Clinical Audits of Placenta Previa and their Outcomes at Qena University Hospitals

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Abstract

Background: Pregnancy complications that arise in the second and third trimesters include placenta previa (PP).

Objectives: The aim of this study was auditing the current management of placenta previa at Qena university hospital to improve Obstetric care through the use of limited resource and utilization of available services. Identify the gap between the current practice on management of cases with placenta previa at Qena university hospital and the ideal practice according to the international guidelines.

Patients and methods: This study was retrospective Observational study, all patients admitted to Obstetric and gynecological department at Qena university hospital who are diagnosed of having placenta previa (according to to RCOG) during the period from June 2020 to June 2022.

Results: 172 out of 200 patients had placenta previa, whereas 28 patients had low lying placenta. Regarding depth of invasion 28 (14%) cases had placenta accreta, 4 (2%) cases had placenta percreta and 2 (0.7%) cases had placenta increta, Regarding additional surgical steps, no additional steps were needed in 12 (6%) cases, 176 (88%) cases needed bilateral uterine artery ligation and 12 (6%) cases needed bilateral internal iliac artery ligation

Conclusion: The authors of the current study draw the conclusion that placenta previa offers a significant risk to mothers on its own. These patients should be delivered in a tertiary facility with the assistance of a multidisciplinary team. A higher number of prior LSCS is associated with a higher likelihood of placentae accrete.

Keywords: Adherent placenta; Cesarean section; Hysterectomy; Placenta previa

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DOI: 10.21608/svuijm.2022.168651.1432

Received: 1 October, 2022.

Revised: 23 October, 2022.

Accepted: 31 October, 2022.

Published: 12 January, 2024

Cite this article as: Mostafa Khodary, Mohamed Mahrous Mahmoud , Mahmoud Soliman Moaad (2024). Clinical Audits of Placenta Previa and their Outcomes at Qena University Hospitals. *SVU-International Journal of Medical Sciences*. Vol.7, Issue 1, pp: 144-151.

Introduction

A pregnancy problem that happens in the second and third trimesters is placenta previa (PP). Both the mother and the foetus may experience substantial morbidity and mortality as a result. One of the main factors contributing to vaginal bleeding in the second and third trimesters is it **(ACOG, 2021)**.

The new classification of placenta previa is as follow: low lying placenta which<2cm away from internal os but not covered internal os and if covered internal os it called placenta previa **(Reddy et al., 2014)**

Diagnosis of placenta previa done at (18-20) weeks of gestation but provisional diagnosis at >32 weeks and if low lying placenta previa , recent ultrasound should done before (1-2) weeks before cesarean section **(Stafford et al., 2010)**, transvaginal ultrasonsgraphy more accurate in diagnosis placenta previa than transabdominal ultrasonography increase rate of cesarean sections one of the most risk factors of placenta previa prior to advanced maternal age, assited reproductive technology and somking **(Love et al., 2004)**. In third trimester pregnancies, placenta previa occurs 0.3% to 2% of the time. About 0.4% of pregnant women experience placenta previa complications, which have a 0.03% death rate.. Placenta accreta (PA) or one of its more advanced variants may be related to placenta previa as (placenta increta and percreta). Clinically, PA becomes a problem during delivery when the placenta partially separates from the uterus, which is followed by a large amount of obstetric haemorrhage and causes disseminated intravascular coagulopathy, the need for hysterectomy, surgical damage to the ureters, bladder, bowel, or neurovascular structures, adult respiratory distress syndrome, acute transfusion reaction, electrolyte imbalance, and renal failure **(Lam et al., 2000)** management of placenta previa depend on if asymptomatic which not accerta or in active bleeding ,termination at 36+0 weeks to 37+6 weeks, but symptomatic instances requiring an immediate caesarean delivery include those with active labour, refractory life-threatening maternal haemorrhage, foetal distress, and severe vaginal bleeding at >34+0 weeks **(Ononeze et al., 2006)**.

The aim of this study was auditing the current management of placenta previa at Qena university hospital to improve Obestatric care through the use of limited resource and utilization of available services. Identify the gap between the current practice on management of cases with placenta previa at Qena university hospital and the ideal practice according to the international guidelines.

