EAS Journal of Anaesthesiology and Critical Care
Abbreviated Key Title: EAS J Anesthesiol Crit Care
ISSN: 2663-094X (Print) & ISSN: 2663-676X (Online)
Published By East African Scholars Publisher, Kenya

Volume-7 | Issue-6 | Nov-Dec-2025 | DOI: https://doi.org/10.36349/easjacc.2025.v07i06.013

OPEN ACCESS

Original Research Article

Perioperative Management of Abdominal Surgical Emergencies of the Elderly Patient in Ziguinchor

Sambou P[1*], Kane MM[1], Barboza D[1]

[1]Anaesthesia-Resuscitation Department, Peace Hospital Center, Health Sciences, Training & Research Unit, Assane Seck University, Ziguinchor, Senegal

Article History
Received: 07.10.2025
Accepted: 03.12.2025
Published: 06.12.2025

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Introduction*:** The perioperative management of an elderly patient is significantly particular due to age-related physiological and pharmacological changes. Emergency surgery in the elderly patient corresponds to a major and disturbing life event for the patient. ***Objective*:** To evaluate the perioperative management of abdominal surgical emergencies in elderly patients. ***Methodology*:** This is a retrospective, descriptive and analytical study conducted over 3 years from January 1st, 2022 to December 31th, 2024. We included in the study all patients aged 60 years and older who were operated on for a non-traumatic abdominal surgical emergency. ***Results*:** We collected and included 74 medical recording, representing a frequency of 2.5%. The sex ratio was 1.04. The average age was 71.5 years with extremes of 60 to 91 years. Patients were classified as ASA 2u in 59.4% and ASA 1u in 32.4%. Charlson's index was on average 3.1 with extremes from 2 to 6. Surgeries were rated Altemeier 4 in 39.2%. The preoperative indications were dominated by acute bowel occlusions in 43.2%, strangulated abdominal wall hernias in 25.6%, acute peritonitis in 12.1% and acute appendicitis in 12.1%. Preoperative acute kidney injury was found in 27%. In the postoperative phase, 36.4% of patients were admitted to intensive care unit. The reasons for admission to intensive care unit were delayed awakening (64%), hypovolemic shock (9.5%) and respiratory distress (5.4%). The state of hypovolemic shock (12.1%), postoperative acute kidney injury (5.4%) and acute respiratory distress syndrome (5.4%) were the main postoperative complications. The evolution was favorable in 78.4% and the mortality was 21.6%. The causes of death were septic shock in 68.7% and cardiogenic shock in 31.3%. Factors associated with mortality were age, ASAu score, Charlson index, preoperative acute kidney injury (AKI), perioperative anuria, pulmonary inhalation, admission to intensive care unit, septic shock, postoperative AKI, atrial fibrillation and surgical resumption. ***Conclusion*:** An adaptation of perioperative management in the elderly is essential to reduce postoperative morbidity and mortality.

Keywords: Emergencies, Abdominal Surgery, Elderly, Ziguinchor.

INTRODUCTION

The aging of the population associated with advances in surgical techniques leads to an increase in the number of elderly subjects who are candidates for an interventional procedure performed under anesthesia regardless of the technique [1]. The perioperative management of an elderly patient or even a centenarian is significantly different from that of a young patient due to physiological and pharmacological changes related to age [1]. Emergency surgery in the elderly patient corresponds to a major and disturbing life event for the patient. It therefore deserves, due to the aging of the population, particular attention both qualitatively and quantitatively [2]. In countries with limited resources, the quality of this care remains a major challenge. The objective of our work was to evaluate the perioperative anesthetic management of abdominal surgical emergencies of the elderly patient at Peace Hospital in Ziguinchor.

PATIENTS AND METHOD

This is a retrospective, descriptive and analytical study conducted over 3 years from January 1st, 2022 to December 31th, 2024 at Peace Hospital in

***Corresponding Author:** Paulin SAMBOU
Anaesthesia-Resuscitation Department, Peace Hospital Center, Health Sciences, Training & Research Unit, Assane Seck University, Ziguinchor, Senegal

Ziguinchor. Were included in the study all patients aged 60 years and older who underwent non-traumatic abdominal surgical emergency. We did not include all patients under 60 years old and those operated on the regulated program. From the hospitalization records and anesthesia sheets, we collected epidemiological data (frequency, age, sex), diagnosis and type of surgical procedure performed, surgical history, pre-operative clinical evaluation data, the data on the paraclinical explorations (CBC, blood ionogram, serum creatinine, urea rate, glomerular filtration rate according to the MDRD formula, ECG, echocardiography, abdominal CT-scan). Data on comorbidities were also collected allowing us to define the Charlson index, which is a score of comorbidities with a variable by age, predictive of survival at 10 years. We also collected data on preoperative preparation, on the course of anesthesia (induction, titration of agents, vascular filling, blood transfusion, adverse events, duration), on postoperative management (transfer to intensive care unit ICU, ventilation, treatment) and on the evolutionary modalities (duration of hospitalization, morbidity, mortality).

