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Hystererectomy in a Tertiary Hospital in a Sub-Saharan Setting: A 20-Year Retrospective Review of the Indications, Types and Analysis of Technical Index

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Abstract

Background: Hysterectomy is one of the most performed surgeries through the world, even in Sub Saharan setting where indications are not rare. **Objective:** To study the frequency, indications, surgical methods, and complications of hysterectomies at the Douala General Hospital. **Patients and methods:** We carried out a cross-sectional study over a 20-year period, from the 1st January 2000 to 31st December 2019, in the department of Gynaecology and Obstetrics of the Douala General Hospital, a tertiary health facility in Cameroon, central Africa. All patients who underwent hysterectomies for gynaecological or obstetrical indications and whose files were complete were retained. **Results:** Out of a total of 7126 gynaecological and obstetrical surgical cases 1007 were hysterectomies, giving a frequency of 14.21%. Meanwhile, 968 files fulfilled the inclusion criteria. The average age of the patients was 45.75 ± 7.71 years (range 19 to 75 years). The indications included symptomatic fibroids 64.15% (621 cases), gynaecological cancers 13.94% (135 cases), severe cervical dysplasia 11.15% (108 cases), and endometrial hyperplasia with atypia 7.02% (68 cases), haemostatic hysterectomies 2.68% (26 cases), uterine prolapse 0.82% (8 cases), a case of post abortion uterine necrosis (0.10%) and a case of uterine endometriosis (0.10%). Laparotomy was the main surgical approach 86.05% (833 cases), followed by the vaginal route, 10.20% (97 cases) and then laparoscopy 3.92% (38 cases). The average length

of hospital stay was 6.07 ± 1.92 days following laparotomy, 3 ± 1.09 days following the vaginal route, and 3.6 ± 1.04 days following laparoscopy. The main intra-operative complications included haemorrhage, 1.75% (17 cases), bladder injuries 0.82% (8 cases) and ureteral injuries 0.72% (7 patients). Post-operative complications mainly included: fever 3.61% (35 cases), anaemia 2.5% (24 cases) and abdominal wall sepsis 0.92% (9 cases). **Conclusion:** The frequency of hysterectomy was 14.21%. Uterine fibroid, gynaecological cancer and cervical dysplasia were the main indications. Intra-operative haemorrhage, bladder and ureteral injuries were the major complications. Increase in the practice of vaginal and laparoscopic hysterectomies could contribute to the reduction of peri and post-operative complications and hospital stay. Thus reinforcement of abilities is required.

Keywords

Hysterectomy, Indications, Surgical Methods, Complications, Douala General Hospital-Cameroon

1. Introduction

Hysterectomy is amongst the most performed surgical interventions in Gynaecology [1]. This surgical intervention is usually done for benign pathologies like uterine fibroids and is reported to represent up to 20% of gynaecological interventions in some countries [1] [2]. The main indications of hysterectomies reported in the literature are benign pathologies of uterus like leiomyomas [1] [2] [3]. For a long time, abdominal hysterectomy has remained the main type followed by vaginal route especially in developing countries. Buambo *et al.* in a retrospective study done in Brazzaville found that abdominal route was the main route (82.5%) followed by vaginal route (17.5%) [3]. Development and popularisation of minimally invasive approaches and alternatives like endometrectomy in recent years have enabled the reduction of complications, morbidity and hospital stay linked to abdominal approach. The trend in the recent years, in developed countries, has been to use minimally invasive techniques both for benign and malignant uterine diseases [4] [5]. The first laparoscopic hysterectomy is reported to have been performed in 1989 and demonstrated several advantages as compared to the traditional abdominal route like less post-operative pains, better cosmetics, shorter hospital stay, early recovery time [4] [5] [6] and [7]. Laparoscopic and vaginal routes are now the standard over the abdominal route whenever possible in western countries [4] [5] as compared to Subsaharan settings where vaginal and laparoscopic routes are seldom performed [3]. Many authors think that the technical index of hysterectomy is an indicator of the quality of gynaecological service. Mindful of this, in a bit to improve in our practice, we designed this study to audit the practice of hysterectomies for obstetrical and gynaecological reasons in our service with regards to the frequency,

the indications, the types and to take stock of our technical index.

