

ORIGINAL RESEARCH ARTICLE

Hysterectomy following severe primary postpartum hemorrhage: A five year review in Abidjan University Hospitals

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Abstract

Hemostasis hysterectomy is a mutilating technique responsible for definitive side effect on the woman's fertility. The aim was to document hemostasis hysterectomies performed in obstetrics units of university hospitals in Côte d'Ivoire. This was a retrospective, cross-sectional, and descriptive study from January 2013 to January 2018 in the three university hospital centers of Abidjan. It involved all parturients of the said university hospital centers who presented a severe postpartum hemorrhage and in whom a hemostasis hysterectomy was performed. The overall frequency of hemostasis hysterectomy in the three university hospitals was 0.32%. The most common etiologies were atony and uterine rupture. Hemostasis hysterectomy was indicated immediately. The deaths recorded were most often intraoperative and in the immediate postoperative period. The reduction of its incidence requires a good surveillance of the third period of delivery. (*Afr J Reprod Health 2023; 27 [3]: 40-46*).

Keywords: Hemostasis hysterectomy, post partum hemorrhage, maternal death, Côte d'Ivoire

Résumé

L'hystérectomie hémostatique est une technique mutilante responsable d'effet secondaire définitif sur la fertilité de la femme. L'objectif était de documenter les hystérectomies d'hémostase pratiquées dans les unités d'obstétrique des hôpitaux universitaires de Côte d'Ivoire. Il s'agit d'une étude rétrospective, transversale et descriptive de janvier 2013 à janvier 2018 dans les trois CHU d'Abidjan. Il s'agissait de toutes les parturientes desdits centres hospitalo-universitaires qui présentaient une hémorragie sévère du post-partum et chez qui une hystérectomie hémostatique a été pratiquée. La fréquence globale des hystérectomies hémostatiques dans les trois CHU était de 0,32 %. Les étiologies les plus fréquentes étaient l'atonie et la rupture utérine. L'hystérectomie d'hémostase a été indiquée immédiatement. Les décès enregistrés étaient le plus souvent peropératoires et dans la période postopératoire immédiate. La réduction de son incidence nécessite une bonne surveillance de la troisième période d'accouchement. (*Afr J Reprod Health 2023; 27 [3]: 40-46*).

Mots-clés: Hystérectomie d'hémostase, hémorragie post-partum, décès maternel, Côte d'Ivoire

Introduction

Eight hundred and thirty women die every day from complications related to pregnancy and childbirth, according to the World Health Organization (WHO)¹. This makes maternal mortality a real public health problem. The global response to this problem was made in the year 2000 through the building of the 5^e millennium development goal whose objective was to reduce by $\frac{3}{4}$ the rate of maternal mortality worldwide until 2015. However, this strategy has not produced the expected effects, as the reduction in the mortality rate has been only 2.3% per year¹. Nevertheless, this rate has increased

considerably since 2000. Indeed, in some countries, the annual rate of reduction in maternal mortality between 2000 and 2010 was more than 5.5 per cent, the proportion needed to achieve the Millennium Development Goal¹. As a result, the international community has adopted the Sustainable Development Goal, which aims to reduce maternal mortality by 70 per 100,000 live births¹. In low-income countries, 99% of maternal deaths are caused by postpartum hemorrhage². In Africa and Asia it is responsible for more than 30% of maternal deaths. In Côte d'Ivoire, 45% of maternal deaths are attributable to postpartum hemorrhage according to the UNICEF report³. In contrast, its frequency is

low in developed countries, at around 5 to 10%^{4,5}. Improving the prognosis of postpartum hemorrhage requires prompt and appropriate management. Prophylactic administration of uterotonics during delivery is a procedure that plays a central role in the prevention of postpartum hemorrhage. However, in less than 1% of deliveries, these measures are insufficient and require interventional radiology or conservative surgery. When conservative surgical or radiological treatment fails, hemostasis hysterectomy is the last option. However, its frequency has steadily decreased in developed countries and in North Africa over the last 30 years^{5,6}. In contrast, in sub-Saharan Africa its frequency remains high⁷⁻⁹. However, haemostatic hysterectomy, the ultimate intervention to guarantee maternal survival, remains a mutilating technique responsible for essentially psychological after-effects but can also be a source of marital conflict. Indeed, although it is a life-saving procedure, it irreversibly affects the woman's identity because of the definitive compromise of female fertility. The implementation of new therapeutic methods such as the use of intrauterine balloons in the management of postpartum hemorrhage would seem to be an effective alternative. Several studies exposing this public health problem have been conducted in sub-Saharan Africa. However, those carried out in Côte d'Ivoire are few in number and are of the single-centre type. Documenting hemostasis hysterectomies performed in obstetric units of university hospitals was the main focus of our study.

