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## Etiological distribution of acute surgical abdomen in older adults in a second-level hospital

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### Abstract

**Introduction:** Acute abdomen is defined as a set of signs and symptoms based on severe abdominal pain of sudden or insidious onset and rapid progression (less than 24-48 hours). Diagnosis in older adults is more difficult, given that pathophysiological reactions are not as rapid or effective. Surgeons must be able to promptly identify potentially surgical pathologies to reduce geriatric morbidity and mortality.

**Objective:** To determine the etiological distribution of emergency surgical acute abdomen in older adults treated at HGZ Number 20 "La Margarita", Puebla.

**Materials and Methods:** An observational, descriptive, cross-sectional, retrospective, homodemic, single-center study was conducted. Patients over 60 years of age who were admitted to the emergency department with a diagnosis of surgical acute abdomen were included. Data were obtained from the medical record and compiled using a Data Collection Instrument.

**Results:** A total of 99 patients, 52% women and 48% men, aged 60-93 years. The most common pathologies were intestinal occlusion, acute calculous cholecystitis, and complicated acute appendicitis, with a frequency of 11.1% each. When grouping all cases of appendicitis (complicated and uncomplicated), appendicitis was more frequent, at 19.18%. Complicated appendicitis predominated in men, and intestinal occlusion in women.

**Conclusion:** Our study observed a marked increase in cases of acute appendicitis, which variably influenced the distribution by sex and age.

**Keywords:** Abdomen, pain, surgical, geriatric, etiology

### Introduction

Abdominal pain remains a challenge for physicians due to its wide etiologic variety and the vital urgency it represents on many occasions <sup>[1]</sup>. Ancient texts, dating back to the time of Hippocrates, describe acute abdominal processes. However, it was not until the late 19th century that John Deaver introduced the term "acute abdomen" into the medical literature <sup>[2]</sup>. The term acute abdomen encompasses a series of clinical presentations characterized by intense abdominal pain, generally of sudden onset, accompanied by alterations in intestinal transit and impairment of the general condition, often requiring urgent surgical intervention <sup>[3]</sup>.

Aging can be defined as a progressive and generalized deterioration of function, leading to a decrease in the capacity to adapt to aggressions and an increased risk of age-associated diseases <sup>[4]</sup>. In medical literature, those over 65 years old are considered geriatric patients <sup>[5]</sup>. Surgical acute abdomen is a syndrome that evolves rapidly in less than a week and usually presents with signs and symptoms of peritoneal inflammation, frequently requiring urgent medical or surgical intervention <sup>[6]</sup>.

The increase in the population over 60 years old has changed global demographics. At the beginning of this century, 10 million elderly people were added to the world population, and it is estimated that by 2045, the global population will grow by 50 million annually, of which 21 million will be older adults <sup>[7]</sup>.

As they age, elderly patients suffer an increase in chronic diseases combined with the physiological processes of aging, which increases the surgical risk in elderly patients <sup>[8]</sup>. Although some disorders are almost exclusive to the elderly, most of the diseases they suffer from are the same as those affecting younger adults.

However, in the elderly, these disorders can manifest atypically, less evident, and more non-specifically, and they have a 6-8 times higher mortality rate <sup>[9]</sup>. About 15% of patients with acute abdominal pain are considered special cases, including the elderly, especially when they have a poor general condition and their abdomen does not respond to peritoneal aggressions in the same way as a young adult. According to statistics from our health system, 21% of general surgeries are performed on people over 60 years old <sup>[10]</sup>.

Acute abdomen in the elderly can manifest typically with abdominal pain and alterations in gastrointestinal transit, accompanied or not by deterioration of the general condition. Atypical manifestations include confusion, general deterioration, and genitourinary alterations <sup>[11]</sup>. Abdominal pain can be a symptom of a wide variety of diseases <sup>[12]</sup>.

The elderly face a high risk of morbidity and mortality during surgical interventions, whether elective or emergency. This risk is due both to the intervention itself and to the patient's conditions <sup>[13]</sup>. The alteration in pain perception in older adults is well-documented. Recent studies show that this decrease in pain perception also extends to abdominal conditions. This could explain why older adult patients arrive at the emergency room in advanced stages of their disease, which worsens their prognosis <sup>[14]</sup>. In many cases, more than half of these patients require hospitalization, and between 20% and 33% will require immediate emergency surgery <sup>[15]</sup>.

Upon hospital admission, approximately 40% of these patients are incorrectly diagnosed. Their overall mortality is 10%, but it increases up to 20% if they require emergency surgery <sup>[16]</sup>. This is due both to the underlying abdominal pathology and to cardiac and pulmonary complications <sup>[17]</sup>.

