

Obstetrical Interventions And Surgical Procedures To Prevent Life Threatening Complications During Delivery

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ABSTRACT

BACKGROUND: Besides, revolution in health care system, yet millions of women still endure the risks of pregnancy and childbirth, causing, millions of maternal deaths. Threatened abortion, threatened preterm delivery, placental abruption, pelvic pain, premature rupture of membranes and breech presentation are major complications during pregnancy. Instrumental vaginal delivery deals with pre-operative assessment, intra-operative precautions and post-operative care to ensure safe birth.

OBJECTIVE: To investigate common surgical procedures & obstetrical interventions to prevent life threatening complications in various modes of deliveries.

MATERIALS & METHODS: This was Hospital based episiotomy Cohort study, conducted in Maternal and Child Health Centre (MCH), Aapbara, Islamabad from 2011-2012 & complied in 2015-16. Mothers with gestational age of 35 completed weeks were included in the study. At first visit history, examination and relevant investigation were done, where necessary and recorded. Various mode of deliveries were grouped and assessed for normal, cesarean, neonatal morbidity etc.

RESULTS: Mode of delivery was recorded in females of mean age 26.580 years (Age range: 16-44: CI 95.0% =0.15). Results showed cases of Spontaneous vaginal delivery with 73.91% (n=2241), VD with the use of forceps 5.24% (n=159), cesarean section 14.14% (n=429) and cervical tear repair 0.65% (n=20), Birth outcome (still births 1.01% (n=32), twin births (n=41)) and confronting risk factors for neonate mortality (n=19) (due to congenital/multiple congenital anomalies and encephalic abnormalities) and mother miscarriage (n=3), blood transfusion 68 (2.24%), hysterectomy (n=2), retained placenta (n=1), placental abruption (n=2) were recorded.

CONCLUSION: This study reveals that even though in most of the cases pregnancy out come results in Spontaneous vaginal delivery but there is still high percentage of cesarean section, so, there is greater need of regular anti-natal visits. It is also concluded that to sustain previous health gains and to meet the United Nations Millennium Development Goals, policymakers need to place much greater emphasis on proven, cost-effective measures to save maternal and newborn lives.

Key Words: Surgical Procedures, Childbirth complications, Delivery risk factors.

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INTRODUCTION:

Past century has witnessed a revolution in health care, yet millions of women still endure the risks of pregnancy and childbirth under conditions virtually unchanged over time. Tragically, millions of maternal deaths result from many of the same preventable causes. Part of the world now has maternal mortality levels of the order of 5, some 300 times less. Only rich industrialized countries have achieved such stable historical lows, but many middle income and some poor countries are getting quiet close, around or well below 50. The majority of low income countries how ever still have a long way to go¹. The current global estimates show that in the developing world approximately 65% of pregnant women receive at least one antenatal care visit; 40% of deliveries take place in health facilities and slightly more

than half of all deliveries are assisted by skilled personnel².

While there have been significant declines in infant and child mortality in the developing world in recent decades, there has been little progress in reducing the death rate for mothers and newborns. Cesarean delivery is usually considered a safe, low-risk procedure by most health care practitioners and the general public. Surgery at delivery is of no physical benefit to mother but seems as an altruistic act, to save the baby³.

Cesarean section, one of the most frequently performed surgical procedures on women, is rising globally and in the USA. This trend is predicted to continue despite increasing efforts to curb it through performance improvement initiatives, including patient preference management⁴. Mother's life is at a greater risk, and there is a need of preoperative diagnosis and treatment to ensure safe births. But the advancement in obstetric management and surgical procedures has greatly declined the mortality and morbidity rate. Rate of cesarean operation on women is increasing throughout the

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world because of its safe and easy procedure⁵. Although vaginal birth after previous cesarean (VBAC) rates decreased from 35.3% in 1994-1995 to 29.9% in 2000-2001, overall cesarean delivery rates in Canada increased from 17.5% to 21.2% over the same period⁶. In the United States, cesarean delivery rates increased from 20.7% in 1996 to 22.5% in 2000⁷.

According to Scandinavian findings, planned vaginal breech delivery results in an increased incidence for neurological morbidity as compared to elective CS⁸. Most of the studies conclude that vaginal delivery is safe when assisted by qualified staff and careful management during the delivery⁹. In USA and Canada the use of forceps and ventouse is similar to Australia and New Zealand where it is 7.416.4% of all deliveries in 1999-2000¹⁰.

