

# Complications of Obesity in Cesarized Parturients in the Teaching Centers of Cotonou

Annelie Kerekou Hode<sup>1\*</sup>, Eugène Zoumenou<sup>2</sup>, Benjamin Hounkpatin<sup>3</sup>, Serge Mewanou<sup>4</sup>, Blaise Tchaou<sup>5</sup>, Martin Chobli<sup>6</sup>

<sup>1</sup>Service of Endocrinology, Hospital and University National Center Hubert Koutoukou Maga of Cotonou, Cotonou, Benin

<sup>2</sup>Service of Anesthesia and Reanimation, Hospital Mother and Child of Cotonou, Cotonou, Benin

<sup>3</sup>Service of Gynecology and Obstetrics, Hospital Mother and Child of Cotonou, Cotonou, Benin

<sup>4</sup>Service of Anesthesia and Reanimation, Hospital and University National Center Hubert Koutoukou Maga of Cotonou, Cotonou, Benin

<sup>5</sup>Department of Anesthesia and Reanimation, Hospital and University of Parakou, Parakou, Benin

<sup>6</sup>Emergency Department of Hospital and University National Center Hubert Koutoukou Maga of Cotonou, Cotonou, Benin

Email: \*kerekouannelie@yahoo.fr, ezoumenou@yahoo.fr, bhounkpatin@yahoo.fr, mewanous@yahoo.fr, tchblaise@yahoo.fr, mchobli@yahoo.fr

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## Abstract

This survey had the objective to determine the frequency of the obesity at the parturient, to value the impact of the obesity on the childbirth by Caesarean and the complications postoperative immediate in the teaching hospitals of Cotonou. **Patients and Method:** We did a prospective, comparative and analytic survey from January 13 to April 13, 2012. Eight hundred ninety-one consecutive parturients having had a Caesarean were included. We studied the anesthetic techniques, the techniques of control of the aerial ways, the number of necessary tests for the tracheal intubation, the complications and aftercare of the first 48 hours. A comparison has been made according to the BMI. The obesity has been defined by a BMI  $\geq 30$  kg/m<sup>2</sup>. The parturient has been classified in two groups: Non-obese: BMI  $\leq 30$  kg/m<sup>2</sup>, obese: BMI  $\geq 30$ . **Results:** There were 703 (78.90%) Caesareans in emergency and 188 (21.09%) programmed Caesareans. The obesity which has been recovered at 286 parturient is 32.10%. The obese parturient also required more frequently several lumbar punctures ( $p < 0.001$ ) at the time of the spinal anesthesia and more of conversion of the spinal anesthesia into a general anesthesia ( $p = 0.008$ ). The postoperative complications: laryngeal pain, back pain and suppuration of the wound were more frequent at the obese parturient. **Conclusion:** Many changes led by pregnancy are added to those of the obesity to drive to functional changes, a reduction of the physiological reserve and finally to an in-

creased anesthetic and obstetric risk. The obesity is frequent at the parturient in Benin. The post-operative complications are more frequent after the Caesarean at the obese parturient.

## Keywords

Obesity, Caesarean, Anesthesia, Complication, Benin

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## 1. Introduction

According to a WHO's report, more than a third of the women and a quarter of the men in Africa are in overweight, and these proportions should increase to 41% and 30% respectively during the next ten years. The recent tendencies in the urbanization of the developing countries and the internationalization of the food market contribute to changing the behavior of people and their style of life. These changes of lifestyle, bound to the nutrition, transition of the traditional to the modern habits, have driven to the emergence of the overweight and the obesity [1] [2]. A hospitable survey led to Cotonou returns a prevalence of overweight of 35.3% and the one of the obesity to 27.3% with a feminine predominance: 16.9% at the men vs 36% at the women [3]. The morbidity townships of the obesity at the women are the complications of pregnancy, the dystocia, and the childbirths by Caesarian procedure [4] [5] [6].

This survey had the objective to determine the frequency of the obesity at the parturient, to value the impact of the obesity on the childbirth by Caesarean and the complications postoperative immediate in the teaching hospitals of Cotonou.

