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Maternal and Fetal Outcome of Placenta Previa

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Abstract

Background: *Placenta previa accounts for approximately 0.5% of all deliveries but still remains major cause of perinatal mortality and morbidity.This study aimed to the outcome (both maternal and fetal) of placenta previa in Zagazig University Maternity Hospital.****Methods:*** *A cross sectional study that was conducted on 160 pregnancies with placenta previa in Obstetrics and Gynecology Department of Zagazig University Hospitals from October 2018 till October 2019. The diagnosis of placenta previa was based on ultrasonography and confirmed at cesarean delivery.****Results:****160 cases of placenta previa were studied regarding the perinatal and maternal outcome, were highest in the maternal age group 31.9-36 years, incidence of placenta previa was highest in 60.7% the multiparous group. Perinatal morbidity was studied as the percentage of babies requiring resuscitation and NICU admission. It was 21.3% of the casesthe percentage of perinatal deaths was 7.5%.****Conclusions:****The reduced maternal mortality in recent years ismainly due to presence of qualified team of placenta previa and accrete, better diagnosis , blood transfusion, effective antibiotic therapy and better understanding of the management of shock and renal failure*.

Key words: *Placenta previa, Maternal Morbidity; Neonatal Mortality*

I. INTRODUCTION

Placenta previa is a major cause of maternal morbidity and mortality because of the associated antepartum and intrapartum hemorrhage. Moreover, placenta previa is associated with preterm delivery, with the neonatal mortality increasing three fold as a result of prematurity. The prevalence of placenta previa has been recently estimated to be approximately 0.5% of all pregnancies, and this increase correlates to the elevated cesarean section rate[1,2].

Placenta previa should be suspected in any woman beyond 20 weeks of gestation who presents with painless vaginal bleeding.

For women who have not had a second trimester ultrasound examination, antepartum bleeding after 20 weeks of gestationshould prompt sonographic determination of placental location beforedigital vaginal examination is performed because palpation of the placenta can cause severe hemorrhage[3].

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This situation prevents a safe vaginal delivery and requires the delivery of the neonate to be via cesarean delivery. Most cases are diagnosed early on in pregnancy via sonography and others may present to the emergency room with painless vaginal bleeding in the second or third trimester of pregnancy. The presence of placenta previa can also increase a woman's risk for placenta accreta spectrum (PAS) [4].

The underlying cause of placenta previa is unknown. There is, however, an association between endometrial damage and uterine scarring[5].

The risk factors that correlate with placenta previa are advanced maternal age, multiparity, smoking, cocaine use, prior suction, and curettage, assisted reproductivetechnology, history of cesarean section(s), and prior placenta previa[6,5,7].

Uncontrolled postpartum hemorrhage from placenta previa or PAS may necessitate a blood transfusion, hysterectomy thus leaving the patient infertile, admission to the ICU, or even death[5].

Tranexamic acid (TA), an antifibrinolytic agent, could exert its hemostasis effect via inhibiting the activation of plasminogen to plasmin. Its efficacy and safety in reducing hemorrhage and lowering transfusion requirements have been well established in various elective surgeries[8].

During delivery, when the placenta separates from the uterine wall, physiologic and haemostatic changes occur sequentially to reduce bleeding: strong myometrial contractions, increased platelet activity, massive release of coagulation factors and consequently a parallel increase in fibrinolytic activity. While oxytocin administration enhances the first mechanism, TXA administration might be able to counter the latter and thus facilitate the haemostatic process. Finally, the association between the extent of the initial decrease in plasma fibrinogen and the subsequent severity of blood loss reported in women with early PPH suggests that both the coagulation and fibrinolysis processes are implicated in the control of postpartum blood loss and further supports the hypothesis that TXA might be effective in PPH prevention. Accordingly, there is a clear theoretical rationale for the use of antifibrinolytic agents to reduce postpartum blood loss[9].This study aimed to the outcome (both maternal and fetal) of placenta previa in Zagazig University Maternity Hospital

II. METHODS:

This cross sectional study included 160 pregnancies with placenta previa admitted to obstetrics & Gynecology department at Zagazig University hospitals through the period from October 2018 till October 2019.calculated by open Epi.

Inclusion criteria: Women of age (< 40 years old). Diagnosed to have placenta previa by U/S. Patients with and without maternal or fetal complications.Patients with gestational age (> 28 week).**Exclusion criteria:**Patients with severe cardiac of pulmonary diseases. Patients with uncontrolled DM. Patients with liver disease.Patient with history of coagulation disorders.