We used Microsoft Excel 2016 software for the creation of the database. The quantitative variables were expressed as an average and the qualitative variables were expressed in terms of number and percentage. The statistical analysis was carried out using the Pearson Chi2 test or the exact Fisher test from the Jamovi software version 2.6.19. The p value allowing the existence of a statistically significant difference between the percentages of two variables was set at 0.05.

RESULTS

During our study period, 2 859 surgeries were performed urgently in the operating room of Peace Hospital. We had collected and included 74 medical records, the frequency was 2.5%. There was a male predominance in 58.1% and a sex ratio at 1.04. The average age was 71.5 years with extremes of 60 to 91 years. The age group 60 to 69 years was predominant in 45.9% followed by the age group 70 to 79 years in 35.1%. The predominant medical history were hypertension in 12.1% and diabetes in 6.7%. The Charlson index averaged 3.1 with extremes of 2 and 6. Figure 1 describe the distribution of patients according to the Charlson index.

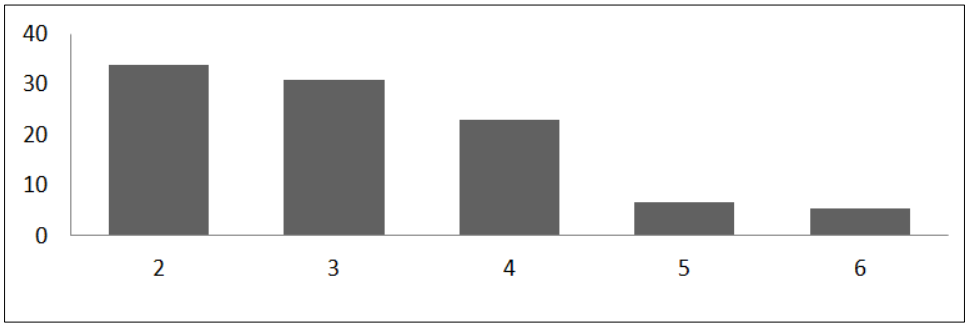

Figure 1: Distribution of patients according to the Charlson index

A surgical history was found in 20.2% of whom more than two thirds (86.6%) involved abdominal surgery. The patients were on antihypertensives medications in 13.5%, oral antidiabetic drugs in 6.7%, beta-blockers in 1.3%, ACE-inhibitors (angiotensin-converting enzyme) in 1.3% and under doxazocine in 1.3%. Patients were classified as ASA 2u in 59.4% and ASA 1u in 32.4%. The evaluation of metabolic reserve carried out in 17.5% had found a mean of 5.9 with extremes of 4 and 7. The evaluation of cardiovascular risk had found a predominant Lee score of 1 in 62.1%. Lee's score was 0 and 2 in 29.7% and 8.1% respectively. Surgeries were rated Altemeier 4 in 39.2%. They were ranked Altemeier 1 and 3 in 28.3% each. The preoperative indications were dominated by acute bowel occlusions in 43.2% of which half were of tumor origin. Tumor pathologies were found in 21.6% with predominance of colonic tumors (9.4%), rectosigmoid (5.4%), pyloric and mesenteric (1.3%). Table I describes the distribution of patients according to operative indications.

