Factors affecting success of trial of labour after previous one lower segment Caesarean section

Raida M. Al-Wazzan
Department of Obstetric and Gynecology, College of Medicine, University of Mosul.

(Ann. Coll. Med. Mosul 2010; 36 (1 & 2): 121-129).
Received: 9th Feb 2010; Accepted: 7th Nov 2010.

ABSTRACT

Objective: The aim was to analyze the different factors associated with successful trial of labor after previous one lower segment cesarean delivery in our institution.
Patients and methods: A Prospective case-series study was done at Al-Batool Maternity Teaching Hospital, Mosul on 476 women with previous one lower segment Caesarean delivery subjected to trial of labour between January 2009 and mid June 2009.
Results: Successful trial of labour and vaginal delivery was reported in 82%. The factors that were found to be significantly associated with successful trial of labour are: parity of 2-4, history of previous vaginal delivery and particularly history of vaginal birth after Caesarean, fetal malpresentation as the indication of previous Caesarean, inter-pregnancy interval longer than 12 months, gestational age ≤ 40 weeks, cervical dilation ≥4 cm, cervical effacement ≥50%, station lower than –1 and intact membrane at time of admission, clear liquor and neonatal weight < 4000 grams.
Conclusions: The factors present in woman's obstetric history and during her intrapartum course in the current pregnancy and birth weight that had significant differences in this study can be used as predictor of successful trial of labour and will help obstetrician to identify women who are more likely to attempt trial of labor and have a successful vaginal birth after previous one lower segment Caesarean delivery.

Keywords: Caesarean section, vaginal birth after Caesarean (VBAC), trial of labour after Caesarean delivery (TOL), prior Caesarean delivery.

الخلاصة

الهدف: دراسة العوامل التي قد تؤثر في نجاح محاولة الولادة الطبيعية عند النساء اللواتي لديهن تاريخ عملية قيصرية واحدة سابقة.
المرضى وطريقة البحث: دراسة مستقبلية لـ ٤٧٦ مريضة لديها تاريخ عملية قيصرية واحدة سابقة واللواتي أعطين محاولة الولادة الطبيعية.
الاستنتاج: نسبة نجاح محاولة الولادة الطبيعية عند النساء اللواتي لديهن تاريخ عملية قيصرية واحدة هي ٨٢%. هناك عدة عوامل ترتبط بزيادة نجاح محاولة الولادة وهي: ولادة ٢-٤ أطفال، تاريخ ولادة طبيعية سابقة خاصة إذا كانت بعد العملية القيصرية، سبب العملية القيصرية السابقة هو الوضعية غير الطبيعية للجنين عند الولادة، الفترة بين الولادة السابقة والحمل الحالي أكثر من ١٢ شهر، مدة الحمل الحالي أقل من٤٠ أسبوع، توسع عنق الرحم ≤٤ سنتمتر، الغشاء السلوي (الأمنيوني) غير ممزق عند دخول المستشفى، لون السائل السلوي (الأمنيوني) طبيعي ووزن الوليد أقل من ٤٠٠٠ غرام.

Vaginal delivery after previous one lower segment Caesarean section represents one of the most significant and challenging issues in obstetric practice[1] and it has been accepted as a way to reduce the overall Caesarean section rates[2-5] and elimination of the need for major surgery which consequently reduces maternal and neonatal morbidity and mortality as well as reduce the financial and psychosocial disadvantages[6-8]. Trial of labour (TOL) was recommended by the American Academy of Family Physicians[9] and Society of Obstetricians and Gynaecologists of Canada[10] as Level A and the universal adoption of Craigin's dictum of once a Caesarean, always a Caesarean made in the old obstetric days will be no longer applied[2,6]. Although numerous publications over years have demonstrated the relative safety and efficacy of TOL[2-4,6,12], it may be occasionally associated with severe maternal morbidity and even mortality[1] and the risk depends on the success of TOL [2,4,13] as adverse outcomes are most common following a failed TOL[1,7,13-15] and women are at increased risk of emergency Caesarean section, uterine rupture, infectious morbidity, hemorrhage and perinatal death[2,4,14].

Several studies have found that many factors (clinical characteristics and obstetric variables) are associated with TOL failure[2,4,12,13] and some have proposed different scoring systems to incorporate these individual factors and attempt to reliably predict TOL success, failure, or complications[12] as this would help clinicians and women in making good clinical decisions and minimizing adverse events[2,7,14].