Patients and methods

This study was retrospective Observational study, all patients admitted to Obstetric and gynecological department at Qena university hospital who are diagnosed of having placenta previa (according to to RCOG) during the period from june 2020 to june 2022

Inclusion criteria: All patients diagnosed prenatally as Placenta previa disorders by means of Ultrasound, Doppler, and MRI

Exclusion criteria: Impaired liver or renal functions**,** Coagulation disorders, those with spontaneous separation of placenta intraoperative or any other associated uterine pathology needing hysterectomy

Methods

Data from patient and review of medical records of women admitted to the obstetric and gynecological department searching the following audits criteria: Risk stratification during prenatal and antenatal care, multidisciplinary team inclusion of consultant obstetricians seniors, senior pediatricians, seniors intensive care in the management plan of each patient, number of previous sections, harm to adjacent structures, requirement for blood transfusion, quantity and kind of blood products, blood transfusion required due to placenta (accreta, increta, and percreta) presence (bladder ,colon , ureter , vascular injury), A second surgical procedure (bilateral uterine artery ligation, b lynch, internal iliac artery ligation) is necessary if hysterectomy (total or partial) is necessary. post-operative complications (postpartum hemorrage, pelvic hematoma, DVT< pulmonary embolism , post oberative infection), need ICU admission, maternal mortality, follow up maternal condition , clinical and laboratory, follow up of fetal condition, timing of termination of pregnancy, causes of termination of pregnancy and NICU admission and Fetal ,Neonatal outcome

Data were being analyzed and will be compared to the audit criteria. Each point in the management of placenta previa in the current practice were be compared to the standard international practice to identify the gap between what is the actual and the ideal practice.

Ethical Approval Code:OBG024

Statistical analysis

Statistical Package for Social Sciences (SPSS) version 26.0, Microsoft Excel 2016, and MedCalC programme software version 19.1 were used to tabulate and statistically analyse the gathered data.

Results

Demographics

Ages of patients who initially experienced placenta previa ranged from 19 to 42 years old, with a mean age of 30.51 5.24 years. 9% of the cases were primigravida. 158 (79.0%) patients had previous cesarean section out of which 32% patients had Previous 2 CS. Regarding site of placenta previa, 112 cases (56%) had an anterior placenta. 172 out of 200 patients had previa, whereas 28 patients had low lying placenta. The mean time of termination was 35.16± 4.29 weeks and ranged from 16 weeks to 39 weeks. Regarding time of termination of pregnancy, 47% of patients required termination of pregnancy due to term pregnancy (≥ 37 weeks). Antepartum hemorrhage was the cause of termination in 66 (33 %) patients. Among the 200 studied cases, 41 cases (20.5%) had history of previous surgical abortions, 15 cases (7.5%) had recurrent placenta previa **(Table. 1).**

Intra-Operative complications and methods of hemostasis

Regarding depth of invasion, 28 (14%) cases had placenta accreta, 4 (2%) cases had placenta percreta and 2 (1%) cases had placenta increta. 130 cases (65%) needed blood transfusion.. Regarding additional surgical steps, no additional steps were needed in 12 (6%) cases, 176 (88%) cases needed bilateral uterine artery ligation and 12 (6%) cases needed bilateral internal iliac artery ligation. 71 cases (37%) were admitted to ICU. Bladder injury (serosal) occurred in 14 patients (7.0%). Hysterectomy was done for 10 patients (5%). Regarding maternal mortality, two cases (1%) have died. 28 cases (14.%) had Post-partum hemorrhage. Complete removal of placenta has been a failure in 2 cases (1%). 65 cases (32.5%) required placental bed sutures, whereas 2 cases (1%) required placement of Bakari balloon, **(Table. 2).**

Neonatal outcome

180 (90%) patients gave live births, 98 cases (49 %) were admitted to NICU. 6% cases experienced IUFD, 4% cases had missed abortion and 9% cases had neonatal death. Among the studied cases, 82 cases have given birth to a < 34-week-neonate, 105 cases to 34 -37 week-neonate, and 13 cases to a > 37-week-neonate. Neonatal weight was variable, 13 cases (6.5%) have given birth to a below 1.5 kg neonate, 62 cases (31%) to a neonate of a weight between 1.5 kg and 2.5 kg, and 125 cases (62.5%) to a neonate weighing more than 2.5 kg. Apgar score was calculated at 1 min and 5 mins postnatally, 45 cases have given birth to a neonate of < 7 Apgar score at 1 min, while 20 cases have given birth to a neonate of < 7 Apgar score at 5 min. 8 cases (4%) have given birth to a neonate with a congenital malformation, **(Table. 3).**

