

Post-Operative Mortality Analysis in the Urology Department of Conakry University Hospital

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Abstract

Introduction: Death is a major accident which constitutes an element whose evaluation and analysis are necessary in a surgical service. Such a study is especially important in our country where the health structure operates with limited resources and more than half of the population lives below the poverty line. The objective of this study was to determine the frequency of post-operative mortality, to describe the main comorbidity factors responsible for this mortality and to identify the main cause of post-operative death in the urology department of the Ignace Deen National Hospital. **Material and Method:** This was a retrospective descriptive study lasting 5 years from January 1, 2015 to December 31, 2019. It had focussed on all the files of patients operated on at the Urology Department of the Ignace Deen National Hospital, either in an emergency or planned and who died in per or post-operative immediately or 30 days later. **Results:** We recorded 63 cases of post-operative death, or a frequency of 1.84%. The average age was 61.92 ± 16.91 with the extremes of 12 and 91 years. Bladder (20.63%) and prostate tumours (60.3%) were the main admission diagnoses. High blood pressure was the main comorbidity factor found with 38.09% of cases followed by diabetes with 12.69%. Transurethral resection of the prostate, transurethral resection of the bladder and prostate adenocomectomy were the most performed surgical procedure with respective proportion of 19.04%, 20.63% and 38.09%. Probable cause of death were anemia in 25 cases (39.68%), septic in 20 cases (31.75%), heart failure in 6 cases (9.52%), pulmonary embolism in 5 cases (7.94%), obstructive renal failure 4 cases (6.35%) and stroke in 3 cases (4.76%). **Conclusion:** The majority of deaths occurred in patients over the age of fifty. Anaemia was

the main cause of deaths. Difficulties in procuring blood products as well as the lack of modern therapeutic means are factors that make it difficult for patients to adequately manage.

Keywords

Post Operative Mortality, Urology, Ignace Deen

1. Introduction

Post-operative mortality is defined as the number of death occurring in per or immediate postoperative period or 30 days after the intervention in a population of operated patient [1].

Death is a major accident that is an element whose evaluation and analysis are necessary in a surgical department. Although pathological processes and new therapeutic approaches in urology are currently well known, data on mortality risk factors are less available [2].

Thus, the study of mortality in the service of urology, like any hospital department, has a positive impact on the quality and safety of care. It thus allows the implementation of action to improve practice that will be useful for the training, communication and involvement of caregivers in the management of possible risk factor.

In urological hospitals, thromboembolic risks, old age, competitive morbidity and the frequency of cancers are all factors that increase the risk of death [3].

Mortality study in this area usually focus on a specific condition or surgery and not on mortality in a hospital ward [4] [5] [6].

The combined progress of urological surgery and anaesthesia lead to more frequent surgical indications, including for fragile patients or patient with serious pathologies.

Thus, the high frequency of urological conditions justifying surgery in elderly patients and the lack of previous studies on this subject motivated the choice of this study.

The objectives of this study were to determine the frequency of post-operative mortality, to describe the main comorbidity factors responsible for this mortality and to identify the main causes of post-operative deaths in the urology department of the Ignace Deen National Hospital.

2. Material and Method

This was a descriptive retrospective study lasting five years from January 1, 2015 to December 31, 2019. It had focussed on all the records of patients operated on at the Urology department of the Ignace Deen National Hospital, either in an emergency or planned and who died in the immediate or postoperative period or 30 days after the procedure.

Data were collected using a pre-established survey form, based on the patient's operative and hospitalization records and medical files.

Were included in our study the records of operated and deceased patients mentioning: the comorbidity, the operative report, the probable cause of death. We excluded from our study the records of non-dead patients and those operated on and died outside the study period.

The data were collected anonymously; the identity of the patients and the operating physicians was confidential.

The study variables were quantitative (age, frequency, NFS, blood glucose, creatinine, blood pressure and length of hospitalisation) and qualitative (sex, provenance, marital status, socio-professional strata, reasons for consultation, history, comorbidity factors, preoperative diagnosis, pre-anaesthetic visit, types of surgery, pre-death alert syndrome, probable causes of death).