All patients was subjected to full history, clinical examination and Laboratory Studies included Complete Blood Count (CBC), ABO and Rh compatibility, Prothrombin time (PT)/ partial thromboplastin time (PTT). The sonographic diagnosis of placenta previa requires the identification of echogenic homogeneous placental tissue covering or proximate to the internal cervical os (a distance greater than 2 cm from the os

excludes the diagnosis of previa).

Calculation of gestational age was determined by the last menstrual periods and first-trimester ultrasound.

Primary Measures: Neonatal Apgar score, neonatal admission to NICU or not, neonatal weight.

Secondary measures: Gestational age at which C.S was done. Type of C.S (Emergency or Elective), (USCS or LSCS).Amount of blood loss.Amount of blood transfusion.CBC postoperative.

Complication; intra and postoperative (Fever, DIC, VTE, Maternal infection, ICU admission, Caesarian hysterectomy).Time of discharge from hospital.

The study protocol was approved by the Ethics Committee of the Zagazig University, Faculty of Medicine. An informed consent was taken from all the participants before taking any data or doing any investigations. Approval of IRB.4468

Statistical Analysis:

Data collected throughout history, basic clinical examination, laboratory investigations and outcome measures coded, entered and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) (Statistical Package for the Social Sciences) software for analysis. P value was set at <0.05 for significant results &<0.001 for high significant result.

III. RESULTS:

Table 1: Demographic data distribution among studied group (N=160)

Maternal age	**Mean ± SD**	**31.9±4.71**	
	Median (Range)	**32.0 (23-41)**	
GA by LMP	**Mean ± SD**	**36.16±2.16**	
	Median (Range)	**36.0 (28-38)**	
		N	**%**
HiGravidity	**≤ 2**	**17**	**10.6**
	3-5	**114**	**71.2**
	>5	**29**	**18.1**

Parity	**0**	**9**	**5.6**
	≤ 2	**97**	**60.7**
	>2	**54**	**33.8**
Previous Abortion	**No**	**74**	**46.8**
	Yes	**86**	**53.8**
	Total	**160**	**100.0**

Maternal age was distributed as **31.9±4.71** and GA was **36.16±2.16**, majority were gravidity 3-5 and parity **≤ 2** and 53.8% had experienced previous abortion table 1.

Table 2: Obstetric history distribution among studied group

		N	%
Antepartum Bleeding	**No**	**25**	**15.6**
	Yes	**135**	**84.4**
Previous deliveries	**CS**	**122**	**76.3**
	Vaginal	**7**	**4.4**
	Mixed	**31**	**19.4**
CS	**Once**	**75**	**61.4**
	More	**47**	**38.6**
DM	**No**	**131**	**81.9**
	Yes	**29**	**18.1**
Preeclampsia	**No**	**152**	**95.0**
	Yes	**8**	**5.0**
	Total	**160**	**100.0**

84.4% had antepartum hemorrhage, previous delivery were 76.3% CS, less than 5.0% had relevant family history or medical history table 2.

Table 3: Ultrasonography finding and result distribution among studied group

GA by US	**Mean ± SD**	**34.55±3.48**	
	Median (Range)	**35.0 (23-38)**	
		N	**%**
Placenta previa	**Low lying**	**41**	**25.6**
	Complete central	**83**	**51.9**
	Morbidly accrete spectrum	**36**	**22.5**
Cervical internal OS	**Incomplete**	**55**	**34.4**
	Complete Covered	**105**	**65.6**
	Total	**160**	**100.0**

Majority were placenta previa central 51.9% and 65.6% had complete covered int cervical OS and possibility of accrete founded in 43.8% table 3.

Table 4: Maternal outcome and complications

Hospital stay	**Mean± SD**	**6.78±2.5**	
	Median (Range)	**7.0 (1-14)**	
		N	**%**
Hysterectomy		**41**	**25.6**
Maternal death		**1**	**0.6**
Infection		**12**	**7.5**
ICU admission		**32**	**20.0**
Pulmonary embolism		**3**	**1.9**
Blood transfusion		**114**	**71.2**

Post-partum hemorrhage	**49**	**30.6**
Uterine artery ligation	**42**	**26.2**
Internal iliac artery ligation	**2**	**1.2**
Shock	**21**	**13.1**
Bladder injury	**2**	**1.24**
Ureter injury	**1**	**0.62**
Bowel injury	**1**	**0.62**
Total	**160**	**100.0**

Major complication were **Blood transfusion71.2** ,**Post-partum hemorrhage** with 30.6% table 4.

