

Original Research Article

Surgical Site Infections: Frequency, Risk Factors and Management in the General Surgery Department of the Mamou Regional Hospital

Diallo Amadou^{1*}, Diallo, M. S¹, Keita Doubany Mariame¹, Kaba, M.¹, Konate Lancinet¹, Camara Emile¹, Barry, T. II, Toure Aboubacar¹

¹General Surgery Department Ignace Deen

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Abstract: Introduction: The general definition of surgical site infections (SSI) includes any infection at the operated site, occurring within 30 days following the procedure or within one year if there has been placement of an implant or 'a prosthesis. Surgical site infection (SSI) represents one of the main healthcare-associated infections (HAI). **Material and Methods:** The general surgery department of the Mamou Regional Hospital (HRM) served as the setting for our study. This was a prospective, descriptive study lasting 6 months, from May 1 to October 31, 2016. The aim of the study was to help improve surgical site infections in the department. **Results:** We collected 175 interventions, 27 of which developed an SSI, or 15.42%. The average age of our patients was 33.52 years with extremes of 7 and 82 years, the most affected age group was between 11 and 20 years, i.e. a frequency of 29.63%. Patients in the dirty surgery class were the most represented with a rate of 44.44%. Deep surgical site infection was the most common with 48.15%. **Conclusion:** Infection of the surgical site remains one of the postoperative complications most feared by surgeons because it ruins the success of the surgical procedure and compromises the functional or vital prognosis. We found an average ISO frequency compared to the African series.

Keywords: Infection, surgical site, Mamou Regional Hospital.

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INTRODUCTION

The general definition of surgical site infections (SSI) includes any infection at the operated site, occurring within 30 days following the procedure or within one year if there has been placement of an implant or 'a prosthesis [1].

Surgical site infection (SSI) represents one of the main healthcare-associated infections (HAIs) [2]. The factors favoring SSI are numerous such as factors linked to the intervention itself (Type, nature and duration of the intervention), factors inherent to the personnel such as respect for asepsis rules [3, 4]. SSIs are responsible for significant additional costs linked to an increase in the length of hospitalization and the number of readmissions [5]. The high frequency of SSI in the hospital environment, the difficulty of management and the absence of previous study at the Mamou regional hospital motivated the choice of this work.

The aim was to contribute to improving the management of surgical site infections (SSI) in the

general surgery department of the Mamou Regional Hospital.

MATERIAL AND METHODS

This was a prospective descriptive study lasting 6 months, from May 1 to October 31, 2016, carried out in the general surgery department of the Mamou Regional Hospital.

- Our study focused on all hospitalized and operated patients who developed an SSI and who agreed to participate in our survey.
- All hospitalized and operated patients who did not develop an SSI were not included.
- Collection medium: For the collection of our data we used:

A pre-established investigation sheet, the hospitalization register, the operating report register and the individual medical files of patients.

Sampling and sample size: We carried out an exhaustive sampling of all hospitalized and operated patients who developed an SSI.

Study variables: Our variables were epidemiological, clinical, therapeutic and evolutionary.

RESULTS

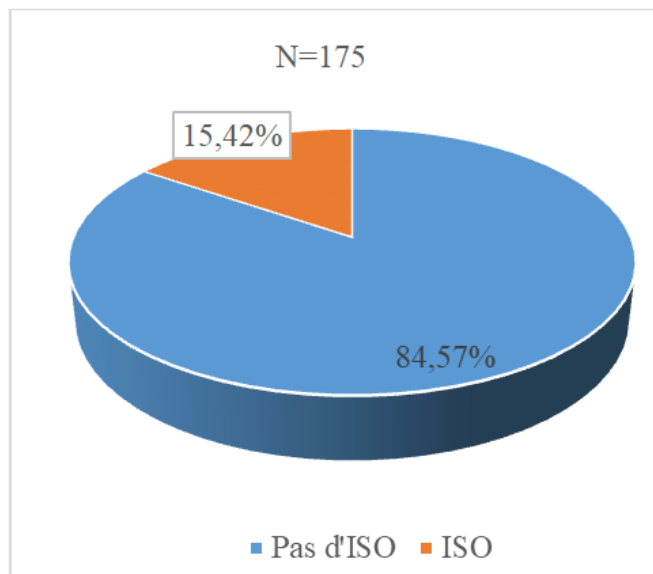


Figure 1: Frequency of SSI cases compared to the total number of those operated on

Table I: Distribution of patients by age

Age	Effectifs	%
≤ 10[	01	3,70
[11 – 20[	08	29,63
[21 - 30[	07	25,93
[31 – 40[	05	18,52
[41 – 50[	00	0,00
[51 – 60[	01	3,70
[61 – 70[	02	7,41
[71 – 80[	02	7,41
≥ 81	01	3,70
TOTAL	27	100

Average age = 33.52 years, Extreme = 7 - 82 years

Table II: Distribution of patients according to contamination class

Contamination class	Effective	%
Dirty	12	44,44
Clean Contaminated	07	25,92
Own	06	22,22
Contaminated	02	7,40
TOTAL	27	100

