



Findings of Exploration Laparotomy: Abdominal Tumors. Reported Experience

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ABSTRACT

Emergency surgery is a diagnostic-therapeutic challenge in patients with acute abdomen. Exploratory Laparotomy is defined: "invasive surgical procedure, which seeks to explore the abdominal cavity, for diagnostic and/or therapeutic purposes, thus offering the opportunity to provide rapid and timely treatment to the patient." Objective: to describe the experience of exploratory laparotomies in patients with acute abdomen, and where the unexpected diagnostic finding was abdominal tumors. Patients and Methods: the study had a longitudinal, retrospective, observational and descriptive design. The records of all patients surgically treated for clinically expressed acute abdomen with the support of laboratories and cabinet, in a second level medical care hospital, are reviewed. Results: the patients who underwent emergency exploratory laparotomy 1,277 surgeries in 5 years, of which a total of 135 patients were included. Surgical complications due to the initial etiology of the oncological disease with respect to being locally advanced and/or extremely metastatic (carcinomatosis). Morbidity is 23% and mortality reaches 13%. Discussion: acute abdomen due to oncological etiology is real and it is necessary to avoid nihilism both by the surgeon and the patient, which does exist and should be considered as a possibility. The most common surgical emergency: gastrointestinal obstruction (43%), intra-abdominal inflammatory complications (33%) and bleeding (17%). Conclusions: individualizing the patient according to: the surgical urgency, the oncological pathology, the general conditions of the patient, the infrastructure and the competence of the surgeon; forming a strategy maximizing survival, quality of life and prognosis for each patient.

Keywords: Acute abdomen, exploratory laparotomy, Oncological disease, Carcinomatosis.

INTRODUCTION

Emergency surgery is today a diagnostic-therapeutic challenge in patients with acute abdomen, and who present a medical emergency. Exploratory Laparotomy is defined as "an invasive surgical procedure that seeks to explore the abdominal cavity, either for diagnostic and/or therapeutic purposes, thus offering the opportunity to provide rapid and timely treatment to the patient." [1] The evolution of surgery throughout its history has been too slow and sometimes, even with insignificant setbacks. Historically, the first review of having performed a surgical procedure is documented in the Mesolithic era of a trepanation in the year 12,000 B.C. [2,3] For this reason, what is relevant worldwide is to highlight that it is a public health problem because of what this already implies; since it generates high costs due to the loss of human lives, the medical assistance of patients, the decrease in work production and in other cases even disability, as well as a commendable economic impact for any health system. [4]

OBJECTIVE

To describe the experience of exploratory laparotomies in patients presenting with an acute abdomen, and where the unexpected diagnostic finding was abdominal tumors. Analyze in a deductive, critical and statistical way the behaviors and/or therapeutic decisions of these patients. Therefore, to evaluate the morbidity, mortality and prognosis of this group of cases under study.

PATIENTS AND METHODS

The study had a longitudinal, retrospective, observational and descriptive design. The records of all patients surgically treated for clinically expressed acute abdomen with the support of laboratories and cabinet, in a second level medical care hospital of the General Hospital "Dr. Rubén Leñero" of the Secretary of Health. Mexico City. Country: Mexico.

In a 5-year study period from January 2018 to January 2023. Age, sex, surgical and pathological history, presumptive and definitive pathological diagnosis, time of evolution of the clinical picture, surgical risk according to ASA classification, surgical time, bleeding in surgery, days of hospital stay, complications, morbidity and mortality. The study of the results was carried out through descriptive statistical procedures.

RESULTS

The records of patients who underwent exploratory laparotomy in 1,277 surgeries in 5 years were reviewed, of which a total of 135 patients were included for this research, of which 71 were male (53%) and 64 cases of gender. female (47%). With an age range of 17 to 79 years, with an average of 46 years and a bimodal value of 38 and 44 years. Regarding comorbidities, factors and previous associated diagnoses; the most frequent comorbidity was diabetes mellitus 26 patients representing 19%, in second place obesity with a BMI equal to or greater than 30 present in 16 cases which is 21%, the third comorbidity highlights arterial hypertension in 9 people, and that they are 12%. See table 1.

