Association of Short Interpregnancy Interval with Scar dehiscence

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ABSTRACT

Background: The number of deliveries through cesarean section has been increased in the last two decades. After cesareans section, uterine scar dehiscence is the most commonly occurring complication, especially in females undergoing trial of labor in previous cesarean section. Short Inter pregnancy interval (IPI) enhance the complication and raise the risk of uterine dehiscence or even rupture.

Aims: To assess the frequency of short IPI in pregnant females with priorone cesarean section and to determine the association of uterine scar dehiscence in short IPI.

Methods: This cross sectional study was conducted at Department of Gynecology, Services Hospital, Lahore, from October 2015 to March 2016.A total of 150pregnant women with singleton pregnancy for >37weeks with only one previous low, transverse cesarean delivery were included. History was taken to determine the outcome variable (short IPI).Ultrasonography examination was performed on all patients to ascertain the presence of uterine scar dehiscence. All data was collected on predesigned proforma.

Results: The mean age of patients was 31.946±4.48 years. There were 42% females who had short IPI while 58% had normal IPI(>8months).Uterine scar dehiscence was seen in 5.3% patients. Uterine scar dehiscence was significantly association of short IPI with uterine scar dehiscence (relative risk =1.868 (95% CI; 1.194-2.923, P-values < 0.05)

Conclusion: A short IPI of <8months may bE a risk factor for uterine scar dehiscence. Although these findings are insignificant but need further trials to confirm the significance. The results suggested that obstetrician must take IPI in her knowledge before giving trial and during preconception counseling.

Keywords: Short interpregnancy interval, uterine scar dehiscence, Cesarean section

INTRODUCTION

In Asian countries, including India, Bangladesh, Nepal & Pakistan, every 1/14 births ends with the death of child within the first year[1,2]. In a systematic review, significant impacts of short inter pregnancy interval (IPI) were found for outcomes including preterm birth along with low birth weight, stillbirth & early neonatal death, highly in developed countries[3].

It is considered that this effect can be higher in developing or poorly developed countries that had poorer maternal health & nutrition. It has been stated, according to the data retrieved from Pakistan, that teenage pregnancy and short IPI, both have significant effect on neonatal death[2,4,5,6].

There is a high rise in number of cesarean sections within the last two decades.[7] The cesarean rate worldwide is 15% of births. Mean cesarean delivery rate is 21-32% in developed countries. The maternal mortality rate is increased two fold with cesarean delivery compared with vaginal delivery.[8]

Uterine scar dehiscence or breach is a most deadly complication develops in females who undergo trial of labor after previous one cesarean section. Its incidence ranges from 0.5% to 4%.But if a female had successful vaginal delivery after one cesarean section, then in next pregnancy the chances of uterine dehiscence or rupture decreases in trial of labor[2,6].

The impact of interval between two consecutive pregnancies is a significant risk factor for security of

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VBAC. But this issue is not clearly described as there was lack of evidence and inadequate publications.[9] Short IPI causes less wound healing and raises the risk of rupture of the uterus from scar site, as myometrial tissue rejuvenates very slowly as there is slow production of fibroblast & replacement of myometrium via connective tissues. Prominently, there is evidence, detected on ultrasound and hysteroscopy, that previous scar healing is incomplete between 6-12months after cesarean[9].

This improper healing of uterine scar cause the renewal of isthmus of uterus and cause very thin uterine, especially at site of lower segment in next pregnancy and this very thin scar segment has high probability of rupture during trial of labor.[8]

In a study, out of 1768 females: 1,323 (74.8%) had≥24months IPI, 257(14.5%) had 18–23months IPI while 188 (10.6%) had <18months IPI. The uterine rupture occurred in 1.3%, 1.9% & 4.8% cases, respectively (P-value=0.003). In multivariate analysis, IPI<18months had significant rise in frequency of uterine rupture (OR=3.0; 95% CI;1.3–7.2).[7]