Methods

This was a retrospective, cross-sectional, and descriptive study from January 2013 to January 2018 in the 3 university hospitals of Abidjan, namely those of Yopougon, Treichville and Cocody. Indeed, these three university centres, with an annual average of 7,000 deliveries and 3,000 caesarean sections, are the main referral centres for obstetrical emergencies in the peripheral centres and the suburbs of Abidjan, which is a cosmopolitan city with a population of around 5 million. It concerned all parturients of the said university hospital centers who presented a severe postpartum hemorrhage and in whom a hemostasis hysterectomy was performed. However, patients for whom an indication for hysterectomy was made following uterine perforation in the context of induced abortion or

outside the 3 university hospitals were not included in our study population. Data collection was based on a questionnaire and by a single investigator. The sources of information came from different documents, including the registers of entries to the triage unit, the registers of operative reports, the registers of transfers and deaths to the resuscitation and postoperative subunit, the records of parturients in the wards, the delivery registers, and the data from the statistics and human resources department. The statistical variables studied were Socio-demographic characteristics such as maternal age, parity, socio-economic level, clinical data and the immediate evolutionary profile in the post partum of these patients. The IBM SPSS Statistics 25 software was used to analyze the data. The descriptive type results presented the variables in the form of numbers and proportions. We obtained the authorization of the directors of the university hospital centers. We reassured them of the anonymous and confidential nature of the information coming from the registers and medical files.

Results

During the study period, we recorded 343 cases of haemostasis hysterectomy out of 105243 deliveries performed in the three university hospitals. Our overall frequency was 0.32%, i.e. one haemostasis hysterectomy for 307 deliveries. The CHU of Cocody topped the list with a frequency of 0.63, followed by the CHU of Treichville (0.26) and Yopougon (0.1). The patients in our series were predominantly young. The age group 30-39 years was the most represented with 49.4% of cases. The average age was 31.42 years with extremes of 16 and 45 years and most were single in 48.5% of cases. The most represented socio-professional categories were housewives, shopkeepers and workers in the private sector in 50%, 33% and 15% respectively. In terms of reproductive value, they were mostly multiparous in 36% and pauciparous in 30.8%. More than 90% of the patients had no medical or surgical history. However, 10.2% of the patients had a notion of caesarean section in their history. Table 1 summarize socio-demographic features.

More than 78% of our patients were evacuated, and 89% of them were evacuated from health centers at distances of more than 15 km.

Table 1: Sociodemographic profile of the study population

Socio-demographic features	Effective (%)
Age (years) n = 343	
15-19	9 (2.6)
20-29	110 (32.0)
30-39	190 (55.4)
40	34 (10.0)
Marital status	
Single	166 (48.5)
Bride	49 (14.2)
Not specified	128 (37.3)
Socio-professional activity (n = 226)	
Pupils / students	5 (2.0)
Officials	5 (2.0)
Private Tailors	29 (13.0)
Trader	74 (33.0)
Housewives	113 (50.0)
Reproductive value (n= 343)	
Gestivity (G=n)	
(G=1)	29 (8.5)
(G = 2-3)	82 (23.8)
(G = 4-6)	123 (36.0)
(G > 6)	72 (21.1)
not specified	37 (10.6)
Parity	
(P =1)	66 (19.5)
(P =2-3)	106 (30.8)
(P = 4-6)	94 (27.4)
(P > 6)	40 (11.7)
Not specified	37 (10.6)
Background	
Medical	
Yes	01 (0.4)
No	312 (90.5)
Not specified	31 (9.1)
Surgical	
Cesarean section	35 (10.2)
Myomectomy	01 (0.4)
Umbilical hernia	01 (0.4)
No	275 (79.9)
Not specified	31 (9.1)

On admission, 35.6% of the patients had an unstable hemodynamic state, i.e., 28.2% in shock and 7.4% in coagulopathy, and the most common etiologies were atony and uterine rupture in 47% and 42% respectively. Because of the seriousness of the complications, hemostasis hysterectomy was indicated immediately in 99.6% of cases. The average time from diagnosis of postpartum hemorrhage to the performance of the operation was 160.10 minutes, i.e. 2h40 min, with extremes of 10 and 843 minutes and a standard deviation of 164.1 minutes. The average time of the operation in the OR was 106.71 minutes (1h47 min) with extremes of 20 and 395 minutes and a standard deviation of 42.32 minutes.

