

# Statistical Data About Risk Factors and Pregnancy Outcome of Placenta Previa

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Doi: 10.19044/esj.2018.v14n15p27 [URL:http://dx.doi.org/10.19044/esj.2018.v14n15p27](http://dx.doi.org/10.19044/esj.2018.v14n15p27)

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## Abstract

Placenta previa is a placental location close to or over the internal cervical os. **The aim** of this study was to evaluate: risk factors, maternal and neonatal outcomes in patients with placenta previa. **Material and methods:** We conducted a retrospective cohort study of 38 women who have had a caesarean section for placenta previa at a tertiary referral University Hospital of Obstetrics and Gynecology “Koço Gliozheni” in Tirana, Albania. The period of this study was from January 2015 to March 2018. Maternal and neonatal data were obtained from medical records and the hospital database system. All cases of placenta previa were managed by medical team, obstetric consultants and all data were calculated with SPSS.20 program. **Results:** In total, 38 women with placenta previa were classified in three different types of placenta previa: Marginal placenta previa occurred in 16 women(42.1%), Complete placenta previa occurred in 19 women(50%) and with accreta placenta previa in 3 women(7.9%). The mean age of mothers was 30,61 years old, mode = 35, median = 30 and Std. deviation = 4.641 years. **Conclusions:** The prevalence rate of section caesarean and placenta previa is increased during the years. Several obstetrical factors have been found to be risk for placenta previa including: advancing maternal age, previous caesarean delivery, previous abortions, previous uterine surgery, multiparity, previous placenta previa, low socio-economic status, mother’s cigarette smoking /alcohol use. Placenta previa is associated with an increase in preterm birth and neonatal and maternal outcome. Other complications of pregnancy can be associated with placenta previa, but the majority of women deliver healthy babies.

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**Keywords:** Placenta previa, placenta accreta, maternal outcome, neonatal outcome

## **Introduction**

Placenta previa (PP) is a placental location close to or over the internal cervical os. (Cunningham,2010). Placenta previa is the most common cause of painless bleeding in the later stages of pregnancy (after the 20th week), because the placenta is rich in blood vessels, if it is implanted near the outlet of the uterus, bleeding can occur when the cervix dilates or stretches. (James, 2007), (Milosevic,2009).

The exact etiology of placenta previa is unknown. However, it may be associated with abnormal vascularization. (Charles et al, 2014). The condition may be multifactorial and several obstetrical factors have been found to be risk for placenta previa including:

Uterine factors: Previous Caesarean section, Previous Abortion - curettage (such as D&C procedures for miscarriages or induced abortions) of the uterine cavity, or any type of surgery involving the uterus (Myomectomy), include scarring of the upper lining tissues of the uterus. (Ojha, 2012), (Gulrukh,2006), (Ananth, et al. 1997).

Placental factors: multiple gestation, mother's cigarette smoking/ alcohol use, and living at high altitude. So in these situations the placenta must grow larger to compensate for decreased function (lowered ability to deliver oxygen and/or nutrients). (Ananth, et al. 1997). It has also been observed that women carrying male fetuses are at slightly greater risk for placenta previa than are women carrying female fetuses. The risk of having placenta previa increases with: advanced maternal age, the number of previous deliveries, women with previous placenta previa. (Faiz, et al. 2003), (Ananth, et al.1996). Transvaginal ultrasonography is more accurate in diagnosing placenta previa than abdominal ultrasonography. However, with the technologic advances in ultrasonography, the diagnosis of placenta previa is commonly made earlier in pregnancy and then confirmation by magnetic resonance imaging (MRI). (Williams, et al. 1993), (Sherman, et al. 1992), (Warshak, 2006).



**Fig. Nr. 1.** Normal Placenta (Authors 2017)



**Fig. Nr. 2.** Complete Placenta Previa (Authors 2017)



**Fig. Nr. 3.** Marginal Placenta Previa (Authors 2017)



**Fig. Nr. 4.** Accreta Placenta Previa (Authors 2017)

Historically, there have been three defined types of placenta previa: Complete placenta previa in which the placenta completely covers the internal os. Partial placenta previa in which the placenta partially covers the internal os. Marginal placenta previa in which the placenta is located adjacent to, but not covering, the internal os. (Smith, et al. 1997), (Creasy, et al.2014).

Placenta previa is associated with an increase in preterm birth and neonatal and maternal outcome. (Bhide,2003). Fetal intrauterine growth retardation (IUGR), Low birth weight (< 2500 g), low Apgar score which needs admission in neonatal intensive care unit. Even neonatal death may occur. (Zlatnik, et al.2006). Maternal complications are: massive hemorrhage, emergency hysterectomy, multiple blood transfusions, urogenital injuries, sepsis, prolonged intensive care unit (ICU) and hospital stay. Management of placenta previa depends upon the extent and severity of bleeding, the gestational age and condition of the fetus, the position of the placenta and fetus, and whether the bleeding has stopped. (Eric. et al, 2001). Treatment of placenta previa involves bed rest and limitation of activity. Tocolytic medications, intravenous fluids, and blood transfusions may be required depending upon the severity of the condition. A Caesarean delivery is usually planned for women with placenta previa as soon as the baby can be safely delivered (typically after 36 weeks' gestation), although an emergency Caesarean delivery at any earlier gestational age may be necessary for heavy bleeding that cannot be stopped after treatment in the hospital.(Ara, et al, 2009). The risk of requiring hysterectomy following a caesarean delivery for patients with placenta previa (accreta if the placental tissue extends into the superficial layer of the myometrium) is increased.(Blackwell,2011), (Machado, 2011).

