

Analytical Study on Trial of Scar using Flamm and Geiger Admission Scoring System for VBAC

Pragya Mishra¹, Shobha Mukherjee², Astha Gupta³, Aparajeeta⁴

ABSTRACT

Introduction: The strength of the uterine scar and its capacity to withstand the stress of subsequent pregnancy and labor cannot be completely assessed or guaranteed in advance. Hence the present study was undertaken to analyse factors stated by Flamm and Geiger admission scoring system and other plausible factors for successful TOLAC.

Material and methods: A total of 265 cases of a previous CS were selected. Booked cases were regularly followed up in the antenatal clinic and the unbooked patients, who reported directly for labor, were then assessed for a trial of vaginal delivery.

Result: A total of 265 cases were eligible for trial of scar using Flamm and Geiger Admission scoring system. 135 had VBAC whereas in 130 cases trial was terminated and had ERCS. Out of 130 ERCS, 73.4% were because of scar tenderness, whereas 16.4% had non reassuring fetal heart rate. Remaining had unsuccessful progress of labor.

Conclusion: Flamm and Geiger admission scoring system can be used to successfully predict the likelihood of vaginal delivery after a trial of scar, thereby reducing maternal and fetal morbidity and rate of caesarean section. Decision regarding trial should also include factors like eventful previous pregnancy, interpregnancy interval, gestational age and estimated fetal weight. Successful trial can be increased by regular antenatal visits, general health promotion, early detection and management of high risk factors. Adequate inter pregnancy interval should be encouraged by promoting and offering contraception.

Keywords: Trial of Scar, Flamm and Geiger, VBAC

INTRODUCTION

Caesarean section is the most common operation in modern day obstetrics. Births by caesarean, many of them unnecessary, have started to increase globally. This rising rate is an issue of particular concern in the global maternity care field, due to the increased adverse maternal and neonatal outcomes associated with caesarean section.¹⁻⁴

Cragin popularized the dictum, "once a caesarean section, always a caesarean section."⁵ From 1916, when these words were spoken to the New York Association of Obstetricians & Gynecologists, through the ensuing 50-60 years, this statement reflected most of the obstetricians' management of patients with a prior caesarean delivery.

The dictum now is "once a caesarean section, always an institutional delivery in a well- equipped hospital". The reasons which led to the reversal of the old dictum are based upon the newer concepts of the assessment of scar integrity, fetal well-being, and improved facilities of emergency CS.⁶

A previous CS does cast a shadow over the outcome of future pregnancies.⁷ With present techniques and skill, the incidence of cesarean scar rupture in subsequent pregnancies is very low. Trial of labor after previous cesarean delivery (TOLAC) provides women who are eligible for vaginal delivery with the possibility of achieving that goal-a vaginal birth after cesarean delivery (VBAC). In addition to fulfilling a patient's preference for vaginal delivery, at an individual level VBAC is associated with decreased maternal morbidity and a decreased risk of complications in future pregnancies.⁸ At a population level, VBAC also is associated with a decrease in the overall cesarean delivery rate. Assessment of individual risks and the likelihood of VBAC is, therefore, important in determining who are appropriate candidates for TOLAC.

The strength of the uterine scar and its capacity to withstand the stress of subsequent pregnancy and labor cannot be completely assessed or guaranteed in advance. These cases require critical assessment and supervision.⁹

Factors Associated with Successful Trial of Labor After Previous Cesarean Delivery¹⁰

- Increased probability of success
- Previous vaginal birth
- Spontaneous labor
- Decreased probability of success
- Gestational age greater than 40 weeks
- Increased maternal age
- Increased neonatal birth weight
- Maternal obesity
- Nonwhite ethnicity
- Preeclampsia
- Recurrent indication for cesarean delivery
- Short inter pregnancy interval

Hence, the present study was undertaken to analyse the factors associated with successful trial of scar using Flamm and Geiger Admission scoring system, assess the success and safety of VBAC and to evaluate the maternal and fetal outcome in these cases. Study aimed to predict the likelihood of vaginal birth in

¹Associate Professor, Department of Obstetrics and Gynaecology, RMCH, Bareilly, ²Professor, Department of Obstetrics and Gynaecology, RMCH, Bareilly, ³Junior Resident - 3rd year, Department of Obstetrics and Gynaecology, RMCH, Bareilly, ⁴Junior Resident 2nd year, Department of Obstetrics and Gynaecology, RMCH, Bareilly, Rohilkhand Medical College and Hospital, Bareilly, U.P, India

Corresponding author: Dr.Astha Gupta, Room No. 41, G Block, Rohilkhand Medical College And Hospital, Bareilly, U.P- 243006, India

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patients undergoing a trial of scar using Flamm and Geiger Admission Scoring System, to determine other associated factors governing the successful trial of scar and to analyse maternal and fetal outcome.