Table 2: Patient flow, clinical data and evolutionary profile of the study population

Parameters	Effective (%)
Mode of admission (n=343)	
Evacuated	270 (78.7)
Referred	4 (1.2)
Coming from themselves	38 (11.0)
Not specified	31 (9.1)
Distance between the place of residence and the center (Km) (n = 343)	
<5	8 (2.3)
5-10	32 (9.3)
> 15	303 (88.4)
Hemodynamic status on admission (n = 343)	
Stable	223 (65.0)
State of shock	96 (28.0)
Coagulation disorder	24 (7.0)
Indications (n = 343)	
Placenta accreta	11 (3.1)
Uterine rupture	144 (42.0)
Uterine atony	161 (47.0)
Abdominal Pregnancy	4 (1.2)
Uterine inversion	2 (0.8)
Not specified	21 (5.9)
Blood transfusion (n= 240)	
Yes	214 (89.0)
No	26 (11.0)
Quantity of blood transfused (ml) n= 213	
250-500	103 (48.4)
500-1000	80 (40.3)
>1000	24 (11.3)
Surgical treatment (n = 343)	
Conservative treatments + hemostasis hysterectomy	01 (0.4)
Hemostasis hysterectomy from the outset	342 (99.6)
Evolutionary modalities	
Post-operations (n = 343)	
Simple	104 (30.2)
Complications	231 (67.4)
Not specified	08 (2.4)
Etiologies of death (n = 51)	
Hemorrhagic shock	35 (68.4)
Coagulopathy	01 (2.6)
Anemia	04 (8.0)
Cerebral anoxia	01 (2.6)
Not specified	10 (18.4)
Time from intervention to time of death (n = 51) hour h	
Peroperative	20 (39)
1	07 (14)
6	15 (29)
12	04 (8)
24	01 (2)
Not specified	04 (8)

More than 89% of our patients received a blood transfusion with quantities of approximately 500 to 1000ml in 40.3%. The postoperative course was

complicated in more than 67% of cases, most of them being a hemorrhagic shock in 68.4% of cases. Death was most often recorded intraoperatively in 39% of cases and immediately postoperatively, i.e. within 6 hours in 29% of cases (Table 2).

Discussion

Prevalence

In Africa, the practice of hemostasis hysterectomy is very common. The panorama of proportions in the African literature shows considerable variability in proportions⁹⁻¹³, but remains high compared to that of developed countries^{5, 14-16}. Indeed, the practice of home births by some women contributes to the increase in the incidence of hysterectomy¹⁷. Delayed evacuation due to transportation and road conditions, as well as delayed management, can lead to complications of immediate postpartum hemorrhage and have a negative influence on prognosis. According to the literature, a higher level of obstetric care is associated with a lower incidence of hysterectomy. Poor active management of the third stage of labour, haemodynamic instability in some patients combined with the absence of blood products would be factors that would oblige the obstetrician to reduce the delay in management by opting for radical treatment from the start. The percentage of hemostasis hysterectomy in the same country also varies from one center to another. This variation takes into account the technical platform and protocols for the management of postpartum hemorrhage. In Côte d'Ivoire, for example, the rates of hemostasis hysterectomies recorded at the University Hospital of Cocody, Treichville, and Yopougon during this period represented 0.63, 0.26 and 0.1 respectively. This significant difference could be explained by the absence of a conservative surgical technique in the management algorithm of the Cocody and Treichville hospitals.

Socio-demographic features

Maternal age is known to be a risk factor for immediate postpartum hemorrhage. Marriage at a young age exposes women to early sexual activity, and thus the risk of large multiparity. In our study, 2.6% of patients were younger than 20 years of age. Indeed, the immaturity of the pelvis of these women would expose them to the risk of uterine rupture. In

addition to maternal age, the socioeconomic level and the level of education of the women in the management of their pregnancy would have a major role in the occurrence of postpartum hemorrhage. Housewives were by far the most frequently concerned, i.e. 49.4% of the women in our series. Most of their pregnancies were poorly monitored or not monitored at all, either because they refused to go to a health center or because of lack of resources, with the result that they resorted to home deliveries by unqualified personnel, with the risk of hemorrhagic complications. Low educational attainment and low socioeconomic status are identified by most authors as predisposing factors for postpartum hemorrhage¹⁻². One effect of women's low educational level is lack of awareness of or refusal to adhere to family planning. The primiparous women in our sample represented a significant 19.5%. This large number confirms the notion that women with no experience of parturition are at risk of gravido-puerperium. The analysis of our series as well as the data in the literature⁶ denotes the absence of a statistically significant association between medical and surgical history and incidence of postpartum hemorrhage. The occurrence of postpartum hemorrhage is thought to be due to lack of timely access to quality maternal health services, exacerbated by the duration and quality of transport, and may impair subsequent maternal-fetal prognosis¹. In our series, 78.7% of our patients were evacuated, 1.2% referred and 11% came by themselves. Nearly 25.7% of the patients came from another city which was located more than 15 km from the city of Abidjan in 24.47% of cases. On admission, 35.6% of the patients had an unstable hemodynamic state, i.e., 28.2% in shock and 7.4% in coagulopathy. According to the literature, the degree of shock or hemodynamic impairment is proportional to the volume of blood loss^{2,6}.