The treatment of acute abdomen in older adults is a challenge. The surgeon's assessment depends on the diagnostic impression and the patient's clinical stability. Unstable patients with suspected emergency surgical pathology require urgent evaluation and treatment. In contrast, stable patients with less severe diseases can await assessment after basic paraclinical tests. However, due to the diagnostic and therapeutic difficulties in older adults with abdominal pain, an early assessment by the surgeon contributes to timely diagnosis and treatment <sup>[18]</sup>. The difficulty lies in determining the correct indication for surgery when symptoms are discrete or do not coincide with laboratory data, which can have significant consequences, both medical and legal <sup>[19]</sup>.

Acute abdomen represents a significant challenge for the general surgeon, especially in cases with uncertain diagnoses. The decision to opt for surgery or medical treatment, generally complex, requires a complete understanding of the information provided by the patient or their relatives, as well as the etiologic distribution prevalent in our hospital setting <sup>[20]</sup>.

## Materials and Methods

The research will be conducted in the emergency department at the Hospital General de Zona Número 20 "La Margarita" located in the city of Puebla de Zaragoza, Puebla, starting from the authorization of this protocol and for the subsequent 6 months. The research will be carried out in the emergency department at the Hospital General de Zona Número 20 "La Margarita" located in the city of

Puebla de Zaragoza, Puebla, starting from the authorization of this protocol and for the subsequent 6 months. Patients who are IMSS beneficiaries, over 60 years of age, of both genders, with a diagnosis of acute abdominal pain syndrome.

Approval and authorization for the research work were requested from the local research and research ethics committee (CLIEIS) No. 2102 of the Mexican Social Security Institute (IMSS), for the realization of the investigation. The study results were presented using descriptive statistics. Descriptive statistics were reported for qualitative variables using frequencies and percentages, and quantitative variables were reported using mean and standard deviation if they followed a normal or Gaussian distribution.

## The following criteria were used to analyze the study population

### Inclusion Criteria

- Patients over 60 years of age.
- Patients who are IMSS beneficiaries.
- Patients of both genders.
- Patients who meet the operational definition of surgical acute abdomen.
- Patients who agree to participate in the project, with prior informed consent form.

### Exclusion Criteria

- Patients who do not agree to participate in the project.
- Patients without surgical acute abdomen.
- Patients under 60 years of age.

### Elimination Criteria

- Patients who die during hospital stay.
- Patients who are transferred to another hospital location.
- Patients who decide not to participate in the study.
- Patients without the mental faculties to authorize their participation or without responsible family members to grant consent.

## Results

Ninety-nine patients over 60 years of age were analyzed in the general surgery department of the Hospital General de Zona Número 20 "La Margarita" during a period from 04/01/2024 to 08/31/2024, who underwent surgery following their evaluation in the emergency department for abdominal pain. Of the registered patients, the female sex predominated with 52% of admissions, compared to 48% for males (Fig. 1).

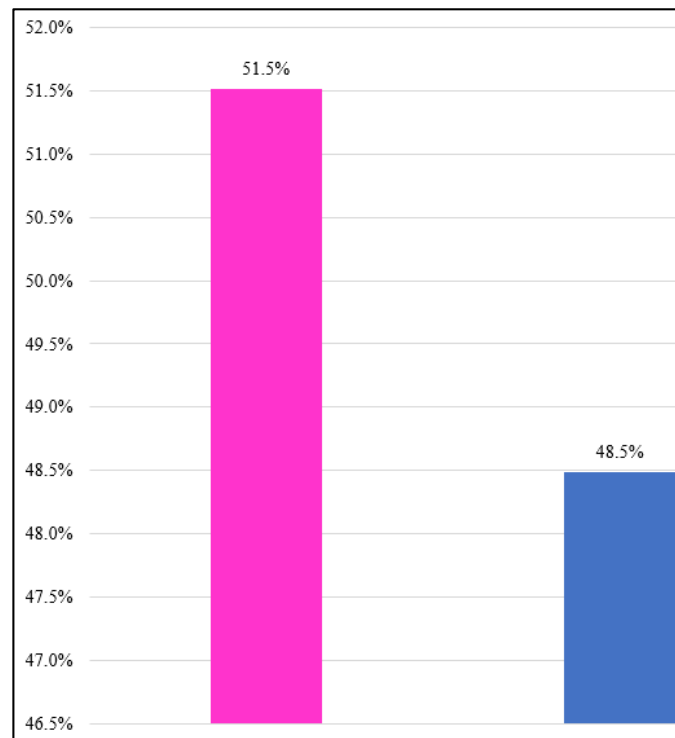
The age range of these patients was between 60 and 93 years, with a mean age of 70 years, showing the highest registration in patients aged 63 years (Table 1).

