


ORIGINAL RESEARCH

EVALUATION OF THE RATE OF SURGICAL SITE INFECTION IN GYNECOLOGICAL SURGERY AT THE REGIONAL HOSPITAL OF NGAOUNDERE

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ABSTRACT

In Cameroon, where the prevalence of infectious complications remains high, several factors that may or may not lead to these infectious complications are still to be known in our region. The aim of this work was to contribute to improved care delivery. This was a prospective study coupled with an exploratory study from May 10th to August 31st, 2016. All patients who had a gynecological and obstetric surgery at the HRN and without any infection before surgery were included in this study, and were followed each for 30 days. In total, we had 65 surgical procedures in gynecology and obstetrics. The average age of the patients was 29.23 years. Clean surgeries accounted for 98.5% of interventions, with contaminated clean surgeries accounting for 1.5% of interventions. A total of 6 cases of infections of the surgical site was observed (9.2%). Significant variables associated with postoperative infections were the use of antibiotic, the date of first dressing, the duration of surgery. The infection rate of the surgical site which is 9.2% is clearly greater to the data of the literature, despite the antibiotics in prophylactic in clean surgeries. However, better pre and post-operative care as well as strict adherence to the principles of perioperative asepsis should be the rule in our context.

KEY WORDS: infection; postoperative; gynecological surgery

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INTRODUCTION

An infection is the invasion and multiplication of microorganisms such as bacteria, viruses and parasites that are not normally present within the body [1]. It is thus the result of a complex interaction between the body's defense mechanism, the site of surgical incision and the microorganism in question [2]. Nosocomial Infection (NI) or healthcare associated infections occur in patients under medical care. It is said to be associated to healthcare if it occurs during stay period in the hospital or in the course of a diagnostic, therapeutic, palliative, preventive or educative procedure of a patient that was not present or incubating during the patient's admission to the hospital

[1]. The principal criteria defining an IAS constitute the realization of an act or care procedure at large by a healthcare professional or patient or surroundings under the supervision of a healthcare professional. No distinction is made regarding the place where the act is realized or executed [3]. We estimate about 234.2 million surgical interventions practiced annually in the world [4], and reports states about 11.9% patients develop postoperative infections [5].

In fact, concerning surgical site infections (ISO), it is considered to be a nosocomial infection if it occurs within 30 days after surgery, or within a year following surgery if

there was put in place of a prosthesis or implant [1]. In sub-Saharan Africa where several research shows again an increased incidence of infectious postoperative complications, yet there is still a persistent zones of shadow as well as on the morbidity related to every type of surgery and the profiles of surgical patients presenting complications [6]. This is why post-surgery infection represents the first cause of morbidity in the gynecological unit of university hospital of Dakar [7].

A prospective design study of the infectious post-operative complications in gynecological and obstetrical surgery carried out in the university hospital center of Yaoundé gave a prevalence rate of 23.2%. Meanwhile a cohort prospective study centered on post-operative infections in patients operated of a gynecological or obstetrical surgery in the gynecological unit of the general hospital of Yaoundé gave a prevalence rate of 2.8% [8].

In fact, regarding this great difference in rates of post-operative infections, it is interested to carry out a study at the Regional Hospital of Ngaoundéré so as find out the rate of post-operative infections at the units of gynecology and obstetrics in surgery.

GENERAL OBJECTIVE

Evaluate the rate of surgical site infections in the unit of gynecology/obstetrics of the Regional Hospital of Ngaoundéré.

SPECIFIC OBJECTIVES

- 1-Determine the socio-demographic characteristics of patients;
- 2-Determine the family and class of the antibiotic used in prophylaxis
- 3-Determine the quality of care delivery in pre and post-surgery.

METHODS

Study framework

At the Regional Hospital of Ngaoundéré, precisely the gynecological and obstetrical unit.

Study design

Prospective design coupled to and exploratory and explicative study.

Study period

From May 10 to August 31, 2016

Inclusion criteria

All patients admitted for surgery at the units of gynecology and obstetrics of the Regional Hospital of Ngaoundéré during the study period.

Non-inclusion criteria

Patients with known infection at admission before surgery;
Patients without mobile contact for post-operative surgery follow-up.

Sample

An exhaustive sample of all surgical patients who answered our criterion inclusion conditions.

Tool of data collection

A data collection slip

Method

Data were collected by counting directly the number of different surgeries, the types of antibiotic used (family and

class), the quality of healthcare delivery and the duration of hospitalization.

