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# Sonographic Correlation of Placenta Previa with Pregnancy Outcomes After 24 Weeks of Gestation

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## Abstract

Placenta typically discoid in shape and echogenic (hyperechoic) structure visible on ultrasound. Placenta may be extend to the lateral wall of uterus but normally lies along the anterior and posterior wall of the uterus. The thickness of placenta is 2.0cm to 2.5cm and measuring diameter 22cm. In various times placenta abnormally located along the internal cervical os of uterus which may be partially or fully covered the os that's called placenta previa. Prevalence of placenta previa occurs in approximately 5 per 1000 pregnancies. Prevalence of Placenta previa is rising as a result of increasing rates of LSCS (Lower segment cesarean section). Placenta previa leads many adverse outcomes during pregnancy for both fetus and maternal so it is require follow up scan at term. Objective: The main objective is to estimate the sonographic correlation of placenta previa with pregnancy outcomes after 24weeks of gestation. Methodology: A cross sectional analytical study conducted at Tertiary care Teaching Services Hospital Lahore. Maternal diagnosed with placenta previa after 24 weeks of gestation included and also only singleton pregnancies. Maternal observed with follow up scans throughout term and analyzed perinatal outcomes. GE Logiq S8 Ultrasound machine, with 3.5MHz convex probe used for the evaluation of patients. Results: Total 77 patients. We observed among maternal with high grade (type three and four) placenta previa are highly significant and associated with outcome cesarean deliveries. Then those minimum maternal with low grade (type one and two) placenta previa are not highly significant. Another result we find out those maternal who have previous history of Lower segment cesarean section associated with placenta previa.

**Keywords:** Ultrasound, Placenta Previa, Cesarean Delivery, Haemorrhage, Normal Vaginal Delivery

## Introduction

Placenta involves of vascular tissue in which remaining products can permits in the reverse direction from fetus, oxygen and nutrients can permits from mother's blood into that of the fetus. Placenta previa is the occurrence in which placental tissue which spread over pass the internal cervical os. Due to fetus delivered early as preterm (less than 37 weeks of gestation) Also are some of them stillborn or die early in the neonatal period. Maternal mortality due to antenatal and postnatal haemorrhage that is major causes of both maternal morbidity mortality. Particularly gross bleeding causes by placenta previa. While if effects only 1 in 300-400 deliveries. Definitely neonatal mortality is raised the major cause being premature baby and threefold in pregnancy with placenta previa. Higher incidence of antepartum bleeding in women which having high grade (major) placenta previa in earlier 33 weeks of gestation require blood transfusion, and also with significant of preterm delivery hysterectomy, cesarean delivery than women with low grade (minor) placenta previa. In which the developed placenta partially or fully covers the internal os the cervix of the uterus that's placenta is an obstetric complication. Placenta previa is a serious cause of bleeding in third-trimester that's has been related with worse maternal complications and perinatal outcomes. Peripartum bleeding is the main causes of direct maternal mortality in Asia. Major causes of per partum bleeding are uterine don't be able to contract, placenta previa, abruption placenta. Placenta previa is related with postpartum hemorrhage, deliveries occur before time and fetal growth restriction. Neonatal death and greater rate of premature fetus are also occurring in pregnancies that are complicated by placenta previa. It is still challenging to better perinatal outcomes and minimize maternal complication in women having placenta previa despite to make diagnosis so early, careful observation and advance newborn care. In women with greater maternal age, multigravida, males fetuses previous cesarean section and previous induced or spontaneous abortion that's maternal have increased occurrence of placenta previa observed by epidemiological and clinical studies however causes of low lying remains obscure. Furthermore, mother use drug and having habit of smoking that's behavioral factors behavioral factors that have been include with the increased risk of placenta previa. Finally, women have higher incidence of placenta previa that's with a history of low lying placenta in previous pregnancies. The previous studies shows placenta previa rate of prevalence is vary greatly in women which have previous predisposing risk factors. The prevalence rate of placenta previa and its relation with various harm factors estimated by systematic review of literature so we performed this study. To assess the strength and extent of the correlation of placenta previa with these harm factors so conduct a meta-analysis and also for as well as to identification the sources of heterogeneity across these studies. The prevalence of Placenta previa follows at around 5 per 1000 pregnancies. With cumulative rates of LSCS (Lower segment cesarean section) so as result the prevalence of placenta previa increased. In Austria the caesarean section frequency has increased from 22 to almost 30 percent in last decade. Such abnormal Placental location has been detected to be connected with previous cesarean section.