2. Material and Methods

2.1. Study Design, Period and Site

We carried out a cross-sectional retrospective study, in the department of Obstetrics and Gynaecology of the Douala General Hospital (DGH), from the 1st January 2000 to 31st December 2019, in order to assess the frequency, indications, surgical methods and complications of hysterectomy.

The DGH is a tertiary health structure in Douala, the largest city and economical capital of Cameroon, with an estimated population of over three million inhabitants. This hospital has a capacity of 320 beds and hosts many services, amongst which is the service of Obstetrics and Gynaecology. The workforce of the Gynecology and Obstetrics department is constituted of 8 gynaecologist and Obstetricians, with few having special training in vaginal surgery, Laparoscopy and other surgical techniques. The service is involved in the training of medical students and resident doctors in Obstetric and Gynecology.

2.2. Inclusion and Exclusion Criteria

Patients included were those who have undergone hysterectomy for gynaecological or obstetrical indications, in the service of Obstetrics and Gynaecology of the DGH, and whose files were complete. A file was considered complete if it contains beside others at least the following information: age, the indication, the route of surgery, the duration of hospital stay, and the outcome of management. Files with more than 25% (more than one these key data) of missing data were excluded from the study.

2.3. Data Collection

A list of patients who underwent hysterectomy was obtained from the theatre and inpatients registers. The files of the patients were then compiled and information was retrieved and filled in a pre-established data collection form. The data recorded included the age, surgical indication, surgical method, intra and post-operative complications and the length of hospital stay. Blood loss of more than 500 ml was considered as hemorrhagic complications. Febrile morbidity was considered for a postoperative temperature of above 38˚C.

2.4. Statistical Analysis of Data

The data were typed and analysed using the software SPSS 21.0 version. The results were reported in terms of number, mean, and percentage. The differences between the groups were determined with the Fisher's test with $p \leq 0.05$.

2.5. Ethical Considerations

The study was endorsed by the national ethical committee. Access to files was granted only after approval from the ethical committee of the institution. The

data were exploited discreetly.

3. Results

968 files fulfilled inclusion criteria and were enrolled in this study. The sociodemographic characteristics, the frequency, the indications of the surgery, the route of surgery, the hospital stay, and the complications are summarized in Table 1.

3.1. Age

The mean age of the patients was 45.75 ± 7.71 years (extremes 19 to 75 years). The age range of 40 to 50 years was the most represented 56.40%: (546 cases) (Table 2).

3.2. Frequency

Out of 7126 surgical cases realised in the service, 1007 patients underwent an

Table 1. Frequency of hysterectomies at Douala General Hospital from 2000 to 2019.

Year	Number of cases of hysterectomies	Number of gynecological surgery cases	Frequency of hysterectomies in %
2000	35	288	12.15
2001	37	298	12.41
2002	36	263	13.68
2003	56	345	16.23
2004	52	352	14.77
2005	47	312	15.06
2006	49	302	16.22
2007	44	280	15.71
2008	42	276	15.21
2009	40	296	13.51
2010	65	425	15.29
2011	62	427	14.51
2012	58	471	12.31
2013	55	430	12.79
2014	55	418	13.15
2015	44	258	17.05
2016	58	424	13.67
2017	55	410	13.41
2018	61	428	14.25
2019	56	423	13.23
Total	**1007**	**7126**	**14.21**

1007 cases of hysterectomies were performed. It represented 14.21% of surgical operations, hence an average of 43.8 cases per year.

Table 2. Distribution of hysterectomies by age.

Age group (year)	Number (n)	Percentage (%)
40 - 50	546	56.45
>50	306	31.63
30 - 40	101	10.35
<30	15	1.56
Total	**968**	**100**

The mean age of the patients was 45.76 ± 7.71 years with a minimum of 19 years and a maximum of 75 years. Patients over 40 years old were the most represented.

hysterectomy, giving a frequency of 14.21%. Thirty-nine incomplete files were excluded and our study involved 968 patients.