Table 5: Neonatal outcome and complications

Birth weight	**Mean ± SD**	**2890.3±493.1**	
	Median (Range)	**3000.0 (1500-3500)**	
		N	**Percent**
Sex	**Male**	**120**	**75.0**
	Female	**40**	**25.0**
APGAR	**Bad**	**19**	**11.9**
	Good	**141**	**88.1**
NICU	**Not**	**116**	**72.5**
	Needed	**44**	**27.5**
Still birth		**5**	**3.1**
Neonatal mortality		**12**	**7.5**
Neonatal morbidity		**34**	**21.3**

Total	**160**	**100.0**

Majority were male with BW 2890.3±493.1. 27.5% needed NICU, 5 cases had still birth and 12 cases mortality and 21.3% had morbidity. Causes of death in this only case is due to haemorragicshock.she came to emergency in severe shock table 5.

Table 6: Outcome and complications in relation to different types of placenta previa

			Placenta previa			Total	X^2	P
			Low laying	Complete central	Accrete spectrum			
HYSTRECTOMY	Not	N	41	51	27	119	21.44	0.001**
		%	100.0%	61.4%	75.0%	74.4%		
	Done	N	0	32	9	41		
		%	0.0%	38.6%	25.0%	25.6%		
DEATH	Survived	N	41	80	36	159	1.1	0.57
		%	100.0%	89.8	100.0%	99.4%		
	Died	N	0	1	0	1		
		%	0.0%	1.2%	0.0%	0.6%		
INFECTION	-VE	N	32	80	36	148	17.6	0.00**
		%	78.0%	96.4%	100.0%	92.5%		
	+VE	N	9	3	0	12		
		%	22.0%	3.6%	0.0%	7.5%		
ICU	Not	N	38	61	29	128	6.33	0.04*
		%	92.7%	73.5%	80.6%	80.0%		
	Needed	N	3	22	7	32		
		%	7.3%	26.5%	19.4%	20.0%		

Pulmonary embolism	**-VE**	**N**	**41**	**80**	**36**	**157**		
		%	**100.0%**	**96.4%**	**100.0%**	**98.1%**		
	+VE	**N**	**0**	**3**	**0**	**3**	**2.87**	**0.24**
		%	**0.0%**	**3.6%**	**0.0%**	**1.9%**		
Blood Transfusion	**Not**	**N**	**15**	**20**	**11**	**46**		
		%	**36.6%**	**24.1%**	**30.6%**	**28.8%**		
	Needed	**N**	**26**	**63**	**25**	**114**	**0.91**	**0.63**
		%	**63.4%**	**75.9%**	**69.4%**	**71.2%**		
POST partum hemorrhage	**-VE**	**N**	**35**	**52**	**24**	**111**		
		%	**85.4%**	**62.7%**	**66.7%**	**69.4%**		
	+VE	**N**	**6**	**31**	**12**	**49**	**6.87**	**0.03***
		%	**14.6%**	**37.3%**	**33.3%**	**30.6%**		
Uterine artery ligation	**Not**	**N**	**8**	**9**	**5**	**22**		
		%	**19.5%**	**10.8%**	**13.9%**	**13.8%**	**1.74**	**0.41**
	Done	**N**	**33**	**74**	**31**	**138**		
		%	**80.5%**	**89.2%**	**86.1%**	**86.2%**		
INT ILIAC ART LIGATION	**Not**	**N**	**23**	**40**	**18**	**81**		
		%	**56.1%**	**48.2%**	**50.0%**	**50.6%**		
	Done	**N**	**18**	**43**	**18**	**79**	**0.69**	**0.76**
		%	**43.9%**	**51.8%**	**50.0%**	**49.4%**		
SHOCK	**-VE**	**N**	**41**	**67**	**31**	**139**		
		%	**100.0%**	**80.7%**	**86.2%**	**86.9%**		
	+VE	**N**	**0**	**16**	**5**	**21**	**8.47**	**0.014***

		%	0.0%	19.3%	13.8%	13.1%		
Bladder injury	-VE	N	39	83	36	158		
		%	95.2%	100.0%	91.7%	98.8%		
	+VE	N	2	0	0	2	0.67	0.48
		%	4.8%	0.0%	8.3%	1.2%		
Ureter injury	-VE	N	41	77	36	159		
		%	100.0%	98.8%	100.0%	99.38%	0.38	0.87
	+VE	N	0	1	0	1		
		%	0.0%	1.2%	0.0%	0.62%		
Bowel injury	-VE	N	41	81	36	159		
		%	100.0%	98.8%	100.0%	99.38%	0.38	0.87
	+VE	N	0	1	0	1		
		%	0.0%	1.2%	0.0%	0.62%		
Total		N	41	83	36	160		
		%	100.0%	100.0%	100.0%	100.0%		

Hystrectomy, ICU, Shock and postpartum hemorrhage significantly associated with central type then marginal but infection sig associated with anterior table 6.