The aim was to analyze the different factors associated with successful trial of labor after previous one lower segment Caesarean delivery in our institution.

Patients and method

A prospective case-series study was carried out in Al-Batool Maternity Teaching Hospital in Mosul city, which is a tertiary referral center and it operated an open door policy where all pregnant women, booked and unbooked, were seen and managed, irrespective of their clinical state. Blood bank, laboratory facilities, radiology services, operating theatres and neonatal intensive care support are available at any time. A trained obstetrician, obstetric registrars, anesthetic doctor and a neonatal registrar being on duty around the clock. The total number of annual deliveries (including vaginal delivery and operative delivery) were 23257. The study started from January 1st till June 15th 2009. A 476 women with previous one lower segment Caesarean delivery were included in the study that deemed suitable for TOL (singleton pregnancy with vertex presentation and no contraindication for vaginal delivery such as: previous uterine rupture, placenta previa).

Patients admitted in labour for TOL were managed using partograph for their progress of labour and were monitored carefully. Pinard's stethoscope and intermittent electronic fetal monitoring were used to monitor the fetal heart rate as there was no enough number of machines for continuous monitoring in the labour ward. Women who had either meconium stained liquor or bloody liquor were allowed to undergo TOL if they have advanced cervical dilatation and reassuring cardiotocographic (CTG) trace and no vaginal bleeding to endanger mother and/or fetal life; these TOL were done under close observation and monitoring with low threshold for Caesarean delivery.

These cases after delivery were divided into 2 groups: successful TOL group who delivered vaginally and failed TOL group who required an emergency Caesarean delivery. The association of various factors with success of TOL was analyzed statistically. These factors were socio-demographic characters (maternal age, parity, address), past obstetric history characters (history of prior vaginal delivery, history of previous vaginal birth after Caesarean (VBAC), history of previous fetal loss , inter-pregnancy interval, indications of previous Caesarean delivery), current pregnancy and intrapartum characters (booking state, history of hypertensive disorder with pregnancy and diabetes mellitus, gestational age, type of labour (spontaneous or induced), need for augmentation, cervical os dilatation, cervical effacement, head station, state of membranes at the time of admission,

liquor state) and neonatal characters (neonatal birth weight and sex).

Statistical analysis

Student T-test and Chi-square test were used for statistical analysis. Odds ratios (OR) and their 95% confidence intervals were also calculated. The Minitab version 11 SPSS was used for statistical analysis. P value <0.05 was considered significant.

Results

Among 476 pregnant women who underwent TOL after previous one lower segment Caesarean delivery,391 women (82.15%) delivered vaginally (successful trial group), while 85women (17.85%) delivered by emergency Caesarean section (failed trial group).

There was no maternal death in this study but there were two scar dehiscence (0.4%) that required emergency operation and successful repair of uterus were done without major complications; the patients had an uneventful recovery and both neonates had Apgar scores of 9 at 5 minutes.

Table (1) demonstrates that there was no significant difference in maternal age and address between the successful and failed TOL groups.

Regarding past obstetric characteristics, the following factors were significantly associated with successful TOL as shown in table (2).

Women who were giving more than one viable pregnancy (Parity >1) particularly those women with parity 2-4 as their TOL were associated with more vaginal delivery while those women with parity ≥5 were associated with more emergency Caesarean delivery.

History of prior vaginal delivery (vaginal delivery before and after Caesarean delivery) was highly significant among success group and specifically those who had history of previous VBAC (p value: 0.004, OR=0.35; 95% CI: 0.18-0.71). A past history of fetal loss didn't make any difference to the mode of delivery as most of cases were due to abortion (83.95%). When the interval between the previous delivery and the current pregnancy was longer than 12 months, more success of TOL were reported.

Studying the indication of previous Caesarean delivery showed fetal malpresentation (non recurrent cause) was associated with more success TOL while failure to progress of previous labour (recurrent cause) was associated with failed TOL. Both fetal distress and placental causes had no significant associatation with success TOL.

Table (1): Sociodemographic characteristics and mode of delivery.