Major complications reported during pregnancy are threatened abortion, threatened preterm delivery, placental abruption, pelvic pain, premature rupture of membranes (PROM) and breech presentation. Instrumental vaginal delivery deals with pre-operative assessment, intra-operative precautions and post-operative care to ensure safe birth¹⁰. This study was carried out to evaluate the most commonly confronting complications, and surgical method adapted to overcome the problems during labor.

MATERIAL & METHODS

A hospital based Cohort study. This study was conducted in March 2011 to March 2012 (01 year) & complied in 2015-16, in Maternal and Child Health Centre (MCH), Aapbara, Islamabad. It is a tertiary health care hospital. Mode of delivery, birth outcome and confronting risk factors for neonates and mothers were recorded.

The study population consisted of women who were booked at antenatal clinic and were delivered at Mother and Child Health Center (MCH) Aabpara, Islamabad, with singleton or twin pregnancies, and a gestation of 35 completed weeks, regardless of ultimate mode of delivery. Information regarding gestational age, parity, booking status, and any antenatal complication were noted.

Detailed abdominal and vaginal examination i.e. cervical dilatation, station, and position of the head were performed and recorded. Decision for

forceps delivery, ventouse extraction or caesarean section were the discretion of consultant and the choice of method was dependent entirely on her/his judgment. The instruments used were either the Bird's version of the Malmstrom vacuum extractor using the 40mm metal cup, or the obstetric forceps, which was either the Wrigley's outlet forceps or Neville-Barnes low-cavity forceps.

In the standard antenatal care protocol at Mother and Child Health Center (MCH) AabPara, Islamabad. The first visit was as early in pregnancy as possible and then ladies are expected to make visits every 4 weeks until 28 weeks gestation, every 2 weeks until 36 weeks and then weekly until delivery. The visits were more frequent if any complication arises. At the first visit history taking, examination and laboratory investigations were done to assess risk of developing complications. The laboratory investigations carried out include hemoglobin measurement, ABO and rhesus blood group typing, urine microscopy, random blood sugar, blood urea, Serum creatinine and hepatitis B and C screening.

At first visit and subsequent follow-up visits their weight and blood pressure was noted and they were examined by abdominal palpitation, fetal heart auscultation, and examination for edema. The women who seemed to be low risk are subsequently seen at the follow-up clinic, but if a significant risk factor is detected they are referred to high-risk clinic.

Specifically, for this study delivery method was grouped as spontaneous vaginal delivery (SVD), including normal spontaneous vaginal delivery (NSVD) with episiotomy, assisted delivery (AD), including forceps or vacuum delivery; and cesarean section delivery (CS). The outcome variables assessed were prenatal fetomaternal complications, intra-partum and post-partum maternal complications, obstetric interventions in terms of instrumental deliveries and cesarean section, neonatal morbidity, low birth weight babies (<2.5 kg) and perinatal mortality.

The data entry was analyzed by using SPSS, version 16. Means and standard deviation was calculated. The level of significance (p values) was mentioned along with Mean \pm S.E and Range (Min-Max). Analysis of variance was done categorically and frequency of cases was calculated.

RESULTS

Tables 1 & 2 of our study reveals that obstetrical trend for the delivery in MCH Center Abbpara, Islamabad, is Spontaneous vaginal delivery with episiotomy but Obstetrical interventions and surgical procedures used to avoid life threatening conditions in mothers were Cesarean section 14.14% (n=429) and assisted deliveries using forceps 5.24% (n=59) or vacuum delivery. Showing that rate of Cesarean section is quiet high, but instrumental delivery using Forceps and ventouse is within permissible limits. Women of age 20-30 were in greater percentage. But one forth were either <20 years old or >30 years old. As shown in figure 1,

Table3, explains maternal and neonatal characteristics i.e. Gravida (n=1769), Para (n=1350), abortion(n= 344) and birth weight (n=2178). The gender-wise distribution of total n=2178 delivery showed, n= 1057(48.53%) and n=1121(51.47%) for male and female babies respectively.

Table 4, of the study shows various conditions of mother and progress of delivery for birth weight less or equal and above 2.5 kg baby weight. It is clear that in both cases, NSVD is the major contributor, while PPH is the lesser contributor.