The results were presented as mean and standard deviation for quantitative variables and as a percentage for qualitative variables. All the information was recorded on a pre-established file on Excel, and all the analyses were carried out using Epi info 7.

3. Results

During our 5-year study period, we recorded 63 cases of post-operative mortality out of 3407 patients operated, or 1.85%. The average age was 61.92 ± 16.91 years with extreme of 12 and 91 years. The most affected age group was that of 62 to 71 years with 17 cases or 26.98%. The sex ratio was 6.87 in favour of men. Mortality affected more patients from rural areas than urban ones with 58.73% and 41.27% of cases respectively. The socio-demographic characteristics of the patients are reported in **Table 1**.

The reasons for consultation were dominated by incomplete chronic retention of bladder urine with 42 cases or 66.67% followed by hematuria with 22 cases or 34.92%. The majority of patients, 57.14% had no history, but we noted 9.52% of transurethral resection of the prostate and 7.93% of prostatic adenomectomy.

Thirty-eight patients had comorbidities. These comorbidities were dominated by hypertension in 24 cases (38.09%) and diabetes in 8 cases (12.69%) (**Figure 1**).

The preoperative diagnosis was dominated by benign prostatic hypertrophy in 23 cases (36.50%), followed by malignant prostatic and bladder tumours and post-infectious urethral strictures in 23.80% ($n = 15$), 20.63% ($n = 13$) and 06.34% ($n = 4$) of cases respectively (**Table 2**).

All patients had received a pre-anaesthetic visit and only 5 patients or 8% were classified as ASA. Three were in ASA II and 2 in ASA I. The average hemoglobin level was 11.68 ± 1.25 g/dl with the extremes of 5 g/dl and 13 g/dl. And 46 patients received a transfusion before the procedure. Blood glucose was normal in 61 patients and high in 2, respectively 96.83% and 3.17%. Creatininemia was normal in 19 patients or 30.15% and high in 44 patients or 69.85%. According to the type of surgery, transurethral resection of the prostate, transurethral resection of the blad-

der and prostatic adenomectomy were the most frequent surgical procedures, accounting for 19.04%, 20.63% and 38.09% of cases respectively (**Table 3**).

Table 1. Distribution of patients according to socio-demographic characteristics.

socio-demographic characteristics	Number	Percentage (%)
Gender		
Male	55	87.30%
Female	8	12.70%
Ages		
12 - 21	2	03.17
22 - 31	1	01.60
32- 41	2	03.17
42 - 51	11	17.46
52 - 61	10	15.87
62 - 71	17	26.98
72 - 81	14	22.22
Profession		
liberal	20	31.75
Retired	13	20.63
Civil servant	10	15.87
Farmer	10	15.87
Housewife	7	11.11
Student/Pupil	3	4.76
Marital status		
Married	60	95.20%
Single	3	4.76%
Origin		
Rural area	37	58.73%
Urban area	26	41.27%

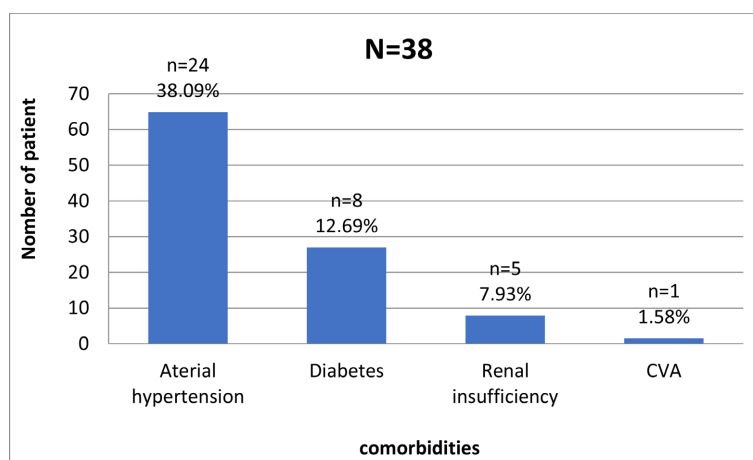


Figure 1. Distribution of patients by comorbidities.