Variables	Failed TOL (85)		Success TOL (391)		p-value	Odd ratio (OR)	CI 95% (OR)
	Number	%	Number	%			
Maternal age (years)							
<18 (/ 467)	2	2.35	5	1.28	0.456	1.86	0.36-9.51
18-34 (385 / 467)	63	74.12	322	82.35	0.080	0.61	0.36-1.06
≥35 (84 / 467)	20	23.53	64	16.37	0.116	1.57	0.77-2.77
Address							
City (327 / 467)	56	65.88	271	69.31	0.537	0.86	0.52-1.40
Village (149 / 467)	29	34.12	120	30.69	0.537	1.17	0.71-1.92

Table (2): Past obstetric characteristics and mode of delivery.

Variables	Failed TOL (85) Number	%	Success TOL (391) Number	%	p-value	Odd ratio (OR)	CI 95% (OR)
Parity							
Parity =1 (160 / 467)	49	57.65	111	28.39	0.000*	3.43	2.15-5.48
Parity >1 (316 / 467)	36	42.35	280	71.61	0.000*	0.29	0.18-0.46
2-4 (174 / 316)	14	38.89	160	57.14	0.038*	0.48	0.24-0.96
≥5 (142 / 316)	22	61.11	120	42.86	0.038*	2.09	1.04-4.22
No previous vaginal delivery (160/ 476)	49	57.65	111	28.39	0.000*	3.43	2.15-5.48
Prior Vaginal delivery (316 / 476)	36	42.35	280	71.61	0.000*	0.29	0.18-0.46
Previous VBAC (185/ 316)	13	15.294	172	43.989	0.004*	0.35	0.18-0.71
history of fetal loss (162 / 476)	22	25.88	140	35.81	0.080	0.63	0.37-1.06
Inter pregnancy interval >12months (418 / 476)	53	62.35	356	91.05	0.000*	0.16	0.10-0.27
Indications of previous Caesarean delivery							
No progress of labour (NPOL) (124 / 476)	38	44.70	86	21.99	0.000*	2.87	1.78-4.62
Fetal malpresentation (212 / 476)	22	25.89	190	48.59	0.000*	0.37	0.22-0.62
Fetal distress (58)	9	10.59	49	12.53	0.620	0.83	0.39-1.76
Placental causes (24 / 476)	2	2.35	22	5.626	0.211	0.40	0.10-1.67
Other indications** (58 / 476)	14	16.47	44	11.25	0.183	1.56	0.81-2.80

* Significant

**include: history of infertility, history of eclamptic fit, history of intra-uterine growth restriction (IUGR), Failure of induction, multiple pregnancy.

In the evaluation of current pregnancy and intrapartum characteristics, booking status, hypertensive disorder with pregnancy and diabetes mellitus showed no significant difference among both groups. Gestational age ≤40 weeks (p value 0.002), cervical dilatation of ≥4 cm, cervical effacement of ≥50% , a station of – 1 or lower and those with intact membrane at time of admission and clear liquor were more likely to have a successful VBAC and they were statistically significant among success group. Type of labour (spontaneous or induced) and use of oxytocin were not statistically differed between both groups as showed in table (3).

After delivery, newborns who delivered by vaginal delivery had weight of < 4000 grams which was significantly differ from those delivered by Caesarean section (p value 0.000). There was no significant difference between both groups in sex of newborns as demonstrated in table (4).

Table (3): Current pregnancy with intra-partum characteristics and mode of delivery.

Variables	Failed TOL (85) Number	%	Success TOL (391) Number	%	p-value	Odd ratio (OR)	CI95% (OR)
Booked women (291/476)	50	58.82	241	61.64	0.630	0.89	0.55-1.45
Unbooked women (185/476)	35	41.18	150	38.36	0.630	1.12	0.69-1.83
Hypertensive disorder with pregnancy (77/476)	16	18.82	61	15.60	0.465	1.25	0.68-2.30
Diabetes mellitus (10/476)	3	3.53	7	1.79	0.311	2.01	0.52-7.72
Gestational age ≤40 weeks (418/476)	66	77.65	352	90.03	0.002*	0.38	0.21-0.70
Gestational age >40 weeks (58/476)	19	22.35	39	9.97	0.002*	2.60	1.44-4.71
Spontaneous labour (468/476)	84	94.12	384	93.86	0.690	1.53	0.19-12.43
Induced labour (8/476)	1	1.18	7	1.79	0.690	0.65	0.08-3.96
Augmentation of labour (21/476)	4	4.705	17	4.35	0.848	1.09	0.47-2.53
Oxytocin use (29/476)	5	5.88	24	6.14	0.929	0.96	0.35-2.58
Cervical dilatation ≥4cm (311/476)	31	36.47	280	71.61	0.000*	0.23	0.14-0.36
Cervicaleffacement ≥50% (298/476)	29	34.12	269	68.797	0.000*	0.18	0.10-0.31
Presenting part station -1 and lower (325/476)	27	31.76	298	76.215	0.000*	0.15	0.09-0.23
Intact membrane (361/476)	54	63.53	307	78.52	0.003*	0.48	0.29-0.78
Meconium stained liquor (114/476)	52	61.18	62	15.86	0.000*	8.36	5.23-13.37
Clear liquor (355/476)	31	36.47	324	82.86	0.000*	0.12	0.07-0.20
Bloody liquor (7/476)	2	2.35	5	1.28	0.456	1.86	0.36-9.51