Table I: Distribution of patients according to operative indications

Operative indications	Number (n=74)	Percentage (%)
Acute bowel obstruction	32	43,2
Strangulated abdominal wall hernias	19	25,6
Acute generalised peritonitis	9	12,1
Acute appendicitis	9	12,1
Postoperative eviscerations	3	4
Volvulus of the pelvic colon	2	2,7
Postoperative digestive fistulas	2	2,7

The surgical approach was laparoscopic in 10.9% with a conversion rate of 1.3% related to technical difficulties. Surgical interventions were dominated by exploratory laparotomy in 51.3%, hernial cure in 24.3% and appendectomy in 12.1%. Acute pre-operative kidney injury was found in 27%. Dysnatraemia was noted in 60.7% preoperatively. Hypernatremia and hyponatremia were found in 48.6% and 12.1%, respectively. A dyskalaemia was found in 20.2% with hyperkalaemia in 4% and hypokalaemia in 16.2%. The electrocardiogram performed in half of the patients revealed abnormalities in 31%. The abnormalities were of the type of regular sinus tachycardia in 14.8%, a bundle branch in 8.1%, a long QT in 2.7%, PVC (premature ventricular complex) / PAC (premature atrial complex) in 5.4%, a ventricular hypertrophy in 2.7% and repolarization disorders in 1.3%. Transthoracic echocardiography (TTE) performed in 2.7% of cases and was normal. Abdominal CT-scan was performed in 44.6% of patients. A preparation was carried out by vascular filling in 44.5% and blood transfusion in 1.3%. General anesthesia with orotracheal intubation was performed in 91.9%. Intrathecal morphine (2.7%) and epidural analgesia (1.3%) were performed for both intraoperative and postoperative analgesic purposes. Rapid sequence induction was performed in 89.1%. The peroperative incidents identified were dominated by arterial hypotension in 50%. In 29.7%, the incidents occurred in ASA 2u patients. Table II shows the distribution of patients according to incidents that occurred intraoperatively.

Table II: Distribution of patients according to operative incidents

Operational incidents	Staff (n)	Percentage (%)
Arterial hypotension	37	50
Pulmonary inhalation	3	4
Anuria	3	4
Hemorrhagic shock	1	1,3
Bradycardia	1	1,3
Hypertension	1	1,3
Tachycardia	1	1,3

The management of perioperative incidents consisted of vascular filling (17.5%), ephedrine administration (25.6%), noradrenaline initiation (5.4%) and blood transfusion (8.1%). The average duration of the surgery was 100 minutes with extremes of 30 and 240 minutes. The average duration of anesthesia was 160 minutes with extremes of 50 and 300 minutes. Patients were awakened at the operating table in 72.9% and in ICU in 27.1%. In post-operative, 36.4% of patients were admitted to ICU and 63.6% were transferred to the surgery department. The reasons for admission to ICU were delayed awakening (64%), hypovolemic shock (9.5%) and acute respiratory distress syndrome (5.4%). Postoperative complications had occurred in 36.3%. Complications were medical in 25.6% and surgical in 10.7% requiring a surgical reintervention. Postoperative complications are detailed in table III.

Table III: Distribution of patients according to postoperative complications

Post-operative complications	Staff (n)	Percentage (%)
Hypovolemic shock	9	12,1
Posto-operative acute kidney injury (AKI)	4	5,4
Acute respiratory distress syndrome	4	5,4
Atrial fibrillation	2	2,7
Postoperative eviscerations	3	4
Postoperative bowel obstruction	2	2,7
Postoperative peritonitis	2	2,7
Digestive fistulas	2	2,7

The evolution was favorable in 78.4% and the mortality was 21.6%. Deaths were secondary to refractory septic shock with multi-organ dysfunction syndrome (MODs) in 68.7% and refractory cardiogenic shock in 31.3%. The average duration of hospitalization was 2.9 days with extremes of 1 and 20 days. In the analytical study, the epidemiological parameters associated with the adverse outcome were age ($p<0.001$), ASAu score ($p=0.003$) and Charlson index ($p<0.002$). Pre-operative AKI ($p=0.009$) was associated with an adverse outcome. Among the peroperative incidents, anuria ($p<0.001$) and pulmonary inhalation ($p=0.001$) were associated with an adverse outcome. The post-operative awakening in ICU ($p=0.003$) and the admission to ICU ($p<0.001$) were associated with an unfavorable outcome. Surgery and anesthesia durations longer than 3 hours were also associated with an unfavorable evolution. Among the postoperative complications, septic shock ($p<0.001$), postoperative AKI ($p=0.008$) and atrial fibrillation ($p=0.007$) were associated with an adverse outcome. The resumption of surgery ($p=0.008$) was associated with an adverse outcome, particularly digestive fistulas ($p=0.006$).

