

Effect of Short Interconception Period on Foetomaternal Outcome and Maternal Quality of Life

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ABSTRACT

BACKGROUND

Short interconception period affects maternal health & foetal wellbeing. We wanted to study effect of Short Interconception Period (ICP) on maternal and foetal outcome and maternal quality of life as assessed by WHO-QOL BREF questionnaire.

METHODS

This case control study was conducted among 67 antenatal patients at a tertiary care centre in central India. Antenatal woman with Short ICP was defined as one with Last menstrual period within 18 months from last live / stillbirth. Group A (cases) comprised of 32 consecutive patients who had short ICP. Group B (controls) comprised of 35 consecutive patients with normal ICP.

RESULTS

Mean triceps fold thickness, a measure of nutritional status of the mother, was less in Group A with statistically significant difference (p value 0.03). Preterm labour, gestational hypertension and anaemia were commoner in Group A with statistically significant difference (p values 0.0230, 0.0462 and 0.0183 respectively). Low birth weight neonates and intrauterine growth retardation were more common in Group A with statistically significant difference as per Chi square test (p value 0.005 and 0.02 respectively). Women of both groups were satisfied with their health status as per WHOQOL-BREF, though women with normal ICP had statistically insignificant lower psychological, physical and environmental domain scores.

CONCLUSIONS

There is a need for improvement in interpregnancy services with emphasis on contraception and nutritional supplementation.

KEYWORDS

Interconception Period, Foetomaternal Outcome, Maternal Quality of Life

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BACKGROUND

A successful pregnancy outcome requires various physiologic adaptations in the mother. A positive outcome for both mother and foetus is expected due to advances in obstetrics and neonatology. Short interconception interval between pregnancies interferes with the physiologic adaptation in the mother and therefore on the foetus and outcome of pregnancy.

WHO defines Quality of life as "individual's perception of their position in life in context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns."¹ Though maternal & neonatal mortality reflect the obstetric & neonatal care available, self-perceived 'quality of life' can guide the health programs to yield better outcomes. 'WHOQOL-BREF' questionnaire is a tool to analyse the physical, psychological, social and environmental domains in the pregnant woman's life.

Objectives

1. To study the effect of short interconception period on maternal outcome namely preterm labour, gestational hypertension, gestational diabetes mellitus, anaemia and maternal nutritional status as measured by triceps fold thickness and serum albumin level.
2. To study the effect of short interconception period on foetal outcome namely IUGR, low birth weight, neonatal mortality.
3. To study the effect of short interconception period on maternal quality of life as assessed by WHO-QOL BREF questionnaire.

METHODS

This is a case control study conducted among antenatal patients registered in the Department of Obstetrics and Gynaecology, at a tertiary care centre. Antenatal woman with Short ICP was defined as one with "last menstrual period (LMP) within 18 months from last Live/Stillbirth". A woman with Normal ICP was defined as having LMP within 18 months to 5 years of last Live/Stillbirth.

Inclusion Criteria

Booked antenatal cases of our institute willing to consent, with either short or normal ICP were included in the study.

Exclusion Criteria

Pregnancies following a spontaneous or induced abortion, pregnancies with a pre-existing morbidity prior to conception like chronic liver disease, essential hypertension, overt diabetes, heart disease, haemolytic anaemia and pregnancies with twin gestation were excluded from the study. Women with ICP of more than 5 years were also excluded from the study

A total of 67 women satisfied the eligibility criteria. Group A (cases) comprised of 32 consecutive patients who had a short ICP. Group B (controls) comprised of 35 consecutive patients with a normal ICP. All women were subjected to thorough clinical examination and routine antenatal investigations including obstetric ultrasound examination. Maternal quality of life was assessed after 37 completed weeks of gestation by WHO-QOL BREF Questionnaire, which comprises 26 items and is a validated shortened version of the WHOQOL. Each item is rated on a Likert scale of 5 points which is then transformed linearly to scores on 0-100 scale.^{2,3} A lower score on the summary scales represents a poorer QOL. Patients were followed up till parturition. Complications, if any, Obstetric as well as medical were looked for. Study also considered gestational age at the time of termination of pregnancy. Maternal outcome was measured in terms of occurrence or non-occurrence of Preterm labour, Pregnancy induced Hypertension, Anaemia and Diabetes. Nutritional status was assessed in terms of Triceps skin fold thickness and serum Albumin. Outcome of the Foetus in terms of gestational age at birth, Birth weight, Apgar score at birth, need for Neonatal ICU admission and other perinatal complications including death were studied. The two study groups were compared in terms of differences in the foetomaternal outcome. Comparison of the two groups in terms of maternal quality of life was also done.