Table 1. Factors and Comorbidities Associated with Patients with Abdominal Tumors

Variable in study:	Number of patients	Percentage %
COMORBIDITIES:		
• Mellitus diabetes	26	19
• Arterial hypertension	9	12
• Obesity	16	21
• Previous surgery	3	1
• Neurological deficit	2	3
• Heart disease	2	3
• Chronic obstructive pulmonary disease	1	1
• Liver disease	5	7
• Thyroid pathology (hypo or hyperthyroidism)	2	3
FACTORS:		
• Alcoholism	38	28
• Smoking	27	20
• Drug addiction	11	8
• Disability or incapacity.	2	1

Regarding risk factors, alcoholism was the most frequent. It is necessary to clarify that the same patient could have attended, with one or more comorbidities or factors.

In addition, presumptive diagnoses were identified upon admission or preoperatively (such as intestinal occlusion) See Figures 1 and 2, the result was a colon tumor, but the definitive diagnosis was issued only by the pathology report. See table 2.

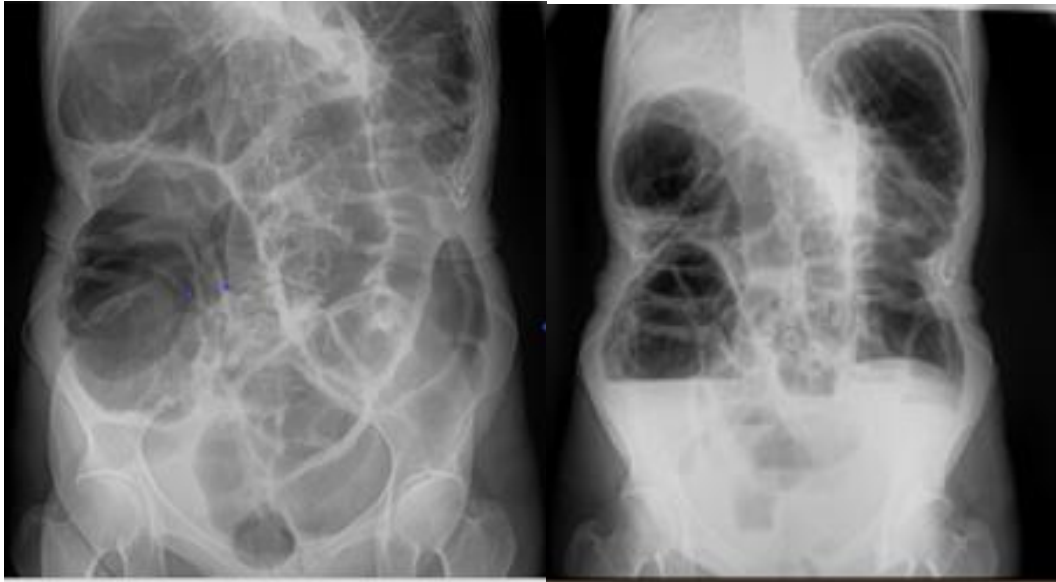


Figure 1
Figure 2
X-Rays Of the Abdomen Standing and Recumbent.
In A Patient with Intestinal Occlusion Due to A Colon Tumor.

Table 2. Diagnosis f Abdominal Tumors

Diagnosis Presumptive	Number of Cases	%	Diagnosis Definitive Histopathological	Number Of Cases	%	
Acute Abdomen	41	30	Adenocarcinoma of The Colon	89	66	
Intestinal Occlusion	55	41	Rectum Adenocarcinoma	18	13	
Acute Appendicitis	12	9	Ovarian Adenocarcinoma	8	6	
Intestinal Occlusion + Acute Abdomen	23	17	Retroperiotneal Sarcoma	5	4	
Others	4	3	Hepatic Adenocarcinoma	5	4	
			Cervical Cancer	2	2	
Total	135	100	Transitional Cell Carcinoma	8	6	Total: 135

They are divided into gastrointestinal with an incidence of 75% and non-gastrointestinal with a consequent 25%. Where the most frequent malignant tumor in this study is adenocarcinoma of the colon and rectum in 91% of the cases of tumors of the digestive tract and the anatomical site with the highest incidence is the sigmoid colon in 47%. See figure 3 and 4.