Table .1.Demographic data

Variables		**(n=200) (%)**
Age (years)	Mean± SD	30.51± 5.24
	Median	30.0
	Range	19.0- 42.0
Gravidity	Mean± SD	3.61± 1.31
	Median	4.0
	Range	2.0 – 6.0
Parity	Mean± SD	1.86± 1.98
	Median	1.50
	Range	0.0 – 7.0
Time of termination (weeks)	Mean± SD	35.16± 4.29
	Median	37.0
	Range	16.0- 39.0
History of previous surgical abortions		41 (20.5%)
Recurrent placenta previa		15 (7.5%)
Primigravida		18 (9.0%)

History of cesarean section	Total	158 (79.0%)
	Previous 1 CS	32 (16.0%)
	Previous 2 CS	64 (32.0%)
	Previous 3 CS	40 (20.0%)
	Previous ≥4 CS	22 (11.0 %)
Site of placenta previa	Anterior placenta	112 (56%)
	Posterior placenta	88 (44%)
Type of placenta previa	Low lying	28 (14.0%)
	P. previa	172 (86.0%)
Cause of termination	Antepartum hemorrhage	66 (33.0%)
	IUFD	10 (5.0%)
	Mature fetus	94 (47.0%)
	Missed abortion	6 (3.0%)
	Oligohydramnios	2 (1.0%)
	Rupture uterus	1 (0.5%)
	Preterm labour	21 (11.5%)

Table 2. Intra-Operative complications and methods of hemostasis

Variables	N = 200 (%)
Post-partum hemorrhage	28 (14.0%)
Need of blood transfusion	130 (65.0 %)
Invasive placentation	34 (17.0%)
Incomplete removal of placenta	2 (1.0%)
Bladder injury	14 (7.0%)
ICU admission	74 (37.0%)
Mortality	2 (1.0%)
No additional step	12 (6.0%)
Placental bed sutures	65 (32.5%)
Ligation of uterine artery	176 (88.0%)
Ligation of internal iliac artery	12 (6.0%)
Placement of Bakri balloon	2 (1.0%)
Hysterectomy	10 (5.0%)

Table .3. Neonatal outcome of studied patients

Variables		N = 200 (%)
LB/SB	**Live birth**	180 (90.0%)
	Still birth	20 (10.0%
Maturity (weeks)	**< 34**	82 (41.0%)
	34 -37	105 (52.5 %)
	>37	13 (6.5%)

Weight of babies (kg)	**<1.5**	13 (6.5%)
	1.5 – 2.5	62 (31.0%)
	>2.5	125 (62.5%)
Apgar score	**<7 at 1 min**	45 (22.5%)
	<7 at 5 min	20 (10.0%)
Need of NICU stay	**yes**	98 (49.0%)
	No	102 (51.0%)
Congenital malformation	**yes**	8 (4.0%)
	no	192 (96.0%)

Discussion

Placenta previa is a common cause of obstetric hemorrhage with associated maternal morbidity. Other causes of obstetric hemorrhage are abruptio placenta and incidental causes. There are 5 placenta previa cases for every 1,000 pregnancies. Although the cause of placenta previa is unknown, there are a number of risk factors connected to this illness. Advanced maternal age, multiparity, pregnancies spaced closely apart, past caesarean sections or uterine surgeries, maternal smoking, use of assisted reproductive technologies, repeated spontaneous or planned abortions, and history of curettage , and a male foetus are the main risk factors for placenta previa **(Carusi et al., 2018)**.

The date of delivery should be chosen by a clinical situation and sonographic data in accordance with RCOG standards. According to the research, placenta previa should occur before 38 weeks of pregnancy, and placenta accrete should likely occur before 36–37 weeks, elective caesarean section delivery is not advised in asymptomatic women **(Jauniaux et al., 2018)**.