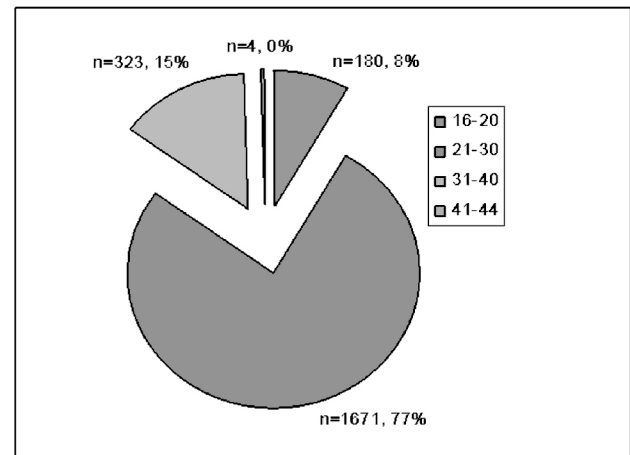


Figure 1: Women (Age and Percentage) who visited MCH center during 2011-12

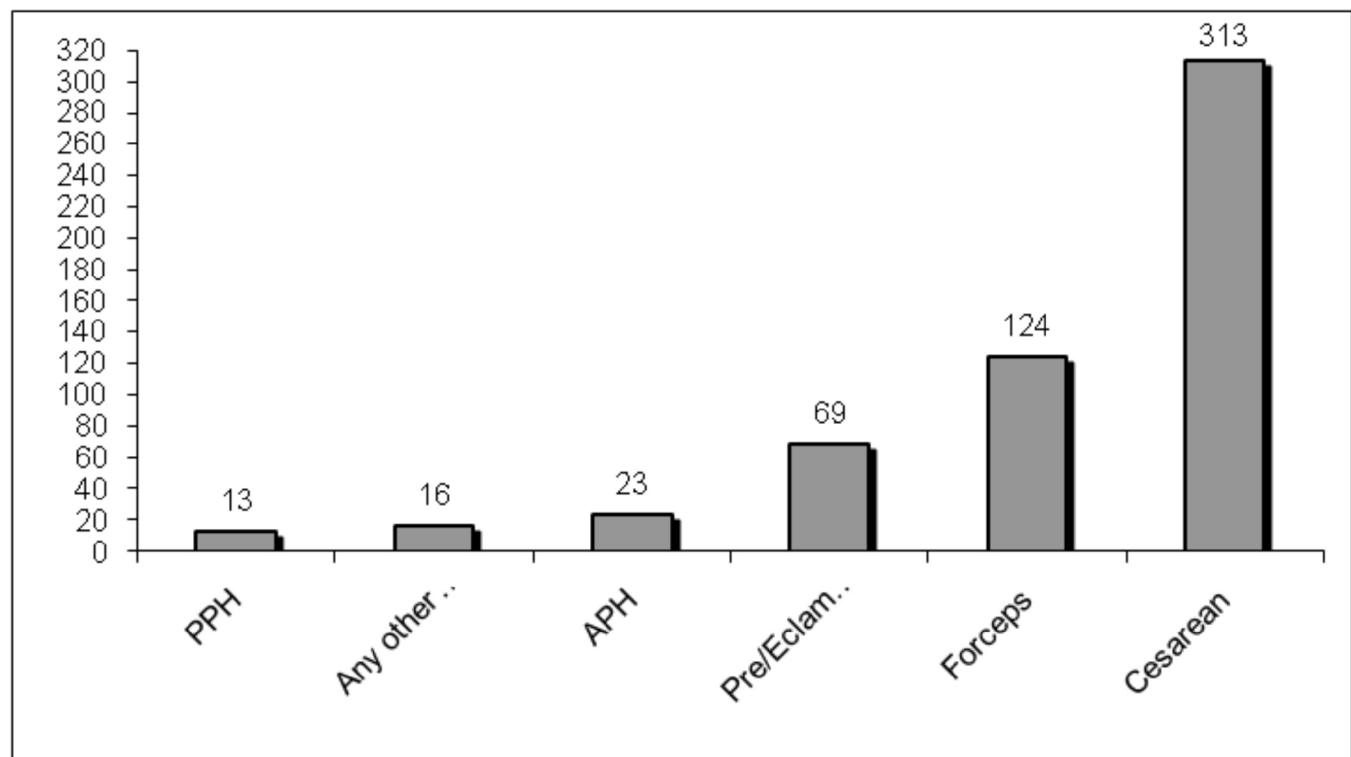


Figure 2: Frequency distribution of factors in delivery management

Table1: Delivery Management (NSVD, Forceps, CS) and blood transfusions

Delivery Management			
		n = (number of cases)	%age
1.	Normal Labour (Vaginal Birth/ Episiotomy)	1678	77.04
2.	Forceps	124	05.69
3.	Cesarean Section (CS)	313	14.37
4.	Any other surgery		
	Cervical Tear Repair	20	0.91
	Retained placenta	1	0.04
	Hysterectomy	2	0.09
	Placental abruption	2	0.09
5.	Blood Transfusion		
	1Pint	34	1.56
	2Pint	1	0.04
	2P+4FFP	2	0.09
	2P+4FFP+2Plat	1	0.04
Total		2178	100.0

Table2: Causes of neonatal deaths

Abnormalities resulting in neonatal death (n = number of cases)			
S#	Abnormalities	Number	%age
1.	Miscarriage	3	10.00
2.	Congenital Anomalies	2	06.66
3.	Multiple Congenital Anomalies	4	13.34
4.	Encephalic abnormalities	2	06.66