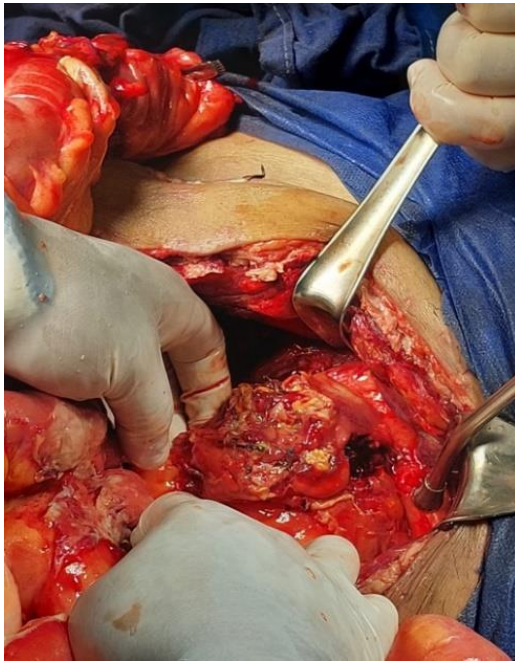


Figure 3
Figure 4
Colon Tumor at The Level of The Cecum.

The average time in which the patient with the presumptive diagnosis goes to seek medical attention in the emergency room is nine days, with an interval of 1 to 19 days; likewise, the average surgical care after admission to the emergency department is 42 hours, with a range of 2 to 83 hours. 60% of patients undergo surgery after 48 hours. 10% at 2 hours and the remaining 30% in the interval of this period of time.

The anesthetic risk according to the American Society of Anesthesiologists (ASA) was estimated as follows. See table 3.

Table 3. Asa Classification of Patients with Abdominal Tumors.

Asa Classification	No. of Patients	%
I	3	2
II	31	23
III	80	59
IV	21	16

The average surgical time of the surgery is 129 minutes with a range of 29 to 265 minutes. The quantification of bleeding associated with each surgical event presents an average of 350 ml with intervals of 50 to 1,600 ml. Regarding day/bed, 9 days are averaged with a range of 1 and 23 days. Surgical complications were expressed by initial etiology of the oncological disease with respect to being locally advanced and/or extremely metastatic (carcinomatosis) with a great progression of the oncological pathology, causing ureteral lesions in two cases, one rectal perforation, six of sigmoid colon, see figures 5 and 6, one in the cecum, one more in the bladder, two patients presented with packing and three with open abdomen; in total 16 complications that represent 12%. Regarding general morbidity, 17 nosocomial pneumonias, 3 eviscerations/eventrations (due to a very decimated nutritional status and hemodynamic

instability), 4 residual abscesses were documented; and 7 surgical wound infections, with a total of 31 pathologies and which are 23%.

