

Peripartum hysterectomy at the University Hospital of Kinshasa, Democratic Republic of Congo: from 2002 to 2011
Hystérectomies obstétricales aux Cliniques Universitaires de Kinshasa, République Démocratique du Congo : de 2002 à 2011

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Résumé

Contexte. L'hystérectomie obstétricale est souvent un acte salvateur pour la santé maternelle. Les modalités de sa pratique et les données épidémiocliniques des patientes concernées peuvent orienter les stratégies de réduction de la mortalité maternelle. La présente enquête en a étudié la fréquence, les caractéristiques des patientes et des nouveau-nés, ainsi que les caractéristiques per et postopératoires.

Matériel et méthodes. Etude rétrospective des dossiers d'hystérectomie obstétricale, aux Cliniques Universitaires de Kinshasa. Les données maternelles, opératoires et néonatales ont été analysées à l'aide de tests Chi carré de Pearson, Exact de Fisher et le calcul de Odds ratio selon le cas.

Résultats. La fréquence était de 6,6 pour 1000 accouchements. Les transférées représentaient 69,09%. L'âge moyen était de $33,42 \pm 5,91$ ans et la parité moyenne était de $4,89 \pm 2,07$. La rupture et l'atonie utérines représentaient respectivement 32,72 et 27,27% des indications. L'hystérectomie était totale dans 63,63% de cas. L'hémorragie était retrouvée chez 89,09 % des opérées. L'infection pariétale représentait 20,37% des complications postopératoires. La proportion des femmes décédées était de 12,73%, et 48,1% de nouveau-nés étaient nés morts. Les transférées avaient beaucoup plus d'enfants morts ($p = 0,000$).

Conclusion. L'Hystérectomie obstétricale reste une préoccupation. La rupture et l'atonie utérines en sont les principales indications. Les mortalités maternelle et fœtale sont inquiétantes.

Mots-clé : hystérectomie obstétricale, rupture utérine, hémorragie du postpartum, mortalité maternelle

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Summary

Background. Peripartum hysterectomy is one of the procedures performed for saving maternal life. Understanding its practice and patients epidemiologic aspects will contribute to reduce maternal mortality.

Its frequency, patients and newborns characteristics, and per and postoperative characteristics were studied.

Material and methods. Medical records of patients who underwent hysterectomy during labor or within the postpartum period from January 1st 2002 to December 31st 2011 at University Clinics of Kinshasa were reviewed. Maternal, operative and newborns data were analyzed. The Chi square test of Pearson, the Exact test of Fisher and the Odds Ratio were used. Statistics analyses were performed by SPSS 15.0 and statistical significance was considered for a p value < 0.05 .

Results. The frequency of peripartum hysterectomy was 6.6 out of 1000 deliveries. The transferred patients represented 69.09%. Mean age was 33.42 ± 5.91 years and the mean parity was 4.89 ± 2.07 . Uterine rupture represented the main indication (32.72%) followed by uterus atony (27.27%). Total hysterectomy was performed in 63.33%. The procedure was complicated by hemorrhage in 89.09% cases. In postoperative period, parietal infection was found in 21.27%. Maternal death represented 12.73%. The stillbirth rate was 48.1%. This rate was more prominent in transferred patients ($p=0,000$).

Conclusion. Peripartum hysterectomy remains a preoccupation. Uterine rupture and uterine atony are the main indications. Maternal and fetal mortalities are considerable.

Key-words: hysterectomy, peripartum, uterine rupture, postpartum hemorrhage, maternal mortality.

Introduction

Peripartum hysterectomy (pH) is the ablation of the uterus during childbirth or within 42 days of postpartum period (1-3). Its frequency is much lower in developed countries compared to developing ones and especially to Sub-Saharan Africa (2, 4, 5). This situation is usually an emergency indicated for uterine atony or uterine rupture (6, 7).

These two conditions are markedly characterized by hemorrhage; a major cause of maternal death (7-11). Hysterectomy is then considered as one of the ultimate effort for maternal rescue. The surgeon usually faces an ambivalent responsibility as he must decide promptly between implementing conservative methods for a woman who needs further maternity or practicing hysterectomy on time to assure the success of this procedure (11-14).