DISCUSSION

The definition of the elderly subject is not consensual regarding the minimum age threshold, with different assessments on calendar or physiological age [2]. The WHO suggests age 60 as the minimum threshold for old age [3]. This population is classified as young elderly: 60 to 75 years, in old: 75-90 years and senior > 90 years. In Senegal, the national agency for statistics and demography estimated that this segment represented 5.9% of the general population [4]. This segment of the population poses specific medical and social problems, but it is mainly characterized by its fragility and its increasing recourse to the act of anesthesia [5]. On the one hand, the cost of additional examinations constitutes a brake on appropriate care. On the other hand, an adapted technical platform is often lacking in our countries and regions with limited resources. In our series, 74 abdominal surgeries were performed urgently over a period of 3 years in patients older than 60 years, which represented a frequency of 2.5%. Frequencies of respectively 4.5% and 2.1% were found by Senegalese authors [6, 7]. In Ivory Coast, Koffi and Lebeau had found 5.1% and 3.25% respectively over periods of 10 years in patients over 60 [8, 9]. This low frequency is explained by the growing increase in the young population in Africa. However higher frequencies are observed in advanced countries reaching 45 to 50% of the surgical population [10]. The average age in our series was 71.5 years with extremes of 60 and 91 years. Our study population consisted mainly of young old people from 60 to 69 years old in 45.9%. A lower average age was found by Koffi and Lebeau with 68.2 and 68.3 years old, respectively [8, 9]. Diaw found a higher average age of 74.1 years among a series of patients over 65 years old. Other African authors had also found a small proportion of patients over 80 years old [8-13]. We thus note a predominance of young old men in the African context. However, reliable estimates are difficult to obtain due to the extreme variability of the methodological approach adopted in the different studies [11]. In Europe, higher ages are observed [1; 2]. Indeed, life expectancy is longer in developed countries. The patients in our series were classified as ASA 2u in 59.4% and ASA 1u in 32.4%. Charlson's comorbidity index averaged 3.1 with extremes of 2 and 6. In the Diaw study in Dakar, the mean Charlson index was 5 ± 2.7 with ASAu class average of 2.8 ± 1 [7]. This difference in the comorbidity index between our two studies could be explained by a selection bias, a lifestyle difference, and dietary habits. Diaw's study included patients over 65 years old and living in urban areas while our study focused on patients aged 60 and older living in peri-urban and rural areas. These are patients whose agricultural and peasant activities condition regular physical activity. An ASAu average class of 2 was found by other African authors [8-13]. According to Betteli, in developed countries, more than 50% of patients over 70 years old suffer from at least one disability and 30% from two or more. This feature, also known as poly-pathology, indicates a condition in which clinical patterns, progression and treatment are more complicated than the simple sum of all diseases. The author evokes a coexistence of this polypathology with a reduced ability to cope with surgical stress [10]. This association makes the management of patients from this group complex. In our study, the operative indications were dominated by acute bowel occlusions in 43.2%, strangulated abdominal wall hernias in 25.6%, acute generalized peritonitis and acute appendicitis in 12.1%. Koffi and Diaw had found similar results [8, 7]. In Lebeau's series, there was a predominance of strangulated hernias of the wall [9]. These results confirm the trend found in our study. According to Launay-Savary, in the elderly population, causes of acute bowel obstruction include adhesions (50% to 75%), strangulated abdominal wall hernia (15%) and neoplasia (15%) [2]. According to the same author, colonic occlusions are less frequent than small-bowel occlusions in elderly subjects. However, colonic occlusions are more proportionally more common in elderly patients than in young patients. These colonic occlusions are secondary to colorectal cancer and are responsible for nearly 50% of the indications of laparotomy in 90-year-old patients [2]. In our series, acute bowel occlusions were of neoplastic origin in 21.6%. Colorectal cancers accounted for more than a third of the causes of acute bowl occlusions with 14.8%. The most common inflammatory processes observed in older people are gastrointestinal perforations, cholecystitis and appendicitis [2]. Regarding gastrointestinal perforations, ulcer disease is rarely the cause. Gastric or duodenal perforation occurs in 5-10% of elderly patients with ulcer [2]. Colonic perforation in the elderly is most often secondary to complications of diverticular disease [2]. General anesthesia was the most used technique in our series with 91.9%. The anesthetic technique is conditioned by the type of surgical indication and the clinical state of the patient. The most important thing is to adapt appropriate management for the elderly patient in preoperative preparation and optimization of analgesia. The goal remains early rehabilitation and empowerment. Aging is associated with degeneration of vital functions. Which makes this section of the population susceptible to complications during and after surgery, especially in the context of emergency. This susceptibility is aggravated by the state of dehydration and the relative hypovolemia of the third sector in this context of abdominal emergency. In our series, arterial hypotension predominated among the intraoperative adverse reactions with 50% followed by pulmonary inhalation 4% and anuria 4%. Diaw had found a higher prevalence of peroperative hypotension of 72.3% [7]. Aye in his observational study of all patients over 65 years old who had undergone anesthesia found a prevalence of low blood pressure of 65.5% [12]. Ba had found a lower prevalence of 13.3% [14]. The latter concluded that anaesthesia of the elderly patient in emergency poses a significant risk of intraoperative arterial hypotension, particularly in patients with high ASA classes. This difference in prevalence is linked on the one hand to a selection bias and on the other hand to