3.3. Indications

The indications included symptomatic fibroids 64.15% (621 cases), gynaecological cancers 13.94% (135 cases), severe cervical dysplasia 11.15% (108 cases), and endometrial hyperplasia with atypia 7.02% (68 cases), haemostatic hysterectomies 2, 68% (26 cases), uterine prolapse 0.82% (8 cases), one case of post abortion uterine necrosis (0.10%) and one case of uterine endometriosis (0.10%) (**Table 3**). Total hysterectomy was performed during debulking surgery in 76 cases of ovarian cancers while 53 cases included expanded hysterectomies for cervical cancer. Subtotal hysterectomy was performed for 1 case of post abortion uterine necrosis and in 4 cases of debulking surgery for frozen pelvis.

3.4. Surgical Method

Laparotomy was the main surgical type 85.95% (832 cases), followed by the vaginal route 10.20% (97 cases) and laparoscopy 3.92% (38 cases). All the laparoscopic hysterectomies were total, and involved benign uterine pathologies in patients without a history of prior abdomino-pelvic surgery and in whom the uterine size did not exceed 12 weeks of amenorrhea. Fourty percent of laparoscopic hysterectomies performed were type II according to "classification of Mage" [2] (**Table 4**).

3.5. Duration of Hospital Stay

The average length of hospital stay was 6.07 ± 1.92 days following laparotomy, 3 ± 1.09 days following the vaginal route, and 3.6 ± 1.04 days following laparoscopy. Of the three surgical methods, the length of hospital stay was longer following abdominal hysterectomy with a significant difference ($p = 0.00023$) (**Table 5**).

3.6. Complications

We found a global rate of complications of 11% (106 cases), with 3.5% (34 cases) intra-operatively and 7.5% (72 cases) postoperatively (**Table 6**).

Intra-operative complications included haemorrhage, 1.75% (17 cases), bladder

Table 3. Distribution of hysterectomies according to indications (n = 968).

Indications	Number (n)	Percentage (%)
Symptomatic fibroids	621	64.15
Gynecological Cancer	135	13.94
Severe cervical dysplasia (SIL II)	108	11.15
Atypical hyperplasia of the endometrium	68	7.02
Haemostastic hysterectomy	26	2.68
Uterine Prolapse	8	0.82
Endometriosis	1	0.10
Perforation with uterine necrosis	1	0.10
Total	**968**	**100**

Symptomatic myomas, severe cervical dysplasia and cervical cancer were the main indications in order of importance.

Table 4. Hysterectomies and surgical methods.

Surgical methods	Number (n)	Percentage (%)
Laparotomy	833	86.05
Vaginal route	97	10.02
Laparoscopy	38	3.92
Total	**968**	**100**

Laparotomy was the main route (86.05%) of hysterectomies followed by vaginal route (10.02%) and laparoscopic route (3.92%).

injuries 0.82% (8 cases), ureteral injuries 0.72% (7 cases) digestive wound 0.10% (1 case) and death 0.10% (1 case) (Table 6). Postoperative complications included: fever 3.61% (35 cases), anemia 2.5% (24 cases), abdominal wall sepsis 0.92% (9 cases), hemoperitoneum 0.10% (1 case) and death 0.10% (1 case). Intra and post operative complications observed were significantly higher following laparotomy than the vaginal route and laparoscopy (p = 0.003) (Table 7).

4. Discussion

4.1. Age

Our mean age is comparable to that reported by Bambo *et al.* in Congo (42.7 years), Razafindrabe *et al.* in Madagascar (42.5 years) and Kouam *et al.* in Cameroon (43.2 years) [3] [6] and [7]. Like Bambo *et al.* in Congo [3], our population is still influenced by herbal medicine, even in cases of symptomatic fibroid [8] [9] [10] and [11]. This can last for several years, therefore delaying the surgical treatment of benign lesions like uterine myomas at age of 40 or more.