## **Materials and methods**

We performed a retrospective cohort study, covering a period time from January 1,2015, to March 31, 2018, of women who have had a caesarean section for PP at a tertiary referral University Hospital of Obstetrics and Gynecology “Koço Gliozheni” in Tirana, Albania. Maternal and neonatal data were collected from the case notes (medical records and hospital database system) of women who were found to have PP on transabdominal or transvaginal ultrasound scanning and in whom the diagnosis was confirmed during Caesarean section. The ultrasound machine used was Aloka Echo Camera L. All ultrasound examinations were performed by an obstetrician. The transabdominal ultrasound examinations were performed with the bladder half-full and the transvaginal ultrasound examinations were performed with the bladder empty. The internal os was visualized, and the distance between the lower edge of the placenta and the internal os was measured.PP cases were

managed by medical team, obstetric consultants. All data were calculated with SPSS. 20. Program.

Data were collected on patient age, parity, gestational age at time of caesarean delivery, history of previous PP, abortions, history of previous surgery intervention in uterine cavity, smoking cigarette and alcohol use, history of previous caesarean delivery, and degree of PP by ultrasound. The evaluation also included whether caesarean section was done electively or as an emergency, operative time. Neonatal evaluation included neonatal birth weight, Apgar score at 1 and 5 minutes, neonatal gender, position of fetus, generality admission to the neonatal intensive care unit, or any other complications.

## Results and discussions

In total, 38 women with PP were classified: Marginal PP occurred in 16 women (42.1%), Complete PP in 19 women (50%) and 3 women (7.9%) with Accreta PP. The mean age of mothers was 30.61 years old; mode = 35; median = 30 and Std. deviation = 4.641 years. Our results showed that the overall prevalence rate of placenta previa was 1.6/1000 birth life in 2015; 2.6‰ in 2016 and 4.2‰ in 2017. Also we can see that prevalence rate of section caesarean is increased during the years. Respectively this is 352.4 ‰ in 2015; 373.2‰ in 2016 and 403.5‰ in 2017.

**Tab. Nr.1.** Prevalence of S. Caesarean and Placenta Previa

Year	Nr. of birth	Nr. Sec.Caes	Prevalence of Sec. Caes	Nr. of P.P	Prevalence of P.P
2015	4279	1508	352,4‰	7	1,6 ‰
2016	4223	1576	373,2‰	11	2,6 ‰
2017	4037	1629	403,5‰	17	4,2 ‰

In Tab Nr. 2 we can see examples of situations like as living at a low socio-economic status. (57.9 %) and mother's cigarette smoking/alcohol uses (39.5%), increases risk for placenta previa.

**Tab. Nr. 2.** Mothers' demographic data and factors

Soc-eco. Status	Nr	%	Story of alcohol/ cigarette uses	Nr	%
Unemployed	22	57.9	No	23	60.5
Employer	16	42,1	Yes	15	39.5
Total	38	100	Total	38	100

As we can see at Tab Nr.3,4 that uterine factors can predispose to placenta previa include scarring of the upper lining tissues of the uterus. So placenta previa is more common among women who: Have had a baby (50% second parity, 15.8% third parity, 10.5 % multiparity), Previous caesarean

delivery including first subsequent pregnancy following a caesarean delivery(42.1% after 1s/caesarean, 5.3% after 2 s/caesarean, 5.3 % after 3 s/caesarean), Abortions(dilatation and curettage) (65.8 % had 1 abortion, 5.3% 2 abortions), had placenta previa with a previous pregnancy (15.8%), previous uterine surgery (15.8%), number of fetus (94.7 % one fetus).

**Tab. Nr. 3.** Uterine factors

Parity	Nr	%	Previous sec.caes	Nr	%	Story of abortion	Nr	%
0	3	7.9	0	18	47.4	0	12	28.9
1	6	15.8	1	16	42.1	1	25	65.8
2	19	50.0	2	2	5.3	2	2	5.3
3	6	15.8	3	2	5.3			
Multiparity	4	10.5						
Total	38	100		38	100		38	100

The mean age of mothers that are with PP and their have had previous story with PP is 32.8 years old (SD=3,54 and SE =1,4), but mothers that didn't have previous story of PP, the mean age is 30.1 years old (SD=4.74 and SE=0.83).