## 2. Patient and Method

Our survey took place in the service of anesthesia resuscitation, the operative blocks, to the intensive care, the delivery rooms, the services of hospitalization, the neonatology service of two academic motherhoods of Benin. We did a prospective, comparative and analytic survey of January 13 to April 13, 2012. After the favorable opinion of the local ethics committee and the consent of the parturient. We collected the data by a standardized questionnaire. The information we collected included age, height, weight, BMI, Co-morbidities, gestational and parity, anesthetic technique, complications, indications for Caesarean section, cesarean section modalities, the satisfaction of the parturient. All parturients who had a Caesarian procedure during this study period were included either Eight hundred ninety-one parturients. We studied the anesthetic techniques, the techniques of control of the aerial ways, the number of necessary tests for the tracheal intubation, the complications and aftercare of the first 48 hours. A comparison has been made according to the BMI. The obesity has been defined by a  $BMI \geq 30 \text{ kg/m}^2$ . The parturient has been classified in two groups: Non obese:  $BMI \leq 30 \text{ kg/m}^2$ , obese:  $BMI \geq 30$ . The obese have been classified in

4 groups: moderate obesity: BMI between 30 and 35 kg/m<sup>2</sup>; stern obesity: BMI splices 35 and 40 kg/m<sup>2</sup>; morbid obesity: BMI ≥ 40 kg/m<sup>2</sup>; terrific obese: BMI ≥ 50 kg/m<sup>2</sup> [7]. The primary criteria of judgment were the prevalence of the obesity, the choice of the anesthetic technique and the difficulties bound to the anesthetic technique. The secondary judgment criteria were the intervening of a complication perioperative.

The collected data have been seized with the help of the software SPSS 18 and have been analyzed with the software Epi-Info 3.3.2. The qualitative variables have been described while using the percentages and their interval of confidence. The quantitative variables have been described while using the average and the gap marks. The comparisons of frequency have been made with the help of the test of Chi Square and the comparisons of average with the test of Student. A p been worth lower or equal to 0.05 has been considered like statistically meaningful.

### 3. Results

There were 703 (78.90%) Caesareans in emergency and 188 (21.09%) programmed Caesareans. The obesity has been recovered at 286 parturient is 32.10%. Among the 286 obese, 57.69% (165) had an obesity moderates; 28.32% (81) had a stern obesity, 13% (37) had a morbid obesity and 1.04% (3) were terrific obese. The obese parturient had a more elevated middle gravidity to 3.03 and a more elevated middle parity to 1.56. The high BP, OSAS and the burrs were the co-morbidities the more frequently recovered at the obese parturient (Table 1).

**Table 1.** Distribution according to BMI and characteristics of women in labor.

	BMI < 30		BMI ≥ 30		p
<b>Effective total</b>	605	(67.90%)	286	(32.10%)	
Age < 18 ans	11	1.82%	1	0.35%	0.063
18 - 45 ans	593	98.02%	283	98.95%	0.237
>45 ans	1	0.17%	2	0.7%	0.243
<b>Mean Gravidity</b>	2.66 ± 1.588		3.03 ± 1.803		<b>&lt;0.001</b>
<b>Mean Parity</b>	1.28 ± 1.422		1.56 ± 1.653		<b>&lt;0.001</b>
<b>Co-morbidity</b>					
<b>Arterial hypertension</b>	<b>108</b>	<b>17.85%</b>	<b>76</b>	<b>26.57%</b>	<b>0.002</b>
Diabetes	8	1.32%	2	0.70%	0.328
Asthma	19	3.14%	14	4.90%	0.135
<b>Snoring</b>	<b>106</b>	<b>17.52%</b>	<b>104</b>	<b>36.36%</b>	<b>&lt;0.001</b>
<b>OSAS</b>	<b>18</b>	<b>2.98</b>	<b>44</b>	<b>15.38%</b>	<b>&lt;0.001</b>
Cardiopathy	6	0.99%	7	2.45%	0.085
Other	81	13.39	30	10.49%	0.132

OSAS: Obstructive sleep apnea syndrome.

There were 703 (78.90%) Caesareans in emergency and 188 (21.09%) programmed Caesareans. The Caesarean was programmed more frequently at the obese parturient ( $p = 0.003$ ) (Table 2). Didn't have a meaningful difference in the indications according to the BMI. The indications of the Caesarean were the uterine scars, the acute fetal distress and the pre-eclampsia. There was not a difference between the indications in the two groups.