There are no studies on pH in our institution. Yet, knowledge on the circumstances of its practice and epidemiological aspects of patients can guide the development of strategies contributing to reduce maternal deaths. This is logically in agreement with the Millennium Development Goals for 2015 outlined by the World Health Organization (15). We collected cases of pH performed in the University Hospital of Kinshasa (UHK) to determine the frequency, characteristics of patients and newborns, as well as the peroperative and postoperative characteristics of these hysterectomies.

Material and methods

A review was conducted at the Department of Obstetrics and Gynecology of the UHK. We included all records of patients who underwent hysterectomy during childbirth or within 42 days after delivery, between 1st January 2002 and 31st December 2011. We used the births, operating room, hospitalization and medical records.

The variables of interest were age, parity, indications of pH, type of hysterectomy, type of anesthesia, the status and weight of the newborn, peroperative and postoperative complications. Parity was defined as the number of pregnancies a patient had, that reached at least 28 weeks gestation, no matter what their issues were. Thus, a primiparous had one pregnancy, a pauciparous 2 or 3, a multiparous 4 or 5 and a grand multiparous beyond 5. Intraoperative hemorrhage was retained as complication if patient needed a blood transfusion.

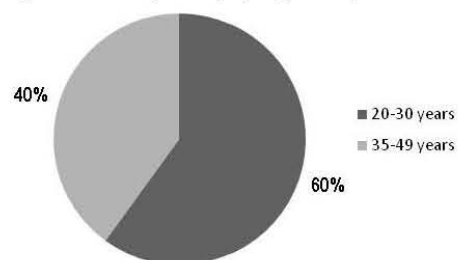
Data were saved and analyzed using SPSS 15.0 software for Windows. Descriptive statistics were used. Comparison of proportions was achieved using the Pearson chi-square test and Fisher exact test. The Odds ratio established the association of factors to uterine rupture and death of the newborn. A p value < 0.05 was considered for statistical significance.

Results

During this 10 years period, 55 pH were performed. Within the same period there were 8331 deliveries giving a frequency of 6.60 per 1000 deliveries. The operated patients transferred from other medical facilities represented 69.09% of cases.

Patients' age and parity

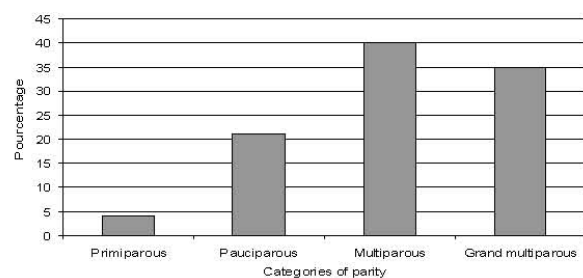
The patients' mean age \pm Standard deviation (SD) was 34.2 ± 5.91 years with range from 21 to 44 years. The 20-34 years cluster was the most represented (60 %) (Figure 1).



Mean \pm Standard deviation = 33.42 ± 5.91 years

Figure 1: Patients' distribution following age clusters

Patients' parity varied between 1 and 10 with a mean \pm SD of 4.89 ± 2.07 . Most operated patients (74.54 %) had a parity of at least 4 (Figure 2).



Mean \pm Standard deviation = 4.89 ± 2.07

Figure 2: Patients' distribution according to their parity categories

Indications

The table 1 shows that the indications of pH were dominated by uterine rupture (32.72 %) followed by uterine atony (27.27%) and placental insertion anomalies (placenta previa and placenta accreta) (14.55 %). Uterine apoplexy syndrome motivated 9.09% of pH.

