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Audit of Postoperative Deaths in the Surgery Department "A" of The Point G University Hospital

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Abstract **Original Research Article**

Purpose: To study postoperative deaths in the surgery department “A” of the CHU Point G. ***Methodology:*** This was a retrospective, descriptive study of postoperative deaths in "A" surgery from January 2018 to December 2023. Included were all cases of death in the postoperative period with a medical file, and patients who died during their hospital stay. ***Results:*** The overall mortality rate was 11.48%. The mean age was 51.18 years. The male-to-female ratio was .12. Patients were admitted as emergencies in 54.5% of cases. The preoperative preparation protocol was difficult to assess in 100% of cases. Difficulties in the operating room were unclear in 63.6% of cases. Cancers were the most common type of cancer, accounting for 46.7% of cases. Intestinal resection was the most frequently performed procedure. The duration of the procedure was unclear in 97.4% of cases. The assessment of resuscitation was undetermined in 98.7% of cases. The date of death was unclear in 62.3% of cases. The time of death was unclear in 85.7% of cases. Deaths occurred during treatment in 96.1% of cases. It was difficult to determine whether deaths were preventable in 100% of cases. Conducting the audit was difficult in 100% of cases. ***Conclusion:*** The results of the study highlighted shortcomings and inaccuracies in the records of patients who died post-operatively.

Keywords: Audit, postoperative death, surgery A, University Hospital Point G.

INTRODUCTION

An audit is a set of techniques used to analyze and evaluate the methods of a company [1] . It is an indicator of performance and quality of care.

Clinical auditing has been developed as part of a continuous process to ensure and improve quality, which is a critical aspect of any effective, efficient and responsive healthcare system [2] .

In Africa, having surgery is considered twice as risky as in the rest of the world due to the lack of postoperative follow-up, outdated equipment and a shortage of qualified personnel [3] .

Surgical audits allow for constructive feedback to be given to individual surgeons, hospitals, and other healthcare professionals [4] . Mortality studies alone do not provide the information needed to track trends and improve the quality of care without regular medical audits in a hospital ward [5] .

We found no data in the literature on auditing postoperative deaths in surgery in Mali. The aim of this study was to evaluate postoperative deaths in the "A" surgical ward of the Point G University Hospital.

METHODOLOGY

This was a retrospective descriptive study of postoperative deaths in surgery A from January 2018 to December 2023, a period of 6 years.

Included were all cases of death within 30 days of surgery for which a medical record was available, as well as patients who died during their hospital stay.

Deaths unrelated to surgery and incomplete records were excluded. We used exhaustive sampling.

The parameters studied were sociodemographic, clinical, and thanatological data. It should be noted that the terms "indeterminate," "imprecise," and "inadequate" refer to insufficient records, as defined by an audit protocol.

Thus, an item is considered indeterminate when it is not clearly defined or identifiable, or when the available information does not allow for a precise conclusion to be drawn. This may mean that there is uncertainty regarding a specific aspect of the audit, such as a financial result, a procedure, or a risk that cannot be assessed due to a lack of sufficient or reliable data.

The term "imprecise" refers to information, data, or descriptions that lack clarity or detail to be accurately and correctly understood. Imprecise information is vague and does not allow for informed decision-making.

An element is considered inadequate when it does not meet the criteria or requirements defined for a procedure, control, or measure. In auditing, this means that something is insufficient or inappropriate within the context of the audit.

Data entry and analysis were performed using Excel 2016 and SPSS version 20.0. The statistical tests used were Pearson's Chi -squared and Fisher's exact tests with a threshold value of $P<0.05$. Patient anonymity and confidentiality were respected.

RESULTS

Frequency:

During the study period, 77 patient records of post-operative deaths were collected, representing 22.4% of all deaths (77/344). The overall mortality rate was 11.48%.

Sociodemographic aspects:

Most of the deceased patients were between 45 and 60 years old. The mean age was 51.18 years, with a standard deviation of 17.08 years, ranging from 15 to 80 years. The median age was 54 years. Males were the most numerous, representing 53.2% of cases, with a sex ratio of 1.12.

Clinical aspects:

Before their deaths, 54.5% of patients (42/77) had been admitted as emergencies. The admission method was unclear in 98.7% of cases, and pain was the most common reason for admission, accounting for 74% (57/77). Other reasons included rectal bleeding in one patient, bowel disturbances in 3.9% (3/77), and other issues in 20.8% (16/77). 59.7% of patients had no known prior medical history. 67.1% of patients had a history of hypertension.

Patients had been referred before their death in 67.5% of cases (52/77). Pre-referral care was inaccurate in 86.5% of cases (45/77) and the availability of the evacuation form was inaccurate in 94.2% of cases (49/77).

It was difficult to assess the delay in evacuation and examination in 100% of cases. The patient examiner was inaccurate in 49.4% of cases (38/77).