Ultrasound is a useful modality chooses for diagnosis of placenta previa. With the bladder half- full were performed Tran's abdominal ultrasound and distance measure between the internal cervical os and lower edge of placenta. With empty bladder performed Tran's vaginal ultrasound. Only singleton pregnancies included in study and after 24 weeks gestation. Based on ultrasound conclusion the grade of placenta previa was classified. Ultrasound is non-invasive, inexpensive, portable and easy to use imaging modality. It has no potential of bio effects for baby and mothers. So, it is justified to use ultrasound as a first-line modality for the evaluation of fetal and extra-fetal structures in the female pelvis during pregnancy. Ultrasound can prudently be used in the evaluation of placenta previa and resultant pregnancy outcomes. In recent years ultrasound scanning has managed to exact localization of the placenta. New research on abnormal position of placenta advices individualized approach to progress delivery timing. It was also suggested by some authors that patients with placenta previa should take complete bed rest and checkup regularly throughout pregnancy to minimize adverse outcomes.

## Methods

A cross sectional analytical study was conducted at Tertiary care Teaching Services Hospital Lahore. Our sample size was 72 patients additional 10 percent included total 77 patients were included after the approval of synopsis from an institutional review board (IRB). Women diagnosed with Placenta previa after 24 weeks of gestation included and also only singleton pregnancies. Maternal observed with follow up scans throughout term

and analyzed perinatal outcomes. GE Logiq S8 Ultrasound machine, with 3.5MHz convex probe used for the evaluation of patients. The probe positioned on all parts of the uterus until the distance between internal cervical os and lower edge of placenta detected. The distance must be 3cm or less. The accurate measurement between them and location of placenta increase the rate diagnosis of placenta previa, induction of labor and fetal outcomes.



Figure 1: Image 1st shows 30 yrs. pregnant women their fetus biparietal diameter 7.90cm corresponding to Gestational age 31 weeks 5 days. Image 2nd shows Grade four Placenta previa (which completely covering the internal cervical os)



Figure 2: Image 1st shows 33 yrs. old pregnant women their fetus Femur length 6.35cm corresponding to Gestational age 32 weeks 6 days. Image 2nd shows Grade three Placenta previa (which fully covering the internal cervical os)

## Results

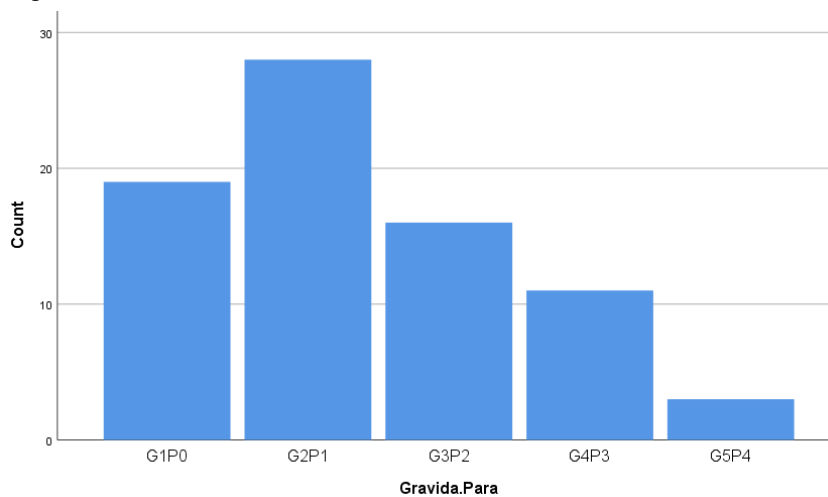
Total 77 patients included in this study which all patients (pregnant women) have placenta previa (low lying placenta). Major results find out Lower segment cesarean section (2.6%) and Normal vaginal delivery (14.3%) in Low grade (One and Two grades) placenta previa. In High grade (Three and Four grades) placenta previa have Lower segment cesarean section (80.5%) and Normal vaginal delivery (2.6%). The relation of outcome with

High-grade placenta previa includes type three and four were highly significant with p-value  $0.000 < 0.05$ . Total count of patients with in grades of placenta previa Lower segment cesarean section (83.1%) and Normal vaginal delivery (16.9%). Another result find out previous history of Cesarean delivery associated with placenta previa. In this study frequencies obtain G1P0 (24.7%) G2P1 (61.0%) G3P2 (81.8%) G4P3 (96.1%) G5P4 (100%).

