IS THE RATE OF VAGINAL BIRTH INVERSELY PROPORTIONAL TO BODY MASS INDEX IN PREGNANCY

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Mercy Health Care first

Obesity is a major public health issue in Australia and the current prevalence is estimated at approximately 50% of all pregnant women.(1) Obesity has implications for both maternal and neonatal outcomes. Studies have suggested that the incidence of vaginal birth decreases with increasing Body Mass Index(BMI).(2-4) This study looks at this association in a metropolitan referral hospital.

METHODS

A retrospective audit from February 2020 - August 2020 conducted at Werribee Mercy Hospital

- Included all nulliparous, singleton pregnancies with a cut off BMI of 40 based on GP referral BMI as per the institutional policy
- Women's BMI is classified based off their booking visit BMI recorded at the first hospital visit on BOS (Hence inclusion of Class III)
- Women were stratified into 5 main categories according to WHO classification of BMI: Controls - BMI < 25, Cases – BMI > 25
- **Primary Outcome:** Vaginal birth rate amongst cases and controls
- **Secondary Outcomes:** Maternal and Neonatal Morbidity (refer to Table 1)

FIGURE 1: STRATIFICATION OF COHORT INTO BMI CATEGORIES

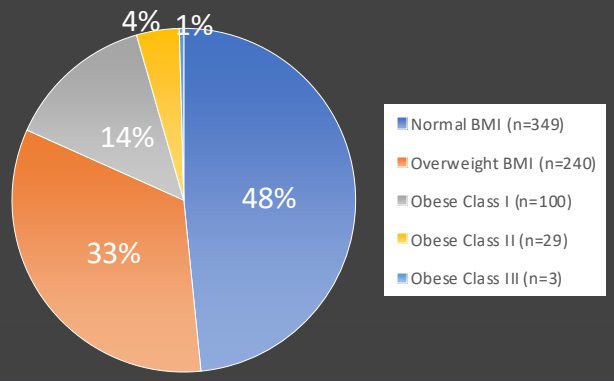


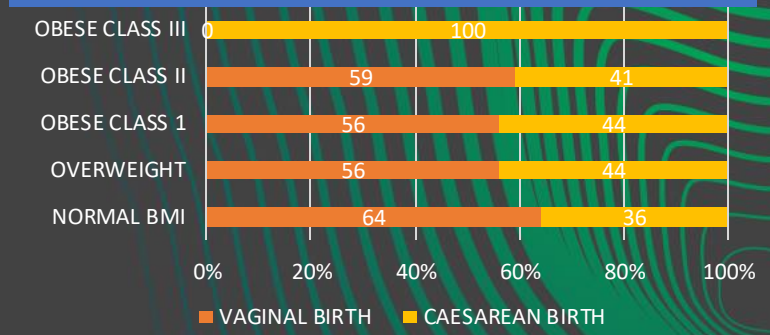
TABLE 1: Primary and secondary outcomes in BMI cohorts

OUTCOME	NORMAL BMI % of Total (n)	OVERWEIGHT % of Total (n)	OBESE CLASS I % of Total (n)	OBESE CLASS II % of Total (n)	OBESE CLASS III % of Total (n)
PRIMARY OUTCOME					
VAGINAL BIRTH	64.5% (225)	56.3% (135)	56.0% (56)	58.6% (17)	0.0% (0)
CAESAREAN BIRTH	35.5% (124)	43.8% (105)	44.0% (44)	41.4% (12)	100.0% (3)
P value		0.0481	0.129	0.5497	0.0463
SECONDARY OUTCOME					
PPH	5.4% (19)	32.9% (79)	38.0% (38)	24.1% (7)	33.0% (1)
P value		< 0.00001	< 0.00001	0.0018	0.1614
OBSTETRIC ANAL SPHINCTER INJURIES (OASI)	3.2% (11)	2.1% (5)	1.0% (1)	0.0% (0)	0.0% (0)
P value		0.6074	0.4791	0.0054	1
WOUND INFECTION	4.0% (14)	8.3% (20)	7.0% (7)	6.9% (2)	33.3% (1)
P value		0.0313	0.2789	0.3517	0.1228
HYPERTENSIVE DISORDERS	2.9% (10)	6.7% (16)	5.0% (5)	13.8% (4)	33.3% (1)
P value		0.0394	0.3413	0.0164	0.0911
GESTATIONAL DIABETES	13.5% (47)	24.6% (59)	29.0% (29)	24.1% (7)	0.0% (0)
P value		0.0007	0.0007	0.1606	1
SHOULDER DYSTOCIA	1.1% (4)	2.5% (6)	1.0% (0)	3.4% (1)	0.0% (0)
P value		0.3304	1	0.3306	1
SCN ADMISSIONS	12.6% (44)	18.3% (44)	18.0% (18)	10.3% (3)	0.0% (0)
P value		0.0603	0.1884	1	1
MACROSOMIA	4.3% (15)	5.4% (13)	8.0% (8)	3.4% (1)	0.0% (0)
P value		0.5584	0.1941	1	1

RESULTS

1,961 births occurred in a 6 month period. 721 Singleton, primiparous deliveries were included. (Figure 1 -2, Table 1).

FIGURE 2: VAGINAL VERSUS CAESAREAN BIRTH RATE IN BMI COHORTS AS A PERCENTAGE OF TOTAL BIRTHS



DISCUSSION

In contrast to other literature which shows a decreasing vaginal birth rate with increasing BMI, we could not show the same linear association in view of the following limitations:

- Due to our cut off BMI
- Inadequate sample size to prove an association
- Our inclusion criteria to avoid bias took primiparous women only as multiparous women with previous vaginal deliveries being more likely to have a subsequent vaginal delivery independent of BMI

However, we have found that there is a significant direct association between PPH and increasing BMI.

RECOMMENDATIONS

Despite there not being a confirmed linear association between increasing BMI and our primary outcome, a statistically significant association in various secondary outcomes should prompt clinicians to be more vigilant of these risk factors in managing this cohort of pregnancies.

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