Maternal Obesity and its Association with Cesarean Section

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ABSTRACT

Objective: To determine the frequency of C-section and to compare the frequency of C-section in obese and non-obese patients.

Methods: This cross-sectional study was conducted in department of obstetrics and gynecology, Shaikh Zayed hospital, Rahim Yar Khan. The study duration was 9 months from January-2020 to September-2020. Pregnant females having singleton pregnancy, who were aged 18 to 40 years and gestational age >36 weeks were included. Pre-pregnancy body mass index (BMI) of all patients was calculated. The patients were followed till their delivery. Association of BMI with C-section was determined.

Results: Out of 180 included patients, 50 (27.7%) underwent C-section. Majority of the patients were in age group 25-30 years; 56 (43.1%) in NVD group versus 29 (58%) in C-section group. Among the total 130 patients who underwent NVD, 33 (25.4%) patients were overweight and 14 (10.8%) were obese. While among 50 patients who underwent C-section, 17 (34%) patients were overweight and 28 (54%) patients were obese (p-value <0.0001).

Conclusion: There was a strong association of obesity with increased risk of C-section. So the obese women should be managed carefully and should be considered at risk of C-section.

Keywords: Body mass index, obesity, cesarean section.

INTRODUCTION

The prevalence of C-section is increasing globally day by day since 1990s. from 1990 to 2014 the prevalence increased from 6.7% to 19.1% of all baby births, with large regional variations, the rate is higher is North America and is least in Africa.[1] There is a wide range of indications for C-section the ultimate goal of C-section is to prevent or reduce fetal and maternal morbidity. Fear of loss of child birth and the patient preferences are two most common factors leading to increased prevalence of C-section.[2,3] According to latest WHO report, C-section rate of up-to 10 to 15% is acceptable, a rate higher than this will not further reduce the feto-maternal morbidity and mortality outcomes.[4]

Increasing rate of C-section, has also increased interest of researchers to determine the effect of C-section on long term health outcomes of neonates. Studies have reported that C-section increasing the risk of various adverse health outcomes, such as food allergy, asthma and allergic rhinitis.[5-7]

Prevalence of obesity is also increasing worldwide and has now been declared as global epidemic. According to reports, >50% of the women of child bearing age are either overweight or obese, making it the commonest morbidity of pregnant women.[8,9] Obesity is a known risk factor of adverse general health and obstetric outcomes. Studies have reported a direct linkage between obesity and increased risk of C-section. The aim of this study is to determine the frequency of C-section and to compare the frequency of C-section in obese and non-obese patients.

METHODS

This cross-sectional study was conducted in department of obstetrics and gynecology, Shaikh Zayed hospital, Rahim Yar Khan. A written consent was taken from patient. The study duration was 9 months from January-2020 to September-2020. Pregnant females having singleton pregnancy, who were aged 18 to 40 years and gestational age >36 weeks were included. Patients having co-morbidities such as gestational diabetes, pre-eclampsia, eclampsia, or with planned C-section, or morbidly obese patients with BMI ≥40.0 Kg/m^2 were excluded. We included 180 patients in the study.

After inclusion BMI of all patients was calculated before taking patient to the labor room. Pre-pregnancy BMI was estimated by removing 12.5 Kg from the current patient weight, the 12.5 Kg was selected because the average weight gain during pregnancy is 12.5 Kg. The obesity was defined according to the WHO criteria; patients with BMI ≥30.0 Kg/m^2 were labelled as obese. While patients having BMI <18.5 were labelled as underweight, with BMI 18.5 to 24.9 Kg/m^2 were labelled as normal weight and those 25-29.9 Kg/m^2 were labelled overweight.

The patients were followed till their delivery. The decision to perform C-section was based on labor room findings and decision of the consultant gynecologist.

All the data was entered and analyzed using SPSS version 23.0. Chi-squareFtest was applied to determineFthe association of BMI with C-section rate. P-value ≤0.05 was taken asssignificant association.

RESULTS

Out of 180 included patients, 50 (27.7%) underwent C-section. Majority of the patients were in age group 25-30 years; 56 (43.1%) in NVD group versus 29 (58%) in C-section group. There was no significant difference in baseline study characteristics in patients who underwent normal vaginal delivery and C-section except previous C-section history which was higher in C-section group (Table 1).

We found a strong association of BMI with C-section, Among the total 130 patients who underwent NVD, 33

(25.4%) patients were overweight and 14 (10.8%) were obese. While among 50 patients who underwent C-section, 17 (34%) patients were overweight and 28 (54%) patients were obese (p-value <0.0001) [Table 2].

Table 1. Baseline Study Variables.

	NVD (N=130)	C-Section (N=50)	p-Value
Mean Age	28.6±6.32	28.3±5.9	0.77
<25 Years	32 (24.61%)	08 (16%)	
25-30 Years	56 (43.1%)	29 (58%)	0.18
>30 Years	42 (32.3%)	13 (26%)	
Women Education			
Illiterate	31 (23.8%)	11 (22%)	
Up-to secondary Level	65 (50%)	25 (50%)	0.95
Higher Secondary or higher	34 (26.1%)	14 (28%)	
Previous Abortion History	8 (6.1%)	5 (10%)	0.37
Previous History of C-section	14 (10.7%)	35 (70.0%)	<0.0001

Table 2. Association of BMI with Cesarean Delivery.

	NVD (N=130)	C-Section (N=50)	p-Value
Underweight	08 (6.1%)	01 (2.0%)	
Normal Weight	75 (57.7%)	04 (8.0%)	
Overweight	33 (25.4%)	17 (34%)	<0.0001
Obese	14 (10.8%)	28 (54%)	

DISCUSSION

Studies have reported various risk factors of C-sections, diabetes, cephalic position and repeated pregnancies as common risk factors of C-section. The association of BMI with C-section has not been studied at the vast level. In present study, the frequency of cesarean delivery was 27.7%. A previous study from Pakistan has reported C-section rate of 50%.[10] While another study from Pakistan reported C-section of 32.3%. Studies conducted in different countries have reported significant differences in C-section rates, the C-section rate in Iraq is 22.6% to 33.3%, in Saudi Arabia 19.1%, in Jordan 9.29%, and 32.0% in US.[11-13]

In present study, we found the mean BMI of patients who underwent C-section was higher significantly in comparison to those who had normal vaginal delivery. In our study, there were 54% patients in C-section group and only 10.8% obese patients who underwent NVD. Similarly, there were 34% overweight patients in C-section group and 25.4% in NVD group. These results are comparable to the study conducted by Kominarek's et al. from US, who reported that the frequency of C-section increases with increase in obesity class.[14] Another study from Egypt reported that obesity is a significant factor of C-section and directly linked with it.[15]

A recent study by Al-Kubaisy observed the association of BMI with C-section and reported obesity as a significant factor of C-section. In their study there were only 11.9% obese patients in whom NVD was done while in remaining 88.1% patients C-section was done. While among overweight patients 36.2% patients underwent NVD while 63.8% underwent C-section.[16]

Cnattingham et al. reported that as obese women have larger body volumes therefore the oxytocin take a longer time to reach the optimal level, moreover the presence of higher adipose tissue contents that itself can obstruct the progression of uterine contractions that can compromise fetal circulation for overt period, thereby planning for C-section.[17] A study by Perlow et al. reported that the risk of cesarean delivery is high among women age ≥35 who are obese or overweight.[18]

CONCLUSION

There was a strong association of obesity with increased risk of C-section. So the obese women should be managed carefully and should be considered at risk of C-section.

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