Informed written consent was obtained from study subjects prior to the study. Ethical clearance was obtained from the Institutional Ethics Committee. Statistical Analysis was performed using student's t test and Chi square test.

RESULTS

A total of 67 antenatal women who satisfied the eligibility criteria were evaluated. Mean age for Group A i.e. Short ICP Group was 25 ± 3.42 years while that for Group B i.e. Normal ICP group was 28.65 ± 4.43 years. Table 1 shows the age wise distribution of women in Cases (Group A) and Controls (Group B). Majority of cases 30 (93.75%) and controls 24 (68.57%) were in age group of 21-30 years. The difference in mean age of both the groups was statistically significant. (p value=0.0004).

Age Group (in Years)	Cases (Group A) (n = 32) (%)	Controls (Group B) (n = 35) (%)	P Value
21-30	30(93.75)	24(68.57)	
31-40	02(6.25)	11(31.43)	
Total	32(100)	35(100)	
Mean ±SD	25±3.42	28.65±4.43	0.0004*
Range	22-35	22-38	

Table 1. Age Distribution of Study Groups

Study Group	Mean ICP (in Months)	P Value
Cases (Group A)	10.93 ± 3.09	
Controls (Group B)	37.28 ± 12.89	0.0001*

Table 2. Mean Interconception Period in Study Groups

There was significant statistical difference in ICP between 2 groups after applying t test (p value=0.0001) as

seen in Table 2. This indicates that the study groups were distinct.

The first trimester was uneventful in antenatal women of both groups. Out of total 32 cases, 02 (5.71%) cases had threatened abortion, while one case had urinary tract infection in second trimester. Table 3 shows the maternal outcome in two groups in terms of various complications, majority in the third trimester. Anaemia was seen in 26 cases and 20 controls and was the commonest complication observed

Maternal Outcome Factors	Group A Cases (n=32) N (%)	Group B Controls (n=35) N (%)	P Value
Anaemia (Hb < 11 gm %)	26 (81.25)	20 (57.14)	0.0183*
Preterm labour (<37 weeks)	08 (25.00)	02 (5.71)	0.0230*
Gestational Hypertension	07 (21.87)	02 (5.71)	0.0462*
GDM	2	1	0.4841
Nutritional Status	Mean Value	Mean Value	
Mean Triceps fold thickness (in mm)	23.90 ± 3.63	25.85 ± 3.72	0.03*
Mean serum albumin (in Gm/dl)	2.98 ± 0.22	3.06 ± 0.27	0.19

Table 3. Maternal Outcome of Study Groups

The mean triceps fold thickness, which is measure of nutritional status of the mother, was less in cases as compared to controls and this was statistically significant. Similarly, Preterm labour, Gestational Hypertension and Anaemia were commoner in cases than controls and the difference was statistically significant. There were no still births in both the groups. Comparison between two groups in terms of other foetal outcomes is depicted in Table 4. It was found that Low Birth weight Neonates and IUGR were more common in Group A than in Group B and the difference was statistically significant as per Chi square test with a p value of 0.005 and 0.02 respectively. Group A neonates also had lower Apgar scores at birth, however the difference was statistically insignificant.

Foetal Outcome Factors	Group A Cases (n=32) N (%)	Group B Controls (n=35) N (%)	P Value
Depressed APGAR score at birth	07 (21.87)	04 (11.42)	0.24
Low Birth weight (<2.5 kgs)	18 (56.25)	08 (22.86)	0.005*
IUGR	12 (37.50)	05 (14.29)	0.02*

Table 4. Foetal Outcome in Study Groups

Domains of WHO-BREF scale	Group A Cases (n=32) (Mean± SD)	Group B Controls (n=35) (Mean± SD)	P Value (t test)
Physical	70.85 ± 13.70	69.75 ± 13.95	0.74
Psychological	74.57± 12.90	71.62 ± 13.61	0.36
Social	84.42 ±18.08	75.06 ± 17.98	0.03*
Environmental	70.82 ± 17.40	64.56 ± 20.08	0.17

Table 5. WHO- BREF Mean Quality of Life Scores of Study Groups

Maternal quality of life was compared between cases and controls (Table 5) using a standard QOL questionnaire (WHO-BREF) and scores were transformed to 0-100 scale. Mean scores were calculated for both groups with respect to each of the 4 domains namely Physical, Psychological, Social

and Environmental. Surprisingly the mean scores were higher in cases as compared to controls, however, statistically significant difference was noted only in the social domain.