the fact that in his study, there was a predominance of spinal anesthesia and ASA patients 1 and 2. The modality of administration of anesthetic agents and/or their titration using neurophysiological monitoring improve the hemodynamic profile of anesthesia in the elderly subject operated on as an emergency for surgery abdominal [15]. In the absence of monitoring devices, a reduction of doses and systematic titration is necessary in our context. In postoperative, 36.4% of patients were admitted to ICU. The reasons for admission to ICU were wake-up delay 64%, shock 9.5% and respiratory distress 5.4%. The rate of admission to ICU was 29.8% and 19.7% in the series by Diaw and Lebeau [7-9]. This high rate of admission to intensive care in our study is explained by the lack of a post-intervention treatment room. The physiological changes of the elderly subject would be responsible for an extension of the delay, the duration of action and a delay in drug elimination. The shock (35.3%), delay in waking up (29.4%) and AKI (17.6%) were the main reasons for transfer to a resuscitation unit in the Diaw series [7]. The shock is linked to increased sensitivity to hypovolemia and decreased adrenergic response in elderly patients. Anesthesia aggravates this state of affairs. The prevalence of postoperative complications in our series was 36.4%. Koffi found a similar prevalence of 37.9%. Post-operative complications were dominated by states of shock in 12.1%, respiratory distress and AKI in 5.4% each. Infectious and respiratory postoperative medical complications are common in the elderly and for this type of surgery as well [2-10]. Physiological aging is associated with decreased immunity leading to increased susceptibility to infections. The risk of surgical site infection is non-negligible [15, 16]. Supramesocolic abdominal surgery is known to be a source of respiratory complications. In the elderly, this respiratory involvement is the bed of infection leading to a vicious circle. In the elderly subject, postoperative shock would be multifactorial. It is linked on one hand to sepsis at the abdominal and respiratory starting point and on the other to myocardial infarction [16]. The stress induced by the pathology and the surgical intervention is deleterious on the energy balance of the myocardium. Postoperative AKI is also linked to several intertwined factors. Its management begins preoperatively and would improve the prognosis. Diaw had found a postoperative AKI rate of 37.5% and the latter was identified as a factor associated with mortality. The surgical complications found in our study were eviscerations 4%, digestive fistulas 2.7%, postoperative occlusions 2.7% and postoperative peritonitis 2.7%. Lebeau had found the digestive fistulas and eviscerations in 2.9% and 1.4% respectively [12]. The mortality in our study was 21.7%. Deaths were caused by refractory septic shock with MODs in 68.7% and refractory cardiogenic shock in 31.3%. A higher rate was found by Diaw with 28.1% death rate [7]. This difference can be explained by a selection bias related to the higher minimum threshold. However, Koffi noted a lower prevalence of 9.5% in surgery [8]. Indeed, postoperative complications are managed in ICU and are associated with mortality [7]. Causes of death are septic shock and cardiogenic shock in the literature [2-16]. Pulmonary embolism was found as a cause of death in 12.1% [7].

CONCLUSION

Our study describes a predominance of young old with few comorbidities. One third of the patients had preoperative acute kidney injury. Acute bowel obstruction, strangulated abdominal hernia wall, peritonitis and appendicitis were the main operative indications. Low blood pressure was the primary peroperative adverse event. More than a third of the patients were admitted to intensive care unit after surgery. This admission to intensive care unit was associated with postoperative complications and mortality. Perioperative management of this age group requires multidisciplinarity, protocols and an appropriate technical platform. The objective would be an improved and rapid rehabilitation in order to reduce morbidity and mortality.