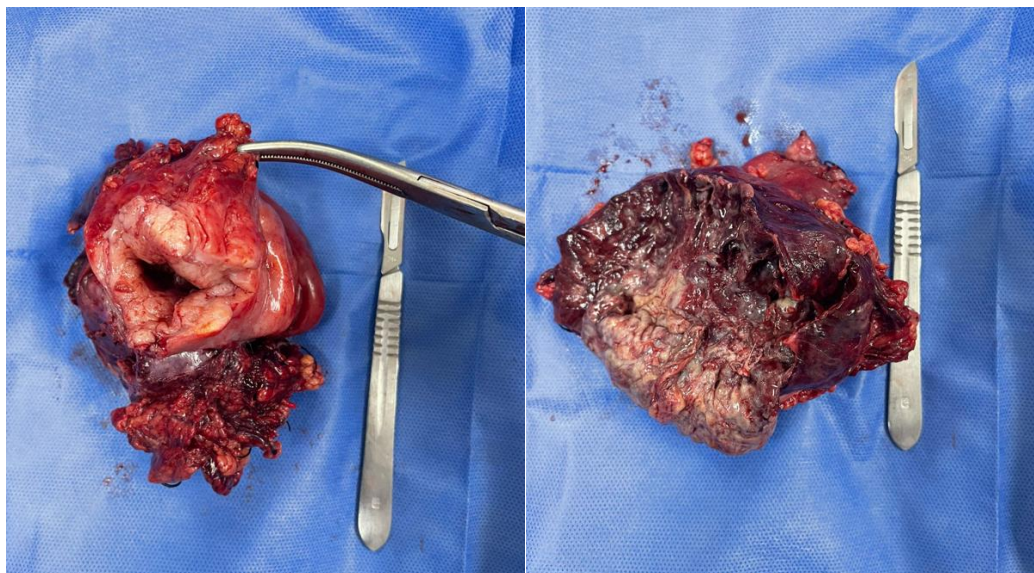


Figure 5
22-Year-Old Patient with Absceded and Perforated Sigmoid Colon Tumor.

Figure 6

Mortality reported in this research is increased, due to the very nature of oncological diseases and their advanced nature, coupled with admission conditions such as:

- Severe G III anemia
- Acute chronic severe malnutrition.
- Septic and hypovolemic shock.
- Severe dehydration with hydro electrolyte imbalance.
- Decompensated metabolic acidosis.
- Wasting/wasting syndrome.
- ECOG 2 – 3

Based on the patients who had colon and rectal tumors, such as 6 individuals with colon perforations, 2 transverse, 3 cecum; in addition to 4 cases of carcinomatosis with secondary peritonitis, one case of intestinal ischemia and 2 more patients due to nosocomial pneumonia. With a total of 18 patients and representing 13% of the total study population.

The surgical procedures performed that predominate are palliative with biopsy taking in more than 30%, it is essential to consider the factors that influence at that time of emergency surgery to regulate conduct or make a consistent, ethical decision and enhance the patient's prognosis for better and longer survival. The surgical procedures performed are tabulated, see table 4.

Table 4. Surgical Procedures Performed on Patients with Abdominal Tumors.

Procedure Surgical	Tumor	No.	%
Hartman Procedure	Rectum Adenocarcinoma	11	8
Low Anterior Resection	Sigmoid Colon Adenocarcinoma	19	14
Loop Diverting Colostomy Biopsy	Adenocarcinoma Of The Colon / Carcinomatosis	39	29
Cytoreduction (Ovarian Routine)	Ovarian Adenocarcinoma	6	4
Complete Tumor Resection	Retroperiotneal Sarcoma	3	2
Liver Biopsy	Hepatocarcinoma And/Or Metastasis	41	30
Left Or Right Hemicolectomy	Adenocarcinoma Of The Colon	10	7
Bladder Plasty with Biopsy	Transitional Cell Carcinoma	4	3
Posterior Pelvic Exenteration	Adenocarcinoma Of the Cervix And Rectum	2	1
Total		135	

Once discharged from hospitalization, the patients are followed up in the surgery consultation and with a pathology report they are referred to a third level of care, to medical oncology for adjuvant or palliation, or to surgical oncology for cleansing surgery as the case warrants.

