

# Risk factors of placenta previa with maternal and neonatal outcome at Dongola/Sudan

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## ABSTRACT

**Background:** Placenta previa is a major cause of hemorrhage affecting 0.4–0.5% of all pregnancy's early detection of cases and senior input will significantly reduce maternal and fetal morbidity and mortality. **Objectives:** The aim of the study is to determine risk factors, fetal and maternal outcome in pregnancy complicated by placenta previa. **Method:** This is descriptive cross-sectional study in women diagnosed with placenta previa at Dongola maternity hospital, Sudan from December 2018 to June 2019. **Results:** There were 3,674 deliveries and 52 cases of placenta previa during the study period with prevalence of 1.4%. The average age of the patients was 34.8 years and most of them were above 35 years (53.8%), and (63.5%) were para 3 and more. Other identified risk factors included previous cesarean section (69.1%), previous uterine evacuation (13.5%), and assisted reproductive technique (5.8%). Maternal complications were hemorrhage needing blood transfusion (40.4%), cesarean hysterectomy (21.2%), and bladder injury (3.8%), but (34.6%) were with good outcome and no maternal death. NICU admission with RDS (25%), prematurity (25%), and death (5.8%) were the fetal complications, while in (44.2%) fetal outcome was good. **Conclusion:** The most identifiable risk factors for placenta previa were previous uterine scars, advanced maternal age, and multiparity. And it is associated with adverse maternal and fetal outcomes.

**Keywords:** Antepartum hemorrhage, Dongola, placenta previa, Sudan

## Introduction

Obstetric hemorrhage is an important cause of maternal and neonatal death and morbidity in developing world. Placenta previa represent 1/5<sup>th</sup> of antepartum bleeding,<sup>[1]</sup> affecting 0.4–0.5% of all pregnancies.<sup>[2]</sup> Placenta previa is classified into major or minor depending on its relation to internal os.<sup>[3]</sup>

Risk factors are: uterine surgery, advanced maternal age >35, multiparity, multiple gestation, dilatation and curettage, history of placenta previa (4–8%), assisted reproductive technology, non-spacing, smoking, cocaine use, low socioeconomic status, and male fetus.<sup>[4–7]</sup> Placentation type proved recently to be associated with

serious complications, placenta previa spectrum mainly percreta is disastrous, which is diagnosed by magnetic resonance imaging.<sup>[8]</sup>

There is direct proportion between placenta previa and number of previous cesarean delivery in Sudan.<sup>[9]</sup> Transvaginal scan is the gold standard for diagnosis of placenta previa.<sup>[2]</sup>

Placenta previa is better to be managed in tertiary centres and individualized.<sup>[10]</sup>

The aim of the study is to address risk factors, maternal and neonatal outcome because of lack of research in my country.

## Subjects and Methods

Prospective cross-sectional hospital-based study done in a 6 months' period from December 2018 to June 2019 and conducted at Dongola maternity hospital in Sudan.

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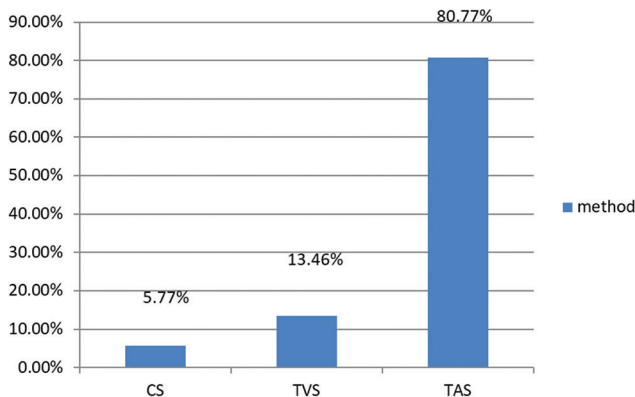
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Total coverage of cases diagnosed with placenta previa attended at Dongola maternity hospital during the study period. Patients managed as per protocol until discharge. Data had been collected through a structured pretested questionnaire and analyzed using simple percentage.

The study approved by Sudan Medical specialization board ethical committee, northern state ministry of health and Dongola maternity hospital, and a written consent was taken from all participants.

