

# Pathologies Associated with Pregnancy and Outcomes: About 570 Cases over 12 Months at the Maternity Ward of the Owendo University Hospital (Gabon)

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## ABSTRACT

**Introduction:** Pregnancy associated with pathology is difficult to manage in our context and its outcome is uncertain. **Aim:** To study pregnancy associated with pathology and the outcome in our context **Patients and method:** Descriptive, analytical, and retrospectively recruited study carried out in the maternity ward of the Owendo University Hospital from January 1 to December 31, 2021, i.e. 12 months. We included all those with pathology in a progressive pregnancy regardless of gestational age, as well as elective caesarean sections during the period. Socio-demographic and clinical variables, pregnancy outcome, maternal and neonatal outcome. **Results:** We retained 570 (12.62%). The mean age of pregnant women was  $28.8 \pm 6.7$  years. The inactive accounted for 452 cases (79.29%), 213 (37.37%) were female learners and 430 (75.43%) were from their homes. The reason for hospitalization was elective caesarean section 148 cases (25.96%), premature rupture of membranes 108 cases (18.95%), vasculo-renal pathologies 67 cases (11.75%), threat of preterm delivery 58 cases (10.18%) and anaemia in the context of hyperthermia 55 cases (9.64%). Pregnancy was full-term in 249 cases (43.68%) and 11 (1.92%) were beyond term. Apart from elective caesarean section, the upper route accounted for 51.37% of cases versus 48.6%. Twelve (2.74%) perinatal deaths were recorded as well as 3 (0.52%) maternal deaths. **Conclusion:** The association of pathology and pregnancy is a source of maternal and perinatal mortality. Corrective actions dictated by the WHO must be implemented.

**Keywords:** Pathologies, Pregnancy, Caesarean section, Death, Owendo (Gabon)

## INTRODUCTION

Pregnancy progresses and ends physiologically in 3/4 of cases [1]. A pathological condition of the mother or the product of conception may lead to fears of complications during the course or at the time of delivery [2]. The WHO's recommendations on antenatal care to make pregnancy

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a positive experience, improved since 2015, contribute to the significant reduction in maternal and infant mortality [3]. Risks during pregnancy and childbirth exist in all countries but vary from country to country depending on socio-economic conditions, the level of providers and technical platforms. In our context, the course of pregnancy is unpredictable, the prognosis of delivery is uncertain and the case fatality rate does not decrease. Globally, 830 women die every day worldwide due to complications related to pregnancy or childbirth. The maternal mortality ratio in developing countries in 2015 was 239 per 100,000 live births, compared to 12 per 100,000 in developed countries [4]. These maternal deaths could have been avoided if pregnant women had had access to antenatal care and adequate management of critical medical situations and their consequences. This is a direct consequence of the inadequacy of health services, health providers and rampant poverty [4]. In Gabon, maternal mortality was estimated at 316 deaths per 100,000 live births over seven years (2005-2012) and has not decreased significantly. The same was true for neonatal mortality, estimated at 26 deaths per 1000 live births [5,6]. The maternity ward of the Owendo University Hospital (CHUO) is busy. The patients come from the commune of Owendo and the greater Libreville, which makes it a reference center. Our series takes stock of pathological pregnancies in their epidemiological and evolutionary aspects.

## PATIENTS AND METHOD

This was a descriptive, analytical, and retrospectively recruited study carried out at the maternity ward of the Owendo University Hospital from January 1 to December 31, 2021, i.e. 12 months. The CHUO maternity ward is a reference maternity hospital and is located on the outskirts of Libreville. It carries out about 5000 deliveries per year and houses a neonatal and surgical intensive care unit. It is classified as level 3. The study population consisted of pregnant women who had consulted or those who had been hospitalized in the maternity ward during the study period. We included all those with a pathology in a progressive pregnancy regardless of gestational age, as well as elective caesarean sections of the period. We did not include women who gave birth with a normal pregnancy, those admitted for a gynaecological pathology, incomplete or missing records, as well as those who could not be reached by telephone after their discharge from the maternity ward. Physical records, the registers of the delivery and hospitalization room, those of the on-call reports, those of the operating theatre, the intensive care unit and the neonatology department were used to support the data collection. When the delivery had not taken place at the end of the hospitalization, the pregnant woman was contacted by telephone to find out the outcome of the

