Esophagectomy due to esophagus cancer. Five-year experience at the Hospital Nacional de Itauguá. 2015-2020 period

Esofagectomía por cáncer de esófago. Experiencia de cinco años en el Hospital Nacional de Itauguá. Periodo 2015-2020

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ABSTRACT

Objective: Reporting the experience of esophagectomies in esophagus cancer patients, in the General Surgery Service at the Itauguá National Hospital, 2015-2020 period. **Methodology:** Descriptive, retrospective, transversal study, where clinical files of patients with esophageal neoplasia diagnosis submitted to an esophagectomy were checked at the Itauguá National Hospital, 2015-2020 period. **Results:** The study included 18 clinical files. 78% were male, with an average age of 62,6 years old. The average BMI was of 19. The symptoms' frequence was 86% dysphagia, 83% weight loss and 28% epigastric pain. Squamous carcinoma predominated in 67% over adenocarcinoma. The tumors' location was most frequently distributed on the third half. 78% of patients were submitted to a total transhiatal esophagectomy by Orrienger's technique and the rest to transthoracic way by McKeown's technique. Esophagogastric anastomosis' complications correspond to 34% and respiratory ones to 28%. Peri-operatory mortality rates were of 17%. **Conclusion:** Esophagectomy is still the only healing treatment for esophagus cancer despite its high morbimortality rates. Early diagnosis is important to be able to offer a healing treatment. It's unfortunate that the studied patients did not have a follow-up, hence objective evaluation of medium- and long-term results is impossible.

Key words: Esophagectomy, Esophagus, Esophageal Neoplasms.

RESUMEN

Objetivo: Reportar la experiencia con las esofagectomías en pacientes con cáncer de esófago, en el Servicio de Cirugía General del Hospital Nacional de Itauguá, periodo 2015-2020. **Metodología:** Estudio descriptivo, retrospectivo, transversal, donde se revisaron los expedientes clínicos de pacientes con diagnóstico de neoplasia en el esófago sometidos a esofagectomía en el Hospital Nacional de Itauguá, período 2015-2020. **Resultados:** El estudio incluyó 18 expedientes clínicos. El 78% fueron del sexo masculino, la edad media fue de 62,6 años. El IMC promedio fue de 19. La frecuencia de los síntomas fueron la disfagia en un 86%, pérdida de peso en un 83% y epigastralgia en un 28%. El carcinoma escamoso predominó en un 67% sobre el adenocarcinoma. La ubicación de los tumores se distribuyó con más frecuencia en tercio medio. El 78% de los pacientes fueron sometidos a una esofagectomía total transhiatal por técnica de Orringer y el restante por vía transtorácica por técnica de Mc Keown. Las complicaciones de la anastomosis esofagogástrica correspondieron al 34% y las respiratorias a un 28%. La tasa de mortalidad perioperatoria fue de 17%. **Conclusión:** La esofagectomía sigue siendo el único tratamiento curativo para el cáncer de esófago a pesar de su alta tasa de morbimortalidad. Es importante el diagnóstico precoz para poder ofrecer un tratamiento curativo. Es infortunado que los pacientes estudiados no tuvieran un seguimiento, de manera que resulta imposible la evaluación objetiva de los resultados a mediano y largo plazo.

Palabras clave: Esofagectomía, Esófago, Neoplasias Esofágicas.

INTRODUCTION

Esophagus cancer is considered as quite an aggressive digestive tube neoplasia and with a lesser global-scale survival percentage[1] thus constituting a worldwide health problem[2]; it holds the seventh place amongst death causes by cancer worldwide[3], eight place in incidence, and third amongst digestive tube neoplasia1. The survival rate after 5 years is 20%[4]; and the estimated number of deaths is 13.661 patients, according to the Cancer Research International Investigation Agency of the OMS[5]. In Paraguay, during the 2010-2014 period, esophagus cancer held fifth place amongst the main 10 death causes by cancer on males, under stomach cancer[6] and in 2019 dropped down to sixth place, underneath pancreas cancer[7]. There is a prevalence for males, older than 50 years old[8]. The main risk factors are alcohol consumption, smoking and a lower socioeconomic level[2-3]. 90% of cancer cases are adenocarcinomas or epidermoid carcinomas[8]. Despite this pathology's high mortality, its treatment has improved, and the survival rate is increasing. During the years 1960-1970, only 5% of patients survived, however, nowadays it rises to approximately 20%[9].