*significant

Table (4): Neonatal characteristics and mode of delivery.

Variables	Failed TOL (85) Number	%	Success TOL (391) Number	%	p-value	Odd ratio (OR)	CI95% (OR)
Neonatal weight <4000 grams (380 / 476)	48	56.47	332	84.91	0.000*	0.23	0.14-0.37
Neonatal weight ≥4000 grams (96 / 476)	37	43.53	59	15.09	0.000*	4.34	2.67-7.05
Female (233 / 476)	35	41.18	198	50.64	0.114	0.68	0.42-1.10
Male (243 / 476)	50	58.82	193	49.36	0.114	1.47	0.91-2.35

*significant

Discussion

The advantage of a trial of labor and vaginal delivery compared to repeated Caesarean section is well established[3,4,6,11], and it was apparent in localities like Iraq, where there is a tendency towards large families, as it allows women to have multiple deliveries without the potential for multiple repeated Caesareans[7] which is associated with an expected rise in complications and difficulty in performing surgery due to adhesions, and the risk of damage to the bladder[15] or bowel at the time of surgery as well as there may be difficulties in conceiving a further child or the development of placenta praevia or accreta[7,15] and increased chances of uterine rupture[7] in the future pregnancy. In addition, strategy of TOL in hospital may encourage women to attend hospital for delivery than home delivery [1].

The rate of vaginal birth after trial of labour was 82% in this study, near to that rate reported in Baghdad (86%)[16] and in Jordan (80%)[11] and it was higher than the rates reported in a 2003 literature review of 142,075 trials of labour(70%)[3] and 59% in New Guinea[6] but less than 91% reported in Korea[5].

Although some studies[5,11] reported no case of uterine rupture in women who had undergone TOL after Caesarean delivery, recent large review of studies[3] done in different places quoted the range of uterine rupture as 0.4%–0.62%, which means that our two cases (0.4%) of dehiscence scar were in the range of others and it was lower than 1.5% reported in Aisien et al study[1].

There was no maternal mortality in most of studies[5,6,11,14] done elsewhere as well as in this study unlike Aisien et al study[1] who reported one maternal death due to uterine rupture and postpartum haemorrhage.

In this study, Maternal age showed no effect on mode of delivery similar to other studies[6,12,13,17], but differ from Bujold et al study[18] which showed increasing failure of TOL in women who were 35 years and older.

Residence in this study showed no effect on the success of TOL as cases with obstructed labour (which mainly arrived from rural area) were not included in this study. We can't compare residence with other studies as they studied effect of race, not address, which can't be applied in our locality as we have no different races nor immigrant.

Parity more than one made women more likely to have successful TOL in this study which is in agreement with other studies[6,8]. Multiparous women (para 2-4) was delivered vaginally more than grand multiparous women (para ≥5) and can be explained by the fact of the tendency of babies to get bigger with parity, increasing incidence of malpresentation and increasing soft tissue scarring with increasing parity[6].

Successful TOL has been found to be influenced by previous vaginal delivery, particularly, a prior VBAC[7,12,13,19] which is in agreement with this study.

Reports in the literature[3,12,20,21] have shown a significant effect of the indications of previous Caesarean delivery on success of TOL. In this study, more success of TOL was reported among women with fetal malpresentation as an indication of previous Caesarean delivery which was corresponded with Tripathi et al study[21]. In the other hand, failure to progress of labour in previous pregnancy was reported to be associated with less success of TOL in this study which was reported in other studies[4,6,21]. Fetal distress does not appear to affect mode of delivery in this study in contrast with others[4,21] .