MATERIAL AND METHODS

This prospective analytical study was carried out at Rohilkhand Medical college And Hospital, a tertiary care teaching hospital located in Bareilly, Uttar Pradesh from July 2018 to June 2019. This hospital gets referrals of high-risk cases from neighboring villages and townships. About 5,000 deliveries take place annually in the hospital with the rate of CS ranging between 30 and 35%. A total of 265 cases of a previous CS were selected. Booked cases were regularly followed up in the antenatal clinic and the unbooked patients, who reported directly for labor, were then assessed for a trial of vaginal delivery.

Cases selected for trial of scar were by using Flamm and Geiger Admission Scoring System¹¹

A score was obtained and probability of VBAC was derived. The cases selected for TOLAC were monitored carefully during labor by continuous fetal monitoring. All the cases were provisionally prepared for emergency CS. Intrapartum monitoring was done by using the standard partograph of the World Health Organization (WHO). Four-hourly internal examinations were performed to assess the progress, and special attention was paid toward the evidence of scar dehiscence or rupture. The trial of vaginal delivery was continued till there was satisfactory progress. The trial was terminated by emergency repeat CS, when there was evidence of unsatisfactory progress, scar tenderness, or fetal distress.

RESULT

In present study, 265 patients qualifying and consenting for trial of scar were selected, Flamm and Geiger Admission Scoring system was used to predict the likelihood of VBAC. Maximum patients were of 21-25 years of age. The mean age

		Points
1. Maternal age	<40 years	2
2. Vaginal birth history (choose one)	A. Vaginal birth before and after first cesarean delivery	4
	B. Vaginal birth after first cesarean delivery	2
	C. Vaginal birth before first cesarean delivery	1
	D. No previous vaginal birth	0
3. Reason other than failure to progress for first cesarean delivery		1
4. Cervical effacement at admission	A) >75 percent	2
	B) 25 to 75 percent	1
	C) < 25 percent	0
5. Cervical dilation	>4 cm at admission	1

Table-1

TOLAC	No. of cases	Percentage
ERCS	130	49.05
VBAC	135	50.95

Table-2:

Indications for ERCS	No. of cases	Percentage
Scar tenderness	96	73.4
Non reassuring FHR	21	16.4
NPOL	13	10.2
	130	

Table-3

POG	LSCS	
<37 weeks	31	77
37-40 weeks	47	37
>40 weeks	52	21
	130	135

Table-4:

	Hospital stay
VBAC	2 days
ERCS	9 days

Table-5:

of patient was 23.4 years. Maximum patients were booked and belonged to urban area. Out of total 265 cases, 135 (50.95%) underwent successful trial of scar and delivered vaginally, whereas 130 (49.05%) had Emergency Repeat Caesarean Section (Table-2). Out of 130 ERCS, 73.4% were because of scar tenderness, whereas 16.4% had non reassuring fetal heart rate. Remaining had unsuccessful progress of labor (Table-3).

At <37 weeks POG 31 cases underwent ERCS and 77 cases had VBAC. Between 37 and 40 weeks POG 47 cases underwent ERCS and 37 had VBAC. At >40 weeks POG 52 cases underwent ERCS and 21 had VBAC (Table-4). Factors found significant for successful trial of scar were age ($p=.010$), prior vaginal delivery ($p=.0016$), spontaneous progress of labour, as were considered in Flamm and Geiger admission scoring system. Other factors found significant for successful trial of scar were interpregnancy interval, eventful previous pregnancy ($.0023$), gestational age ($p<.00001$) and estimated fetal weight ($p<.00001$). Intraoperative findings of impending scar dehiscence were comparable with clinical examination for same. Maximum cases of successful trial of scar was seen in cases previously operated for fetal distress, whereas Premature Rupture of Membranes and transverse lie had unsuccessful trial of scar.

Maternal morbidity was found higher in ERCS cases due to wound infection and wound gaping had a longer hospital stay. Mean duration of hospital stay in cases of successful TOLAC was 2 days, whereas that of ERCS was 9 days (Table-5). Neonatal morbidity was comparable in both the groups. In this study there was no maternal mortality. With proper case selection, appropriate timing and close supervision trial of labour after prior LSCS is safe and often successful.

DISCUSSION

Rohilkhand Medical College and Hospital caters to large number of population. In our study 54% of cases were booked and 46% of cases were unbooked. Successful trial of scar occurred in 62.8% of cases amongst booked patients (p -value was .00435). In our study, maximum cases were of 21-25 year age group. Probability of successful trial decreases with advancing age p -value was .010233. In a similar study done by Grobman W A, Lai Y, Landon MB¹² it was concluded that VBAC was significantly more likely among women who were younger. Maximum number of patients in study were from low socioeconomic status. Rohilkhand Medical College and Hospital, the set up of present study caters urban population therefore 57.2% of cases belonged to urban area. In the present study, success rate of vaginal delivery prior to cesarean section is 72%, whereas vaginal delivery after cesarean had successful TOLAC in 78.6% of cases (p value was .001635). Mercer BM, Gilbert S¹³ also found similar results among 13,532 women meeting eligibility criteria, VBAC success increased with increasing number of prior VBACs: 63.3%, 87.6%, 90.9%, and 91.6% for those with 0, 1, 2, 3 and 4 or more prior VBACs, respectively ($p<.001$). In our study, as period of gestation increased, the probability of successful TOLAC decreased (the p -value was <0.00001).