pregnancy and the fate of the newborn. An individual data collection sheet was drawn up and the following variables were studied: socio-demographic variables (age, occupation, place of residence, marital status), clinical variables (reason for hospitalization, parity, existence of a previous caesarean section, gestational term, type of pathology and indication for current caesarean section), pregnancy outcome (delivery, return home), maternal and neonatal outcomes. Data were entered using Microsoft® Excel software. Statistical analysis was performed using Epi info™ 6 software (version 6.4). Results were expressed as a percentage for qualitative variables and as an average  $\pm$  standard deviation for quantitative variables. These variables were compared with each other using the Chi2 test, the Yates-corrected Chi2 (n between 3 and 4) and the Fisher exact test (n < 3). The difference was considered significant for a p-value < 0.05.

## RESULTS

During the study period, 4516 pregnant women were hospitalized. Of these, 582 were for pathologies associated with pregnancy and 4,455 deliveries were carried out. We retained 570 (12.62%). The mean age of pregnant women was  $28.8 \pm 6.7$  with extremes of 14 to 48 years. The 26-35 age group accounted for 42.28%, 452 patients (79.29%) were not gainfully employed and 213 (37.37%) were learners. For marital status, 374 patients (65.61%) were single versus 196 (34.39%) married. In 430 cases (75.43%), 140 (24.56%) were referred from their homes, and of these, 65 (46.43%) came from maternal and child care centres (SMI) and 75 (53.57%) from other health facilities in the area. The reason for hospitalization was elective caesarean section in 148 cases (25.96%), premature rupture of membranes in 108 cases (18.95%), vasculo-renal pathologies 67 cases (11.75%), threat of preterm delivery (PAD) in 58 cases (10.18%) and anaemia in the context of hyperthermia 55 cases (9.65%). For vasculo renal pathologies, 34 cases (50.74%) were severe pre-eclampsia with HRP, and eclampsia. The mean parity was  $1.5 \pm 1.6$  pars with extremes of 0 to 9 pares and 195 cases (34.21%) were nulliparous. The mean gestational age was  $34.6 \pm 5.2$  weeks of amenorrhea (SA) with extremes of 6 to 43 weeks. The fetus was not viable in 79 cases (13.85%) and 231 (40.53%) had less than 37 weeks. Pregnancy was full-term in 249 cases (43.68%) and 11 (1.93%) were past term. Pregnancy follow-up was regular in 495 pregnant women (86.84%) and the provider was the midwife in 372 cases (75.15%) versus 123 (24.85%). Following hospitalization, 132 pregnant women (23.16%) were discharged after treatment and 438 (76.84%) gave birth. Of these, 148 cases (33.79%) were elective caesarean sections and 290 cases (66.21%) were true pathologies associated with pregnancy. At delivery, pregnancy was premature in 112 cases (38.62%).

Induction of labour was necessary for 141 pregnant women (48.62%) and caesarean section for 149 (51.37%), i.e. 70 cases (46.97%) after failure to induce labour. A total of 297 caesarean sections (67.8%) were performed. Anterior uterine scarring was the leading indication with 101 cases (34%), followed by vasculo-renal pathologies 61 cases (20.53%). In this group, 34 cases (55.74%) were severe pre-eclampsia versus 27 cases (44.26%). For RPM, the caesarean section rate was 31 cases (28.7%). All these results are shown in Table 2. The mean APGAR score was 7.13±2.2 at 1st minute of life with extremes of 0 to 10 and 409 neonates (93.38%) had a score greater than 7. The mean birth weight was 2928.5 ± 617.9 g with extremes of 1040 to 4740 g and 91 newborns (20.78%) had a birth weight below 2500 g. When caesarean section was scheduled, the APGAR score of the newborn was not significantly different from that resulting from a pregnancy associated with true pathology regardless of the route of delivery. ( $p=0.321$ ). What was not was the same for birth weight ( $p=0.002$ ). Of the 438 births, 12 perinatal deaths (2.74%) were recorded. Of these deaths, 7 (58.33%) were from pregnancies with severe pre-eclampsia, 2 (16.66%) from pregnancies with SS hemoglobinopathy, and the remaining 3 (25%) from previa haemorrhagic placenta, past term and severe anemia. No deaths were observed when the caesarean section was scheduled. Perinatal death was significantly associated with pathological pregnancy ( $p=0.000$ ) (Table 3). Three (0.52%) maternal deaths were recorded. Ectopic pregnancy, HRP and eclampsia were the conditions associated with these deaths.