The inter-pregnancy interval was longer among success group in this study while failed to be shown in Stamilo et al study[23].

Our result regarding past obstetric history of fetal loss corresponded with the result noted in Amoa et al study[6] as there was no significant effect on success of TOL as most of them were due to abortion not to fetal death.

In the evaluation of the current pregnancy, there was no difference in the mode of delivery between booked and unbooked women who were subjected to TOL which not correspond with Asian et al study[1]. There was no apparent effect of presence of hypertensive disorder with pregnancy and diabetes mellitus on the success of TOL as many of these women were subjected to elective repeat Caesarean section and not allowed to go to labour which correspond to many studies[6,12,21] but not with others[3,22].

Gestational age >40 weeks was associated with more failure of TOL which was shown in other studies[4,8,17,24] which can be explained by increasing birth weight, increased risk of fetal intolerance of labor and increased need for induction of labor as gestational age advanced after 40 weeks while some other studies[3,17,21] failed to show this association.This study failed to show any effect of preterm gestational age on mode of delivery which differ from other studies[6,12,25].

In our very crowded hospital, most of obstetricians didn't use oxytocin in induction or augmentation of trial of labour after previous one lower segment Caesarean delivery because they feared from the high morbidity and mortality associated with uterine rupture. For that reason, only eight inductions with oxytocin and twenty one labour augmentations with oxytocin reported in this study with no scar rupture and no perinatal loss. Evaluation of these cases showed no significant association between induction of labour and augmentation of labour with more failure of TOL which does not confirm with other studies[4,12,13,20] as these studies evaluate more cases and difference in induction methods.

Not surprisingly, the more advanced the cervical dilatation in initial presentation, the higher the rate of successful TOL which is shown in this study and in agreement of other studies[5,6,13,17]. Cervical effacement ≥ 50% and head station -1 or lower more likely to deliver vaginally as in other studies[4,5,6,13] .

In this study, rupture membrane diagnosed at time of admission was associated with more failure of TOL and meconium stained liquor was another strong predictor (OR 8.36; 95% CI 5.23 -13.37) of emergency Caesarean sections in agreement with Tan et al study[3] while other studies[4,21] failed to show any effect.

Neonatal weight ≥4000 grams was associated with more Caesarean delivery which conformed with many studies[8,17,20,26] but not with others[6,13].

In this study, as other studies[3,4,6], sex of the newborn in the current pregnancy didn't have any significant effect on the success of TOL.

Conclusion

The factors present in women's obstetric history and during her intrapartum course in the current pregnancy and birth weight that had significant differences in this study can be used as predictor of successful trial of labour and will help obstetrician to identify women who are more likely to attempt labor and have a successful vaginal birth after previous one lower segment Caesarean delivery.