Lower uterine segment assessment on ultrasound can help effectively to evaluate its veracity to predict the chances of intra partum rupture. Rationale of current study is that the population dynamics are changing over time regarding prevalence of factors associated with maternal morbidity and mortality. Current study was proposed to cater two issues, one is to find the frequency of short IPI in pregnant women with one previous cesarean section and second is whether to give her a trial of normal vaginal delivery or not. The most fatal complication associated with trial is uterine scar dehiscence or rupture. This decision can be facilitated if we know the frequency of uterine scar dehiscence in

patients with and without short IPI. A new program for immediate postpartum contraception technique may be installed if there comes out significant evidence from our study.

The objectives of the study were to assess the frequency of short IPI in pregnant females who had prior one cesarean section and to compare the frequency of uterine dehiscence in females with or without short IPI.

MATERIAL & METHODS

This cross sectional study was conducted in the Department of Gynecology, Services Hospital, Lahore from October 2015 to March 2016. Using 95% confidence level,5% margin of error and taking expected percentage of short IPI 10.6%,[7] estimated sample size was150. Non-Probability, Consecutive Sampling technique was used.

Inclusion criteria:
- Age 18-45 years
- Pregnant women with singleton pregnancy for >37weeks determined by last menstrual period and ultrasonography
- Females who had prior previous cesarean delivery in lower segment

Exclusion criteria:
- Females with a J-shaped, classical or T-inverted incision.
- Females with prior transmural myomectomy determined by medical record
- Females who had abortion and fatal fetus delivered vaginally between current and previous cesarean delivery
- History of anti-phospholipid syndrome or systemic lupus erythematosus
- Estimated fetal weight >4kg
- Polyhydroamnios on AFI
- Multiple pregnancy on USG

Data collection procedure: After approval of synopsis, 150 pregnant women according to selection criterion visiting labor room were enrolled in the study. Informed consent was taken. All patients were evaluated for inclusion and exclusion criterion. History was taken to determine short IPI (defined as interval between prior delivery & conception <8months). Ultrasonography examination was performed on all patients to ascertain the presence of uterine scar dehiscence(showing scar thickness <3.5mm) at 36 to 38 weeks of gestation. All data was collected on predesigned performa containing background information like name, age, and hospital registration of patient.

Data analysis: Data was entered & analyzed through SPSS. Mean±SD was determined for quantitative variables like age. Frequency & percentage were calculated for short IPI & uterine scar dehiscence. Relative risk was calculated to measure association of Short with uterine dehiscence. RR>1 was considered as risk of association. P≤0.05 was taken as significant.

RESULTS

The mean age of patients was 31.946±4.48years andmean gestational age at presentation was 37.2±2.89weeks. There were 22(15%) nulliparous, 50(33%) primiparous, 41(27%) were multiparous while 37(25%) were grand multiparous. The mean BMI was 23.56±12.37kg/m2. Table 1There were 63(42%) females who had short IPI (<8months) while 87 (58%) had normal IPI (>8months). Fig 1

In females with short IPI, 6(9.5%) patients had uterine scar dehiscence while in females with normal IPI, 2(2.3%) females had uterine scar dehiscence. Relative risk was 1.868(95% confidence level 1.194-2.923, p-value <0.05), showing significant impact of short IPI on uterine scar dehiscence. Table 2

Table 1: Characteristics of patients (n=150)

Age(years)	31.946±4.48
Gestational age (weeks)	37.2±2.89
Parity Nulliparous Primiparous Multiparous Grand multiparous	 22 (15%) 50 (33%) 41 (27%) 37 (25%)
BMI (kg/m^2)	23.56±12.37