Treatment of data

The treatment of data was made possible by the software's: Microsoft Word, Excel 2010 and Sphinx. Different variables in relation with the objectives of study was taken into account. Variables were describe in tables and graphs. The p-value, probability of committing and error alpha is accepted at 0.05. Khi carré test permitted to compare obtained results with that in the literature.

Limits

The main limit of this study was that of collaboration between health personnels and patients due to language barrier but equally financial difficulties when it came to follow-up certain patients living in different localities.

RESULTS

Socio-demographic characteristics of patients

Ages

Table1: patients' distribution following age

Age (in years)	Number	Frequencies (in %)
Less than 16	1	1,5%
From 16 to 18	2	3,1%
From 18 to 20	4	6,2%
From 20 to 22	4	6,2%
From 22 to 24	5	7,7%
From 24 to 26	7	10,8%
26 and more	42	64,6%
TOTAL	65	100%

Table 1 shows that patients from the age group of 26 years and more are the most represented with a frequency of 64.6%. The mean age of the sample is 29.23 years with extremes of 14 years and 70 years each.

Prophylactic antibiotic treatment

Table 2: Distribution following the antibiotic used in prophylactic

Prophylactic antibiotic	Number (n)	Frequencies (%)
Ceftriaxone	15	23,1%
Ampicillin	50	76,9%
TOTAL	65	100%

Table 2 reveals that ampicillin which is an amino penicillin was mainly used in all caesarian sections while ceftriaxone which is a cephalosporin of third generation was used for the rest of the surgeries.

Preoperative care delivery

Treatment of pilosity

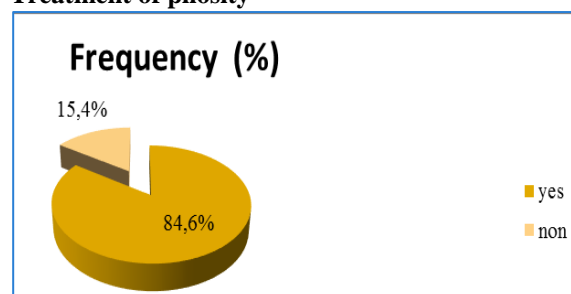


Figure1. Distribution of pilosity treatment during preoperative preparation

The great majority of patients (84.6%) were prepared in the hospital and the rest came already prepared from home (15.4%) as showed above.

Body care

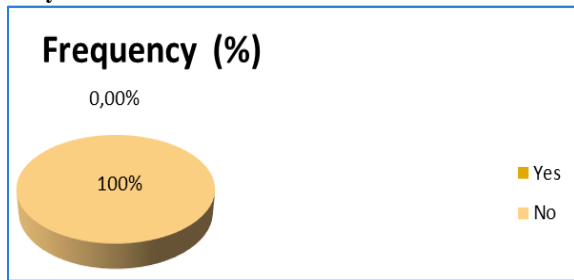


Figure2: Distribution of the frequency of patients following preoperative shower

The figure above shows that no patient had a preoperative shower before surgery.

Table 3: Distribution following antibiotic treatment in post-surgery.

Post-surgery antibiotic treatment	Number (n)	Frequency (%)
Yes	55	84,6%
No	10	15,4%
TOTAL	65	100%

The majority of the patients took an antibiotic treatment after surgery (84.6%) and just 15.4% of the patients never had an antibiotic after surgery as shown above (table3).

Infectious complications of the surgical site

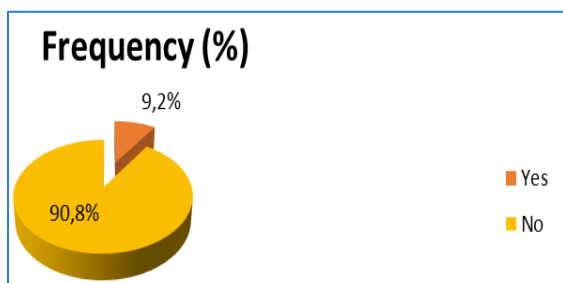


Figure3: distribution of patients following the presence or not of surgical site infection

The figure above shows that, amongst the 65 patients' sample, 6 of them developed a surgical site infection, either 9.2%.

Table IV: distribution of infections following antibiotic treatment in post-surgery

Infection	Yes	No	TOTAL
Post-surgery antibiotics			
Yes	1	54	55
No	5	5	10
TOTAL	6	59	65

The dependence is highly significant. Chi2=23.44; ddl=1; 1-p=>99.99%. We find out that antibiotic in post-surgery plays an important role in the outcome of infections.