References

1. Aisien A, Oronsaye A. Vaginal birth after one previous Caesarean section in a tertiary institution in Nigeria. J Obstet Gynecol 2004; 24(8):886–90.
2. Chhabra S, Arora G. Delivery in women with previous cesarean section. J Obstet Gynecol India 2006; 56(4):304-7.
3. Tan P C, Subramaniam R N, Omar S Z. Predictors for Caesarean delivery and neonatal admission after trial of labour in women with one previous lower segment Caesarean scar. Singapore Med J 2008; 49(3):188-92.
4. Durnwald C, Mercer B. Vaginal birth after Cesarean delivery: predicting success, risks of failure. The Journal of Maternal–Fetal and Neonatal Medicine 2004;15:388-93.
5. Park JS, Kim KY, Na KH, Oh KY, Park MH, Yang YS, et al .A study of successful prognostic factors in vaginal birth after cesarean sections. Korean J Obstet Gynecol 2003; 46(11):2209-15.
6. Amoa A, Klufio C, Wat S, Kariwiga G, Mathias A. A retrospective survey of patients with one previous Caesarean section delivered at the Port Moresby General Hospital: a comparative study of those delivered vaginally and those delivered by repeat Caesarean section. PNG Med J 1997; 40(3-4):127-35.
7. Gyamfi C, Juhasz G, Gyamfi P, Stone JL. Increased success of trial of labor after previous vaginal birth after cesarean. Obstet Gynecol 2004;104(4):715-9.
8. Kang EJ, Lee KA, Park MH, Kim YJ, Chun SH, Ahn JJ. Evaluation of the factors affecting the success of the trial of vaginal birth and duration of labor in women with previous cesarean section. Korean J Obstet Gynecol 2007;50(12):1640-49.
9. Wall E, Roberts R, Deutchman M, Hueston W, Atwood L and Ireland B. American Academy of Family Physicians . Trial of labor after cesarean (TOLAC), Formerly trial of labor versus elective repeat cesarean section for the woman with a previous cesarean section. AAFP Policy Action March 2005.
10. Society of Obstetricians and Gynaecologists of Canada. SOGC clinical practice guidelines. Guidelines for vaginal birth after previous Caesarean birth. Number 155, February 2005. Int J Gynecol Obstet 2005; 89(3):319-31.
11. Ibrahim Ayyad. Vaginal birth after Caesarean section. Middle east journal of family medicine 2006;4(1):10-11.
12. Srinivas S, Stamilio D, Stevens E, Odibo A, Peipert J, Macones A. Predicting failure of a vaginal birth attempt after cesarean delivery. Obstet Gynecol 2007;109:800–5.
13. Dinsmoor M, and. Brock E. Predicting failed trial of labor after primary cesarean delivery. Obstet Gynecol 2004;103:282-6.
14. Park SJ, Lee YH, Kim KA, Hong SK, Baek SK, Lee HJ. Effective factor of vaginal birth after cesarean. Korean J Obstet Gynecol 2009;52(1):23-9.
15. Rahman M, Al Suleiman T, Al Jama F, Burshaid S, Rahman J. Bladder injuries during cesarean section in a University Hospital: a 25-year review. Arch Gynecol Obstet 2009;279:349–52.
16. Al-Chalabi KA. Trial of labor after cesarean birth in Iraq. International Journal of Gynecology and Obstetrics 1997; 58(2):241-2.
17. Kyoung KS, Cho AR, Lee YM, Park MA, Jeong EH, Ji IW. A Study of the causes and the predictive factors in failed vaginal birth after cesarean section. Korean J Perinatol 2007;18(4):385-90.
18. Bujold E, Hammoud AO, Hendler I, Berman S, Blackwell SC, Duperron L, Gauthier RJ. Trial of labor in patients with a previous cesarean section: does maternal age influence the outcome? Am J Obstet Gynecol 2004;190(4):1113-8.
19. Hendler I, Bujold E. Effect of prior vaginal delivery or prior vaginal birth after cesarean delivery on obstetric outcomes in women undergoing trial of labor. Obstet Gynecol 2004;104(2):273-7.
20. Mark B, Sharon MS, Catherine Y, John C, Steven MD, Michael W, Atef H. The MFMU Cesarean Registry: Factors affecting the success of trial of labor after previous cesarean delivery. Am J of

Obstet Gynecol 2005;193(3) Part II:1016-23.
21. Tripathi JB, Doshi HU, Kotdawala PJ. Vaginal birth after one Caesarean section: analysis of indicators of success. J Indian Med Assoc 2006;104(3):113-5.
22. Lehmann M, Hedelin G, Sorgue C, Göllner JL, Grall C, Chami A, Collin D. Predictive factors of the delivery method in women with cesarean section scars. J Gynecol Obstet Biol Reprod (Paris) 1999; 28(4): 358-68.
23. Stamilio D, DeFranco E, Pare´E, Odibo A, Peipert J, Allsworth J, Stevens E, Macones G. Short interpregnancy interval: Risk of uterine rupture and complications of vaginal birth after cesarean delivery. Obstet Gynecol 2007;110(5):1075-82.
24. Coassolo KM, Stamilio DM, Paré E, Peipert JF, Stevens E, Nelson DB, Macones GA. Safety and efficacy of vaginal birth after cesarean attempts at or beyond 40 weeks of gestation. Obstet Gynecol 2005;106(4):700-6.
25. Quiñones JN, Stamilio DM, Paré E, Peipert JF, Stevens E, Macones GA. The effect of prematurity on vaginal birth after cesarean delivery: Success and maternal morbidity. Obstet Gynecol 2005; 105(3): 519-24.
26. Zelop CM, Shipp TD, Repke JT, Cohen A, Lieberman E. Outcomes of trial of labour following previous Caesarean delivery among women with fetuses weighing >4000g. Am J Obstet Gynecol 2001; 185(4): 903-5.