DISCUSSION

Acute abdomen due to oncological etiology is real and it is necessary to avoid nihilism both by the surgeon and the patient that it does exist and that it should be considered as a possibility. [5] By frequency, it has been documented that the most common presentation of surgical urgency is gastrointestinal obstruction (43%), intra-abdominal inflammatory complications (33%), and bleeding (17%). And therefore, the conditions of cancer patients are substantially different from those of the general population, where gastrointestinal obstruction is the main cause. [6] The most common presenting symptoms were vomiting 78 (24.4%), fever 77 (24.1%), and generalized weakness 66 (20.6%), with systemic inflammatory response; with intense abdominal pain, with frank data of acute abdomen make the proposal of an emergency surgical intervention prevail. [7] It should not be left aside, the disorders per se that cancer patients undergo, such as the so-called paraneoplastic syndromes, such as the hydro electrolyte imbalance (hyponatremia, hypercalcemia, hypomagnesemia and syndrome of inappropriate secretion of antidiuretic hormone) that is common in these cases. [8] The number of oncological emergencies is growing, due to the increased incidence of malignant neoplasms in the general population and also to the improvement in the survival of these patients, thanks to advances in cancer treatment and to be able to reach a specific preoperative diagnosis requires the fundamental role played by the radiology service. [9] On the other hand, in the diagnosis of this type of case, there is the medical misconduct of admitting patients with suspected oncology to protocolize and perform definitive surgery and/or additional complementary studies, instead of exhausting outpatient management. [10, 11]

On the contrary, the acute abdomen presented by patients with gastroduodenal perforation undergoing cancer treatment per se has a high mortality. [12] The clinical scenarios in case of perforation can be dramatic, especially in case of free fecal peritonitis. Computed tomography is the best imaging technique to evaluate the obstruction and perforation of the large intestine that may help to issue a preoperative diagnosis. [13] On the other hand, whole-body MRI has become an attractive method for oncology evaluation, with extensive coverage of both the

skeleton and soft tissues in a single step. resulting in an excellent alternative to PET/CT with fluorodeoxyglucose. [14, 15] Intraoperative molecular imaging has recently emerged as an important tool in the surgeons' armamentarium, achieving real-time assessment of the quality of surgical resection, detecting occult diseases, and has recently been documented. (Fluorochromes localize to the tumor taking advantage of its disorganized capillary environment) during surgery in real time. [16] There is another diagnostic alternative that is not very specific and it is because the methods to distinguish malignant tissue from healthy tissue are mainly limited to tactile and visual signals, as well as the experience of the surgeon, being able to leave residual tumor or positive surgical margins, affecting negatively the results of treatment and survival, in addition to exponentially increasing the economic burden; that is why nanoparticles have unique characteristics to serve as optical contrast agents during image-guided surgery, and make a difference. [17]

The acute abdomen in patients with previously undiagnosed cancer becomes a challenge for the surgeon, in order to determine the preoperative and trans operative conduct, since it complicates the clinical picture, which makes the clinical examination difficult. less reliable in many cancer patients and leads to a variety of pathologies unknown to physicians and radiologists. [18] However, having infrastructure and multidisciplinary medical competence mean that selected oncological emergencies exhibit characteristic imaging findings on radiographs, ultrasound, computed tomography, and magnetic resonance imaging that aid in timely diagnosis. [19, 20] And that is why the identification and correct treatment, as well as early, of urgent oncological events that threaten life and are critical; thus, allowing a better prognosis for the patient. [21, 22] On the other hand, we must not fail to take into account benign pathologies, which in some cases lead to a malignant transformation. [23]

The correct surgical treatment for oncological disease is today the cornerstone of offering a curative option and being able to give the patient an excellent prognosis. In the three modalities that currently exist, conventional surgery, laparoscopic surgery and robotic surgery, with the advantages and disadvantages of each of them. [24, 25] There are also other options such as percutaneous radiofrequency ablation, which emerges as an alternative therapy in some very specific cases. [26] In short, radical resection is the gold standard treatment, achieving a good oncological impact and thus being able to achieve a very low average rate of recurrence, which will largely depend on the clinical stage of the patient at that time, with a average follow-up of at least 5 years. [27] Other ablative techniques, including radiofrequency ablation, microwave ablation, cryotherapy ablation, and irreversible electroporation, confer different comparative advantages in terms of applicability. [28]

