**International Journal of Gynaecology and Obstetrics Research**
www.gynaecologyjournal.in
E-ISSN: 2663-3612, P-ISSN: 2663-3604
Received: 29-08-2021, Accepted: 13-09-2021, Published: 29-09-2021
Volume 3, Issue 2, 2021, Page No. 16-18

# Induced preterm delivery at the maternity of Kara University Hospital Center: Indications and prognosis

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**Abstract**
Preterm delivery is one of the leading causes of neonatal mortality. It can be medically induced for maternal or fetal pathology. Thus, we conducted a study during 2018 on all medically induced births between 28 and 36 weeks of amenorrhea (WA). Induced preterm birth constituted 31.67% of preterm deliveries. The mean gestational age was 33.7 weeks (31 weeks - 36 weeks). The main indications were dominated by severe preeclampsia and eclampsia (41.15%) and premature rupture of membranes (19.60%). Lung maturation was achieved in 23.5% of cases. Cesarean was the main mode of delivery (76.47%). The Apgar score was over 7 in the fifth minute 84.31% of the time. The average birth weight was 2008gr (1200gr - 2400gr). Early neonatal mortality was 11.76%.

**Keywords:** cesarean section, induced preterm birth, maternal and neonatal emergencies, Togo

## Introduction
Preterm birth is a major perinatal public health problem in both developing and developed countries due to complications associated with prematurity [1]. Globally, around 15 million children are born prematurely with more than one million deaths, mostly in poor countries [2]. The leading cause of death in children under 5 [2], its incidence varies from 5% to 17% in Africa [3]. In Togo, the incidence of prematurity varies between 8.25% and 20% [4, 5], with an early neonatal mortality of 30% [6].
Despite the progress, preterm birth rates increase. This increase would be the consequence of multiple pregnancies resulting from the more and more practices of medically assisted procreation [7], and from iatrogenic prematurity. This iatrogenic condition results from an obstetric situation that can compromise the prognosis of the mother or the fetus. At the Hospital of Kara (Togo), where no study on induced prematurity exists to date, we looked at it in order to determine its incidence, indications and prognosis.

## Materials and methods
This was a retrospective, descriptive study from January 1, 2018 to December 31, 2018, carried out at the Hospital of Kara. All deliveries medically decided, gestational age between 28 WA and 36 WA and 6 days during the study period were included. The variables studied were related to socio-demographic, clinical and neonatal prognosis.
The data were collected using through documentary review made up of obstetric observation records, delivery registers and neonatal hospitalization registers. The Epi info7 software was used to process and analyze the data. Fisher's Chi-square (X2) test with a significance level defined as $p < 0.05$ was used for data comparison.

## Results
### Frequency
During the study, 161 preterm deliveries were performed out of a total of 1550, a frequency of 10.38% deliveries. Among the 161 premature deliveries, 51 were medically induced (31.67%).

### Sociodemographic data
The average age of the mothers was 28 with extremes of 14 and 41. In Table I we represent the distribution of mothers according to their socio-demographic data.

**Table 1:** Distribution of mothers according to socio-demographic data

| | Number | Percentage |
|---|---|---|
| ***Age (years)*** | | |
| <19 | 8 | 15,69 |
| [20-25] | 9 | 17,64 |
| [25-30] | 11 | 21,57 |
| [30-35] | 11 | 21,57 |
| [35-40] | 8 | 15,69 |
| 40 et plus | 4 | 7,84 |
| ***Pregnancy*** | | |
| First | 16 | 31,37 |
| Second-Third | 18 | 35,29 |
| More than three | 16 | 31,37 |
| ***Previous deliveries*** | | |
| None | 17 | 33,33 |
| One | 9 | 17,64 |
| Two to three | 16 | 31,37 |
| More than three | 9 | 17,64 |
| ***Occupations*** | | |
| Housewife | 27 | 52,94 |
| Small business | 13 | 25,50 |
| Student | 8 | 15,68 |
| Salaried | 3 | 5,88 |

**Clinical data**

In table II we represent the distribution of mothers according to clinical data

**Table 2:** Distribution of mothers according to clinical data

| | Number | Percentage |
|---|---|---|
| ***Gestational age*** | | |
| 28 – 31WA+6 days (very preterm birth) | 2 | 3,92 |
| 32 – 33WA+ 6 days (preterm birth) | 19 | 37,25 |
| 34 - 36SA+6 days (late preterm birth) | 30 | 58,82 |
| *Indications* | | |
| Maternal pathologies | | |
| Preeclampsia/eclampsia | 21 | 41,17 |
| Drepanocytosis | 1 | 1,96 |
| Hign Blood Pressure | 1 | 1,96 |
| Pregnancy's pathologies | | |
| Preterm premature rupture of membranes | 10 | 19,60 |
| Retroplacental haematoma | 4 | 7,84 |
| Chorioamnionitis | 3 | 5,88 |
| Placenta prævia | 2 | 3,92 |
| Undeterminated | 8 | 15,68 |

**Prognosis**

The average birth weight was 2008 grams (gr) with extremes of 1200 gr and 2400 gr. The early (before seventh day) neonatal mortality rate was 11.76%. In Table III, we illustrate the distribution of newborns according to prognosis