Among the most frequent diagnoses in this study population were the main abdominal pain pathologies that warranted surgical intervention in patients over 60 years of age. The top 10 most frequent of these conditions represent 63.6%; the main three were intestinal obstruction, acute calculous cholecystitis, and complicated acute appendicitis, tying in frequency at 11.1%. However, by accumulating the registered cases of uncomplicated acute appendicitis, the frequency of appendiceal inflammation, regardless of its clinical-surgical presentation, increases to 19.18%, making it the most frequent overall (Fig. 2).

Regarding the diagnosis by gender, differences were found between women and men, as complicated acute appendicitis predominated in men, followed by acute calculous cholecystitis as the most frequent diagnosis; in women,

intestinal obstruction was the most frequent, followed by the same biliary pathology as in men (Fig. 3).

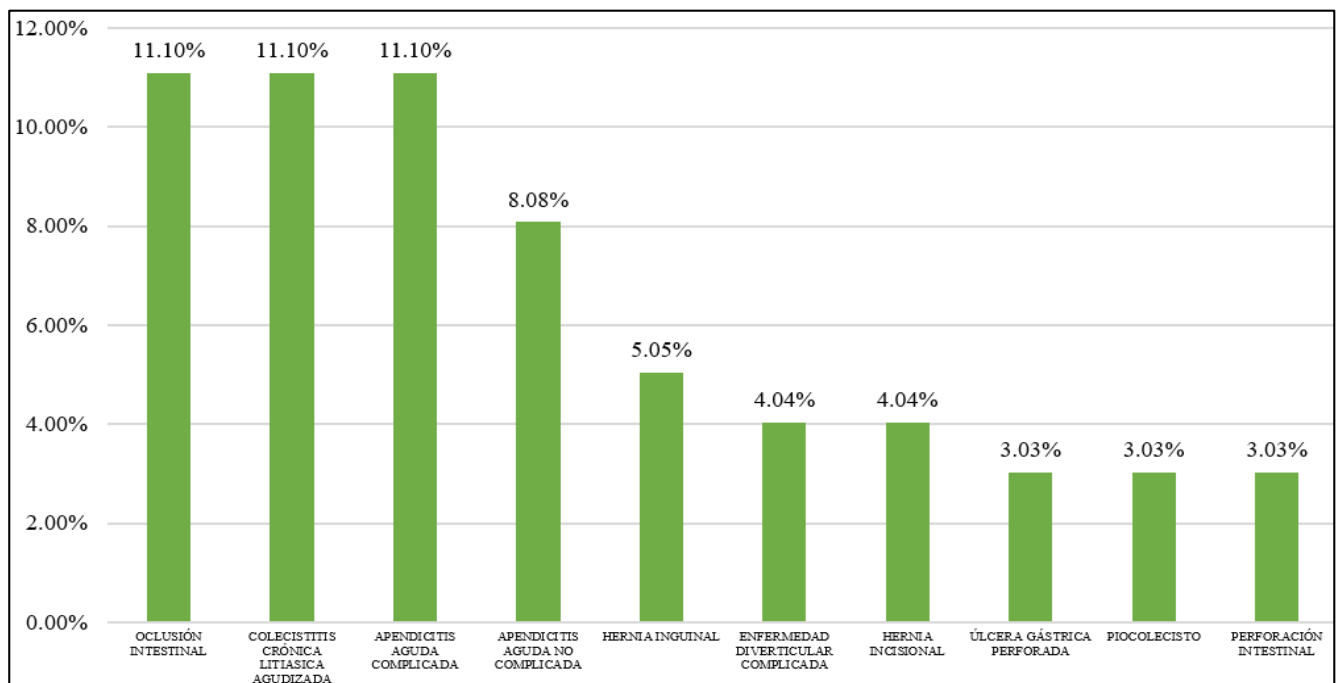
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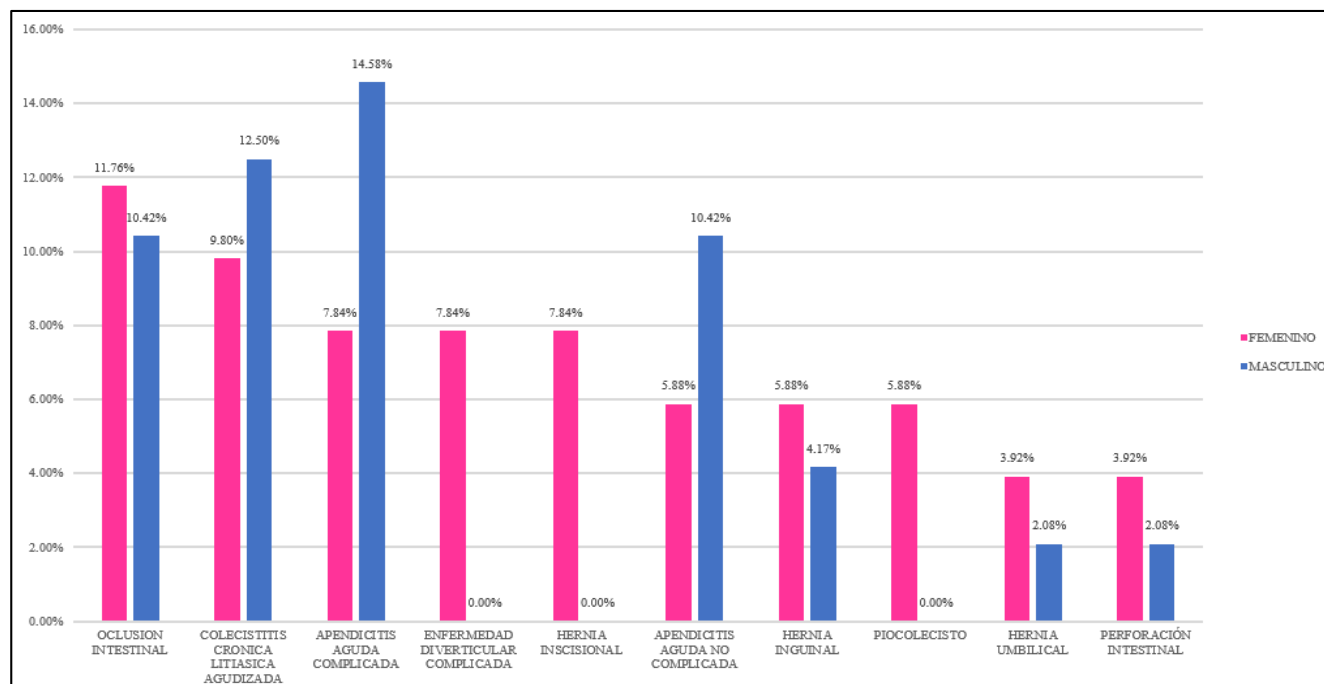
**Fig 1:** Gender distribution of elderly patients with surgical