## DISCUSSION

Pathological pregnancy is common in our context. After 12 months of investigation, we collected 570 cases. This figure is not far from 1.2 in 10 pregnancies in the period. We intentionally included elective caesarean sections of the period (25.96%). In view of the difficulties of managing caesarean sections in our context, they constitute pregnancies with an uncertain outcome. These difficulties are linked to the unavailability of medical consumables and often to the technical platform. Hence the delay, which is often the case in our context [7, 8]. For the pathology, 290 cases were treated for delivery. This figure is not negligible. It is far from that of JM Kasia in Yaoundé, Cameroon in 2020 (249 cases) and that of KE Amoussou in Ouagadougou, Burkina Faso in 2003 (236 cases) but well below that of N Banabdelmalek in Rabat, Morocco in 2018 (556 cases) [9, 10, 11]. Although appreciable, our figure can be improved by forward-looking recruitment in view of the social difficulties of the populations of sub-Saharan Africa. The identification and recording of risk situations is likely to be underestimated. The population of our study has an average age of 28.8 ± 6.7 years and the 16-25 age group represents 33.33%. This

result is close to that of JM Kasia et al (31.19 years) and that of El Hamdani et al in Morocco (31.5 years), as well as that of N Banabdelmalek (31 years) [9, 11, 12]. On the other hand, KE Amoussou had recovered 26.6 years [10]. This figure is much lower than that of the above-mentioned authors. Our health centre is not far from the Faculty of Medicine and the majority of female learners are women. This explains the young age of our population and its celibate nature. Most of them are educated. These results are contrary to those of El Hamdani et al, who found 93% of women illiterate, and KE Amoussou, who found 86.4% [10,12].

All of these studies were carried out in rural areas where marriage is early and the level of schooling is low. The majority of patients were from home (75.4%) and 19.3% were referred. In the series of KE Amoussou, 55.9% of pregnant women had been evacuated and 44.1% of pregnant women had come of their own accord [10]. Elective caesarean section was the main reason for admission in our study, which explains the high number of those coming from home. The mean parity was 1.5 ± 1.6 pares with extremes of 0 to 9 pares and 34.2% (195 cases) had never given birth. JM Kasia et al and KE Amoussou had recovered 42.1% and 42.4% respectively [9, 10]. F Girard et al in France had found 94% primiparous due to late pregnancy [13]. In our series, the high number of female learners may be the explanation. As in the JM Kasia et al series, the majority of pregnant women had good quality antenatal follow-up (86.8%). This result is a far cry from that of N Banabdelmalek in Morocco, which recovered 28%, and KE Amoussou in Burkina Faso, where health care coverage was 39.8% [10, 11]. Living in remote areas, lack of education and lack of resources are the main causes. We did not find any series that included scheduled caesarean sections in the pathology and pregnancy group. In our context, we look at them that way. It comes in 2nd place after emergency caesarean section with no significant difference ( $p=0.213$ ) [8, 14]. For true pathologies, the most common is RPM (18.94%). This frequency is high compared to those of other series [15]. However, it remains within the norm when the pregnancy is at term (between 6 and 22%) [16]. In addition, we did not distinguish between full-term and preterm pregnancies. In our practice, when the pregnancy is at term, as for some learned societies and authors, to minimize the risk of infection, the expectation does not go beyond 24 hours [17]. Preterm, it is a threat of severe preterm birth and management is difficult in our context. It is a source of induced prematurity and increases the rate of caesarean section because it is the recommended route of delivery in this case [18, 19, 20]. Thus, ranked in order of decreasing frequency: RPM (18.95%), hypertensive pathology and its complications (11.75%), hyperthermia complicated by anemia (9.64%), abortions (7.37%), GEU

(3.33%) and other pathologies. Our main concern is high blood pressure and its complications. Our results in terms of frequency for this pathology are higher than those of Ouédraogo Salam (6.99%), as well as those of Ahmed Touimi Benjelloun who had recovered 6%, but close to that of KE Amoussou (11%) [21,22,10].