Quinones JN, Stamilio¹⁴ found similar results that preterm patients have a slightly higher success rate than term patients. (82 vs. 74%). In our study shorter interpregnancy interval is associated with lesser chance of successful TOLAC (the p -value was .002393). Results of Matthew A. Esposito, Cydney A. Menihan¹⁵ were similar to the present study that an interpregnancy interval of <6 months was significantly more prevalent among case patients with uterine scar failure ($p=.02$).

In the present study successful trial of scar occurred in cases with previous indication being fetal distress and breech presentation. Wing DA, Paul RH¹⁶ found contrasting results than present study that the indications of primary cesarean section and reported 91%, 84% and 77% success when the previous LSCS was for breech presentation, fetal distress and dystocia respectively.

Out of total 265 cases, 135 (50.95%) underwent successful trial of scar and delivered vaginally, whereas 130 (49.05%) had Emergency Repeat Caesarean Section. Out of 130 ERCS, 73.4% were because of scar tenderness, whereas 16.4% had non reassuring fetal heart rate. Similar with the results by Najma KP, Rao SB.¹⁷

CONCLUSION

Hence it is concluded that Flamm and Geiger admission scoring system uses many significant criteria to predict the likelihood for successful trial of scar. In a set up where the present study was undertaken, which caters to a large number of population and low socioeconomic group, Flamm and Geiger admission scoring system can be used to successfully predict the likelihood of vaginal delivery after a trial of scar, thereby reducing maternal and fetal morbidity and rate of Caesarean section. Decision regarding trial should also include factors like eventful previous pregnancy, inter pregnancy interval, gestational age and estimated fetal weight. Successful trial can be increased by regular antenatal, general health promotion, early detection and management of high risk factors. Adequate interpregnancy interval should be encouraged by promoting and offering contraception.

REFERENCES

1. Euro-Peristat Project: European perinatal health report. Health and care of pregnant women and babies in Europe in 2010, 2013.
2. Marshall NE, Fu R, Guise JM. Impact of multiple cesarean deliveries on maternal morbidity: a systematic review. *Am J Obstet Gynecol.* 2011;205:262-e1.
3. Guise JM, Eden K, Emeis C, Denman MA, Marshall N, Fu RR, et al. Vaginal birth after cesarean: new insights. Evidence report/technology assessment. 2010;191:1.
4. Morrison JJ, Rennie JM, Milton PJ. Neonatal respiratory morbidity and mode of delivery at term: influence of timing of elective caesarean section. *BJOG: Int J Obstet Gynaecol.* 1995;102: 101-6
5. Cragin EB. Conservatism in Obstetrics. *N Y Med J.* 1916;104:1-3.
6. Rozenberg P, Goffinet F, Phillippe HJ, Nisand I. Ultrasonographic measurement of lower uterine segment to assess risk of defects of scarred uterus.

- Lancet. 1996;347:281-4
7. Swarz O, Paddock R, Bortnick AR. The caesarean scar: An experimental study. *Am J Obstet Gynecol.* 1938;36:962-5
 8. Phelan JP, Clark SL, Diaz F, Paul RH. Vaginal birth after caesarean. *Am J Obstet Gynecol.* 1987;157:1510-5
 9. Dayal V. Trial of vaginal delivery in cases of single previous cesarean section. *J Obstet Gynecol.* 1985;35:445-50
 10. American College of Obstetricians and Gynecologists. ACOG practice bulletin no 115. Vaginal birth after previous cesarean delivery. *Obstet Gynecol.* 2010;116:452
 11. Flamm BL, Geiger AM. Vaginal birth after cesarean delivery: an admission scoring system. *Obstet Gynecol.* 1997;90:907-910.
 12. Grobman W A, Lai Y, Landon MB National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units Network (MFMU) *Obstet Gynecol.* 2007;109:806-12.
 13. Mercer, Gilbert Effect on the likelihood of a successful trial of labor after cesarean section. *J Reprod Med* 1990;35:886-90.
 14. Quinones JN, Stamilio Previous cesarean section: the risks and benefits of oxytocin usage in a trial of labor. *Am J Obstet Gynecol* 1985;151:564-9.
 15. Matthew A. Esposito, Cydney A. Menihan Fetal heart rate changes associated with uterine rupture. *Obstet Gynecol* 2004;103:506-12.
 16. Wing DA, Paul RH Effect on the likelihood of a successful trial of labor after cesarean section. *J Reprod Med* 1990;35:886-90.
 17. Najma KP, Smitha B. Pregnancy outcome in women with previous one cesarean section. *International Journal of scientific research*, Vol:4:Issue:1 January 2015.

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