Oncological emergencies are largely influenced by the following association of factors such as advanced age, neoplastic disease and immunocompromise: acute chronic malnutrition, severe anemia, hydro electrolyte imbalance, systemic infection or sepsis among many others. [29] On the other hand, it is evident that the advanced nature of the oncological disease (+) added to what was previously described (advanced age, comorbidities and immunocompromised) conjugating to the same (+) emergency-medical-surgical (+) surgery: (for definition is a trauma), without leaving aside the (+) infrastructure (medical competence, multidisciplinary management and technological resources with material inputs) make the reason for the study of this research, since it represents a high degree of complexity, in relation to the conduct that

the surgeon will decide the surgical conduct in a scientific, ethical, adequate, correct or ideal manner. [30, 31]

The authors of this research make three observations:

I. The association or sum of these elements results in severity or criticism, which jeopardizes the surgical actor and obviously more importantly, the patient's survival:

- Advanced cancer disease.
- Not knowing the oncological diagnosis.
- Comorbidities. (Mellitus diabetes, heart disease etc.)
- Added factors. (Anemia, malnutrition etc.)
- Being an emergency (life-threatening).
- Surgery (direct trauma per se).
- Infrastructure. (Level of medical care, hours of emergency surgery, etc.)

II. In addition, there are other disadvantages or errors, which are unknown to the patient, such as the oncological diagnosis and dealing with a surgical emergency that imperatively requires immediate surgery:

- Have histological confirmation in the trans operative period, whether it is cancer or not.
- Not knowing the histological lineage and its mutations.
- Not knowing the extent of the disease, whether or not there are metastases, and the precise sites.
- Ignore whether it is an oligometastatic or multimetastatic cancer.
- The anatomical limits of the tumor or its synchronism.
- Not knowing the resect ability of the tumor.
- Having the physical and prognostic conditions for cytoreduction.
- Not having infrastructure for further treatment.
- Not knowing the impact of radical surgery and sequelae with treatment follow-up.
- Not knowing the result of a damage control surgery performed by the ER itself to save the patient's life.

III. The options for surgical conduct in oncological emergencies are described from the most palliative to the most radical and are:

- Diagnostic surgery, with initial biopsy taking and being only palliative-derivative.
- Damage control surgery, with initial biopsy, for subsequent management.
- Urgent resolving surgery, extraction of piece with excision biopsy.
- Radical surgery: with extraction of a piece with clean anatomical edges, and lymphadenectomy.
- Cytoreduction surgery.
- Radical surgery with metastasectomy.

The patient who presents a surgical emergency that endangers his life, with a high risk of death and/or seriousness, [32, 33] however, coupled with the locally advanced or metastatic oncological etiology per se, becomes something atrocious and /or critical. [34, 35, 36] This great paradigm is the subject of research and analysis of the authors, where decision-making is crucial with the results or consequences that they entail; stigmatizing the surgical task in the future that precisely determines the best for the patient.

CONCLUSIONS

Emergency surgery with ignorance of being etiologically oncological is a challenge that puts in crisis the surgical competence of any experienced and trained surgeon.

Decision-making regarding surgical conduct in an emergency exploratory laparotomy, due to an unknown oncological cause at that time, is crucial, with the objectives:

- Resolve the emergency that endangers the patient's life.
- Avoid recurrence and/or death in the short term due to the urgency of the operation.
- Diagnose the tumor strain intraoperatively or in the postoperative period.
- Perform radical curative surgery if the patient's conditions allow it.
- Palliative surgery if you are out of cancer treatment.

It is essential to individualize each patient according to: the surgical urgency, the origin of the oncological pathology, the general conditions of the patient, the infrastructure and competence of the surgeon, which is available; thus, forming a strategy that results in the best survival, quality of life and prognosis for each patient.

The authors conclude that this work and its analysis raise such complex unresolved questions that more future research protocols are warranted.

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