5.	Placental Abruption	2	06.66
6.	Others	17	56.66
Total		30	100.0

Table 3: Maternal and Neonatal record

Maternal characteristics	N	Mean±S.D (kg)	Range
Gravida	1769	3.04±1.17	1-14
Para	1350	2.30±1.28	1-9
Abortion	344	1.44±0.78	1-5
Birth weight	2178	3.08±0.53	0.40-4.7 (kg)
In labor	1806		
NSVD	1618		
Gender (Total)			
Male	1057	48.53%	
Female	1121	5.47%	
Total	2157	100.0	

Table4: Condition of mother and progress of delivery

For Birth weight 2.5 ≥						For Birth weight > 2.5			
	Maternal Condition	N	Mean (Kg)	S.D	Range	n	Mean (Kg)	S.D	Range
1.	APH	6	1.01	0.66	0.50-2.20	17	3.10	0.31	2.60-3.60
2.	PPH	2	1.75	0.35	1.50-2.00	11	3.51	0.47	3.00-4.40
3.	Pre/Eclampsia	15	2.04	0.53	0.70-2.50	54	3.26	0.44	2.60-4.30
4.	NSVD	191	2.15	0.53	0.40-2.50	1445	3.22	0.38	2.56-4.70
5.	Forceps	10	2.01	0.54	1.00-2.50	114	3.27	0.38	2.66-4.40
6.	Cesarean	55	2.25	0.38	0.50-2.50	258	3.20	0.38	2.60-4.40
Total279						1899			
Grand Total2178									