The spinal anesthesia and the general anesthesia was practiced with the same frequency at the obese parturient as non-obese (Table 3). The obese parturient had a score of Mallampati more frequently therefore superior to 2 were more susceptible to present some difficulties the intubation. These parturient required several laryngoscopies more frequently before the intubation (Table 3). The obese parturient also required more frequently several lumbar punctures ( $p < 0.001$ ) at the time of the spinal anesthesia and more of conversion of the spinal anesthesia into an anesthesia general  $p = 0.008$  (Table 3).

The postoperative complications: laryngeal pain, back pain and suppuration of the wound were more frequent at the obese parturient (Table 4). All other complications (stern hypotension, failure of intubation, laryngospasm, hypoxia, inhalation, cardiac stop, belated wakening, respiratory distress, postoperative headache, postoperative nausea and vomiting, cough, neck pain, thrills) didn't depend of the BMI. The only case of death by cardiac arrest noted in postoperative was due to anemia bound to sickle cell disease otherwise there were no post-operative death.

**Table 2.** Distribution of women in labor according to BMI, type of Caesarian and indication.

	BMI < 30 kg/m <sup>2</sup>		BMI ≥ 30 kg/m <sup>2</sup>		p
Type of Caesarian					
<b>Emergency</b>	<b>494</b>	<b>81.65%</b>	<b>209</b>	<b>73.08%</b>	<b>0.003</b>
<b>Scheduled</b>	<b>111</b>	<b>18.35%</b>	<b>77</b>	<b>26.92%</b>	<b>0.003</b>
Indications					
Dystocia	168	27.77%	76	26.57%	0.386
Preeclampsia	91	15.04%	56	19.58%	0.055
Eclamptic crisis	48	7.93%	16	5.59%	0.13
Uterine scar	151	24.96%	78	27.27%	0.255
PP	31	5.12%	20	6.99%	0.281
Placenta hematoma	18	2.98%	6	2.18%	0.304
UR	35	5.79%	11	3.85%	0.144
Acute fetal distress	171	28.26%	68	23.78%	0.091
Prophylactic	50	8.26%	26	9.09%	0.384
Fetal macrosomia	4	0.66%	6	2.10%	0.064
Other	14	2.31%	6	2.10%	0.445

**Table 3.** Distribution of women in labor according to BMI, type of anesthesia and complications.

	BMI < 30		BMI ≥ 30		P
<b>Spinal anesthesia</b>	486	80.33%	234	81.82%	0.334
<b>Multiple lumbarpunction</b>	<b>290</b>	<b>47.93%</b>	<b>192</b>	<b>67.13%</b>	<b>&lt;0.001</b>
<b>Failure to lumbarpunction</b>	<b>0</b>	<b>0.00%</b>	<b>3</b>	<b>1.05%</b>	<b>0.033</b>
Severe low blood pressure	118	19.50%	57	19.93%	0.474
<b>Reconversion in general anesthesia</b>	<b>13</b>	<b>2.15%</b>	<b>16</b>	<b>5.59%</b>	<b>0.008</b>
<b>General anesthesia</b>	119	19.67%	52	18.18%	0.334
<b>Mallampati 1</b>	<b>311</b>	<b>51.40%</b>	<b>61</b>	<b>21.30%</b>	<b>&lt;0.001</b>
<b>Mallampati 2</b>	<b>183</b>	<b>30.20%</b>		<b>36.4%</b>	<b>0.041</b>
<b>Mallampati 3</b>	<b>78</b>	<b>12.90%</b>		<b>28.00%</b>	<b>&lt;0.001</b>
<b>Mallampati 4</b>	<b>33</b>	<b>5.50%</b>		<b>14.30%</b>	<b>&lt;0.001</b>
<b>Multiple laryngoscopy</b>	<b>43</b>	<b>7.11%</b>	<b>36</b>	<b>12.59%</b>	<b>0.006</b>
Failure to intubation	6	0.99%	4	1.40%	0.407
Laryngospasm	1	0.17%	0	0.00%	0.313
Hypoxia	77	12.73%	41	14.34%	0.287
Bronchial inhalation	0	0.00%	1	0.35%	0.321
Cardiac arrest	1	0.17%	0	0.00%	0.679
Pulmonary distress	2	0.33%	2	0.70%	0.385
Late awakening	5	0.83%	5	1.75%	0.385