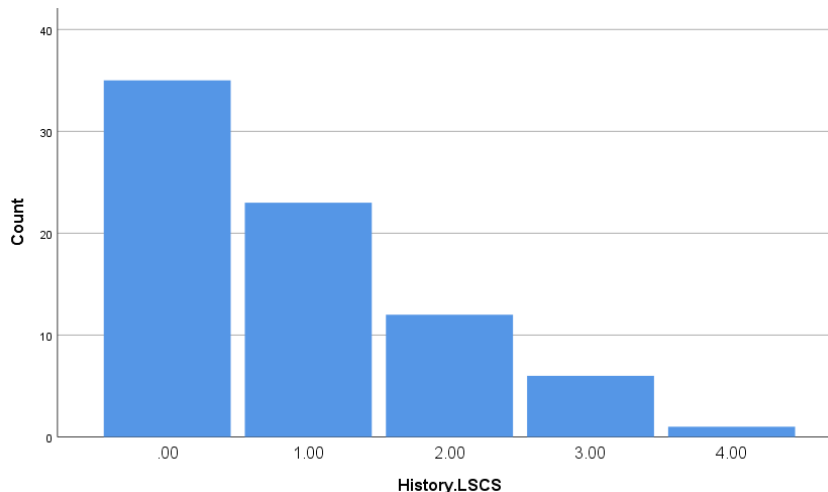
Table 1: Grades Placenta Previa \* outcomes LSCS (Lower segment cesarean section) and NVD ( Normal vaginal delivery) Cross tabulation

		Outcomes		Total
		LSCS	NVD	
Grades PP	One and Two grades of Placenta Previa	Count	2	11
		% within Grades Placenta Previa	2.6%	14.3%
	Three and Four grades of Placenta Previa	Count	62	2
		% within Grades Placenta Previa	80.5%	2.6%
Total		Count	64	13
		% within Grades Placenta Previa	83.1%	16.9%

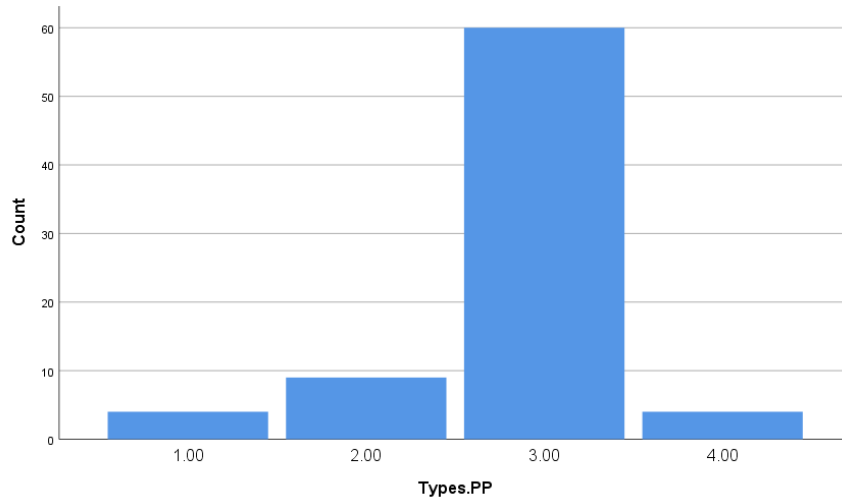
Graph 1:



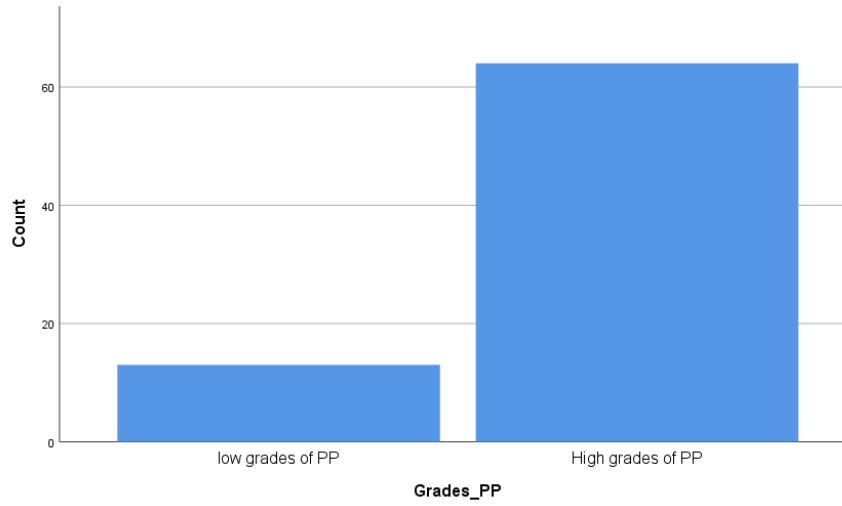
Graph 2:



