studies as it was conducted on primigravida and multigravidas. Our results highlighted obesity as a serious health issue in Pakistan but it does not illustrate all the variables associated with adverse outcomes with obesity and still leave a lot of space for research and studies to be done to enhance patients compliance and to decrease disease burden in the community.

## CONCLUSION

It is concluded from the above discussion that obesity causes significant maternal and fetal complications during pregnancy. It is a high risk state as it is associated with adverse obstetric outcome.

Management should include reduction in weight before pregnancy and to avoid too much weight gain during pregnancy, multi disciplinary approach and appropriate management of complications. Females should be informed about all the risks of obesity for mother and fetus and that by reducing weight, they can improve the outcome.

Despite improvements in our understanding of the endocrinopathy, still greater understanding is needed to know the pathophysiological link between obesity and adverse outcomes of pregnancy.

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