

## Urban violence and splenic trauma in a patient undergoing splenectomy

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### ABSTRACT

Retrospective study at HU/UNIVASF, Petrolina/PE, analyzing 52 splenectomy cases from Oct 2021 to Jan 2024. Trauma and hematological disorders primary reasons for splenectomy, including urban violence like firearm and stab wounds. Quantitative approach used to assess demographic profiles and trauma types influencing surgery decisions. Data sourced from electronic medical records, adhering to ethical guidelines (Resolution No. 466/12, National Health Council). Study approved under CAAE: 73874223.8.0000.0282, providing insights into epidemiological trends and surgical outcomes.

**Keywords:** Splenectomy, Splenic injury, Penetrating abdominal trauma.

### INTRODUCTION

Trauma and hematological disorders are the most common causes for splenectomy<sup>1</sup>, which is indicated for cure, diagnosis, staging, or palliative care. In 60% of the cases of blunt trauma, the spleen corresponds to the main organ injured as a result of the great dissipation of energy from the event. Traumatic mechanisms such as car accidents, being run over and falling are associated with impacts with a high degree of shock, which are the main indications for this surgical procedure. With the evolution of the differences between socioeconomic profiles, the incidence of urban violence increases and is also reflected in the increase in trauma caused by perforation with a firearm (FAP) and perforation by a stab weapon (PAB), mechanisms that can also lead to the indication of splenectomy, both due to direct injury and due to its trajectory and the structures it crosses.

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## **OBJECTIVE**

To identify the epidemiological profile of patients, to evaluate the relationship between urban violence and splenic trauma and the types of spleen lesions in patients undergoing splenectomy for FAP and PAB at the University Hospital of the Federal University of Vale do São Francisco (HU/UNIVASF).

## **METHODOLOGY**

This is a retrospective and descriptive study, with a quantitative approach, of total splenectomy cases performed at the HU/UNIVASF, in Petrolina/PE, from October 2021 to January 2024. The sample corresponds to a non-probabilistic selection selected by convenience, consisting of 52 medical records of patients who underwent the procedure. Data were collected from electronic medical records available in the Management Application for University Hospitals, in the Medical Archive and Statistics Service of the HU/UNIVASF. Data analysis was performed based on the total number of medical records in relation to the number of surgeries performed, and the percentage of trauma mechanisms and types of injury was determined, based on the indications for splenectomy. The inclusion criteria related to demographic characteristics were: age, sex, race, and level of education; Those linked to the context of trauma were: patients treated urgently and who underwent splenectomy from penetrating and blunt traumatic abdomen. Exclusion criteria were elective splenectomized patients and victims of traumatic abdomen without splenic injury.

The study complied with the ethical precepts, guidelines and regulations provided for in Resolution No. 466/12 of the National Health Council and was approved in accordance with CAAE: 73874223.8.0000.0282.

## **RESULTS AND DISCUSSION**

The data analyzed so far show a mean age of 30.89 years, male (90.90%), brown (94.54%) and with incomplete 1st degree (30.90%). This profile corroborates the national panorama of victims of abdominal trauma<sup>4</sup>, a fact that predisposes to significant social and economic losses, constituting an important public health problem both in the São Francisco Valley region and in Brazil.

The causes identified for splenectomy were car accidents (42.30%), FAP (36.53%), PAB (13.46%), being run over (1.92%), falling from one's own height (1.92%) and animal accidents (3.84%). Considering that the spleen is one of the most commonly injured intra-abdominal organs in traumatic events, it is essential to identify and treat potentially fatal hemorrhages at this anatomical site. Emergency and urgent splenectomy continues to be a life-saving measure for many patients. Therefore, it is necessary to know the mechanisms of trauma that most often occur with splenic lesions to guide the search for lesions and indicate the performance of splenectomy.



It was also observed that 50% of the splenectomized patients suffered blunt trauma, of which 84.61% resulted from car accidents. It is known that the most common social profiles in car accidents are males with a mean age of 30 years, a fact identified in the current study, where 95.45% of those injured in car accidents were men with a mean age of 32 years. These findings favor, due to the high morbidity and mortality, problems that impact the social and economic context, indicating the need for greater interventions in the main causes of automobile accidents, especially the consumption of alcoholic beverages and the use of narcotics before driving or piloting.

The high number of cases of FAP and PAB observed here (49.99%), with 20% progressing to death, suggests that violence in the region is probably reflected in the volume of splenic trauma care, subverting the most common injury pattern that occurs with splenectomy. It is essential to highlight that Bahia and Pernambuco are among the most violent states in the country, with 6,659 and 3,423 Intentional Violent Deaths (MVI) in 2022, respectively. In this study, 88% of the patients injured by PAB or FAP were born in these two states. In addition, the concept of MVI is characterized by the sum of the victims of intentional homicide, robbery, bodily injury followed by death, and deaths resulting from on-duty and off-duty police interventions. By analyzing more deeply the region assisted by the HU/UNIVASF, located in Petrolina-PE, it is possible to identify Juazeiro-BA, a neighboring city that is classified as the 10th most violent in Brazil; Petrolina-PE was not listed in this ranking. In this context, the large volume of MVI coincides with the data on splenic lesions secondary to FAP and PAB found in this study.

The 2023 Atlas of Violence shows that in 2021 there were 5,294 and 2,801 firearm homicides, respectively, in the states of Bahia and Pernambuco<sup>8</sup>, corroborating the high rate of splenectomy performed at the UH/UNIVASF, secondary to FAP (36.53%) during the period studied. Another pattern observed here is that of the patients splenectomized by FAP and PAB, 92% are men, most of them brown, and with a mean age of 32.12 years, following the national average, elucidated by the Brazilian Forum on Public Security - 91.4% of the MVI victimized men, 76.5% of the dead were black, and 50.3% were adolescents and young people aged between 12 and 29 years.

In the present study, active bleeding of the spleen (30.70%) was the second most incident type of trauma, second in all cases only to those without records (38.48%) Therefore, this form of trauma resulted in the highest numbers of splenectomy, a circumstance that can be explained by the fact that a traumatized spleen with active bleeding is much more likely to require immediate surgical intervention by laparotomy than a traumatized spleen where bleeding remains contained within an intact splenic capsule.

## **FINAL THOUGHTS**

The data presented here suggest a correlation between the epidemiological profile, traumatic mechanisms and spleen removal with increasing urban violence, with emphasis on firearm and stab



wounds. Based on the evidence of these findings, there is a need for more effective public security policies capable of mitigating the advance of this violence, as it reflects both in great human and financial costs for public health, as well as in a lack of manpower for the labor sector, resulting from the significant morbidity caused by these traumas.



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