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FREQUENCY OF UTERINE RUPTURE AFTER ONE SUCCESSFUL VAGINAL BIRTH AFTER CESAREAN SECTION (VBAC).

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ABSTRACT… Objectives: To determine the frequency of uterine rupture after one successful vaginal birth after caesarean section. **Study Design:** Cross Sectional Study. **Setting:** Department of Obstetrics and Gynecology of Nishtar Hospital Multan. **Period:** 12-May-2017 to 11-May-2018. **Material & Methods:** Total number of 135 patients of 16-45 years with singleton pregnancies were admitted for 2nd Vagina Birth after cesarean Section at gestational age ≥ 28 weeks of gestation. Data in shape of parity, gestational age and BMI was taken. These patients were assessed for frequency of uterine rupture after one successful vaginal birth after caesarean section. Data was analyzed with statistical analysis program (SPSS version 21). Frequency and percentage was calculated for qualitative variables like parity and uterine rupture. Mean ± SD was calculated for quantitative variables like age, BMI and gestational age. **Results:** Mean age of patients was 29.88±5.34 years. Mean body mass index (BMI) of study patients was 25.17±4.88 kg/m^2. Mean gestational age at the time of delivery was 39.01±2.54 weeks. Uterine rupture after vaginal birth occurred in 2 (1.48%) patients. There was no association of gestational age, parity and gestational age with the frequency of uterine rupture. **Conclusion:** Women with prior successful VBAC are at low risk of maternal and neonatal complications during subsequent trail of VBAC with lower risk of uterine rupture and perinatal complications.

Key words: Cesarean Section, Labor, Perinatal Complications, Safety, Uterine Rupture, Vaginal Birth after Cesarean Section.

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INTRODUCTION

In modren obstetrics, it is now routine practice to give trial of vaginal birth after one cesarean section, also called as trail of scar. The probability of a successful vaginal birth has been estimated about 70-80%.[1] Although VBAC is considered safe with good monitoring but it is not without complications like increased risk of uterine rupture, which is no doubt a life threatening emergency. The incidence of uterine rupture in a spontaneous labor after one prior lower transverse segment caesarean section is 0.4%.[2] Mercer has reported its frequency by 0.45.[3] Gyamfi reported 0.5%.[4] There is increased risk of operative injury like peripartum hysterectomy and fetal death. Unsuccessful trial ending up in cesarean section results in increased perioperative morbidity.

Now a days the frequency of cesarean section is enormously high and most of the caesarean section are performed for non-recurrent indications. So many women undergo successful vaginal delivery rather repeat cesarean section.[3] The effect of caesarean scar strength on uterine rupture during vaginal birth remains unclear. It is not clearly known that repeated vaginal birth following cesarean section increases the risk of uterine rupture because of progressive weakening of the scar with each birth or successive deliveries may improve the strength of the scar and predict successful vaginal deliveries.[5]

The probability of uterine rupture in successive VBACs remains to be clearly explained. It is should be emphasized either successive labors will have progressive thinning of uterine scar resulting in uterine rupture. From this study we may find group of patients with uterine rupture to identify those patients in whom further interventions and follow up can be planned. This gives strong

rational to see frequency of uterine rupture after one successful vaginal birth after caesarean section in our population. This study may also provide background data for curative services to prevent uterine rupture after caesarean section after one successful vaginal birth.

MATERIAL AND METHODOLOGY

After permission from hospital ethical committee, cross sectional study was performed on one hundred and thirty five patients fulfilling inclusion criteria of gestational age more than 28 weeks, history of previous one successful VBAC. The patients with uterine surgery other than cesarean section, twin pregnancy and classical cesarean scar were excluded. The sample was taken by non-probability consecutive sampling technique. An informed consent was obtained from all patients for using their clinical data in research. Patients were evaluated by detailed history and clinical examination. Data in age, shape of parity, gestational age and BMI was gathered. These patients were assessed for frequency of uterine rupture after one successful vaginal birth after caesarean section, which was performed by year four resident of gynecology and obstetrics.

Statistical package for social sciences (SPSS version 21) was used for analyzing the patient's data. Frequency and percentage were calculated for qualitative variables like parity and uterine rupture. Mean ± SD was calculated for quantitative variables like age, BMI and gestational age. Stratification was done for age, parity, gestational age and BMI to observe the effect of these variables on outcome. Chi-square test was applied, $p \leq 0.05$ was considered significant.

RESULTS

Table-I showed that mean age of 29.88+5.34 years with range of 19 to 40 years among all patients. Mean body mass index (BMI) of patients was 25.17+4.88 kg/m^2 with minimum BMI of 15.11 Kg/m^2, while maximum BMI of 36.63 Kg/m^2. Mean gestational age at the time of delivery was 39.01+2.54 weeks with minimum gestational age of 29 weeks, while maximum gestational age of 42 weeks.

Figure-1 presented the parity status, there were 69 (51.11%) pregnant females having parity status 2, 47 (34.82%) were having parity status 3 and only 19 (14.07%) females were having parity status 4.

Uterine rupture after vaginal birth occurred in n=2 (1.48%) patients in our study. While in remaining 133 (98.52%) patients there was no incidence of uterine rupture (Figure-2).

Table-II showed the relationship with age, BMI, gestational age and parity with the frequency of uterine rupture. There was no significant relationship with any of these variables with the rupture of uterus (p=>0.05)

Age (Years)	Mean	Standard Deviation	Minimum	Maximum
	29.88	5.34	19	40
BMI (Kg/m^2)	25.17	4.88	15.11	36.63
Gestational Age (Weeks)	39.01	2.54	29	42

Table-I. Descriptive statistics of participants (n=135).