Table 7: Neonatal Outcome and complications in relation to different of placenta previa

			Placenta previa			Total	X^2	P
			Anterior	Central	Marginale			
APGAR	Bad	N	3	13	3	19		
		%	7.3%	15.7%	8.3%	11.8%		
	Good	N	38	70	33	141	10.88	0.02*

		%	92.7%	84.3%	91.7%	88.1%		
NICU	Not	N	35	55	26	116		
		%	85.4%	66.3%	72.2%	72.5%		
	Needed	N	6	28	10	44	5.11	0.02*
		%	14.6%	33.7%	27.8%	27.5%		
STILL BIRTH	-VE	N	41	78	36	155		
		%	100.0%	94.0%	100.0%	96.9%		
	+VE	N	0	5	0	5	4.78	0.09
		%	0.0%	6.0%	0.0%	3.1%		
NEONATAL MORTALITY	-VE	N	38	77	33	148		
		%	92.7%	92.8%	91.7%	92.5%		
	+VE	N	3	6	3	12	0.04	0.97
		%	7.3%	7.2%	8.3%	7.5%		
NEONATAL MORBIDITY	-VE	N	35	65	26	126		
		%	85.4%	78.3%	72.2%	78.8%		
	+VE	N	6	18	10	34	1.96	0.36
		%	14.6%	21.7%	27.8%	21.2%		
Total		N	41	83	36	160		
		%	100.0%	100.0%	100.0%	100.0%		

No significant difference or association except that bad APGAR significantly associated with Central and NICU with central and marginal table 7.

IV. DISCUSSION

Main gestational age of termination was 36 weak as there many protocols and guidelines prefer to terminate and in astudyat a Tertiary Maternity Hospital, Sohag we are afraid of getting worse from several attacks. The risk of haemorrhage increases with increasing gestational age from 4.7% at 35 weeks to as high as 59% at 38 weeks, the mean fetal gestational age was 37.3±1.04 weeks (range, 35-39 weeks), and this degree of fetal maturity may explain our high rate of hysterectomy and blood transfusion

The mean maternal age in this study was 32years while in the the main age was this may due to our traditions in late marriage and small sample of this study.

In the Shruthi Prasanth, [10] study, Pl previa was highest in the age group of 20-29 years i.e., 72.9%, followed in descending order by women in the 30-35 year age group, above 35 year age group and less than 19 year age group, i.e., 20.3%, 5.1%, 1.7% respectively.

In the study Placenta praevia in Najran University hospital The majority (65.2%) of the patients with placenta praevia were in the age group 20-29 years. In contradistinction to the findings of Silver R et al. who found women of 30 years of age or older, were more than twice as likely to have pregnancies complicated by placenta praevia. The incidence of placenta**Prasanth**[11]study, Pl previa was highest in the age group of 20-29 years.

In the present study, the incidence of placenta previa was highest (60.7%) in multigravidas (with two to one viable births). The incidence in Grand multi (>2viable births) was 33.8% and in Primi it was 5.6%.In the **Prasanth** [11]study the incidence of placenta previa was highest (73.55%) in multi gravidas.

In the **Shruthi Prasanth,** [10]study the incidence of placenta previa was highest (73.55%) in multi gravidas (with two to three viable births). The incidence in Grand multi (>4 viable births) was 6.32% and in Primi it was 26.43%.

In the present study, perinatal morbidity was studied as the percentage of babies requiring resuscitation and NICU admission. It was 27.5% of the cases

Neonatal mortality 12 cases mortality and21.3% had morbidity in astudyat a Tertiary Maternity Hospital prematurity (gestational age <37 weeks) was 13.5%. Unfortunately, we had 13.2% fresh stillborn babies and 17% admission to NICU.

In the Shruthi Prasanth, [10]study, 1.6%, 44.3% of babies received resuscitation and NICU admission 39.34% of babies recovered.

In the present study Major complication were uterine artery ligation 86.3%, Blood transfusion with 69.4% Some studies showed that 90% of patients with placenta accreta required blood transfusion and packed red blood cells is needed in 40% of cases and shock/hypotension was noticed in13.1% of cases, PPH was noticed in 30.6% of cases, , 41 cases of placenta previa required caesarean hysterectomy to control the bleeding in the immediate post-operative period.

Mothers who have undergone hysterectomy had placenta accreta and none had placenta previa. The average units of donated blood were 2.5±1.8 units with a maximum of 8 units in some cases. This indicates that

liberal blood transfusion and cesarean hysterectomy are important factors in reducing case-fatality rate in women with placenta accreta. Some studies showed that 90% of patients with placenta accreta required blood transfusion and packed red blood cells is needed in 40% of cases.