Table 2. Distribution of post-operative deaths according to the pathologies for which the intervention was performed.

Main pathologies of the patient	Number	Percentage (%)
Benign prostatic tumour	23	36.50
Malignant prostatic tumour	15	23.80
Bladder Tumours	13	20.63
Post-infectious urethral stenosis	4	06.34
OGE gangrene	2	03.17
Pyelo-urethral junction syndrome	2	03.17
Tumour of the upper excretory way	1	01.58
Renal lithiasis	1	01.58
Prostatic abscess	1	01.58
Double-vaginal fistula	1	01.58
Total	63	100.00

Table 3. Distribution of post-operative deaths by type of intervention.

Type of intervention	Number	Pourcentage (%)
Prostatic adenocomectomy	23	38.09
Trans uretal bladder Resection	13	20.63
Transurethral Resection of Prostate	12	19.04
Urethoplasty	04	06.34
Pulpectomy	03	04.76
Flattening	02	03.17
Pyeloplasty	02	03.17
Prostatic abscess drainage	01	01.59
Nephro-ureterectomy	01	01.59
Fistulorrhaphia	01	01.59
Nephrolithotomy	01	01.59
Total	63	100.00

Pre-death alert syndrome was dominated by signs of decompensation of anaemia followed by infectious syndrome and signs of cardiac decompensation. These signs were often associated respectively in 74.60%, 60.32% and 36.51% of cases (**Figure 2**).

The hypertension was low for 13 patient and High for 33 patients in 20.63% and 49.19% of case.

Forty-six patients were anaemic after the procedure with a haemoglobin level ranging from 5 to 7 g/dl in 7 patients and 8 to 10 g/dl in 39 patients. Probable causes of death were anemia in 25 cases (39.68%), followed by septic shock in 20 cases (31.75%), heart failure in 6 cases (9.52%), pulmonary embolism in 5 cases

(7.94%), obstructive renal failure 4 cases (6.35%) and stroke (stroke) in 3 cases (4.76%).

Death occurred between the first day (D1) and the thirtieth day (D30) after surgery. The average length of hospital stay was 9.48 ± 8.06 days with extremes of 1 and 29 days Deaths were most frequent between the first postoperative day (D1) and the third day (D3), then between the fourth (D4) and sixth day (D6). During these two periods we recorded 17 cases of death (27%) and 16 cases (25%) respectively (Figure 3).

4. Discussion

During our work, we registered 3407 cases of operated patients. Of these, 63 postoperative deaths were recorded, a frequency of 1.84%. We noted an increase in this rate that was 1% in 2010. This significant increase in postoperative mortality is due to the multiplication of surgical indications following the progress of anaesthesia that we have experienced in the last five years. In addition, patients who are otherwise considered unfit for surgery or anaesthesia because of their

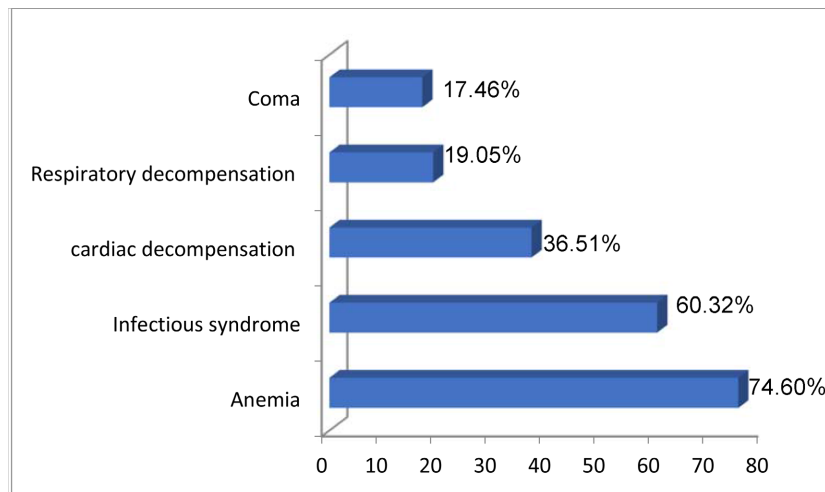


Figure 2. Distribution of patient according to alert syndrome before postoperative death.