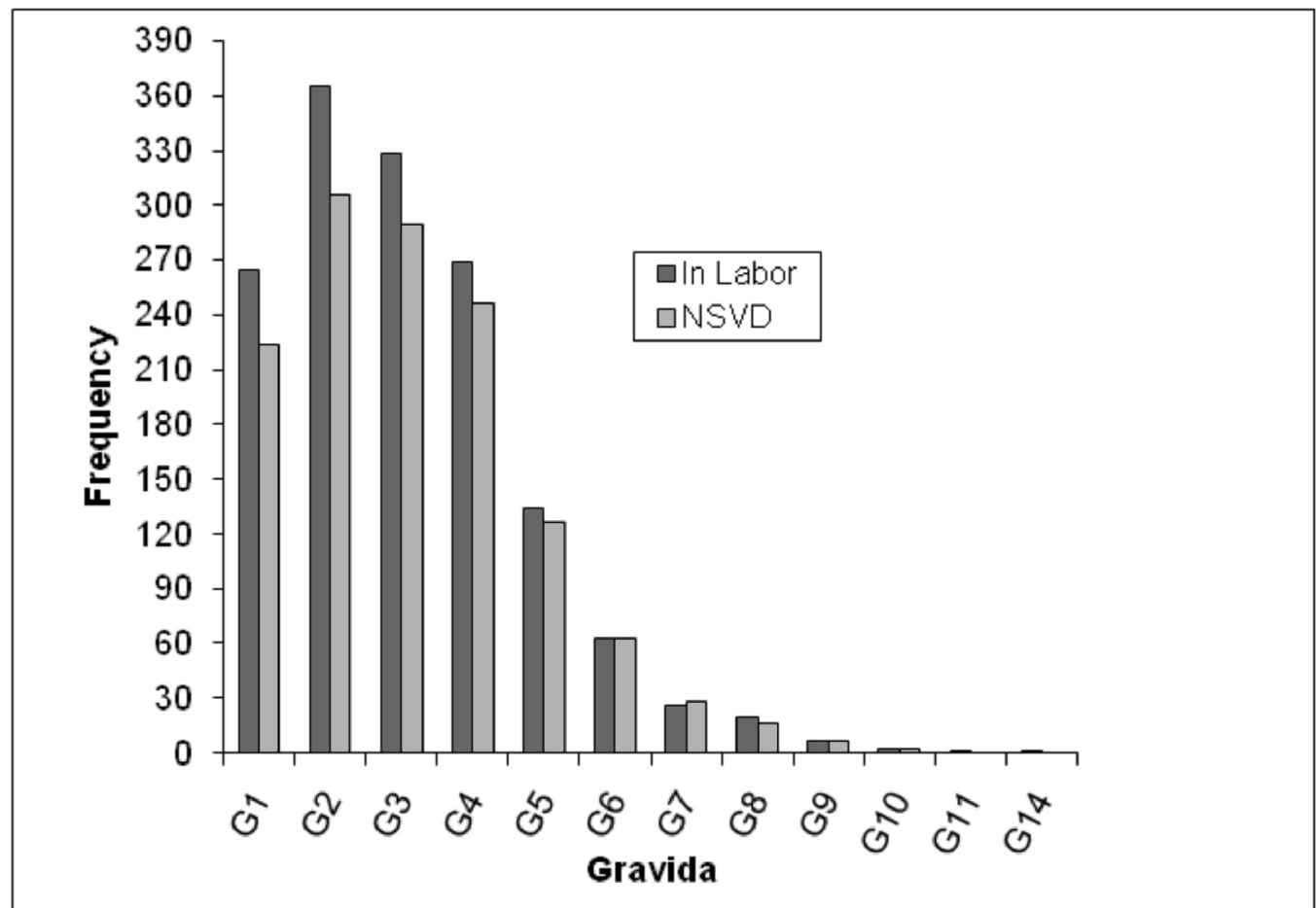


Figure 3: Women brought in labor and Normal spontaneous vaginal birth

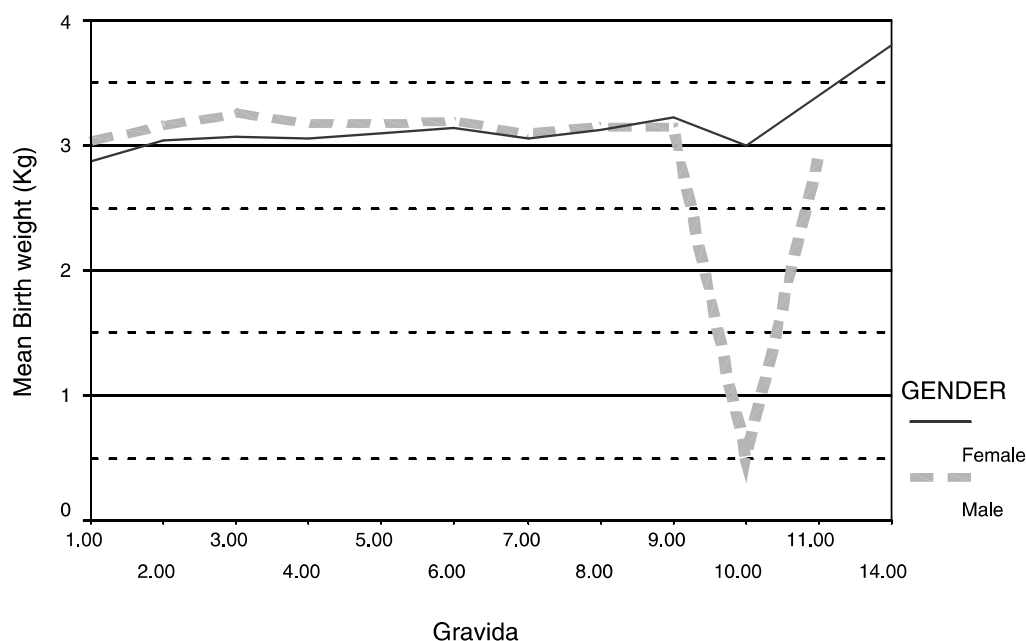


Figure 4: Gravida and mean birth weights of male and female neonate

DISCUSSION

It is estimated that between 1-2% of pregnant women are expected to need a major intervention to save their lives. Increasing rates of cesarean delivery are a major cause for concern in almost all developed countries¹¹. A number of strategies have been proposed that aim to reduce the overall proportion of cesarean deliveries, including trial of labor after previous cesarean deliveries¹². Observational studies¹³ suggest that trial of labor is associated with a significantly increased risk of uterine rupture. A meta-analysis reported an increased risk of perinatal death associated with trial of labor¹⁴, but included premature births between 28 and 36 weeks' gestation and breech deliveries¹⁵.

Forceps are recognized as the primary instrument for operative vaginal delivery in English-speaking countries¹⁶. Although most British obstetricians still prefer forceps for instrumental delivery, the popularity of vacuum extraction is increasing. From 1989 to 1993, the total instrumental vaginal delivery rate remained steady at about 10%. During this time, the ratio of vacuum to forceps procedures gradually changed from 1:6.29 to 1:1.89¹⁷. The Audit Committee of the Royal College of Obstetricians and Gynaecologists has endorsed the view that the vacuum is the instrument of first choice for assisted delivery¹⁸. In the United States, between 1980 and 1987, the forceps rate fell to 8% and the vacuum rate rose to

3%¹⁹. Italy's forceps rate has dropped to 1.1% among primigravid women, while its vacuum rate remains steady at 3.7%²⁰.

Studies suggesting that vacuum extraction cause less maternal morbidity²¹ and even less fetal morbidity than forceps²² have prompted calls for the vacuum extractor to replace forceps as the instrument of first choice for assisted vaginal deliveries. Instrumental vaginal delivery trials comparing forceps with the vacuum extractor are not new. These trials have documented that the vacuum technique offers lower rates of maternal trauma, such as genital tract lacerations