Table 1. Distribution of hysterectomy indications related to type of anesthesia and type of hysterectomy

Variables	Anesthesia		Hysterectomy		Total [n(%)]
	GA	RA	Subtotal	Total	
Uterine rupture	16	2	4	14	18 (32.72)
Uterine atony	13	2	7	8	15 (27.27)
Placental insertion anomaly	4	4	3	5	8 (14.55)
Uterine apoplexy	4	1	2	3	5 (9.09)
Blood dyscrasia	4	0	1	3	4 (7.27)
Others*	4	1	3	2	5 (9.09)
Total [n(%)]	45 (81.8)	10 (18.9)	20 (36.4)	35 (63.6)	55 (100)

Legend. GA: general anesthesia, RA: rachidian anesthesia

*: 2 cases of post-caesarian peritonitis, 2 cases of hematoma and important decay of broad ligament and 1 case of important periuterine varicosis with difficult hemostasis during a caesarian section

Tables 2 and 3 represent the relationship between parity and the two major indications (uterine rupture and uterine atony). No statistical difference in these two indications were noted between grand multiparous and other patients ($p = 0.865$ for uterine rupture and 0.908 for uterine atony).

Table 2. Relation between parity and PH indication for uterine rupture

Parity	Uterine rupture		Total	p
	Yes	No		
At least 6	6	13	19	0.895
Less than 6	12	24	36	
Total	18	37	55	

Table 3. Relation between parity and pH indication for uterine atony

Parity	Uterine atony		Total	p
	Yes	No		
At least 6	5	14	19	0.908
Less than 6	10	26	36	
Total	15	40	55	

Types of hysterectomy and anesthesia

The majority of patients (63.63%) underwent total hysterectomy and general anesthesia was applied in 81.81 % of cases (table 1).

Complications

Hemorrhage occurred in 89.09% of operated patients (table 4). A patient deceased during hysterectomy (1.81%) from post-hemorrhagic

shock due to uterine atony. Postoperatively, 25 patients (46.3%) had a complication, consisting in the parietal wound infection in 20.37% of them. Six other patients died in the postoperative period. Of these, two patients were respectively operated for uterine rupture and uterine atony with hemorrhagic shock, two presented blood dyscrasia and one presented with postoperative peritonitis. Therefore the mortality rate was 12.73%. In relation to their origin (data not shown), there was no statistically significant difference between the proportion of deaths among women from UHK (3/17) and those coming from outward (4/38) ($p = 0.664$).

Table 4. Perioperative and postoperative complications

Complications	n (%)
<i>Preoperative</i>	
Hemorrhage	49 (89.09)
Bladder injury	1 (1.81)
Death	1 (1.81)
Without complication	4 (7.27)
Total	55 (100)
<i>Postoperative</i>	
Without complication	29 (53.70)
Parietal infection	11 (20.37)
Urinary infection	4 (7.40)
Death	6 (11.11)
Others*	4 (7.40)
Total	54 (100)

Characteristics of newborn

All patients in the study had a pregnancy with one fetus. Among these patients, one was transferred from a peripheral center for postpartum hemorrhage but without information on the weight of the newborn. The 54 newborns had a weight between 1500 and 4700 grams with a mean \pm SD of 3013.89 ± 676.74 grams. Those being between 2500 and 3499 grams were the most represented (61.1%). According to the

status of the newborn, there were 48.1% of stillbirths (table 5). The operated patients who were transferred had much more stillbirths (25/37) than those assessed at UHK (1/17) ($p = 0.000$). Considering the indication for surgery, no newborn had less than 2500 grams in uterine rupture and over 3500 grams in placental insertion anomalies and uterine apoplexy syndrom. There was neither stillbirth in placental insertion anomalies nor in blood dyscrasia.

Table 5. Distribution of newborns considering their weights and their status in relation to hysterectomy indication

Indication	N-b characteristics					Total
	Weight			Status		
	1500 - 2499	2500 - 3499	≥ 3500	Dead	Alive	
Uterine rupture	0	13	5	16	2	18
Uterine atony	4	7	4	3	12	15
Placental insertion anomaly	2	5	0	0	7	7
Uterine apoplexy	1	4	0	4	1	5
Blood dyscrasia	1	1	2	0	4	4
Others	1	3	1	3	2	5
Total [n(%)]	9(16.67)	33(61.11)	12(22.22)	26(48.15)	28(51.85)	54(100.00)

Legend. N-b: Newborn

Considering uterine rupture, which was the most frequent indication, patients had 20 times more stillbirths than those operated for other indications [OR 20.8, 95% CI (4.03 - 107.33)] (table VI). Patients from outward were 5 times more operated for this indication than those from UHK [OR 5.45, 95% CI (1.09 - 27.28)]. The difference between newborns having at least 3000 grams and others was not statistically significant with regard to the indication for uterine rupture ($p = 0.076$), although we found this indication 3 times more frequently in this group [OR 3.13, 95% CI (0.86 - 11.32)].