DISCUSSION

Frequency of postoperative infections

Infectious post-surgery risk represents a major problem in the course of any surgical care procedure. It is a permanent risk. In fact, 90% of operated patients are contaminated with pathogens bacteria during parietal suture [24]. The rate of post-surgery infection of this study was 9.2%, all outcomes from clean surgery which is highly greater than usual data reported in articles (<2% for clean surgery) (24). On the other hand, the type of surgical case (urgent or programmed) was not significantly related to post-surgery infection which corroborates with the study of Kemfang and al carried out at the HGY in 2014. Regarding this study, the efficiency of prophylactic antibiotics is confirmed just as that in the study carried out at the HGY [8].

Factors that influences the frequency of infections

Age

In this study there is no relation found between the outcome of infections and the ages of patients contrary to the study of Mitima in 2011 that reveals that, age has a relation with the development post-surgery infections. This happens to appear at age extremes of life (less than 1 year and above 60 years) [3]. The lack of report between age and infection in this study may be as a result of the absence of this age extremes in this study.

Prophylactic antibiotics

Prophylactic antibiotics is the administration of antibiotics before bacterial contamination due to a situation at risk during a surgical procedure [25]. Cephalosporins of first generation are the antibiotics of first choice in most interventions except abdominal surgery. The most used antibiotic is cefazolin. Third generation cephalosporins are proscribed in prophylactics. Meanwhile, in the gynecology and obstetrics unit of the Regional Hospital of Ngaoundéré, prophylactic antibiotics is practiced with ceftriaxone in all surgeries except caesarians. This doesn't match with data in the literature. Again, there is no need for a prophylactic antibiotic out of per operative period as shown in 2005 [25]. This does not corroborate with the practice of the regional hospital of Ngaoundéré where prophylactic antibiotic can follow up after 48 hours of surgery. This prophylactic antibiotic practice of the regional hospital of Ngaoundéré is justified by the frequent rupture in progressive asepsis in zones and customs of the theater due to the structure of the theater, to the localization of the theater which is far away from the sterilization unit and the technological environment of the theater. We have noticed that the regular practice of prophylactic antibiotics in pre and post-operation in clean surgeries reduces significantly the outcome of post-surgery infections. On the other hand, concerning caesarian sections, ampicillin which is an amino penicillin was used for prophylactics which concords with the literatures [25]. The majority of post-surgery (66.7%) out came after a caesarian section. This is as a result of the rupture in asepsis but equally due to the absence of post-surgery antibiotics. This practice of prophylactic antibiotics exposes patients to several bacterial resistances.

Preoperative shower

The day before surgery we must be sure of the patient's body physical preparation. This preparation realized through complete body toilet the day before surgery and early in the morning before intervention except in urgencies. The patient shower should be with an antiseptic foaming solution of the same family with the one that has to be used on the operating table (povidone iodine, chlorhexidine) [26]. In the course of this study none of the

patients that undergone surgery had a body physical preparation (whether at bed nor in the shower). This is as a result of the absence of the site dedicated to body preparation in the regional hospital of Ngaoundéré.

□Pilosity treatment

Depilation (with specific clippers) or chemical epilation must be done as near as possible to the surgical procedure but not in the room theater. It is recommended to be done the morning of intervention. Shaving on the other hand is proscribed [26]. During this study, we observed that, the majority of patients operated (84.6%) had shaved the site of intervention with a blade in the preparation room and the 15.4% rest came already shaved from home.

CONCLUSION

This study concerned the evaluation of the rate of post-surgery infections in the gynecology and obstetrics units of the regional hospital of Ngaoundéré. Our sample was made of 65 patients operated and answered to our criterions. It concerned clean and clean contaminated surgical cases. The study revealed a 9.2% rate of post-surgery infections. The site of the infection was the surgical wound associated to suppuration. We noticed the efficiency of prophylactic antibiotics. In this study, hospital stay period, date of first dressing and prophylactic

antibiotics in pre and post-surgery are factors that are significantly associated to post-surgery infections. Nevertheless, the meticulous selection of clean and clean contaminated surgeries, the respect of the principles of asepsis on the technological environment as well as on the patients, are factors that can influence considerably the efficiency of prophylactic antibiotics and must be scrupulously applied in this context.

AUTHORS' CONTRIBUTIONS

The participation of each author corresponds to the criteria of authorship and contributorship emphasized in the [Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals](#) of the [International Committee of Medical Journal Editors](#). Indeed, all the authors have actively participated in the redaction, the revision of the manuscript and provided approval for this final revised version.

SPONSORSHIP

Declared none.

COMPETING INTERESTS

The authors declare no competing interests.

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