Fig 1: distribution of short and normal IPI
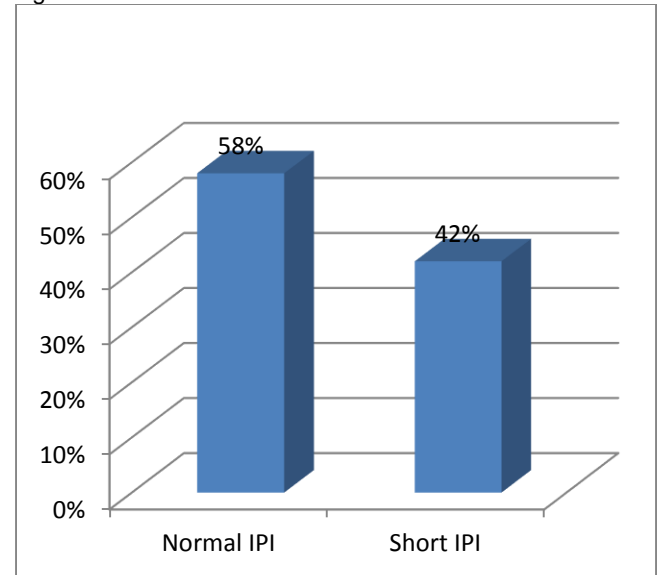
Table 2: Association of uterine scar dehiscence in short IPI

Uterine Scar Dehiscence	Group	
	Short IPI	**Normal IPI**
Yes	6(9.5%)	2(2.3%)
No	57(90.5%)	85(97.7%)

RR = 1.868 (95%CI; 1.194-2.923, p<0.05)

DISCUSSION

In this study it is demonstrated that a short IPI of <8months is a significant risk factor for uterine dehiscence in females with previous one cesarean. Females with a short IPI are at high risk for some major maternal morbidities, like intra-operative damager excessive blood loss leads to blood transfusion[10,11,12].

Results of this study confirmed the results of few previous trials, which showed that short IPI can cause uterine scar dehiscence risk two to four times.

The current literature about short IPI and its impact on uterine dehiscence is hard to present, due to controversial data, unpredictable coverage, definitions of outcome& study design restrictions. We found that out of 5-studies, 3 found that risk of uterine scar dehiscence is significantly associated with short IPI[10,11,12]. One study found no impact of short IPI on frequency of uterine dehiscence[13]. While one study found that there is high risk of short IPI on uterine dehiscence in females with previous preterm cesarean sections[14]. But one limitation of these studies was small sample size i.e., conducted on 3-29 females only[10-14].

There are many causes why short IPIs is associated with adversarial obstetrical endings. It was hypothesized that pregnant females who got pregnancy in short IPI have less nutrition during subsequent pregnancy as their body got fewer duration to convalesce from previous delivery. And this may reduce gestational age, adverse obstetrical outcomes, but also increases the perinatal mortality. Such as, if female got pregnancy again, before she restored the folate, the fetus may have high risk of folate deficiency in early trimester of pregnancy and may be in later trimesters. This can cause high risk of neural-tube defects, intrauterine growth restriction & preterm delivery[15].

Similarly, uterus requires a proper period to recuperate after pregnancy. Number of term deliveries is reduced. Thus, short IPI that starts with delivery of live fetus or still-birth must have more damaging outcome than miscarriage or abortion. Also, if pregnancy that starts the IPI consequences in live fetus delivery and neonate is given exclusive breast feeding. Lactation can also reduce nutrition of female[16].

Brought-up of children and resources can help in decreasing short IPIs and lower the rates of perinatal mortality. Another option to reduce pregnancy in short period is that if female does not want next pregnancy after previous delivery. She might take less good-care of herself & might involve in events to try to end pregnancy. There are different explanations for long IPI. One opportunity is that body of female who attained pregnancy after long IPI is alike to primigravida. This may explain why maternal mortality, hypertensive complications of pregnancy are more likely following IPIs >5yearsand are comparable to the complications of primigravida[17]. Additionally, some females may have health issued which cause difficult for them to conceive and raises the risk of intrauterine fetal demise.