The main aim of this study was auditing the current management of placenta previa at Qena university hospital to improve Obestatric care through the use of limited resource and utilization of available services and identify the gap between the current practice on management of cases with placenta previa at Qena university hospital and the ideal practice according to the international guidelines.

This retrospective observational study was carried out on 200 Patients admitted to Obstetric and gynecological department at Qena university hospital who are diagnosed of having placenta previa (according to RCOG) during the period from June 2020 to June 2022

Ages of the patients who initially displayed placenta previa ranged from 19 to 42 years old, with a mean age of 30.51 5.24 years. With 8.7% primigravida, the mean gravidity and parity were 3.61/1.31 and 1.86/1.98, respectively. Of the 158 patients who had previous caesarean sections (70.9%), 32% had previous two CS. Study by **Shams et al. (2019)** provided confirmation for our findings. The lowest age of presentation was 19 years, and the highest was 45 years. They reported that the average age of patients presenting with placenta previa was 28.5 4.6 years. , Among primigravida, 18%. 130 patients made up of five experienced recurrent placenta previa, of which two-fifths had attached placentas. Patient had prior CS in one-third of cases. 42 (32%) of the patients had a history of prior abortion, and 35/42 of them had had dilatation and curettage procedures. Similar findings were made by **Asicioglu et al. (2014)** in their research of 318 patients with placenta previa, where they discovered that the mean age was 29.2 ± 5.6 years.

Age-related changes in intra-myometrial and endometrial arteries that hinder proper placental development make it more common. In their investigation, patients with placenta previa were predominantly multi-gravidae (82%).

The likelihood of developing placenta previa rises noticeably as the parity rises, and multiparty has been connected as a well-known independent risk factor. In addition, **Hung et al. (2007)** of 457 Asian patients with placenta previa found that 11.4% of those patients had undergone a previous caesarean section. Authors can relate this observation to problems brought on by prior CS **(Law et al., 2010)** scarring in the endometrium. Placenta previa, which has an incidence of 0.3-0.5%, is characterised by the placenta's partial or

complete overlaying of the internal os during implantation in the lower uterine segment. For singleton and twin pregnancies, it happens in 2.8/1000 and 3.9/1000, respectively **(Oppenheimer et al., 2007)**.

According to the current study, 28 (14.0%) individuals had low lying placentas, while 172 (86.0%) of the 200 patients had placenta previa. In contrast, 21 of the 51 patients with placenta previa who had TVS in the study by **Shams et al. (2019)** had a posterior placenta. 19/130 of the recruited individuals had attached placentas, as determined by USG or MRI. 7 out of 130 patients (7%) have undergone a magnetic resonance imaging procedure. Furthermore, **Young et al. (2014)** research.'s of 285 cases with placenta previa found that 69% of them had posterior placenta previa. This shows that low lying posterior previa may remain because the posterior uterine wall has not expanded as much as the anterior uterine wall.

In the study in our hands, regarding depth of invasion, 28 (14%) cases had placenta accreta, 4 (2%) cases had placenta percreta and 2 (1.0%) case had placenta increta. It was found that most (42.5%) of studied cases needed 2 units of fresh blood. Meanwhile, 68 (34%) cases needed 2 units of fresh frozen plasma.

Regarding additional surgical steps, no additional steps were needed in 12 (6%) cases, 176 (88%) cases needed bilateral uterine artery ligation and 12 (6%) cases needed bilateral internal iliac artery ligation.