Management of postpartum hemorrhage

The current recommendations of the World Health Organization recommend uterine massage and administration of isotonic crystalloids in addition to oxytocin as soon as postpartum hemorrhage is diagnosed². In terms of conservative treatment, early ligation of the uterine arteries, before the onset of coagulation disorders, is still to be preferred in the treatment of severe forms, especially if this is

linked to uterine atony. It should also be pointed out that this technique can always be performed before performing a hemostasis hysterectomy, which will not be significantly delayed. When it was the first surgical procedure performed, its success rate was 84.3% according to Horo in 2009¹⁸ and 66% in the study by Mehdi Kehila in 2016¹⁹. In our study, bilateral uterine artery ligation was performed on 0.4% of patients before hemostasis hysterectomy. Bilateral uterine artery ligation is a simple surgical technique with a low risk of immediate severe complications. This low rate is due to the fact that uterine artery ligation is only performed at the University Hospital of Yopougon. We should also note the presence or absence of haemostasis disorders and the time elapsed between the diagnosis and the performance of the surgical procedure which on average was 160.10 minutes (2h40 min) in our series. This would generally lead the obstetrician to opt straight away for a hysterectomy. According to authors in the literature, the speed of execution of the procedure constitutes a good prognostic factor^{5,20,21}. However, since 2012, the World Health Organization (WHO) has issued recommendations for this management, including the use of intrauterine balloon tamponade, which has been reported to be nearly 90% effective²² as an alternative and a second-line treatment for IPPH. The UBT procedure involves inserting a balloon into the uterine cavity and inflating to achieve a tamponade effect. Its effectiveness lies in the rapidity and adaptability of its implementation²³. Few studies have evaluated the use of UBT as an additional useful tool in the management of IPPH in low-resource settings.

Prognosis of hemostasis hysterectomy

The postoperative complications found were essentially of a hemorrhagic nature with a frequency of 67.4%, of which 62.7% of the patients required a blood transfusion. It is imperative to compensate for the shortage of blood derivatives because of the high number of patients requiring blood transfusion. In developing countries, the maternal mortality rate is very high, ranging from 10.52% to 24.13%²⁴. Although a favorable outcome was found in 85%, the death rate remains high at 15% of the cases in our study. Our figure is lower than those found by other African authors, including 19% for Businge¹³,

20.7% for Keita⁸, 22% for Rakotoson²⁰ and clearly lower than the 65% of Foumsou¹¹. On the other hand, in developed countries, the mortality rate is low and ranges from 0 to 4%. These very high and heavy rates in our countries should encourage us to improve and master the algorithms for the management of postpartum hemorrhage. As for the causes of death, in our series the main ones were hemorrhagic shock (83.9%), anemia (9.2%), cerebral anoxia (3.3%), and hypertension and its complications (3.3%). We had 39.2% of intraoperative deaths. This situation could be related to the fact that the hemodynamic state was already precarious when the patients arrived, making rescue difficult. Management in the intensive care unit depends on the resources available to the departments, i.e. blood products and derivatives, perfusion solutions and, in return, the financial resources of the patient²⁰. The unavailability of these products in quantity would have strongly contributed to the increase in this rate.

Limitations

We cannot generalize the results of our study because they are hospital series. moreover, these results come from referral hospitals handling a large number of evacuated patients, sometimes in precarious conditions. Despite this, this is a study that takes stock of the practice of hysterectomy for hemostasis in the largest municipality in Côte d'Ivoire before the introduction of UBT in the management postpartum hemorrhage.

Conclusion

Hemostasis hysterectomy in obstetrics remains a frequent procedure in Côte d'Ivoire. Young and multiparous women are the most concerned. Its indications are dominated, in decreasing order of frequency, by uterine atony, uterine rupture, and hemorrhage due to retained placenta. The maternal-fetal prognosis is worrying with a high maternal death rate (15%). The reduction of its incidence requires a good monitoring of the third period of delivery to avoid uterine atony as well as the application of emergency obstetrical and neonatal care and the creation of surgical maternity units to reduce evacuations.

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Conflicting interest

The authors declare no conflict of interest.

Authors' contributions

EKA (conception, methodology, monitoring data, start and final writing), KG (data collection and analyse), AK (methodology, final writing), AB (data collection), KA (data collection), KF (data collection), VS (data collection) AH (supervisor, authorization, final writing).

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