Table 6. Odd Ratio of patients' provenance, status and weight of newborns associated to uterine rupture

Variables	OR (CI _{95%})	p
<i>Provenance</i>		
Outward of UCK	5.45 (1.09 - 27.28)	0.027
<i>Newborn status</i>		
dead	20.8 (4.03 - 107.33)	0.000
<i>Newborn weight</i>		
≥ 3000 gr	3.13 (0.86 - 11.32)	0.076

Legend. CI: Confidence interval, UCK: University Clinics of Kinshasa

Discussion

Frequency of pH

In this study, the frequency of pH was 6.60 out of 1000 deliveries. It is close to 4.3 ‰ and 5.3 ‰ reported in several countries in Sub-Saharan Africa (5, 16) and in Asia (2, 6, 17). But this frequency is higher than that ranging from 1.9‰ to 3 ‰ found in other African (4, 14, 18, 19), Asian (1, 20-22), European (23-25) and North American studies (3, 25-27). One fact emerges; African and some Asian studies often report higher frequencies. This could be due to the methodology implemented, the environmental infrastructure and the level of medical institution. In fact, several studies reported in developed countries are either national (26) or multicentric (25, 28), whereas most African and some Asian studies often report the experience of one medical institution (5, 14, 18, 29). Indeed, as in many African studies, our data come from a university hospital which represents a referral level. Accordingly, pH performed in this

institution originate mostly from other facilities as evidenced in this study by 69.09% of transferred patients. Several other factors may be involved: the low standard of living, the lack of knowledge on danger signs during pregnancy and childbirth and the lack of adequate infrastructures (19, 30).

Patients' Characteristics

The mean age \pm SD of operated patients was 33.42 ± 5.91 years. This turns close to that reported by Nkwabong *et al* (14) and Okafor *et al* (11). It is slightly higher than 28.2 years reported by Muteganya *et al* (5). The most relevant age cluster of 20-34 years is characterized by many childbirth complications including uterine rupture and uterine atony (8, 31) which are the two main indications of pH in the present study. The mean parity \pm SD was 4.89 ± 2.07 , close to 5.1 reported by Nkwabong *et al* (14).

Characteristics of hysterectomies

The two main indications were uterine rupture (32.72 %) and uterine atony (27.27%). This is in agreement with several African (16, 18, 19) and other developed countries' studies (2, 20). But Nkwabong *et al* (14) in Yaoundé found that uterine atony ranked first as pH indication. Uterine rupture, which is a predictable complication, is found as the first indication in many developing countries for the same reasons mentioned on the high frequency of pH. In developed countries, the most encountered indications are unpredictable, including uterine atony and placental insertion anomalies (previa and accreta) (24, 25). Usually, uterine rupture, uterine atony and placental insertion anomalies occupy the first three positions, which is the trend also observed in this study. The frequency of uterine atony has declined these last years, whereas a placental insertion anomaly has become more frequent (17, 32). This results from the better control of uterine atony using new therapies such as prostaglandins in one hand, and the increase in the rate of scared uterus

(17, 33) having an impact on placentation in the other hand. Uterine apoplexy syndrome (9.09% of indications) justified a hysterectomy in our institution until 2003. Good recovery of uterine tissue, despite the state of apoplexy, has removed this indication in our practice.

As many practitioners do, hysterectomy is practiced in our institution after an attempt to manage, if applicable, by conservative methods. For instance, uterine atony is managed by using uterine tonic drugs, uterine packing with gazes, B-Lynch technique and arteries ligations, and the uterine rupture management depends on patient characteristics and the extension of uterine damages.