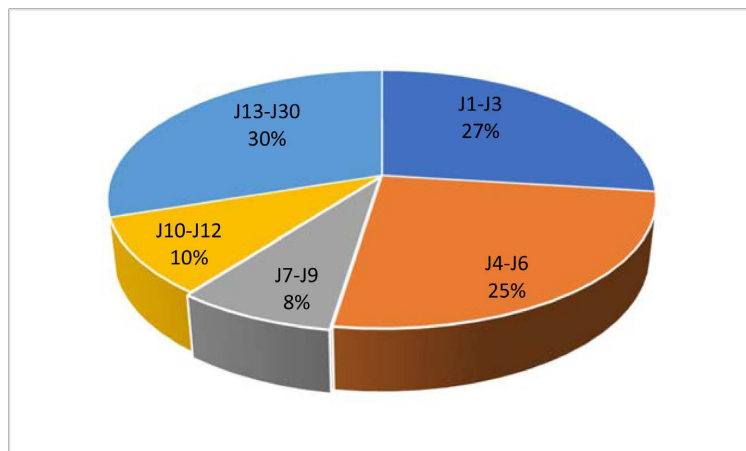


Figure 3. Distribution of post-operative deaths according to the time of occurrence.

defects are increasingly treated surgically. The death rate in our department was higher than that of B Siné *et al.* [3] at Aristide le Dantec Hospital in Senegal in 2016 who reported a postoperative mortality of 1%. However, it was lower than that of AM Ondongo Atipo *et al.* [7] at the CHU of Brazzaville who recorded a death rate of 4.66%.

For these authors [3] [7], the mastery of surgical procedures and the adequate management of patients in the postoperative period are essential conditions for the reduction of postoperative deaths in our practices at the time of death, the average age of our patients was 61.92 ± 16.91 years. This result was close to that of Sine *et al.* [3] and A. Dekou *et al.* [6] with 63.6 years and 63.4 years respectively the age group most affected in this study was almost identical to those of the studies of Sine *et al.* [3], A. Dékou *et al.* [6] and AM Ondongo Atipo *et al.* [7]. This high mortality in elderly subjects in a urological environment is due to the fact that they are the first consultants but also to the existence of comorbidities that weaken them during surgery. We found a predominance of the male sex with a sex ratio of 6.87. It is lower than that of AM Ondongo Atipo *et al.* [7] which was 12.19 H/F that of Dékou [6] with 14 H/F and the one found by Sine *et al.* [3], at the CHU Aristide in Dakar who found a sex ratio of 17.8 H/F. This male predominance is explained by the fact that in addition to the diseases of the urinary tract that are common to men and women, urology also supports diseases of the male genital tract that are most common in our working context. Mortality affected more patients from rural areas than urban ones with 58.73% and 41.27% of cases respectively. This high rate would be explained by the fact that patients in rural areas came to a much more complicated state due to the delay in management. Our result was close to that of A. Ouattara *et al.* in Benin in 2012 who reported in their series a frequency of 53.8% in favour of patients from the rural area [8]. In our series, 58.73% of patients had a comorbidity factor. The presence of concomitant pathologies in patients, mostly elderly, with diseases that can progress to serious complications reduces the chances of survival. We noted a predominance of hypertensive and diabetic patients. Our series was similar to that of AM Ondongo Atipo *et al.* [7] at the CHU de Brazzaville who reported a frequency of 42% with a predominance of hypertensive and diabetic patients.

