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Should a different Partogram be used for the Trial of Labour in Women with the Previous One Caesarean Section Scar as Compared to Primiparous Women; A Comparative study

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ABSTRACT

Objective: To compare various labour parameters in partogram among primiparous women and women with one previous caesarean section scar

Study Design: Comparative cross-sectional study

Place and Duration of Study: Gynaecology and Obstetrics Department, Pak Emirates Military Hospital, Rawalpindi Pakistan, from Oct 2021 to Sep 2022.

Methodology: This study was conducted on primiparous women and women with one previous scar who were booked cases in our department for antenatal checkups and labour. Patients were divided into two groups for comparison. Group-I were primiparous, while Group-II had one previous scar. All women underwent detailed labour records via conventional partogram in the labour room. Duration of the active phase of labour, duration of the second stage, time to progress by 1 cm and time after the alert line were compared in partograms of both the study groups.

Results: A total of 390 women who were either primiparous or had one previous caesarean section were recruited for this study. Of the study participants, 226(42.6%) were primiparous, while 164(57.4%) had one previous caesarean section scar. Statistical analysis revealed that the duration of the active phase of labour, time to progress by 1 cm and time after the alert line were statistically significant (p-value<0.05) in partograms of women in Group-I (primiparous) as compared to those in Group- II (women with one previous scar) (p-value<0.05).

Conclusion: The main parameters of the partogram differ significantly among primiparous women and women with one previous caesarean section scar.

Keywords: Caesarean section, Parity, Gravidity, Labor Pain, Fetal monitoring, Trial of labor, Uterine contraction, Uterine monitoring.

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INTRODUCTION

Obstetrics is an evolving field of medicine, different delivery modes have their own merits and demerits for mother and baby depending upon individual clinical situations.[1,2] Usually, short-term complications of surgical delivery modes are considered. However, limited attention has been paid to long-term consequences, especially in the next pregnancy and labour.[3]

One caesarean section scar may predispose a woman to complications in subsequent pregnancies, especially related to labour.[4,5] Multiple methods have been used to analyse the progress of labour. Graphical representation of various parameters of labour in the form of a partogram gives a clear picture of the overall progress of labour. Timely interventions based on close observation of different indices (cervical dilation, fetal heart rate, duration of labour and vital signs) via partogram may benefit both mother and baby and reduce the burden on the labour team.[6,7]

Labour progress has been studied via various parameters by labour room teams. Partogram has been one of the efficient tools used for this purpose.[8] It is a graphical representation which depicts multiple clinical parameters occurring at various times during various phases of active labour among women.[9]

The number of deliveries via caesarean section has been on the rise worldwide, and Pakistan is no exception to this trend. A local study has been published in the Journal of Pakistan Medical Association regarding the risk of uterine rupture once the alert line is crossed on the partogram during labour following the caesarean section.10 Seeing a lot of physiological and mechanical differences in the progress of labour, the need is felt to generate data

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regarding differences in partogram findings of scar. Therefore, we planned this study to compare various labour parameters in partogram among primiparous women and women with one previous caesarean section scar at PEMH Rawalpindi.

METHODOLOGY

The comparative cross-sectional study was conducted at the Obstetrics Unit of the Pak Emirates Military Hospital Rawalpindi, Pakistan from October 2021 to September 2022, after approval from the Ethical Review Board Committee (IREB letter no. Ec/263/2021). The sample size was calculated by the WHO Sample Size Calculator by using two groups. Group-I consisted of primiparous women, and 18% had labour crossing the alert lines, while Group-II consisted of women with one or more scars, and 10% had labour crossing the alert lines.[11] Non-probability Consecutive sampling technique was used to gather the sample

Inclusion Criteria: All primiparous pregnant women and women with previous caesarean section scar, 37-40+6 weeks of singleton pregnancy in spontaneous or induced labour were included.

Exclusion Criteria: Women with previous vaginal deliveries, women with previous classical caesarean, previous uterine rupture, previous hysterotomy or complex myomectomy in which uterine cavity was opened, women having previous two or more caesarean deliveries or those with any contraindication to labour (transverse lie, footling breech, multifetal pregnancy with presenting breech fetus) were excluded. Those with uncontrolled diabetes, HTN, eclampsia or preeclampsia were also not recruited.

Written informed consent from the women was obtained from the research team members working in the labour room before enrolment. Parity, labour phase and presence of previous caesarean section scar were confirmed by history taking and physical examination by a consultant obstetrician. Labour was induced by Prostaglandin E2 or cervical foley. All women underwent a natural trial of labour under the care of a consultant obstetrician who monitored the program at regular intervals.[12] All the findings related to the progress of labour were recorded and represented in the form of a partogram, which was interpreted by the consultant supervising the team.[13] Duration of the active phase of labour, duration of the second stage, time to progress by 1 cm and time after alert line were compared in partograms of both the study groups.