**Table 3:** Distribution of newborns according to the outcome of the pregnancy

| | Number | Percentage |
|---|---|---|
| *Lungs' maturation* | | |
| Yes | 12 | 23,52 |
| No | 39 | 76,47 |
| *Delivery* | | |
| Cesarean section | 39 | 76,47 |
| Vaginal (induced labour) | 12 | 23,52 |
| *Weight* | | |
| 1000-1499 gr | 2 | 3,92 |
| 1500-1999 gr | 17 | 33,33 |
| 2000-2500 gr | 32 | 62,74 |
| *Apgar at fifth minutes* | | |
| < 7 | 8 | 15,68 |
| ≥ 7 | 43 | 84,31 |
| *Newborns'outcome until seventh day* | | |
| Alive | 45 | 88,23 |
| Dead | 6 | 11,76 |

**Table 4:** Newborns' outcome according to the way of delivery

| | Vaginal delivery n(%) | Cesarean section n(%) | Total |
|---|---|---|---|
| Alive | 10(83,33) | 35(89,74) | 45 |
| Dead | 2(16,67) | 4(10,26) | 6 |
| Total | 12(100) | 39(100) | 51 |

p=0,28

**Discussion**

**Frequency**

The incidence of prematurity was 10.38% in our study. This rate is comparable to those of Balaka *et al* in Togo (11.1%) [6]. Higher rates have been reported by other African authors, especially in Benin by Hounkponou *et al* (17.8%) [8], in Togo by Azoumah *et al* (20%) [5], and in the Democratic Republic of Congo by Nyenga *et al* (43%) [9]. Concerning the proportion of iatrogenic prematurity, it was 31.05% in our series. The iatrogenic prematurity rate is said to be higher in industrialized countries. Valery *et al* in France [10] and Gyamfi-Bannerman *et al* in the United States [11] reported 43.1% and 42% respectively. These high rates in these countries are probably linked to the increase in the age of first pregnancy and the increasing practice of assisted reproduction.

**Socio-demographic data**

The average age of the mothers was 28. The 20 to 34 age group was more represented (60.78%) followed by those over 35 (21.56%). In Cameroon, Chiabi *et al* [12] and Elvira *et al* [13] respectively reported 66.94% for the 20 to 34 age group and 14% for those over 35. They were mostly nulliparous (33.3%), and housewives (52.94%). The same results have been reported in several African series [4, 8, 12]. According to Torchin *et al* [14], the overall risk of prematurity is higher in young women, particularly those under 19, and in women over 35 years old. This increased risk would be for him, partly explained by social and medical factors. Few studies, evaluating the impact of age on the type of prematurity, show that very young maternal age is more associated with spontaneous prematurity, while high maternal age is associated with induced prematurity [14].

**Clinical data**

The mean gestational age in our study was 33.3 weeks. Several authors have reported the same trends. For Hounkponou *et al* in Benin [8], the mean age was 34.04 WA; Farin *et al* reported more than half of preterm deliveries after 32 WA in India [15]. The gestational age of birth have a very high impact on mortality, on severe neonatal morbidity and on the development of the child. Most teams agree on a cautious attitude to deliver premature fetuses after 32 weeks, especially in our settings where the technical platform for recovering extreme and very premature conditions is limited. Our data agree with those of Torchin *et al* who reported 85% preterm birth and late preterm birth in 2010 worldwide. The risks of this prematurity should not be overlooked because the risks of motor disability or intellectual disability are 2 to 3 times higher in children born between 34 and 36 weeks old than in children born at term [14]. The indications for this iatrogenic prematurity were dominated by preeclampsia and eclampsia (41.15%) and preterm premature rupture of membranes (PPROM) (19.60%). The same indications have been found in the literature in Africa. Thus the studies by Ndiaye *et al* in Senegal [16], Azoumah *et al* in Togo [5], and Alhallak *et al* in Algeria [17] reported the same indications. In France, Valery *et al* found 28.9% of pre-eclampsia and 25% of PPROM [10]. In severe preeclampsia and eclampsia, with high maternal and fetal morbidity and mortality, uterine evacuation is the real treatment, and recovery often requires fetal extraction. Also the PPROM, for fear of its infectious complications (chorioamnionitis) pejorative to premature babies, forces the termination of pregnancy at an acceptable term of viability (from 22 weeks)

**Prognosis**

Cesarean was the main mode of delivery in 76.47% of cases. In

France, it was 71.1% [10]. In these pathological circumstances, cesarean section remains the most common mode of delivery. It is all the more frequent as the term is early. For Njom Nlend *et al* [18], the intra-hospital mortality rate for extremes premature was significantly correlated with the mode of delivery, ie 13% in the event of a caesarean section against 23% for the vaginal route. The same observations were found in our study although the mortality rate of premature infants was not significantly correlated with the delivery route (16.67% low route and 10.26% upper route, p = 0.28). Induction of labor can be offered after 34 weeks, if conditions are favorable, subject to close monitoring of labor and non-strenuous expulsion.

The average birth weight was 2008 grams. The Apgar score was over 7 in the fifth minute 84.31% of the time. Early neonatal mortality was 11.76%. Other studies in Africa, on global prematurity, reported higher early neonatal mortality rates ranging from 30.1% to 38.7% [6, 18]. The best survival rate in our study would be related to the gestational age at which the deliveries were induced. The study by Chen *et al* in the United States [19] did not show a difference in mortality between spontaneous prematurity following an RPM of more than 12 hours and prematurity induced between 24 and 27 weeks. On the other hand, beyond 28 weeks, neonatal mortality was higher in the event of induced prematurity.

## Conclusion

Iatrogenic prematurity occupies an important place in premature deliveries in the maternity unit of the Kara Hospital, often a maternal indication. It is responsible for significant early neonatal mortality. Better survival of premature infants requires screening and monitoring high-risk pregnancies for the timely removal of a perfectly healthy fetus.

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