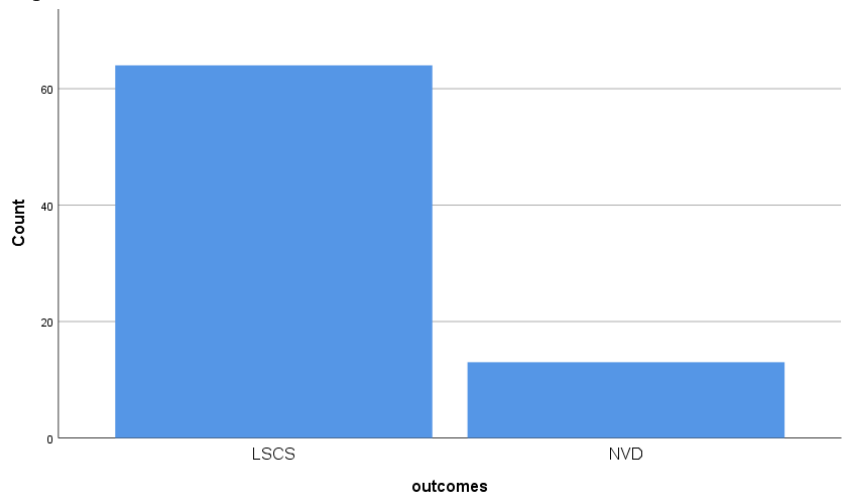
Graph 3:



Graph 4:



Graph 5:



## Discussion

It was a cross sectional analytical study. The objective of this research work was to observe the role of ultrasound in assessment of placental location during pregnancy and its relation with adverse outcomes in services hospital Lahore, City population. Ultrasound technique is useful to detect the accurate location of placenta such as low lying placenta etc. Most of cases in women have placenta encroaching and covering the internal cervical os in 2<sup>nd</sup> trimester of pregnancy although raised as soon in 3<sup>rd</sup> trimester of pregnancy. However some of cases have placenta previa and not raised at the term. In which follow up sonographic scans necessary so minimize adverse outcomes. On ultrasound placenta showed as hyperechoic structure along the myometrium layer of uterus cyst. In those cases placenta raised and not happened any adverse outcomes. But in which placenta remained attached with the internal cervical os and cover it conducted caesarean delivery.

Hyunjin Cho in (2017) studied on placenta previa and its risk factors involve antenatal bleeding. From January 2012 to December 2014 analyzed maternal outcomes by retrospectively study. In Haeundae Paik Hospital, Inje University at the department of obstetrics and gynecology noted women who delivered by placenta previa. Those pregnancies were included which only singleton. At this conclusion using obstetrical history and sonographic finding in cases placenta previa for estimation of antenatal bleeding is difficult.

Martina Koll Mann et al (2015) studied in Placenta Previa occurrence of harm factors and consequences. We accomplished a study on occurrence rate and risk factors of maternal, neonatal in pregnant women with low lying placenta in our organization and province denoting hospital. Between March 1993 to October 2012 this study conducted. Data were collected in a resolution of calculated database from 1993-2003 in a tertiary referral hospital. A worse outcome maternal (34.15%) and neonatal (60.06%) was related with placenta previa. At the concluded by placenta previa was related with differences concerning risk factors neonatal and maternal outcome.

In different type of placenta previa with pregnancy outcomes and risk factors studied by Ahmed- Bahar in (2008). From January 1, 1996 to December 31, 2005, which covering period 10 year of women self-confessed to the obstetric unit a referral teaching hospital in Abha General Hospital of Saudi Arabia that retrospectively studied. The transabdominal or transvaginal ultrasound scanning used for confirmation the accurate location of placenta in cases of placenta previa and make decision cesarean section. The obstetrician was performed ultrasound examination. In the study included only singleton pregnancies after 24 weeks gestation. Women who were diagnosed with Placenta previa and admitted to hospital and managed whether symptomatic or not, to be admitted to hospital and managed predictably up to the 38<sup>th</sup> week of pregnancy needed by hospital policy. In that patients required a crucial indication for delivery. At the conclusion the complete and partial Placenta previa is related with developed morbidity than the maternal with marginal placenta previa

## Conclusion

Although in all types of placenta previa cause high-risk pregnancy however, we observe among maternal with high grade (type three and four) placenta previa are highly significant and associated with outcome cesarean deliveries. Then those minimum maternal with low grade (type one and two) placenta previa are not highly significant because in females placenta raised its proper location and conducted normal vaginal delivery. Another result we find out those women who have previous increasing rates of Lower segment cesarean delivery is associated with high grades of placenta previa and conducted Cesarean delivery.

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