And thanatological aspects:

The information in the patient file was inadequate for diagnosis in 77.9% of cases (60/77). The information was inadequate for monitoring in 97.4% of cases (75/77).

Cancers were the most represented, accounting for 46.7% of cases (36/77), followed by peritonitis (15/77) (Table I).

It was difficult to assess the delay in the anesthesia consultation in 100% of cases. The preoperative preparation protocol was difficult to assess in 100% of cases. The need for transfusion was unclear in 57.1% of cases (44/77).

The operating room nurse (IBODE) and the nurse anesthetist (IADE) were available in the operating room in 94.2% of cases (73/77). The availability of the anesthesiologist was unclear in 90.9% of cases (70/77). The surgeon was available in the operating room in 72.2% of cases (61/77).

The availability of equipment in the operating room was unclear in 98.7% of cases. Difficulties in the operating room were unclear in 63.6% of cases.

The checklist was not completed in 100% of cases. The time patients were positioned on the operating table was imprecise in 100% of cases. Intestinal resections were the most frequently performed procedure, accounting for 23.4% of cases (18/77). Postoperative patient management was undetermined in 100% of cases. The implementation of postoperative resuscitation was undetermined in 80.5% of cases (62/77). Inter-departmental collaboration was imprecise in 97.4% of cases (75/77).

The indication for reoperation was unclear in 79.2% of cases (61/77). The duration of the intervention was unclear in 97.4% of cases (75/77). The assessment of resuscitation was undetermined in 98.7% of cases (76/77).

The type of problem in patient care was undetermined in 88.3% of cases (68/77). The immediate postoperative course was unclear in 49.3% of cases (38/77).

The date of death was imprecise in 62.3% of cases (48/77). The time of death was imprecise in 85.7% of cases (66/77). The clinical picture preceding death was unclear in 89.6% of cases (69/77). Deaths occurred during treatment in 96.1% of cases (74/77).

It was difficult to determine whether deaths were preventable in 100% of cases. Factors associated with death could be identified in 64.9% of cases (50/77). Conducting the audit was difficult in 100% of cases.

DISCUSSION

Postoperative mortality can be due to the pathology itself, a surgical complication, anesthesia, or a patient comorbidity.

For Hamza S *et al.*, in 2022, the evaluation of negative postoperative outcomes is likely to better guide perioperative care, improve shared decision-making and obtain more informed consent [6] .

According to Condé RT *et al.*, in 2016, existing data have proven that auditing surgical mortality within a surgical department helps to develop protocols to reduce this mortality in the unit and create an opportunity to inform, learn, make changes and provide quality surgical care [4] .

Table I: Distribution according to diagnosis

Pathologies	Frequency	Percentage
Cancers	36	46.7
Peritonitis	15	19.5
Intestinal obstruction	9	11.7
Digestive fistula	6	7.8
Gallstones	3	3.9
Pleuropericardial effusion	2	2.6
Gangrene of the lower limbs	2	2.6
Abscesses of solid organs	2	2.6
Hemorrhage/AVF	1	1.3
Evisceration	1	1.3
Total	**77**	**100**

Frequency

The overall mortality rate was 11.48%. This result was comparable to those of Ogbuanya AU *et al.*, in Nigeria in 2022, who found a rate of 9.8% [7] , and of Sylla *et al.*, in Côte d'Ivoire in 2024, who found a rate of 9.6% [8] . This rate is higher than that of Turner RC et al. in Australia in 2019, who had a mortality rate of 0.3% [9] .

This result could be explained by the fact that patients are generally seen at an advanced stage of the disease and by a lack of space in oncology units for palliative care.

Sociodemographic data:

The mean age was 51.18 years with a standard deviation of 17.08 years. This result is lower than that of Sylla et al. in Côte d'Ivoire, who found a mean age of 60 years [8] , and significantly lower than that of Turner RC *et al.*, in Australia, who found a mean age of 79 years [9] . This result is higher than that of As Souto et al. in Benin , who found a mean age of 30 years [10] .

This result could be explained by a random selection and/or lower life expectancy. Males were the most numerous, accounting for 53.2% of cases, with a ratio of 1.12. This result is similar to that of Sylla *et al.*, who found a male predominance with a sex ratio of 1.16 [8], and that of Turner RC *et al.*, who found a male predominance of 57.5% [9] . In contrast, Hamza S. in Morocco found a female predominance of 53.7% [6] . This could be explained by a selection bias.

Clinical aspects

Patients had been admitted to the emergency department in 54.5% of cases prior to their death. In the study by Ogbuanya et al., 78.2% of deaths occurred in emergency situations [7], comparable to ours. This result is lower than that of Sylla *et al.*, in Côte d'Ivoire, who found 96% of cases to be admitted to the emergency department [8], and that of Turner RC *et al.*, in Australia, where 83.8% of patients were admitted to the emergency department [9] . This difference could be explained by the study settings, by chance, or by the fact that emergency cases are diagnosed late, increasing the risk of death.