BIBLIOGRAPHY

1. Aubrun F, Baillard C, Beuscart J-B, Billard V, Boddaert J, Boulanger E. Recommandation sur l'anesthésie du sujet âgé : l'exemple de fracture de l'extrémité supérieure du fémur. Anesthésie & Réanimation. 2019; 5(2): 122-38.
2. Launay-Savary MV, Rainfray M, Dubuisson V. Emergency gastrointestinal surgery in the elderly. Journal of Visceral Surgery, 2015; 152(6) : S73-S79.
3. Organisation Mondiale de la Santé. Rapport mondial sur le vieillissement et la santé 2016 https://apps.who.int/iris/handle/10665/206556 Mis en ligne le 19 Juin 2015, consulte le 03 septembre 2025.
4. Agence Nationale de la Statistique et de la démographie (ANSD) de la République du Sénégal. Rapport provisoire du recensement général de la population et de l'habitat, de l'agriculture et l'élevage. RGPHAE 2023; 32.
5. N'guessan YF. Prise en charge anesthésique du sujet âgé en Afrique subsaharienne. RAMUR, 2023 ; 28(2) : 71-77.
6. Wade TMM, Ba PA, Diao ML, Diop B, Cisse M, Konaté I. Urgences chirurgicales digestives non traumatiques chez le sujet âgé au CHU Aristide-Le Dantec de Dakar : à propos d'une série de 110 cas. J Afr Hepato Gastroenterol 2016; 10(4): 190-3.
7. Diaw M, Bah MD, Léye PA, Gaye I, Traoré MM, Touré AO et coll. Prise en charge périopératoire des urgences abdominales du sujet âgé. Rev Afr Anesth Med Urgence. 2023 ; 28(2) :66-73
8. Koffi GM, Assohoun K, Soro KB. La chirurgie digestive d'urgence du sujet age: une contribution à la prise de décision du praticien. emergency digestive surgery in elderly: contribution to the practitioner decision. *Rev Int Sc Méd*, 2013 ; 15(2) : 83-87.

9. Lebeau R, Diané B, Kassi AB, Yénon KS, Kouassi JC. [Nontraumatic digestive surgical emergencies in elderly patients at the Cocody University Hospital Center in Abidjan, Côte d'Ivoire: etiology and outcome]. Medecine Tropicale : Revue du Corps de Sante Colonial. 2011 ; 71(3):241-244. PMID: 21870548
10. Bettelli G. Geriatric anesthesia: Demographics, epidemiology, state of the art at international level, educational needs, and future perspectives. *Saudi Journal of Anaesthesia*, 2023; 17(4) : 467-473.
11. O'caoimh Rónán, Sezgin Duygu, O'donovan MR. Prevalence of frailty in 62 countries across the world: a systematic review and meta-analysis of population-level studies. *Age and ageing*, 2021; 50(1) : 96-104.
12. Ayé YD, Ahouangansi SER, N'guessan YF. Prise en charge anesthésique du sujet âgé au CHU d'angré Anesthetic management of the age subject at the angre Teaching hospital. Rev Afr Anesth Med Urgence. 2023 ; 28(2) : 20-24
13. Kona Ngondo SF. Aspects cliniques des sujets âgés opérés à l'Hôpital Militaire de la Région N° 1 Yaoundé. *Journal of Sciences and Diseases*, 2024 ; 2(5) : 4-4.
14. Ba EHB, Leye PA, Traoré MM, Ndiaye PI. Hypotension artérielle per-anesthésique du sujet âgé lors d'une chirurgie urgente: quels facteurs de risque? *The Pan African Medical Journal*, 2017 ; 26 : 242.
15. Varvat C, Passot S, Beauchesne B. Optimisation de la prise en charge anesthésique en chirurgie abdominale urgente chez le sujet âgé. In : *Annales francaises d'anesthesie et de reanimation*. Elsevier Masson, 2009 ; 634-639.
16. Green G, Shaikh I, Fernandes R. Emergency laparotomy in octogenarians: a 5-year study of morbidity and mortality. *World journal of gastrointestinal surgery*, 2013; 5(7): 216.

Cite this article: Sambou P, Kane MM, Barboza D (2025). Perioperative Management of Abdominal Surgical Emergencies of the Elderly Patient in Ziguinchor. *EAS J Anesthesiol Crit Care*, *7*(6), 226-231.