**Tab. Nr. 4.** Uterine factors

Nr. of fetus	Nr	%	Previous intervention story	Nr	%	Previous PP story	Nr	%
Unic (Singleton)	36	94.7	No	32	84.2	No	32	84.2
Multiple Gestation(Twins)	2	5.3	Yes	6	15.8	Yes	6	15.8
Total	38	100	Total	38	100	Total	38	100

As we can see at the Table Nr.5 that are three types of placenta previa (42.1 % Marginal, 50% Complete and 7.9% Accreta).However, maternal and fetal complications of placenta previa are well documented. Preterm birth is highly associated with placenta previa, with 57.9 % of women delivering between 32-36 weeks and 26.3% of them delivering > 36 weeks. Also from these 38 patients: 26 (68.4%) delivered with emergency caesarean and 12 (31.6%) were planned.

**Tab. Nr. 5** Position of P.P, Gestational Age of delivery and mode of S.C

Position of P.P	Nr	%	G. Age of Delivery	Nr	%	S.CNr%		
Marginal P.P	16	42.1	28-32 weeks	6	15.8	Emergency	26	68.4
Complete P.P	19	50.0	32-36 weeks	22	57.9	Planned	12	31.6
Accreta P.P	3	7.9	>36 weeks	10	26.3	Total	38	100
Total	38	100.0	Total	38	100			

At the Table Nr.6 are summarized some of the neonatal complications of Placenta Previa: Abnormal fetal presentation (31.6% breech, 28.9 % transverse), Low birth weight (34.2 % 2000-2400 g) and some of them IUGR. It has also been observed that women carrying male fetuses (73.7%) are at slightly greater risk for placenta previa than are women carrying female fetuses (21.1%)

**Tab. Nr. 6.**Position, gender and weight of fetus

Position of fetus	Nr	%	Fetus gender	Nr	%	Weight of fetus	Nr	%
Cephalic	13	34.2	M	28	73.7	1500-1900 gr	8	21.1
Breech	12	31.6	F	8	21.1	2000-2400 g	13	34.2
Transverse	11	28.9	M-M	1	2.6	2500-2900 gr	10	26.3
Twins	2	5.3	F-M	1	2.6	≥3000 gr	7	18.4
Total	38	100	Total	38	100			

Analyzing all cases with PP, using ANOVA test we didn't evidenced significant differences between weight of fetus, position of fetus position of PP, GA and mother's age. On the other hand we evidenced a very significant positive correlation between fetus weight and gestational age at the moment of birth. ( $p \leq 0.001$ , Pearson's  $R = 0.781$ ). So increasing GA is increased also the weight of fetus. This is represented in the table nr. 7.

**Tab. Nr.7.** Correlation between GA and fetus weight

Weight		Gestational Age (GA)			Total
		28-32 weeks	32-36 weeks	>36 weeks	
1500-1900 gr	Count	6	2	0	8
	% within GA	100	9.1	0.0	21.1
2000-2400 gr	Count	0	12	1	13
	% within GA	0	54.5	10	34.2
2500-2900 gr	Count	0	7	3	10
	% within GA	0	31.8	30	26.3
>= 3000 gr	Count	0	1	6	7
	% within GA	0	4.5	60	18.4
Total	Count	6	22	10	38
	% within GA	100	100	100	100

Also we have evidenced that exists a very significant statistical difference between gestational age and delivery mode, (emergency caesarean section or planned caesarean section). So  $\chi^2 = 21.84$ ;  $df = 2$ ;  $p \leq 0,001$ . (see tab. Nr. 8.)

**Tab. Nr. 8.** Correlation between GA and mode of caesarean section

	GA	Section Caesarean		Total
		Urgency	Planned	
28-32 weeks	Count	6	0	6
	% within GA	100	0	100
	% within Section Caesarean	23.1	0	15.8
	% of Total	15.8	0	15.8
32-36 weeks	Count	19	3	22
	% within GA	86.4	13.6	100
	% within Section Caesarean	73.1	25	57.9
	% of Total	50	7.9	57.9
>36 weeks	Count	1	9	10
	% within GA	10	90	100
	% within Section Caesarean	3.8	75	26.3
	% of Total	2.6	23.7	26.3
Total	Count	26	12	38
	% within GA	68.4	31.6	100
	% within Section Caesarean	100	100	100
	% of Total	68.4	31.6	100

## Conclusions

- The prevalence rate of section caesarean and placenta previa is increased during the years 2015-2018. There are three types of placenta previa: 50% Complete, 42.1 % Marginal and 7.9% Accreta.
- Several obstetrical factors have been found to be risk for placenta previa including: advancing maternal age (> 30 years), previous caesarean delivery (42.1 % after 1 s/caesarean), previous abortions (65.8 % had 1 abortion), previous uterine surgery (myomectomy), multiparity (50% second parity), previous placenta previa, low socio-economic status (57.9%) , mother's cigarette smoking /alcohol use (39.5%).
- Placenta previa is associated with an increase in preterm birth and neonatal and maternal outcome. Preterm birth with 57.9 % of women delivering between 32-36 weeks, Abnormal fetal presentation (31.6% breech, 28.9 % transverse), Low birth weight (34.2 % 2000-2400 g) and some of them IUGR. So 68.4% of women delivered with emergency caesarean and 31.6% were planned. Also women carrying male fetuses (73.7%) are at slightly greater risk for placenta previa. Other complications of pregnancy can be associated with placenta previa, but the majority of women deliver healthy babies.



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