4.2. Frequency

Matanga *et al.* and Egbe *et al.* reported a frequency of hysterectomy of 14.54% at the DGH in 2010 [9] [12]. This implies that the practice of hysterectomy has

Table 5. Surgical methods and Hospital Stay.

Surgical methods	Average length of stay
Laparotomy	6.07 ± 1.92
Vaginal route	3 ± 1.09
Laparoscopy	3.6 ± 1.04

Mean hospital stay was 6.07 ± 1.92 days with a minimum of 3 and a maximum of 10 days. The majority of patients (75.6%) spent 5 to 7 days postoperatively. Of the first three routes, hospital stay was longer for abdominal hysterectomy with a significant difference (p = 0.00023).

Table 6. Surgical methods and intraoperative complications (n = 34).

Intraoperative complications	Surgical methods			Total
	laparotomy	Vaginal route	Laparoscopy	
Hemorrhage	16	1	0	17
Bladder sores	8	0	0	8
Ureteral wounds	7	0	0	7
Digestive wounds	1	0	0	1
Death	1	0	0	1
Total	33	1	0	34

Hemorrhage (12) was the most common cause of intraoperative complications. Followed by vesical wounds (1) and digestive wounds. And these complications are most found when using the high way.

Table 7. Surgical methods and postoperative complications (n = 72).

Post operative complications	Surgical methods			Total
	Laparotomy	Vaginal route	Laparoscopy	
Fever	34	1	0	35
Anemia	23	2	1	26
Abdominal wall sepsis	9	0	0	9
Haemoperitoneum	0	0	1	1
Death	1	0	0	1
Total	67	3	2	72

Fever and anemia were the postoperative complication found in the three pathways. Postoperative complications after laparotomy were greater than those observed vaginally and laparoscopically significantly (p = 0.003).

remained constant, in the service of Obstetrics and Gynecology of the DGH. Our frequency is higher than that found at CHU of Yaoundé, 9.33% and CHU of Brazzaville, 6.6% [3] and [7].

4.3. Indications

The main indications of the hysterectomies were symptomatic fibroids in 64.15% of cases. This rate is close to 64.86% found by Kouam *et al.* and 63.9% of Buambo *et al.* [3] [7]. This is in phase with literature, which ranks symptomatic uterine fibroids as the principal indication of hysterectomy [10] [11] [13] [14],

and [15]. A study carried out by Leveque *et al.* in France, had revealed the predominance of the benign uterine pathology in the order of 70% amongst the gynaecological indications of hysterectomies [16]. The high rate of fibroids in our study is justified by the high prevalence of this pathology in the female black race [6] [17].

Obstetrical indications represented 2.62% of cases of hysterectomies in our Hospital and were mainly done for life saving hemostatic reasons.

4.4. Surgical Methods

The analysis of postoperative notes identified 234 cases (33.19%) of abdominal hysterectomies which could have benefited from the vaginal route or laparoscopy. Presently, most data strongly suggest a strong morbidity linked to abdominal hysterectomy which is not the case for minimally invasive techniques which include the vaginal routes and laparoscopies [18] [19] [20] and [21]. Consequently, the tendency now is preference of minimally invasive techniques of hysterectomy, over abdominal hysterectomy [20] in developed countries. We attribute this low index of laparoscopic surgery to the fact that not all the gynaecologists are trained to the technique in one hand and the members of the team like theatre nurses, anaesthetists trained to laparoscopy are lacking. The calculated technical index of hysterectomy in our service was 12.9% in 2017 [21] close to the 19% found by gynaecologists of the service of Maha Alkhadury *et al.* in the Middle East [22] [23], lower than 30% - 60% found by Laberge and Singh in Quebec [24] and 90% in France [25].

4.5. Length of Hospital Stay

Our lengths of hospital stay are short for the vaginal routes and laparoscopy. Thanks to a good learning curve and a better control of post-operative pain, the vaginal and laparoscopic methods can reduce the hospital stay to shorter than 24 hours and consequently: reduce the costs of hospitalisation, favouring a rapid healing and early recovery of the patient's societal activities [22] [26] [27] and [28].