Our figure seems high because we have not dissociated preeclampsia from its complications as in the aforementioned series. In our environment, it is the 2nd source of caesarean section after fetopelvic disproportions, due to the abundance of severe preterm forms [8]. For hyperthermia complicated by anemia, we are well below the results of JM Kasia (39.8%) as well as those of KE Amoussou (23.7%). Despite being in

a highly malarial area, our pregnant women benefit from anti-anaemic and antimalarial (IPT) prophylactic treatments as recommended by the WHO and some centres distribute long-lasting impregnated mosquito nets (MIDLA) [3, 23]. At childbirth, the preterm birth rate is 38.6%. In our series, it is an induced prematurity due to the severe nature of the pathology. JM Kasia and KE Amoussou regained 5.2% and 21.3% respectively [9, 10]. When the condition is associated with pregnancy, the rate of caesarean section increases [13] and management is difficult. In this case, maternity is a reference as recommended in France by the High Authority for Health [24]. In our series, the caesarean section rate is 51.4% excluding elective caesarean section. JM Kasia et al in Cameroon had recovered 35.6% [9].

**Table 1:** Socio-demographic profile of pregnant women.

Parameters studied	n	%
<b>Age (years)</b>		
[26-35] : 28,8± 6,7 [14-48]	241	42,28
<b>Profession</b>		
No gainful activities	452	79,30
<b>Marriage status</b>		
Single	374	65,61
<b>Parity</b>		
[0-2] : 1,5 ± 1,6 [0-9 pares]	379	66,49
<b>Provenance</b>		
Home	430	75,44
<b>Gestational age (GA)</b>		
[29-37] : 34,6±5,2 SA [6-43]	231	40,53
<b>Total</b>	<b>570</b>	<b>100</b>

**Table 2:** Type of pathologies.

Pathologies identified	n	%
Elective caesarean sections	148	25.96
Premature rupture of membranes (PRM)	<b>108</b>	<b>18.95</b>
Vasculo-renales pathologies and pregnancy (HBP, RPH, eclampsia)	67	11.75
Threat of preterm birth (TPB)	58	10.18
Hyperthermia and anemia	55	9.65
Abortions	42	7.37
EUP <sup>1</sup>	19	3.33
Gestational vomiting	18	3.16
FDIU <sup>2</sup>	11	1.93
Expired term	11	1.93
Placenta preavia	7	1.23
HIV and pregnancy	7	1.23
Other (hemoglobinopathy SS, IUGR <sup>3</sup> , Volume anomaly of the LA <sup>4</sup> )	19	3.33
<b>Total</b>	<b>570</b>	<b>100</b>

HIV and pregnancy 1: Extrauterine pregnancy, 2: Fetal death in utero, 3: Intrauterine growth restriction, 4: Amniotic fluid

**Table 3:** Pathological Pregnancy and the Pathway to Childbirth.

Types of Pathology	Delivery route		
	N/%	Low Track n/%	High Track n/%
PRM	108/37.24	77/71.3	31/28.7
Vasculorenal pathologies	67/23.10	6/8.95	61/91.04
TPB	32/11.03	22/68.75	10/31.25
Hyperthermia, anemia	39/13.45	31/79.48	8/20.51
Placenta previa	7/2.41	0	7/100
HIV and pregnancy	7/2.41	1/14.28	6/85.71
Expired term	11/3.79	4/66.66	7/33.33
Autres pathologies	19/6.55	0	19/100
<b>Total</b>	<b>290</b>	<b>141/48,62</b>	<b>149/51,37</b>

**Table 4:** Perinatal morbidity, mortality.

Parameters	ECS n (148)	Pathological pregnancy n (290)	p
<b>APGAR</b>	9.1±0.8 [4-10]	8.2±1.87 [4-9]	0.321
<b>Weight (g)</b>	3007.1±604.6 [2754-4085]	2416±470.1 [1070-3814]	0.002
<b>Perinatal Death</b>	0	12	0.000