DISCUSSION

Systematic review by Conde-Agudelo A et al,⁴ of 58 observational studies identified hypothetical causal mechanisms explaining the effects of short and long intervals between pregnancies on maternal, perinatal, infant, and child health, and critically examined the scientific evidence for each causal mechanism hypothesized. The following hypothetical causal mechanisms for explaining the association between short intervals and adverse outcomes were identified: maternal nutritional depletion, folate depletion, cervical insufficiency, vertical transmission of infections, suboptimal lactation related to breastfeeding-pregnancy overlap, sibling competition, transmission of infectious diseases among siblings, incomplete healing of uterine scar from previous caesarean delivery, and abnormal remodelling of endometrial blood vessels. They found evidence supporting most of these hypotheses. Our results showing a significant association of Short ICP with Low birth weight and IUGR infants, Preterm labour and Maternal Anaemia further consolidate their hypothesis. Getahun D et al,⁵ conducted a study to examine whether the recurrence risk of preterm premature rupture of membranes (PPROM) is modified by the inter pregnancy interval (IPI). They concluded that short ICP was associated with increased risk for PPRM recurrence. Women with previous PPRM are at increased risk for recurrence, and a short ICP is associated with increased risk. We found an increased incidence of Preterm Labour among women with short ICP, however we did not find any association with Premature rupture of membranes or infections. Ball SJ et al,⁶ in their Retrospective cohort study aimed to model the incidence of adverse birth outcomes as a function of interpregnancy interval, studied 40, 441 mothers who each delivered three liveborn singleton neonates. They found out that within mother analysis of interpregnancy intervals indicated a much weaker effect of short intervals on the odds of preterm birth and low birth weight compared with estimates generated using a traditional between mother analysis This study questions the causal effect of short interpregnancy intervals on adverse birth outcomes and points to the possibility of unmeasured or inadequately specified maternal factors in previous studies. However, our study compared the analysis of mothers and observed a statistically significant increase in incidence of preterm labour and LBW among Short ICP cases. Similar results were observed by Emam et al,⁷ in their prospective study conducted in Egypt.

DeFranco EA et al,⁸ in their Population-based retrospective cohort study using vital statistics birth records tried to assess the influence of inadequate birth spacing on birth timing distribution across gestation. They concluded that while short ICP is a known risk factor for preterm birth,

inadequate birth spacing is associated with decreased gestational age for all births. Pregnancies following short ICP had a higher frequency of preterm birth similar to our study Salihu HM et al,⁹ in their retrospective cohort study on foeto - infant morbidities in pregnancies with short interpregnancy interval found out that, mothers with the shortest ICP (0-5 months: AOR = 1.39, 95% CI 1.23-1.56) were at a greater risk for adverse foetal growth outcomes, compared to the referent category (18-23 months). Their findings support the need for inter conception care that addresses Inter Pregnancy Interval and delayed childbearing among women. Our study also found a significant association of Low birth weight and IUGR with a short interconception period with p value of 0.005 and 0.02 respectively. Time and again ill effects of short intervals in birth spacing have been studied and proved.

Furthermore, our study is one of a kind to study the effect of inadequate birth spacing on Maternal Quality of life. We did not find any reference for comparison of QOL scores among normal versus short ICP mothers. A study by Mortazavi F et al,¹⁰ in 2014 comprised of 357 pregnant women: their quality of life was assessed using WHO-QOL BREF. They noted the environmental domain scores to be the best followed by social, psychological and physical respectively. We observed that the social domain scores were high in both, cases and controls followed by psychological, physical and environmental domains. A systematic review on factors influencing quality of life by Nolwenn et al,¹¹ also concluded that while physical component QOL decreased throughout pregnancy, the mental component was stable and even showed an improvement during pregnancy. Some researchers opine that a score of 60 or more be considered satisfactory for each of the domains evaluated,^{12,13} Our study subjects i.e. both cases and controls had mean scores above 60 for all domains. This implies a satisfactory Physical and mental wellbeing of the antenatal women, a very heartening observation.

Most of the women in the present study with short ICP were satisfied with their health status, though women with normal ICP had lower psychological, physical and environmental domain scores, which were statistically not significant.

CONCLUSIONS

We found that short interconception interval is significantly associated with low birth weight and IUGR. Maternal outcome is also affected by short ICP with increased incidence of Preterm Labour, Anaemia and Gestational Hypertension. Quality of Life was satisfactory in cases and controls. Social domain scores were in fact higher among short ICP group and the difference was statistically significant. However, results of this study cannot be extrapolated to general population because of small sample

size. There is a need for improvement in interpregnancy services with emphasis on contraception and nutritional supplementation.

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