Also, **Shakuntala et al. (2020**) showed that a total of 38 units of packed red blood cells were transfused, of which 11 (29.7%) women required two units, one (2.7%) required four, two (5.4%) required six, and 23 (62.2%) did not. Fresh frozen plasma was used in 10 units. In the current investigation, the average blood loss was 1500 ml. Refraining from anterior placenta praevia incision after 24 weeks of pregnancy reduces the need for maternal blood transfusions during or after caesarean delivery, according to **Verspyck et al. (2015)** retrospective cohort study. 3.3% of patients with placenta previa who did not have placental adhesion abnormalities (PAA) had **Ozdemirci et al. (2019)** substantial surgical procedures to control bleeding, compared to 50.3% of patients with PAA. The rate of hysterectomy or arterial ligation (hypogastric, uterine, and ovarian arteries) application was 5% in women who had previously given birth vaginally; the rate was 29% in women who had previously given birth via caesarean section, and there was a 7.8-fold increase in major surgical procedures. When previa and PAA coexisted, there was an almost 34-fold increased likelihood of using significant surgical treatments to reduce intrapartum bleeding. An intrauterine balloon and a B-Lynch suture combination approach has also been used successfully to stop PPH in placenta previa, according to **Yoong et al. (2011)**. Hemostatic sutures were used in 2.85% of the women in **Kumari et al. (2018)** series according to their study. Additionally, **Sindiani et al. (2021)** showed that patients with prior CS were significantly more likely than those without peripartum hysterectomy, uterine brace compressive sutures, uterine artery ligation, transfusion of four or more packed red blood cells, transfusion of fresh frozen plasma, and preceding CS to undergo organ harm (all bladder injury). The incidence of ICU admissions and postoperative hospital stays were comparable in both groups.Our results showed that as regard neonatal outcome of studied patients: 98 (49.0%) new born were admitted to NICU. Regarding neonatal outcome, 162 (81.0%) patients had good fetuses, 6% cases experienced IUFD, 4% cases had missed abortion and 9.0% cases had neonatal death.

However, in the study of **Shams et al. (2019)** A total of 130 infants were delivered; 127 of them were live births, while 3 were stillbirths at 20, 28, and 34 weeks, respectively.Babies were delivered weighing an average of 2.18 0.63 kg. Maximum birth weight was 3.4 kg, while the minimum was 400 grammes. 14 of the infants had an APGAR. The median APGAR score in the **Shakuntala et al. (2020**) was 8 at 1 minute and 9 at 5 minutes, respectively. Five babies (13.5%) weighed between two and 2.5 kilogrammes, seven (18.9%) weighed less than two kilogrammes, and 25 (67.6%) weighed more than 2.5 kilogrammes.

13 (35.1%) people were admitted to the NICU. Thirteen of the babies needed NICU admission for preterm care, making up 15 (40.5%) who were preterm. Fetal growth retardation affected 1 (2.7%) although they did not require NICU care. Due to severe respiratory distress in one baby and sepsis in the other, there were 2 (5.4%) perinatal deaths.

5 of the 6 babies who had RDS (66.2%) recovered. In 2 (5.4%) of the new born, It was a surfactant. No statistically significant difference between the two groups was found for newborn weight, Apgar scores, gestational age at birth, or admission to the neonatal critical care unit,

according to **Sindiani et al. (2021)**. (NICU). The investigation comprised 119 patients with PP. Due to their placentas being excessively connected, 29 of them were disqualified.

90 people had non-adherent placenta previa, 36 of whom had previously received CS, and 54 of whom had not. Additionally, **Kollman et al. (2015)** reported women with "major placenta praevia" underwent caesarean deliveries and had considerably higher rates of preterm delivery, birthweight ≤ 2500 g, and the Apgar-score at five minutes, according to Kollman et al. (OR=6.39, CI 1.35-30.35, p0.01).

Conclusion

The authors of the current study draw the conclusion that placenta previa offers a significant risk to mothers on its own. With the aid of a multidisciplinary team, these patients should be delivered at a tertiary facility. The likelihood of placenta accrete increases with the frequency of preceding LSCS.

Funds: No fund

Author Consent and Conflict of interest

We want to reaffirm that this article is free of any known conflicts of interest and that no significant financial backing has been provided that would have affected the research's conclusion.