CE : Elective caesarean sections

In practice, the choice of vaginal delivery is imposed on us for extreme prematurity and for severe pathologies of pregnancy, as recommended for several years by learned societies, except when childbirth is imminent [18-20]. The mean APGAR score is  $7.13 \pm 2.2$  at the 1st minute of life and 409 (93.38%) newborns had a score above 7. Our results are close to those of JM Kasia et al (94.4%) and far from the severe morbidity found in the series of K. E. Amoussou [9, 10]. For this endpoint, we found no significant difference between the elective caesarean section group and when the pathology was identified. These results are consistent with those of Toril Kolas et al [25]. In our practice, management is multidisciplinary and pulmonary maturation is systematic for pregnancies with a term of less than 35 weeks of amenorrhea, which may be the cause of this acceptable score. The mean birth weight was  $2928.5 \pm 617.9$  g and 80.1% had a birth weight above 2500 g. Our results are close to those of JM Kassia, et al. (89.6%) and this was largely influenced by the occurrence of pathology [9]. This is the result of the non-negligible number of induced preterm births and the testimony of the high rate of low birth weights in our series

(19.9%) compared to 12.7% in the series of N Banabdelmalek in Morocco and that of JM Kassia, et al. (6.8%) in Yaoundé [9,11].

The stillbirth rate is 2.7%. This is not far from those of the other series, which found 1.2, 3.73, and 4.6% respectively [8-10]. No deaths were observed when the caesarean section was scheduled. Thus, the occurrence of a pathology is significantly associated with perinatal death in our study ( $p=0.000$ ). Prematurity and the abundant presence of severe forms of preeclampsia (55.74%) may be the explanation. Three (0.52%) maternal deaths were recorded. Ectopic pregnancy, HRP and eclampsia are the pathologies associated with these deaths and causes usually cited and responsible for maternal mortality in our context [5,6].

## CONCLUSION

In short, pathologies associated with pregnancy remain a worrying situation in the world with regard to the various data in the literature, but also in our maternity wards. Many pathologies were identified during pregnancy, but these were dominated by vasculo-renal pathologies. These



pathologies most often occur in young patients. Due to the seriousness of the pathology and prematurity, the delivery route was dominated by caesarean section. This has a definite impact on maternal and perinatal morbidity. WHO recommendations for the management of pregnancy and the application of protocols can help reduce the incidence of pregnancy-related pathologies and adverse pregnancy outcomes in our context.

#### DECLARATION OF LINKS OF INTEREST

The authors declare that they have no ties of interest.

#### AUTHORS' CONTRIBUTION

B. Sima Ole, S. G. Mba Edou and P. Assoumou designed the research protocol and wrote this manuscript. U. Minkobam C. O. Mounquengui, D. Assoume and O Makoyo Komba collected the data. J.A. Bang Ntamack, S. Mayi Tsonga, and J. F. Meye gave form to this manuscript. All authors agreed with the final version.