Among the pathologies that caused death, benign prostatic hypertrophy was the most encountered pathology with a rate of 36.5%, closely followed by malignant tumours of the prostate and bladder. In the study by Dekou *et al.* [6] in terms of overall mortality, prostate cancer ranked first, while urethral stricture and prostate adenoma took 5th and 6th place respectively

These conditions are the first causes of consultation in our structure. The lack of a specialised urology structure in our country increases the time to take care in an appropriate environment. All patients had a pre-anaesthetic visit. Of these, 91.23% were not classified as ASA. And yet this classification would have made it possible to assess the anaesthetic risk and obtain a predictive parameter of perioperative mortality and morbidity. The inadequacy of the use of this classifica-

tion in our patients would be related to the particular context of the countries south of the Sahara. Our countries are dominated by a shortage of anaesthetist doctors and insufficient training of nurses acting as anaesthetists.

Surgically, prostatic adenomectomy was the most promising surgical gesture of death in our series, followed by trans-urethral resections of the bladder and prostate. This corresponds to prostate and bladder tumour pathologies, which usually occur on areas weakened by age and comorbidities. Prostatic adenomectomy, although simple, if performed after planning. It remains a heavy surgery with high mortality if it is performed urgently or on a comorbid field. This was the case for all our patients who died of prostate adenomectomy. As for trans-urethral resections of the prostate and bladder, they were monopolar and performed for prostate and bladder cancers. Although the duration of these resections did not exceed one hour, they were not exempt from the occurrence of TURP syndrome and bleeding increasing the risk of post-operative death. In the atipo study prostatic adenomectomy, bladder tumour resection and urethroplasty resulted in the death of 31.25%, 12.50% and 6.25% of their patients respectively pre-death alert syndrome was dominated almost entirely by signs of decompensation of anaemia with 74.60% of cases, followed by infectious syndrome 60.32%. As for the probable causes of death, they were dominated by anaemia and septic shock with the respective frequencies of 39.68% and 31.75%. Kidney failure was noted with a frequency of 6.35%. This is different from the causes of death in the AM Ondongo Atipo *et al.* [7] study where anaemic shock associated with haemorrhagic shock accounted for only 7.56% of deaths. According to literature data, mortality due to obstructive renal failure varies from 6.2% to 25% [9] [10]. Acute anaemia in our practice is almost often fatal because of difficulties in proxieting blood products. Since the blood supply chain in our environment is long, prolongs the transfusion time, which is fatal for patients. Septic shock, the second cause of death in our study, ranked third in the Ondongo Atipo *et al.* [7] study with 12% of cases. Other studies have identified it as the first cause of death [11] [12]. Several factors contributed to the occurrence of a state of septic shock in our study, namely age, the presence of comorbidity, especially diabetes, the existence of an infectious outbreak on admission, all crowned by antibiotic resistance, which is a scourge in our practice. However, the more heavy patients, carriers of polypathologies, the more likely we are to face complications and deaths [2]. The death period was between D1 and D30 with a peak between D1 and D3 where we recorded 27% followed by those who died between D4 and D6 with a proportion of 25%. In the study by Dékou *et al.* [6], deaths were observed in particular in the second half of the month (53.9%). These deaths occurred most often at night between 6pm and 6am. For these authors, the distribution of deaths both at night and during the day led them to blame difficult working conditions and the lack of resuscitation equipment.

Thus, in order to reduce post-operative mortality, it would be necessary for us and for some authors [13] to establish a medical audit system in our hospitals such as the one applied in North America. It will consist of bringing together all

staff each week to discuss cases of death, interesting pathologies, and cases of patients with a healing problem.

The limits of our study lie mainly in its retrospective nature and the non-ASA classification of most of our patients. To this are added many difficulties such as: poor management of archives and the incomplete nature of most patient files

5. Conclusion

Postoperative mortality remains high in urological environments, the causes are multiple and depend on the pathology, the type of surgery and the existence of defects. The lack of intensive care unit, difficulties in proxieties of blood products and the lack of modern therapeutic means are factors that make it difficult to adequately manage patients. Although retrospective, the results of our series show the need to evaluate our practises and in order to initiate reforms to reduce risk factors related to post-operative mortality.

Conflicts of Interest

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

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