4.6. Complications

Hemorrhagic complications in our study are explained by hysterectomies done on large polymyomatous uterus, likely in the presence of adhesions, as sequelae of chronic pelvic inflammatory disease [29]. Half of the urinary injuries occurred during debulking surgery for ovarian cancer and during radical hysterectomies and lmphadenectomy for cervical cancer. Post-laparotomy fevers are explained essentially by the large cruentous surfaces, necrosed tissues and residual bleeding (which is less likely with minimally invasive surgery), sources of release of pyrogens [22] [30] [31]. The maternal death observed in our study was due to a complication of septic abortion, despite the successful hysterectomy. Our complications are similar to those observed in literature [3] [7] [31] and [32].

5. Conclusion

The frequency of hysterectomy is 14.21%. Uterine fibroids, gynaecological cancer and cervical dysplasia are the main indications. Intra-operative haemorrhage, bladder and ureteral injuries are the major complications. There is a longer hospital stay and a higher rate of complications following laparotomy than minimally invasive methods, in our context where the technical index of hysterectomies is low. The increase in the practice of the vaginal and laparoscopic methods through reinforcement of abilities could contribute to reducing the peri- and post-operative complication as well as hospital stay.

6. Study Limitations

This study was retrospective with 39 out of 1007 files not included because of missing data; this can create an important bias in the analysis of data.

Furthermore, other important aspects of the technical index like the specific training of gynaecologists in areas like minimally invasive surgery, vaginal hysterectomy or other conservative surgical management of postpartum haemorrhage couldn't be assessed.

Authors' Contribution

Théophile Nana Njamen and Robert Tchounzou designed the study and wrote the manuscript. Fulbert Nkwele Mangala, Adamo Bongoe, Fidelia Mbi Kobenge participated in patients' recruitment and manuscript revision. All the other authors revised the manuscript.

All the authors read and approved the final version of the manuscript.

Conflicts of Interest

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

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Appendix

XI-1 Data collection form

Hysterectomy in a tertiary hospital in a sub-Saharan setting: A 20-years retrospective review of the indications, types and analysis of technical index

Data collection sheet

I. Identification

a) Name or ID:_____DATE: ____/_____/_____

b) Age (years): _____ c/ Parity: _____ d/ Residence: _____

c) Level of education: i/ Primary ii/ Secondary iii/ University

d) Profession: i) NE ii) Self-employed iii) Civil servant iv) Private salary v) Student

II. Past history

a) Chronic disease: i) Sickle cell anaemia ii) Diabetes iii) HTN (hypertension) iv) Cancer v) other

b) Past surgery: i) No ii) Yes Indication and site_____

c) Tobacco consumption: i) No ii) Yes

d) Chronic infection: i) HIV ii) Tuberculosis iii) Hepatitis

III. Indications of Hysterectomy (stick all correct options)

a) Uterine myomas

b) Uterine prolapse

c) Uterine rupture

d) Unexplained abnormal uterine bleeding

e) Ovarian cancer

f) Cervical dysplasia

g) Cervical cancer

h) Endometrial cancer:

i) Endometrial atypic hyperplasia

j) Endometrial cancer

k) Post-partum haemorrhage (indicate the cause)

IV. Type of hystetrectomy

a) Abdominal hysterectomy

b) Vaginal hysterectomy

c) Laparoscopic hysterectomy

V. Per operatory events

a) Type of anaesthesia: i) Local ii) Spinal iii) epidural iv) General

b) Duration of operation: i) less than 30 min ii) 30 - 60 min iii) 60-120 min iv) > 120 min

c) Per-op complications: i) bowel injury ii) Bladder injury iii) haemorrhage iv) Ureteral injury v) other_____

VI. Post-operative events

a) Duration of hospital stay_____

b) Haemorrhage

c) Peritonitis

d) Urinary tract infection

e) Surgical site infection

f) Phlebitis

g) Fever

h) Pulmonary embolus

i) Vesico-vaginal fistula