**Table 4.** Distribution of women in labor according to BMI and immediate post operatives complications.

	BMI < 30		BMI ≥ 30		P
Post operatives headaches	66	10.91%	38	13.29%	0.178
Post operatives nausea and vomiting	88	14.55%	52	18.18%	0.099
<b>Laryngeal pain</b>	<b>28</b>	<b>4.63%</b>	<b>22</b>	<b>7.69%</b>	<b>0.047</b>
Cough	6	0.99%	1	0.35%	0.286
Neck pain	6	0.99%	4	1.40%	0.407
Chills	24	3.97%	13	4.55%	0.404
<b>Lumbar pain</b>	<b>11</b>	<b>1.82%</b>	<b>12</b>	<b>4.20%</b>	<b>0.034</b>
<b>Suppurating wound</b>	<b>0</b>	<b>0.00%</b>	<b>6</b>	<b>2.10%</b>	<b>0.001</b>

#### 4. Discussion

This survey permitted to determine the prevalence of the obesity at the parturient that benefitted from the Caesarean in the academic hospitals of Cotonou, and to determine the impact of the obesity on the complications of the Caesarean.

The prevalence of the obesity at these parturient was of 32.10%. It was superior to the 10.73% of the general population in the Benin [8]. Although the WHO defined the obesity for a BMI  $\geq 30$  Kg/m<sup>2</sup>; at the parturient it is necessary to take account of the supplementary weight contained in the uterus, of the Sodium retention and the supplementary greasy mass of due to the pregnancy. The obesity would be defined then at the parturient for a BMI  $\geq 35$  Kg/m<sup>2</sup> [9]. The prevalence of the obesity at the parturient would be then of 24.80%. It remained superior to the 14.52% recovered in the urban population by Gary *et al.* [7].

Our survey was only carried on the parturient having benefitted a Caesarean and no on the set of the parturient. We could not define the frequency of Caesarean among the obese parturient in relation to the non-obese parturient. The obesity at the parturient is associated to affections as: the arterial hypertension, the diabetes, the asthma, the pre-eclampsia and the OSAS [10]. In our survey this association was meaningful for the arterial hypertension, the nocturnal burrs and the OSAS. At the obese pregnant women, the OSAS is even more frequent and the episodes of arterial desaturation in oxygen that can occur during the syndrome of apnea of the sleep are a threat for the mother and the fetus [11].

Many changes led by pregnancy are added to those of the obesity to drive to functional changes, a reduction of the physiological reserve and finally to an increased anesthetic and obstetric risk [12]. The oedema of the aerial ways, the greasy deposits to the level of the soft cloths of the aerial ways, the short neck and the volume of the breasts contribute to the difficulty of the intubation. The obese parturient had a score of Mallampati more 3 and 4 in relation to the non-obese parturient. The difficulty of intubation has been observed at 12.59% of the parturient obese vs 7.11% at the non-obese parturient. The impact of the failures of the intubation is the order of 1/280 at the parturient against 1/2230 in the general population of the patients operated [13] [14] [15]. The failure of the intubation was observed at 1.40% of the parturient obese vs 0.99% of the non-obese parturient. The spinal anesthesia is recommended therefore especially at the obese parturient [16]. The spinal anesthesia was preferentially the technique the more used (80.80%) for the Caesarean in our survey as well at the obese parturient that non obese. This technique associated the bupivacaine to the fentanyl and/or to morphine. The difficulty of the lumbar puncture was more frequent (67.13% vs 47.93% of multiple puncture) at the obese parturient. This tendency has been returned by Vricella *et al.* [10].

The laryngeal pains were more frequent at the obese that the non-obese. It explains itself comfortably by the number more raised of laryngoscopy. In the same way, there was more back pain at the obese that the non-obese. This result is only a consequence of the multiple lumbar punctures. The suppuration of the operative wound was observed solely at the obese parturient. What joins the observations of Lebuffe *et al.* [17]. The thickness of the adipose tissue plays an important role in the intervening of this complication. The adipose tissue is hypoperfused what makes hypoxic the sub-cutaneous tissue at the obese and delay the skinning.

## 5. Conclusion

Our survey reveals that the obesity's frequency increased depending on the number of pregnancy and childbirth. Obesity increased the risk of occurred hypertension, apnea sleep syndrome and snoring. It increased the difficulties of lumbar puncture at a spinal anesthesia with an important risk of using the general anesthesia. Immediate complications due to obesity were postoperative wound suppurations and long-term back pain.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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