Patients had no known medical history in 59.7% of cases. 67.1% of patients had a history of hypertension in the study by Sylla *et al.*, [8], and 25.6% of patients had a history of surgery in the study by Hamza [6] . The presence of comorbidities increases the risk of postoperative complications; a history of laparotomy is a risk factor for increased operative time and intraoperative complications.

Anesthesia consultations were conducted on an emergency basis in 55.8% of cases, and it was difficult to assess the extent of delays in anesthesia consultations in 100% of cases. Postoperative mortality related to anesthesia is low. Mortality entirely attributable to anesthesia is estimated at 0.69 per 100,000 [11] .

In our study, the transfusion need was unclear in 57.1% of cases. There was a need for transfusion in 39.34% of cases in the study by Kiemtoré S *et al.,* in Burkina Faso [11] in 2017. This precision of the Kiemtoré study was made possible thanks to the audit, requiring proper record keeping.

Therapeutic and thanatological aspects:

Cancers were the most common, accounting for 46.7% of cases. Colon cancer was found to be the indication for surgery in 28% of cases in the Hamza study [6], and in the study by Turner RC *et al.,* in Australia, colorectal pathologies represented 51.3%, with 16.3% involving colonic obstruction and 41.3% having underlying malignancy [9] . Assouto *et al.,* in Benin found acute peritonitis to be the indication for surgery in 52.8% of cases [10] .

Ogbuanya *et al.,* [7] in 2022 in Nigeria found that generalized peritonitis was the most frequent cause of death at 38.9%, followed by cancer (22.9%). This difference could be explained by the study settings and also by the fact that deaths were most often observed in emergency situations and from cancer.

Intestinal resection was the most frequently performed procedure, accounting for 23.4% of cases. Our result is lower than that of Hamza in Morocco, where curative resection was performed in 91.46% of cases [6], and that of the study by RC Turner *et al.,* in Australia, where intestinal resection was performed in 65.5% of cases [9] . Intestinal resections can be a risk factor for postoperative complications if the conditions are not right for either the resection or the anastomosis.

The delay in transfer to the intensive care unit was justified in 50% of cases. Transfer to intensive care was impossible in 8.2% of cases and a lack of resuscitation equipment was found in 19.7% of cases, according to a 2017 study by Kiémtoré S *et al.,* in Burkina Faso [11]. In this study, transfer delays were primarily due to a lack of space, but also to insufficient staffing during shifts. The precision of Kiémtoré *et al*.'s findings can be explained by the audit they conducted.

Inter-departmental collaboration was inaccurate in 97.4% of cases. Inter-departmental collaboration was insufficient in 13.1% of cases in the study by Kiemtoré S *et al.,* in Burkina Faso [11] . The accuracy of the Kiemtoré S *et al.,* study can be explained by the fact that the audit involved the participation of the various departments involved in patient care.

The time of death was imprecise in 85.7% of cases. 57.6% of deaths occurred between 6:00 PM and 7:00 AM in the study by Sylla *et al.,* in Côte d'Ivoire [8] , while 58.6% occurred between 6:00 PM and 8:00 AM in the study by Takongmo *et al.,* in Cameroon [5] . This result could be explained by a lack of attention to detail in the records of deceased patients. Deaths occurring between evening and dawn, according to the literature, could be explained by the inefficiency of the on-call team, which was understaffed.

The preventability of deaths was 100%. In 2017, 31.71% of deaths were preventable in the study by Berthé *et al.,* in Mali [12] . 26.7% of deaths were potentially modifiable in the study by Turner RC et al. in Australia [9] . This difficulty in determining precise figures could be explained by the absence of death audits in surgical settings in our context.

Factors associated with death could be identified in 64.9% of cases. The factors identified were primarily the metastatic stage of cancer, financial constraints leading to delays in treatment, and late diagnosis. In Hamza's study [6] in Morocco, risk factors for mortality were high levels of CEA, hypoalbuminemia , laparotomy, prolonged operating time and significant drainage. Kiemtoré S *et al.,* in Burkina Faso in 2017 found that risk factors associated with death were delayed consultation, delayed evacuation, financial difficulties, and delayed treatment [11] . Sylla et al. found that aspiration pneumonia was the most frequent infectious complication associated with death [8] . Assouto *et al.,* in Benin found that medical complications were the most lethal, with cardiovascular complications leading to shock, respiratory distress, and the emergency setting [10] . In the study by Ogbuanya *et al.,* advanced age, comorbidities, presentation to the emergency department, high ASA scores (III and IV), and late presentation were significantly associated with mortality [7] . Knowledge of risk factors allows for subsequent measures to be taken to prevent modifiable parameters.

Conclusion

The results of this study revealed shortcomings and numerous inaccuracies in the records of patients who died post-operatively. Therefore, it is necessary to conduct a general death audit, and a specific audit of post-operative deaths, to identify deficiencies and improve the quality of patient care.

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