#### REFERENCES

- Cetin I, Cardellicchio M. (2010). Physiologie de la grossesse: interactions entre la mère et l'enfant. *Annales Nestlé*. 68:7-16.
- Bruyère M. (2014). Modifications physiologiques de la femme enceinte. In : *Pathologies maternelles et grossesse*. 2nd éd Elsevier-Masson (Paris):1-4.
- OMS. (2018). Recommandations concernant les soins prénatals pour que la grossesse soit une expérience positive. WHO. 1-14.
- Organisation mondiale de la santé. Mortalité maternelle. (2019). [www.who.int/fr/news-room/fact-sheets/detail/maternal-mortality](http://www.who.int/fr/news-room/fact-sheets/detail/maternal-mortality)
- DSG-PNLP-MSAS. Deuxième enquête démographique de santé au Gabon II 2012 <http://dhsprogram.com/pubs/pdf/PR137/PR137>
- DSG-PNLP-MSAS. Troisième enquête démographique de santé au Gabon III 2019-2021 <http://dhsprogram.com/pubs/pdf/SR198/SR198.pdf>
- Sima Olé B, Obame R, Bang Ntamack J, Massai S, Nzogue Nguema P, Mayi Tsonga S, et al. (2013). L'opération césarienne à Libreville (Gabon): fréquence et évolution des indications. *Rev Chir Afrique Centrale*. 1(1):42-46.
- Sima Ole B, Bang Ntamack J, Obame R, Bibang F, Mewie Lendzinga A, Nzogue Nguema JP, et al. (2017). Utérus cicatriciel: aspects épidémiologiques et mode d'accouchement à la maternité du CHU d'Owendo (Gabon). *Bull Med Owendo*. 15(43):45-51.
- Kasia JM, Noa Ndoua CC, Belinga E, Kensoung H. (2020). Les pathologies maternelles en grossesse au CHRACERH. *Health Sci Dis*. 21(4):39-43.
- Amoussou KE. (2003). Pathologies associées à la grossesse à la maternité du CHU Yalgado Ouédraogo : étude des aspects épidémiologique, clinique et pronostique. Thèse de Doctorat en Médecine, Université de Ouagadougou.
- Banabdelmalek N. (2018). Pathologie maternelle et grossesse (à propos de 556 cas).
- El Hamdani FZ, Zouini M, Baali A, Aboussad A, Baudot P, Vimard P, et al. (2012). Morbidité et recours aux soins de santé maternelle des femmes de la ville de Marrakech. Relation avec l'exode rural et les facteurs socio-économiques et biodémographiques. *Bull Mém Société Anthropol Paris*. 24(3):179-189.
- Girard F, Burlet G, Bayoumeu F, Boutray J. (2001). Les complications sévères de la grossesse et de l'accouchement : état des lieux en Lorraine dans le cadre de l'enquête européenne. *J Gynecol Obstet Biol Reprod*. 30(6):217.
- Sima Olé B, Obame R, Ntamack JB, Massai S, Nguema PN, Mayi-Tsonga S, et al. (2017). Short Stay in Maternity after Delivery by Caesarean Section: Pilot Study Carried Out at The Maternity Hospital of the Owendo University Hospital (Gabon). *Obstet Gynecol Open* 02:
- Yasmina A, Barakat A. (2017). Rupture prématurée des membranes à terme : facteurs pronostiques et conséquences néonatales. *PAMJ*. 26:68.
- Diquisto C. (2020). Rupture des membranes à terme avant travail. Recommandations pour la pratique clinique du CNGOF : Définition, fréquence, complications et facteurs de risque. *Gynécologie Obstétrique Fertilité Senol*. 48(1):19-23
- CNGOF. (2020). Rupture prématurée des membranes à terme. <https://cngof.fr-app-pdf-RPC>
- Mamelle N. (1998). et les obstétriciens du réseau sentinelle A.U.D.I.P.O. Mode d'accouchement des enfants de poids inférieur à 2500g. Description des pratiques en France *J Gynecol Obstet Biol Reprod*. 27 (suppl 2):269-274.
- Boulot P. (1998). Mode d'accouchement des enfants de poids inférieur à 2500g. Quelle voie d'accouchement faut-il choisir ? *J Gynecol Obstet Biol Reprod*. 27(suppl. 2):295-301.

20. Sagot P. (1998). Les différentes modalités d'organisation des soins périnataux en cas de retard de croissance intra-utérin, malformation, pathologie materno-fœtale, accouchement à haut risque, complications du postpartum. *J Gynecol Obstet Biol Reprod.* 27(suppl. 2):94-103.
21. Salam O, Aziz AZ, Sawadogo N, HIEN S, ZABSONRE P, BAMOUNI J, et al. (2021). Profil de l'hypertension artérielle dans un Hôpital Régional au Burkina Faso. *Health Sci Dis.* 22(12):116-122.
22. Benjelloun AT, Benchrifi Y, Mahdaoui S, Samouh N. (2020). Epidémiologie de la prééclampsie dans la région du grand Casablanca. *PAM J.* 2(112):1-11.
23. Unicef. (1999). programme pour une maternité sans risque. Directives pour la survie de la mère et du nouveau-né, p. 11 - 5. Classification statistique internationale des maladies et des problèmes de santé connexes. CIM-10. Genève : Organisation Mondiale de la Santé.
24. Haute Autorité de Santé. (2010). Grossesses à risque : orientation des femmes enceintes entre les maternités en vue de leur accouchement. Recommandations de bonne pratique.
25. Kolås T, Saugstad OD, Daltveit AK, Nilsen ST, Øian P. (2006). Césarienne planifiée versus accouchement vaginal planifié à terme: comparaison des résultats pour les nouveau-nés. *Am J Obstet Gynecol.* 195(6):1538-1543.