CONCLUSION

It is concluded that short IPI <8months is a significant risk factor for uterine scar dehiscence. Findings suggest that doctors should consider IPI during preconception counseling.

REFERENCES

1. Raj A, McDougal L, Rusch ML. Effects of young maternal age and short interpregnancy interval on infant mortality in South Asia. International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics 2014;124(1):86.
2. Valentin L. Prediction of scar integrity and vaginal birth after caesarean delivery. Best practice & research Clinical obstetrics & gynaecology 2013;27(2):285-95.
3. Wendt A, Gibbs CM, Peters S, Hogue CJ. Impact of increasing inter-pregnancy interval on maternal and infant health. Paediatric and perinatal epidemiology 2012;26(s1):239-58.
4. Kushtagi P, Garepalli S. Sonographic assessment of lower uterine segment at term in women with previous cesarean delivery. Archives of gynecology and obstetrics 2011;283(3):455-9.
5. Melamed N, Segev M, Hadar E, Peled Y, Wiznitzer A, Yogev Y. Outcome of trial of labor after cesarean section in women with past failed operative vaginal delivery. American Journal of Obstetrics & Gynecology 2013;209(1):49. e1-.e7.
6. Palmer A, Elimian A, Goodman JR, Knudtson EJ, Rodriguez M, Crouse E. Unsuccessful trial of labor in women with and without previous cesarean delivery. The Journal of Maternal-Fetal & Neonatal Medicine 2011;24(7):900-3.
7. Bujold E, Gauthier RJ. Risk of uterine rupture associated with an interdelivery interval between 18 and 24 months. Obstetrics & Gynecology 2010;115(5):1003-6.
8. Somani SS, Sudhir S, Somani SG. A study of intra-operative maternal morbidity after repeating caesarean section. International Journal of Reproduction, Contraception, Obstetrics and Gynecology 2017;7(1):291-6.
9. Stamilio DM, DeFranco E, Paré E, Odibo AO, Peipert JF, Allsworth JE, et al. Short interpregnancy interval: risk of uterine rupture and complications of vaginal birth after cesarean delivery. Obstetrics & Gynecology 2007;110(5):1075-82.
10. Bujold E, Mehta SH, Bujold C, Gauthier RJ. Interdelivery interval and uterine rupture. American Journal of Obstetrics & Gynecology 2002;187(5):1199-202.
11. Esposito MA, Menihan CA, Malee MP. Association of interpregnancy interval with uterine scar failure in labor: a case-control study. American Journal of Obstetrics & Gynecology 2000;183(5):1180-3.
12. Shipp TD, Zelop CM, Repke JT, Cohen A, Lieberman E. Interdelivery interval and risk of symptomatic uterine rupture. Obstetrics & Gynecology 2001;97(2):175-7.
13. Huang WH, Nakashima DK, Rumney PJ, Keegan Jr KA, Chan K. Interdelivery interval and the success of vaginal birth after cesarean delivery. Obstetrics & Gynecology 2002;99(1):41-4.
14. Rochelson B, Pagano M, Conetta L, Goldman B, Vohra N, Frey M, et al. Previous preterm cesarean delivery: identification of a new risk factor for uterine rupture in VBAC candidates. The Journal of Maternal-Fetal & Neonatal Medicine 2005;18(5):339-42.
15. Smits LJ, Essed GG. Short interpregnancy intervals and unfavourable pregnancy outcome: role of folate depletion. The Lancet 2001;358(9298):2074-7.
16. Winkvist A, Rasmussen KM, Habicht J-P. A new definition of maternal depletion syndrome. American journal of public health 1992;82(5):691-4.
17. Lassi ZS, Mansoor T, Salam RA, Das JK, Bhutta ZA. Essential pre-pregnancy and pregnancy interventions for improved maternal, newborn and child health. Reproductive health 2014;11(1):S2.