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Original Article

Predictors of Failed Trial of Labour After Previous one Caesarean Section

Anam Mahreen, Viqar Ashraf, Rabia Sajjad, Naheed Hayat

Department of Obstetrics & Gynecology, Combined Military Hospital, Bahawalpur/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To look for failed trail of labor after one caesarean section and predicting factors associated with failed labor

Study Design: Cross-sectional Study.

Place and Duration of Study: Gynecology and Obstetrics department Pak Emirates Military Hospital, Rawalpindi Pakistan, from May 2021 to Oct 2021.

Methodology: A prospective study was conducted on the women who were booked cases in our department for antenatal checkups and labor. Those women with history of one caesarean section were recruited for the analysis. They underwent labor in our department and those with failed labor were diagnosed and managed by consultant obstetrician. Relevant clinical factors associated with failed labor among women with one previous caesarean section included in our study.

Results A total of 380 women who underwent labor in our hospital with one previous caesarean section were recruited. Mean age of the women included in the study was 34.43±7.36 years. 162(42.6%) had successful trial of labour while in 218(57.4%) women trail of labour could not succeed. Statistical analysis revealed that gestation age more than 40 weeks, poor Bishop score (<5) at admission and requirement of labour augmentation (with oxytocin) were found statistically significantly associated with failed trial of labour in our study participants (p-value<0.05).

Conclusion Failed trial of labour was a common clinical condition in women with one previous caesarean section. Women with gestation age more than 40 weeks, poor bishop score at admission and requiring labour augmentation were more at risk of having failed trial in our study participants.

Keywords: Caesarean section, Gestation, Induction.

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INTRODUCTION

Obstetrics is one of those specialties which deal with two human lives at one time and all therapeutic and diagnostic work up is targeted to prevent mortality and morbidity in both mother and baby.[1] Normal, instrumental and caesarean deliveries have always been compared for their risks and benefits for both mother and fetus.[2] Delivery via caesarean section has always been studied for complications during or immediately after labour but limited work is published on long term complications or difficulties women may have in next pregnancies.[3]

Mode of delivery has certain impact on neonatal and maternal health and few modes have been associated with clearly increased mortality and morbidity.[4] Complications of one pregnancy may predispose woman to complications in subsequent pregnancies especially related to labour.[5] Prolonged labour or failed induction is always counterproductive for both mother and baby and treating team always had to keep a clear eye on this to avoid complications by timely interventions.[6]

A lot of work has been published in west to break myth of high rate of unsuccessful vaginal deliveries after one caesarean section. Dinsmoor *et al*. published a study regarding factors which could predict failed trial of labour in women who had past history of one caesarean section. They revealed that around 33% had failed trial of labour but they could not devise or pinpoint one scoring system which could be useful in predicting failed labour.[7] A nested case control study carried out in an African country came up with the conclusion that various factors related to mother and baby predicted SVD in women who had one caesarean section in past.[8] A cross-sectional study published in Kingdom of Saudi Arabia analysed the situation from another angle and checked obstetricians' point of view in this regard. They came up with the findings that around 80% of obstetricians were against giving trial of labour to women who had previously been delivered vis caesarean section.[9]

Obstetrics has been a busy speciality in our country in almost all settings ranging from primary care to tertiary care. A lot of myths also exist among masses which affect the health care delivery by clinical

Correspondence: Dr Anam Mahreen, Department of Obstetrics & Gynecology, Combined Military Hospital, Bahawalpur Pakistan

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teams. Delivery after one caesarean section is sometimes dealt in a black and white way and no local guidelines exist that in absence of clear indication of caesarean section, what should be best mode of delivery in women with one previous caesarean section. A local study concluded that Body Mass Index >25, gestational age ≥40 weeks, cervical dilatation <4 cm, and vertex station−2 or higher on admission were the factors which predicted failed trial of labour.[10] Limited local data is available on this very sensitive subject for both treating team and patients, we therefore planned this study with the rationale to look for failed trail of labour after one caesarean section and predicting factors associated with failed labour.

METHODOLOGY

This comparative cross-sectional study was conducted at the obstetrics unit of Pak Emirates Military Hospital Rawalpindi Pakistan from May 2021 to October 2021. Sample size was calculated by WHO Sample Size Calculator by using population prevalence proportion of failed induction of labour in patients with one previous caesarean delivery as 28.4%.[11] Non probability Consecutive sampling technique was used to gather the sample.

Inclusion criteria: All pregnant women with previous one caesarean section, 36-42 weeks of singleton pregnancy in spontaneous or induced labour (with Foley) were included in the study patient.

Exclusion criteria: Women with previous vaginal delivery were excluded from the study.

Women with any previous gynecological surgeries involving breach of endometrial cavity were also not included in the study. Women having previous two or more caesarean deliveries or those with any contraindication to labor (cephalopelvic disproportion) were excluded as well.

After ethical approval from the ethical review board committee via IREB letter no. A/28/Ec/324/2021, this study commenced in our unit. Previous one caesarean section was confirmed by history taking and physical examination by consultant gyneacoligst.[12] All patients had natural trial of labour and failed trial was diagnosed by consultant obstetrician on the basis of clinical parameters of mother and baby during the labour period.[13] Bishop score was also calculated by team managing the women during labour. It included cervical dilatation, position, effacement and consistency of the cervix and foetal head station. A cut of score of 5 was used in our study to associate with failed trial of labour.[14] All the relevant clinical data during and after the labour required for study was entered in a Performa for each patient.