Table III: Distribution of patients according to diagnosis

Diagnostic	Effective	%
Acute Intestinal Obstruction	06	22,22
Acute Generalized Peritonitis	06	22,22
Inguinal hernia	05	18,51
Acute appendicitis	04	14,81
Traumatic rupture of the spleen	02	7,40
Umbilical hernia	01	3,70
Tropical splenomegaly stage 4	01	3,70
Pelvic tumor	01	3,70
Open fracture of the left leg	01	3,70
TOTAL	27	100

Table IV: Distribution of patients according to risk factors

Risk factors	Effective	%
Absence of antibiotic prophylaxis	18	66,67
Failure to comply with preventive measures	10	37,04
Extreme age	02	7,41
Obesity	02	7,41
High number of people in the room	01	3,70
Prolonged Preoperative Hospitalization	01	3,70
Diabetes	01	3,70

Table V: Distribution of patients according to mode of intervention

Mode d'intervention	Effective	%
Emergency	18	66,67
Program	09	33,33
TOTAL	27	100

Table VI: Distribution of patients according to ISO headquarters

Location of surgical site infection	Effective	%
Deep	13	48,15
Superficial	12	44,44
Organ/Space	02	7,41
TOTAL	27	100

ICCONOGRAPHY



Image 1: Deep ISO on postoperative day 12 of a left ovarian tumor



Image 2 and 3: Superficial ISO: on the left Acute generalized peritonitis by ileal perforation on D7 post-operative and on the right OIA by flange on D16 post-operative

DISCUSSIONS

Frequency: We collected 175 interventions, 27 of which developed an SSI, or 15.42%. Our result is similar to that of Jawad B *et al.*, [6] in Morocco in 2013 at the Mohamed V hospital in Meknes who found an SSI rate of 16%.

Age: The average age of our patients was 33.52 years with extremes of 7 and 82 years, the most affected age group was that between 11 and 20 years, i.e. a frequency of 29.63 % followed by that of 21 and 30 years old with a frequency of 25.93%.

Our result is lower than those of Chaldi M *et al.*, [7] in 2002 at the Mohamed V military hospital in Rabat and Latabi A *et al.*, [8] in 2010 at the Mohamed VI University Hospital of Marrakech, all in Morocco who found an average age of 38.6 years and 49 years respectively. This result could be explained by the young age of the population of our country on the one hand and on the other hand this result attests that SSI would be the prerogative of all age groups if the conditions of aseptic and antisepsis are not met.

Risk factors: It appears from this study that the absence of antibiotic prophylaxis was the first risk factor with 66.67% followed by non-compliance with preventive measures with 37.04%. In Morocco Karima Z *et al.*, [9] in 2013 reported in their study carried out at the Ibn Rochd University Hospital in Casablanca in the visceral surgery department that antibiotic prophylaxis was prescribed in 100% of cases having benefited from clean and clean contaminated surgery. Our result corroborates with data from the literature [1] which states that the absence of ABP is a risk factor linked to the surgical procedure which can lead to SSI.

Contamination class: Patients in the dirty surgery class were the most represented with a rate of 44.44%. Tonye *et al.*, [10] in Cameroon in 2014 reported the same result with an SSI rate of 70% for dirty surgery in district hospitals in Yaoundé. This high rate in our series could be partly explained by the high percentage of dirty surgery in the general population of operated subjects.

Method of intervention: Patients operated on urgently had the highest rate of SSI in our study, i.e. 66.67%. Our result is lower than that of Chaldi M *et al.*, [7] in Morocco in 2002 who reported that 70% of their interventions were emergency.

This result could be explained by the potentially high infectious risk of emergency interventions and by the fact that in our study most patients are classified in the dirty surgery class.

Etiological diagnosis: Acute generalized peritonitis and acute intestinal obstructions were the most represented diagnoses with an SSI rate of 22.22%

respectively. Our results are superimposable to those of Tchorma Terry [11] in Guinea in 2010 who reported in his doctoral thesis in medicine carried out at the regional hospital of Kindia that acute generalized peritonitis was the most incriminated with 21.88% of cases. postoperative suppurations compared to other pathologies. The high frequency of these diagnoses in our series could be explained by the late consultation of our patients.

Site of surgical site infection: In our series, deep surgical site infection was the most common with 48.15%. Karima Z *et al.*, [9] in Morocco in 2013 found at the Ibn Rochd University Hospital in Casablanca in the visceral surgery department 55.6% superficial ISO. In France in 2006 Minchella A *et al.*, [12] reported 9 cases of SSI of the organ and space, i.e. 45%.

CONCLUSION

Infection of the surgical site remains one of the postoperative complications most feared by surgeons because it ruins the success of the surgical procedure and compromises the functional or vital prognosis. We found an average ISO frequency compared to the African series. Dirty surgery was the most represented and the treatment is always long leading to an extension of the post-operative stay. Given the great medical-surgical and economic impact of surgical site infections, prevention remains the only way to limit this risk..

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