Patients were divided into two groups for comparison. Group-I were primiparous, while Group-II had one previous scar. Of the total study participants, 226(42.6%) were primiparous, while 164(57.4%) had one previous caesarean section scar. Table II shows the result of the statistical analysis. It was revealed that the duration of the active phase of labour, time to progress by 1 cm and time after the alert line were statistically significantly different (*p*-value<0.05) in partograms of women in Group-I (primiparous) as compared to those in Group-II (women with one previous scar).

Statistical Package for Social Sciences (SPSS) version 23.0 was used for the data analysis. Quantitative variables were expressed as Mean±SD and qualitative variables were expressed as frequency and percentages. Chi-square test was applied to explore the inferential statistics. The p-value lower than or up to 0.05 was considered as significant.

RESULTS

A total of 390 women who underwent labour in our labour room who were either primiparous or had one previous caesarean section were recruited. Table-I summarises the basic characteristics of women undergoing labour recruited in the analysis. The mean age of the women included in the study was 35.36±5.661 years. With regards to BMI, 62(15.8%) had normal BMI, 190(48.7%) were overweight, and 138(35.3%) were categorised as obese.

Table-I: Characteristics of Women included in the Study (n=390)

Study parameters	n (%)
Age of mothers (years)	
Mean ± SD Range (min-max)	35.365±5.661 years 19-39 years
Primiparous	
No	164(42.1%)
Yes	226(57.9%)
Previous one scar	
No	226(57.9%)
Yes	164(42.1%)
Duration of active phase of labour	
5 hours or less>5 hours	154(39.4%) 236(60.6%)
Body Mass Index	
18-24.9	62(15.8%)
25-29.9	190(48.7%)
30 or more	138(35.3%)
Comorbid illnesses	
Gestation diabetes Mellitus	38(9.7%)
Gestational Hypertension	26(6.6%)
Others	09(2.3%)

Table-II: Comparison of different Partogram Parameters in primiparous women and Women with one Previous Scar (n=390)

Partogram parameters	Primiparous Women	Women with One previous scar	*p*-value
Duration of active phase 5 hours or less>5 hours	31(13.7%) 195(86.3%)	123(75%) 41(25%)	<0.001
Duration of second stage 1 hour or less>1 hour	35(15.4%) 191(84.6%)	24(14.6%) 140(85.4%)	0.816
Time to progress by 1 cm 60 minute or less>60 minutes	20(8.8%) 206(91.2%)	141(85.9%) 23(14.1%)	<0.001
Time after alert line 3 hours or less>3 hours	211(93.3%) 15(6.3%)	10(6.1%) 154(93.9)	<0.001

DISCUSSION

Women undergoing labour with one previous caesarean section scar may be at high risk for a number of health-related conditions during labour and need to be monitored closely.[14] Having one scar is no longer considered a contraindication for giving a trial of labour in the next pregnancy, but certainly more caution is required. Partogram usually gives us detailed information about labour progress, which may differ in primiparous women and women with one previous scar. We, therefore, designed this study intending to compare various labour parameters in partogram among primiparous women and women with one previous caesarean section scar.

Sharma *et al*. revealed that multiple factors affected the outcome of the trial of labour in these women. However, careful use of partograms can successfully prevent the need for the emergency caesarean section in these patients.[15] We compared partogram findings in women who were primiparous vs those with one previous scar and found significant differences in them, highlighting the use of separate and sophisticated partograms for women undergoing a trial of labour with one previous scar.

Vlachos *et al*.[16] compared the same partogram in primiparous women and women with one previous scar and concluded that the main parameters of partogram differ significantly among primiparous women and women with one previous caesarean section scar. This warrants the attention of clinicians regarding the need for separate partograms to monitor the progress of labour in these two groups of women undergoing labour.

Data was published from Agha Khan Hospital Karachi by Khan *et al*. to see whether the routine graphic labour record (partogram) can be used to predict the risk of uterine scar rupture in labour following lower segment caesarean section.[17] They concluded that partogram findings were quite different; in their study participants as compared to those of primiparous women but that helped in predicting the risk of uterine rupture. Our findings supported their findings and highlighted the need for a separate partogram to make the trial of labour safer in women with one previous scar.

The pattern of labour progression among women who had a vaginal birth after a caesarean was compared with primiparous and multiparous women who delivered vaginally in the Israeli population, and it was found to be very different.[18] Our results supported their findings, so more work should be done on this aspect. A separate partogram should be designed for women having a trial of labour with one previous caesarean scar.

STUDY LIMITATIONS

Various partogram parameters depend on factors other than one previous caesarean section scar. Designing studies in a more sophisticated way by controlling confounding factors can give a true picture of differences in partogram findings in primiparous women and women with one previous caesarean section scar.

CONCLUSION

The main parameters of the partogram differ significantly among primiparous women and women with one previous caesarean section scar. This warrants the attention of clinicians regarding the need for separate partograms to monitor the progress of labour in these two groups of women undergoing labour.

Conflict of Interest: None.

Authors Contribution

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

SK & MT: Conception, study design, drafting the manuscript, approval of the final version to be published.

SP & TY: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

RB & MM: Critical review, concept, 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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