About the type, total hysterectomy was performed predominantly (63.63%). This trend differs from that reported by several authors (4, 14, 18-20, 34). Indeed, in the context of a life-threatening emergency, subtotal hysterectomy is often preferred because of its easiness and speediness (35). But given the potential risk of cervical cancer, and then, the necessity of monitoring cervical cytology, and other associated events such as bleeding, total hysterectomy must be considered as the ideal procedure (1, 25). Although the rate of intraoperative complications is higher with total hysterectomy, reoperation is most frequent when subtotal hysterectomy is conducted (7). In addition, a systematic review from Cochrane review (36) found no difference in terms of urinary incontinence rate, constipation and sex activity between total and subtotal hysterectomy. Thus, complications accompanying hysterectomy indication should be properly assessed, and the choice between the two types should be individualized and not systematic (7).

Because of hemodynamic instability associated with spinal anesthesia in patients who have already lost a lot of blood, general anesthesia is used in majority of cases. In our study, 81.81 % of patients were operated under general anesthesia. In their study, Okafor *et al* (11) reported 100% of general anesthesia in 16 patients.

As in almost all studies (11, 14, 18), hemorrhage was the first complication in our series (89.09%). Okafor *et al* (11) and Pembe *et al* (18) reported a transfusion in all operated patients. However, it should be noted that the need for transfusion comes from a hemodynamic instability induced by the large blood loss that often existed prior to the intervention itself. It is difficult in many cases to distinguish between hemorrhage induced by the intervention and that either favored or due to the underlying condition. One patient died in the operating room because of a refractory shock associated with a blood dyscrasia. Postoperative morbidity was dominated by surgical site infection (20.37% of operated patients). This result is consistent with those of Pembe *et al* (18) and Kwame - Aryee *et al* (29). Infectious complications remain a major concern in the African surgical practice (37, 38). For pH, the state of emergency, the context of a prolonged labor with repeated pelvic examination, a prolonged operating time and anemia are factors that may explain the high frequency of infection.

Maternal mortality of 12.73% in this study is close to those reported by Muteganya *et al* (11%) (5), Nkwabong *et al* (11.1%) (14), Okafor *et al* (12.5%) (11) and Kwame - Aryee *et al* (12.9%) (29). It is lower than those reported by Diouf *et al* (20 %) (39), Jimoh *et al* (26.3%) (4) and Dongmo *et al* (35%) (38). However, it is higher than that of other studies especially in developed countries (34).

Fetal mortality was more dramatic compared to maternal mortality. The mortality of 48.15% found in the present study is lower than 81% reported by Radriambelomanana *et al* (19). The large amount of fetal deaths is explained by the predominance of uterine rupture as indication for hysterectomy. Indeed, uterine rupture which requires a hysterectomy is usually complete and complex, sometimes with a significant placental decay and therefore inducing severe fetal distress. In the present study, fetal mortality was higher among transferred patients ($p = 0.000$) due to the preponderance of uterine rupture in

this group. In fact, women who were operated for uterine rupture had 20 times more stillbirths than others ($p = 0.000$).

Our study has some limitations. Being retrospective, data on some patients' characteristics such as marital status, socio-economic status could not be collected. In addition, because of the missing information, variables such as hemoglobin before and after the operation could not be incorporated. Finally, this study is based on data from patients' records. Some of these data may have been rated less reliably or have been recorded with less rigor or accuracy. This can lead, at some degree, to a misclassification bias.

But beyond these limitations, this study has the distinction of being the first in our institution. It generates interest around this procedure and continuing discussion shall help to develop well designed studies including the risk factors associated with pH in our setting.

Conclusion

The pH remains a concern. Its frequency in our institution is considerable. The most affected patients are those whose age is between 20 and 34 years. Uterine rupture and atony are the main indications. Total hysterectomy is performed in most cases. The hemorrhage and postoperative infection are the major complications. The maternal and fetal mortality are worrying.

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