References

- **American College of Obstetricians and Gynecologists (2021).** Committee on Obstetric Practice, Society for Maternal-Fetal Medicine. Medically Indicated Late-Preterm and Early-Term Deliveries: ACOG Committee Opinion, Number 818. Obstet Gynecol, 137:e29.
- **Asıcıoglu O, Şahbaz A, Güngördük K, Yildirim G, Asıcıoglu BB, Ülker V (2014).** Maternal and perinatal outcomes in women with placenta praevia and accreta in teaching hospitals in Western Turkey. J Obstet Gynaecol, 34(6):462-6.
- **Carusi DA (2018).** The Placenta Accreta Spectrum: Epidemiology and Risk Factors. Clinical obstetrics and gynecology, 61(4):733-42.
- **Hung TH, Hsieh CC, Hsu JJ, Chiu TH, Lo LM (2007).** Risk factors for placenta previa in an Asian population. Int J Gynecol Obstet, 97(1):26-30.
- **Jauniaux ER, Alfirevic Z, Bhide AG, Belfort MA, Burton GJ, Collins SL, et al. (2018).** Placenta praevia and placenta accreta: diagnosis and management. BJOG: An International Journal of Obstetrics & Gynaecology.
- **Kollman M, Gaulhofer J, Lang U, Klaritsch P (2015).** Placenta praevia: incidence, risk factors and outcome. The Journal of Maternal-Fetal & Neonatal Medicine, 29(9):1395-1398.
- **Kumari S, Singh B (2018).** Maternal and perinatal outcome of placenta previa in a tertiary care centre: an observational study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 7(11): 4701.
- **Lam CM, Wong SF, Chow KM, Ho LC (2000).** Women with placenta praevia and antepartum haemorrhage have a worse outcome than those who do not bleed before delivery. J Obstet Gynaecol, 20:27.
- **Law LW, Chor CM, Leung TY (2010).** Use of hemostatic gel in postpartum hemorrhage due to placenta previa. Obstet Gynecol, 116:528-30.
- **Love CD, Fernando KJ, Sargent L, Hughes RG (2004).** Major placenta praevia should not preclude out-patient management. Eur J Obstet Gynecol Reprod Biol, 117:24.
- **Ononeze BO, Ononeze VN, Holohan M (2006).** Management of women with major placenta praevia without haemorrhage: a questionnaire-based survey of Irish obstetricians. J Obstet Gynaecol, 26:620.
- **Oppenheimer L, Armson A, Farine D, Keenan-Lindsay L, Morin V, Pressey T et al. (2007).** Diagnosis and Management of Placenta Previa. Journal of Obstetrics and Gynaecology Canada, 29(3):261-266.
- **Ozdemirci S, Akpinar F, Baser E, Bilge M, Unlubilgin E, Yucel A et al. (2019).** Effect of the delivery way and number of parity in the subsequent incidence of placenta previa. The Journal of Maternal-Fetal & Neonatal Medicine, 33(19):3238-3243.
- **Reddy UM, Abuhamad AZ, Levine D (2014).** Fetal imaging: executive summary of a joint Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, American Institute of Ultrasound in Medicine, American College of Obstetricians and Gynecologists, American

College of Radiology, Society for Pediatric Radiology, and Society of Radiologists in Ultrasound Fetal Imaging workshop. Obstet Gynecol, 123:

- **Shakuntala PN, HS C, BL NG, Kumar A, Ramaiah R. (2020).** Maternal and fetal outcomes in pregnant women with major degree placenta previa at ESIC MC and PGIMSR. Galore International Journal of Health Sciences and Research, 5(4):42-52.
- **Shams uN (2019).** Clinical Audit Of Placenta Previa Cases And Their Outcome., Indo Am. J. P. Sci, 06[08].
- **Sindiani A, Obeidat N, Abu-Azzam O, Hijazi H (2021).** The impact of previous cesarean section on the outcome of patients with non-adherent placenta previa. Gynecological Surgery, 18(1):1-5.
- **Stafford IA, Dashe JS, Shivvers SA (2010).** Ultrasonographic cervical length and risk of hemorrhage in pregnancies with placenta previa. Obstet Gynecol, 116:595.
- **Verspyck E, Douysset X, Roman H, Marret S, Marpeau L. (2015).** Transecting versus avoiding incision of the anterior placenta previa during cesarean delivery. International Journal of Gynecology & Obstetrics, 128(1):44-47.
- **Yoong W, Ridout A, Memtsa M, Stavroulis A, Aref-Adib M, Ramsay-Marcelle Z et al. (2011).** Application of uterine compression suture in association with intrauterine balloon tamponade (‘uterine sandwich’) for postpartum hemorrhage. Acta Obstetricia et Gynecologica Scandinavica.; 91(1): 147-151.
- **Young BC, Nadel A , Kaima A. (2014).** Does previa location matter? Surgical morbidity associated with location of a placenta previa. J Perinatol, 34:264-7