The reported maternal mortality with these measures is as high as 7% in astudyat a Tertiary Maternity Hospital There were 13.2% bladder and 3.8% bowel injuries.It was found that the bladder is the most frequently involved organ in placenta percreta and is associated with significant morbidity. In a meta-analysis of 54 cases of placenta percreta, bladder injuries were reported as high as 26% Surgical injuries are due to the invasion of the bladder in placenta accreta together with multiple adhesions as a result of repeated cesarean delivery.

In the Shruthi Prasanth,[10]study , 39.65% (n=69) patients received blood transfusions and 3.7% of patients went in for hypotension and / or shock. No patients had febrile morbidity in the post-operative period. The incidence of PPH was 27.9%, hysterectomy was done in 4 cases (7.46%). In this study 3 case of peripartum hysterectomy was for anterior placenta previa. Adherent placenta was seen in 6 cases (3.44%). The indication for emergency peripartum hysterectomy in recent years has changed from traditional uterine atony to abnormalplacentation.

Patients with placenta previa and scarred uterus had 16% risk of undergoing emergency peripartum hysterectomy compared to 3.6% in patient with unscarred uterus. In the present study, 2 cases, caesarean hysterectomy was done for uterine atony, after all conservative measure to arrest bleeding failed.

In this study hystrectomy, ICU, Shock and post partum hemorrhage significantly associated with central type then marginal but infection and bladder injury sig associated with anterior

Jang et al.[12] performed a study looking at different localizations and found that anterior position increases the incidence of excessive blood loss, massive transfusion, placental accreta and hysterectomy.

V. CONCLUSIONS

The major maternal and neonatal complications associatedwith placentaprevia which is a potential life threatening conditiontobothmother and baby. Thorough antenatal care and planned deliveryin wellequippedcentremayimprove outcome in future. The reduced maternal mortality in recent years ismainly due to presence of qualified team of placenta previa and accrete, better diagnosis , blood transfusion, effective antibiotic therapy and better understanding of the management of shock and renal failure.

Further researches on larger populations are needed to study the risk assessment and long term consequences of cesarean sections.

REFERENCES:

1- **Kayem G, Keita H**. Management of placenta previa and accreta. *J GynecolObstetBiolReprod. (2014);(*43): 1142.

2-Rao KP, Belogolovkin V, Yankowitz J andSpinnato JA. 2nd. Abnormal placentation: evidence-based diagnosis and management of placenta previa, placenta accreta, and vasa previa. *ObstetGynecolSurv. (2012); (*67): 503.

3- Charles J Lockwood, et al. (2017): Clinical manifestations and diagnosis, and course of placenta previa. http://www.uptodate.com/home. Accessed Feb. 3,

4- Silver RM, Branch DW. PlacentaAccreta Spectrum. N. Engl. J. Med. 2018 Apr 19;378(16):1529-1536

5- Silver RM, Branch DW. PlacentaAccreta Spectrum. N. Engl. J. Med. 2018 Apr 19;378(16):1529-1536(2006); (107): 1226.

6- Martinelli KG, Garcia ÉM, Santos Neto ETD, Gama SGND. Advanced maternal age and its association with placenta praevia and placental abruption: a meta-analysis. Cad SaudePublica. 2018 Feb 19;34(2):e00206116

7- Jing L, Wei G, Mengfan S, Yanyan H.(2018): Effect of site of placentation on pregnancy outcomes in patients with placenta previa. PLoS ONE. ;13(7):e0200252.

8-Wang C, Xu GJ, Han Z, et al. Topical application of tranexamic acid in primary total hip arthroplasty: a systemic review and meta-analysis. Int J Surg 2015;15:134–9

9- Cortet M, Deneux-Tharaux C, Dupont C, et al. (2012): Association between fibrinogen level and severity of postpartum haemorrhage: secondary analysis of a prospective trial. *Br J Anaesth.*; (108):984.

10- ShruthiPrasanth et al., (2016): Indian Journal of Obstetrics and Gynecology Research; 3(3):274 -278.

11- Prasanth, S., Mehta, P., &Rajeshwari, K. S. (2016). Maternal and fetal outcome of placenta previa in a tertiary care institute: a prospective two year study. Indian Journal of Obstetrics and Gynecology Research, 3(3), 274-278.

12- Jang DG, We JS, Shin JU, et al. Maternal outcomes according to placental position in placental previa. Int J Med Sci 2011;8:439–44.