**Table 1:** Frequency measures of the evaluated population.

Age range:	60-93 age
Mean age:	70 age
DE:	+ /- 7.9



**Fig 2:** Etiological distribution of the top 10 surgical abdominal pathologies.



**Fig 3:** Etiological distribution of the top 10 surgical abdominal pathologies by gender.

## Discussion

As mentioned in the literature, several authors demonstrate a frequency of etiologies for surgical abdominal pain, starting with García-Valenzuela who reports a higher percentage of cases in male patients at 57.1%, with acute appendicitis primarily as the diagnosis at 62.5%. However, the study population was younger with a mean age of \$49.1 \pm 20.3\$ years than the population in our study (García-Valenzuela, Mexico, 2017) [20].

In patients over 60 years of age whose results resemble ours, such as those described by Vázquez Cedeño, who mentions a female predominance at 56.6% and an average age of 71.3 years, the study differs regarding the etiological cause, which was intestinal obstruction at 49.06% (Vázquez Cedeño, Venezuela, 2020) [18].

However, Cespedes Rodríguez *et al* mention a higher frequency in men (52.2%), and likewise cite intestinal occlusive disease at 28.9% as the main etiology (Cespedes Rodríguez, Cuba, 2020) [10].

Lopez Cata mentions an age range slightly lower than that of our study, covering a majority population between 60 and 69 years, as well as a predominance in the male sex at 53.6%, and again refers to intestinal obstruction as the main cause of acute abdomen at 28.1% (Lopez Cata, Cuba, 2021) [2].

Similarly, del Rio Pérez obtained a higher frequency of acute abdominal pain in the male sex at 54.2%, differing quite a bit from other studies regarding the main etiology, as he mentions a higher incidence in complicated abdominal wall hernias at 34.7% (del Rio Pérez, Cuba, 2020) [13].

González Rodríguez also mentions Hernias-Eventrations as the main cause of abdominal pain in the elderly at 35%, leaving acute appendicitis with an 8% frequency (González Rodríguez, Spain, 2020) [9].

Gamarra concludes that an etiology of biliary origin is the cause of acute abdomen in geriatric patients, obtaining a 33.9% frequency, and a higher percentage in the male gender at 61.8% (Gamarra, Paraguay, 2018) [11], which does not resemble the data obtained in our study.

## Conclusion

In a study of 99 patients over 60 years old who underwent surgery for abdominal pain, 52% were women and 48% were men, with a mean age of 70 years. The most common pathologies were intestinal obstruction, acute calculous cholecystitis, and complicated acute appendicitis, each with an incidence of 11.1%. However, when all cases of appendicitis were grouped, it proved to be the most frequent, with 19.18%. Complicated appendicitis predominated in men, while intestinal obstruction predominated in women, both followed by biliary disease.

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## Conflict of Interest

Not available

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Not available

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