Characteristics of women recruited in the study and the outcome variables were described with the help of descriptive statistics. Pearson chi-square analysis and Fischer exact test were done to evaluate the association of various factors with failed trial in women with history of one previous caesarean section. Statistical Package for the social sciences (SPSS) version 23:00 was used for all the above-mentioned analysis. The *p*-values less than or equal to 0.05 were considered significant for establishing the association between variables.

RESULTS

A total of 380 women who underwent labour in our hospital with one previous caesarean section were recruited. Mean age of the women included in the study was 34.43±7.36 years. Table-I summarized the basic clinical and demographic profile of women with one caesarean section included in study.162(42.6%) had successful trial of labour while in 218(57.4%) women trail of labour could not succeed. At the time of admission, 252(66.3%) women had Bishop score of 5 or less while 128(33.7%) had bishop score of more than 5. Out of 380 women recruited, 28(7.3%) women had gestational diabetes mellitus while 16(4.2%) had gestational hypertension.

Table-I: Characteristics Of Women With One Previous Caesarean Section (N=380)

Study Parameters	n(%)
Age of mothers (years)	
Mean±SD	34.43±7.36 years
Range (min-max)	19-39 years
Failed trial of labour	
No	162(42.6%)
Yes	218(57.4%)
Bishop score at admission	
5 or less	252(66.3%)
>5	128(33.7%)
Labour augmentation	
No	289(76.1%)
Yes	91(23.9%)
Body Mass Index	
18-24.9	58(15.2%)
25-29.9	186(48.9%)
30 or more	136(35.8%)
Comorbid illnesses	
Gestation diabetes Mellitus	28(7.3%)
Gestational Hypertension	16(4.2%)
Others	05(1.3%)

Table-II showed the results of statistical analysis. It was revealed that gestation age more than 40 weeks (*p*-value-0.002), poor bishop score (<5) at the time of admission (*p*-value<0.001) and requirement of labour augmentation (*p*-value<0.001) were found statistically significantly associated with failed trial of labour in our study participants (*p*-value<0.05). History of previous cesarean section (*p*-value-0.272) had no such relationship with failed trial of labor in our study participants.

Table-II: Factors associated with failed labour among women with one previous caesarean section (n=380)

Outcome Parameters	Failed Trial n=162	Successful Trial n=218	*p*-value
Gestational age			
<40 weeks	141(87.1%)	162(74.3%)	0.002
>40Weeks	21(12.9%)	56(25.7%)	
Labour augmentation			
No	139(85.8%)	150(68.8%)	<0.001
Yes	23(14.2%)	68(31.2%)	
Bishop score at admission			
5 or less	127(78.3%)	125(57.3%)	<0.001
>5	35(21.7%)	93(42.7%)	
Previous caesarean preterm			
No	133(82.1%)	169(77.5%)	0.272
Yes	29(17.9%)	49(22.5%)	

DISCUSSION

Cesarean section not only increase the chances of morbidity in current pregnancy but also prone the women towards number of complications in future life as well. Some centers prefer caesarean delivery in upcoming pregnancies in women who had one caesarean delivery but this is not completely evidence based in absence of any other compelling indication for caesarean delivery. One previous caesarean section may not alone be associated with failed trial of labour in subsequent pregnancies but multiple other factors may play a role in these high risk women. We conducted this study with an aim to look for failed trail of labour after one caesarean section and predicting factors associated with failed labour in women managed in our Obstetrics department at Pak Emirates Military Hospital.

Mooney *et al*. in 2019 conducted a study and concluded that success rate was around 83% and they tried to check validity and reliability of 'Grobman score' for prediction of success or failure in trial of labour in women with one previous caesarean section and found out that it was quite useful.[15] Success rate in our study was less than that of Australasian population and gestation age more than 40 weeks, poor bishop score <5 at admission and need for labour augmentation predicted failure in our study participants.

A retrospective cohort study was published from India in 2021 and concluded that gestational age, bishop score before delivery and size of the baby were associated with outcome of trial of labour in their study participants.[16] Our results showed that failed trial of labour was a common clinical condition in women with one previous caesarean section. Women with gestation age more than 40 weeks, low bishop score at admission and requiring labour augmentation were more at risk of having failed trial in our study participants

Junior *et al*. published data of Brazilian women undergoing trial of labour in subsequent pregnancy. They revealed that gestational hypertension, fundal height, previous vaginal birth and dilatation at admission were the factors associated with failed trial of labour in their study participants.[17] Gestational age more than 40 weeks, poor bishop score at admission and need for labour augmentation were factors, we found associated with failed trial in women included in our study.

Bishop score at the time of admission, previous vaginal deliveries, BMI and weight at birth were the factors associated with outcome of trial of labour in a study published in 2022 by Sahin *et al*.[18] Similar results were generated in our study conducted on women with one previous caesarean section.

LIMITATIONS OF STUDY

Failed trial of labour could be due to number of socio-demographic and clinical factors. It cannot be concluded with this study design that women with one caesarean section were more at risk of failed induction or those factors which were found associated with failed trial actually predicted failed trial. Study with better design and control of confounders can be useful in generating results which are true picture of clinical association.

CONCLUSION

Failed trial labour was a common clinical condition in women with one previous caesarean section. Women with gestation age more than 40 weeks, poor bishop score (<5) at admission and requiring labour augmentation (with oxytocin) were more at risk of having failed trial in our study participants.

Conflict Of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

AM: & VA: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

RS: & NH: Concept, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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