### Results

Total number of patients delivered during the study period were 3,674. Fifty-two patients were diagnosed as placenta previa (1.4%). The highest incidence of placenta previa was in the age group 30–34 and 35–39 which was 30.77% for each group. The average age of the patients was 34.8 years. The majority of the patients were of parity 1–4. Thirty-six patients had previous scar in the study in a percentage of (69.23%) as seen in Table 1. Followed by history of D&C or evacuation in seven patients (13.5%), three patients had history of ART (5.77%). Grand maternity was seen in three cases (5.77%), and in three patients (5.77%); no identifiable risk factor was present. Most of the patients have more than one risk factor. Eighteen of the patients in this study had no complications (34.62%), the most common maternal complication was hemorrhage, which required blood transfusion in 21 cases (40.38%), followed by hysterectomy in 11 cases (21.15%), 2 cases of bladder injury (3.85%), and no maternal death as presented in Table 2. Figure 1 illustrates method of diagnosis, 42 patients were diagnosed as having placenta previa by transabdominal scan (80.77%), 7 (13.5%) cases were diagnosed through transvaginal scan and three cases were discovered accidentally during cesarean section (5.77%). Twenty-three (44.23%) of the babies had no complications. Thirteen (25%) were preterm, 13 babies (25%) were admitted to NICU, and three cases were fresh stillbirth (5.77%) as shown in Figure 2.



**Figure 1:** Patient's distribution of cases depending on method of diagnosis (n = 52). CS: Cesarean section TVS: Transvaginal scan TAS: Transabdominal scan

### Discussion

In our study, the incidence of placenta previa is 1.4% which is higher than the international incidence 0.4–0.8% as concluded in a meta-analysis,<sup>[8]</sup> and less than 2% in Shruthi *et al.* study.<sup>[11]</sup>

Rate of cesarean section in this study is very high (57.7%) compared to international rate which is (6% and 27.2%), but similar to Brazil (55.6%) and Egypt (51.8%).<sup>[12]</sup>

Women with previous cesarean section are at higher risk of developing placenta previa as confirmed in many previous studies,<sup>[10]</sup> This is the most identifiable risk factor in our study (69.23%).<sup>[10]</sup>

Evacuation of retained products of conception is more frequent among women with placenta previa as shown in previous reports<sup>[9]</sup>; this was noted in 13.46% of patients in the current study. Other identified risk factor includes ART (assisted reproductive technology) as noted elsewhere.<sup>[13]</sup>

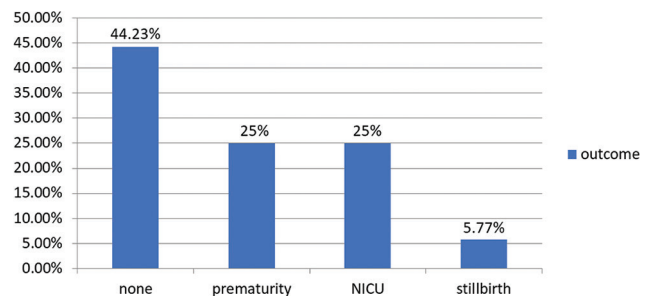
In 5.77% of cases, there is no identified risk factor and even higher percentage in Dr AS Anzaku study which showed 37%. However, genital tuberculosis, sexually acquired diseases, and infestations are common in the tropics may cause intrauterine adhesions which per se risk factor.<sup>[14]</sup>

**Table 1: Percentage of risk factors of placenta previa among the patients (n=52)**

Risk factor	No of patients	Percentage
Previous scar	36	69.23
D&C or evacuation	7	13.46
ART	3	5.77
Multiparity	3	5.77
No risk	3	5.77

**Table 2: Patients distribution according to maternal complications (n=52)**

Complication	No of patients	Percentage
No	18	34.62
Blood transfusion	21	40.38
Hysterectomy	11	21.15
Bladder injury	2	3.85



**Figure 2:** Percentage of fetal complications in placenta previa cases (n = 52)

The highest maternal complication in this study was hemorrhage, which required blood transfusion (40.38%) as in Adere study.<sup>[15]</sup> In our study, (21.15%) of patients had hysterectomy to control bleeding, interestingly this is similar to what has concluded in previous studies.<sup>[16]</sup>

Adverse fetal outcome occurred in our study is (55.77%), in a form of prematurity (25%), NICU (neonatal intensive care unit) admission (25%) and mortality (5.77%). In Martina *et al.* study, adverse fetal outcome occurred in about 60%.<sup>[17]</sup> Although most of the babies in this study were not extremely preterm, however, late preterm may suffer a lot of health problems in the future.<sup>[18]</sup>

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

### Key Messages

Placenta previa is rising, early detection and planning of management, improvement in blood bank services will improve maternal and fetal outcome. Medical evacuation of retained products of conception and avoidance of unnecessary cesarean section will reduce the incidence.

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