Age Groups		Uterine Rupture		P-Value
		Yes	No	
	Age ≤ 30 Years	1	69	0.96
	Age 31-40 Years	1	64	
BMI Groups	BMI <25 kg/m^2	1	74	0.87
	BMI ≥25 Kg//m^2	1	59	
Gestational Age (weeks)	≤37 weeks	1	21	0.19
	≥38 weeks	1	112	
Parity	2	1	68	0.81
	3	1	46	
	4	0	19	

Table-II. Stratification of frequency of Uterine Rupture with age, BMI, gestational age, and parity (n=135)

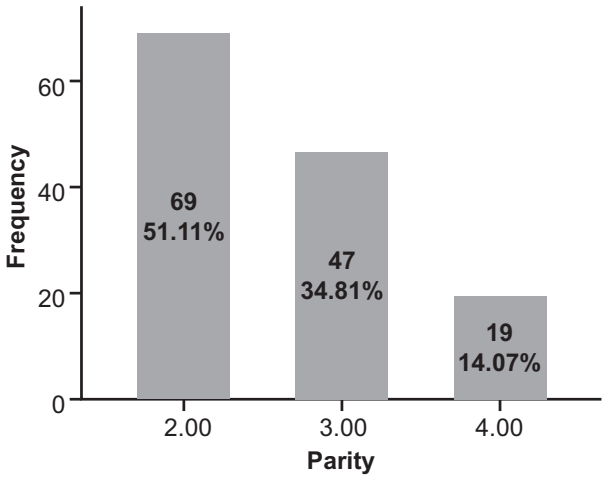

Figure-1. Frequency of parity status of patients (n=135).

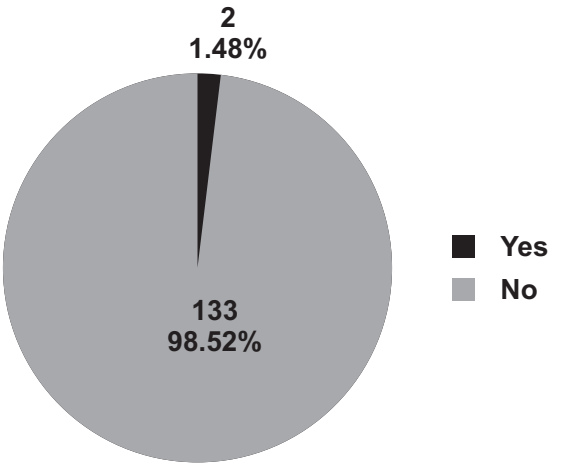

Figure-2. Frequency of uterine rupture (n=135)

DISCUSSION

Uterine rupture is a serious obstetrical emergency associated with potentially life threatening complications both for mother and fetus.[6] Incidence of cesarean section has increased enormously in developing countries, so the risk of uterine rupture after prior cesarean section. According to World Health Organization (WHO), the frequency of uterine rupture is more common in developing countries than in developed countries.[7] Uterine rupture after prior cesarean section is becoming more common because of quick and easy availability of cesarean section as a primary surgical procedure in developing countries. The major risk factors of uterine rupture are associated with prior cesarean section followed by unsupervised vaginal birth trail, obstructed labor, grand multiparity, obstetric interventions, induction at unripe cervix[8], poor access to emergency obstetric care and high prevalence of illiteracy and poverty.

In our study, the frequency of uterine rupture in patients during trial of vaginal birth with one successful VBAC was 1.48%. Berhe and Shirivastava reported the high prevalence of uterine rupture in developing countries, the proportion of women with prior cesarean section to uterine rupture was up to 64%.[9,10] Shirivastava observed the incidence of uterine rupture among women with prior cesarean section was 1.69% and frequency of uterine rupture without prior cesarean section was 0.152%.[10] Al-Zirqi and Jastrow observed the frequency of uterine rupture in women with prior CS from range from 0.22% to 1.69%.[11,12] Vaarasmaki reported about rupture as the most feared complication with the occurrence of 0.2-1.5%.[13] The frequency of uterine rupture is 1.0% in low human development index countries according to recently published multicenteric study from World Health Organization by Motomora. He concluded that the incidence of uterine rupture varied globally, ranging from 0.1% to 2.5%.[14] he added that risk of uterine rupture was associated with early gestational age along with poverty and low education level of communities. He observed a significant relationship between gestational age at birth less than 37 weeks and uterine rupture.[14] kacmarczyk observed that higher gestational age is usually associated with uterine rupture.[15] Harper compared uterine rupture with gestational age before or after 34 weeks of gestation and found no difference.[16] In our study, we did not find any significant difference in frequency of uterine rupture in patients with gestational age before or after 37 weeks. In our study, frequency of uterine rupture was not associate with increased BMI, while Wilson observed that women with a BMI over 40 had lower rates of successful VBAC but no difference in uterine rupture.[17]

CONCLUSION

Prior successful VBAC is strong predictor of subsequent successful trail of VBAC with low risk

of maternal and neonatal complications.

RECOMMENDATION

Risk of subsequent uterine rupture can be reduced by limiting the primary cesarean sections in low resource settings and steps must be taken by health care department and all the stakeholders to devise strict decisions regarding indications of cesarean sections.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
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2	Saima Yasmin Qadir	Data collection and analysis, Study design, Interpretation, Pricipal Investigator, Final reading.	
3	Hajra Sultana	Data collection and analysis, Study design, Interpretation, Pricipal Investigator, Final reading.	
4	Asma Khurshid	Data collection and analysis, Study design, Interpretation, Pricipal Investigator, Final reading.