and episiotomy extensions, but higher rates of cephalohaematoma and scalp trauma, than forceps. In one American trial, soft tissue trauma was noted in 36% of the vacuum group and 49% of the forceps group²³. Pumnoneu *et al*²⁴ found all fetal complications were less common after forceps delivery. Johanson *et al*²¹, found no difference in superficial damage, but cephalohaematoma among 9% of the vacuum group, and 3% of the forceps group. Two trials comparing forceps to the soft cup vacuum extractor showed the vacuum extractor to be less effective than forceps in achieving vaginal delivery^{21,23}. The design of forceps has not changed for decades, whereas the vacuum extractor has undergone modifications, most recently the introduction of soft cups²⁵ to reduce fetal trauma and increase the instrumental success rate.

In our study, there were no significant differences between forceps-delivered and vacuum-delivered groups in the incidence of superficial injuries such as abrasions and bruising. There was, however, significantly increased incidence of jaundice, caput and cephalohaematoma in the vacuum-delivered group compared with the forceps-delivered group. When a ring of extrinsic pressure is applied to the fetal scalp, either from the dilating cervix, pelvic soft tissue or vacuum cup, interstitial fluid and micro-haemorrhages accumulate to form the caput. Longer second stage labour and longer vacuum procedure apparently allow time for accumulation of more interstitial scalp fluid, which in turn leaves the tissues more vulnerable to abrasions, lacerations and cephalohaematoma formation.

In our study, the conditions thought to compromise the mother's life include severe antepartum haemorrhage due to placenta praevia or abruption placentae, severe postpartum haemorrhage, major foeto-pelvic disproportion (due to a small pelvis or hydrocephalus; including uterine pre-rupture and rupture), transverse lie and brow presentation eclampsia/ pre eclampsia

CONCLUSION

This study revealed that there is still high percentage of cesarean section. To sustain UN millennium development goals, cost effective measures are to be searched, to save maternal and new born lives.

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