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Date of reception: 16/11/2023 - Date of approval: 30/07/2024
Responsible editor: Helmut A. Segovia Lohse Universidad Nacional de Asunción. Facultad de Ciencias Médicas. San Lorenzo, Paraguay. Ministerio de Salud Pública y Bienestar Social. Hospital General de Lambaré. Paraguay
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Esophagectomy is the treatment of choice when faced with esophagus cancer, although it's related to an elevated complications and mortality index [10-13]. These complications present an important variation in the definition between each publication, hindering comparison, evaluation and later postoperatory betterment. The same happens with the chosen handling way chosen for esophagectomies which remains a topic of discussion in scientific forums, with a notable inclination towards mininvasive surgery, based on its practice having reduced surgical trauma and postoperative complication rates[11] but due to its high complexity, it's hard to perform. Transhiatal handling is also heavily mentioned as the most used in the United States and Europe due to its low morbimortality and good oncological results[13]. National-level studies do not detail preference regarding the chosen surgical technique for esophagectomies, which hinders standardization.

The data regarding esophagectomies performed in our country due to esophagus cancer are deficient, which is why it's important to publish obtained results to contribute related information and promote the descriptive epidemiology of cancer in Paraguay. This study's main objective is to report the experience of esophagectomies in esophagus cancer patients performed in the Surgery Service at the Itauguá National Hospital, during the 2015 to 2020 period.

MATERIALS AND METHODS

The present investigation was a descriptive, retrospective and cross-cut study, where clinical files of patients with an esophagus neoplasia diagnostic submitted to an esophagectomy at the Itauguá National Hospital during the years 2015 to 2020, where checked.

The pool was constituted by the total of clinical files (n=18) from esophagus cancer diagnosed patients submitted to an esophagectomy at the Itauguá National Hospital, 2015-2020 period, according to the hospital's control card records.

The study included medical files of patients with esophagus neoplasia diagnostic submitted to an esophagectomy at the Itauguá National Hospital, during the years 2015 to 2020. Patients with incomplete or incorrectly filled clinical files were excluded.

The sampling was not conveniently probabilistic in which an 18-patient population was considered constituting 100% of the population. The data was extracted from a data base elaborated through the Microsoft Excel program to be analyzed and interpreted through tables and graphics. A nominal measuring scale was used for the sociodemographic description and a reason scale to define prevalences. For data recollection, revision of clinical files of patients submitted to an esophagectomy due to esophagus cancer in the Surgical Service at the Itauguá National Hospital was requested, merely with researching purposes, respecting Helsinki's ethical principles and safeguarding the participants' identities.

The analyzed variables were: age (in years old), sex (male, female), personal pathological history (arterial hypertension, diabetes, others), familiar pathological history (neoplasia, others), habits (chronic smoker, drinker), consultation reason, consultation motive's evolutive time, BMI, ASA, diagnostic (epidermoid carcinoma, adenocarcinoma, others), injury's location, performed surgical technique, postoperatory complications, in-patient days, discharged status and perioperative deaths.

RESULTS

Out of the 18 patients evaluated with an esophagus cancer diagnosis and submitted to an esophagectomy, 14 (78%) were male and 4 (22%) were female within an age range between 45 to 74 years old, with an average of 62.6 years old and a standard deviation of ±8.9. The average BMI was 19.67% (n=12) had a history of smoking and 83% (n=15) of severe alcohol drinking in their lives. The predominant symptom was dysphagia, present in 89% (n=16) of subjects, followed by weight loss in 83% (n=15) and epigastrium in 28% (n=5). The symptoms' duration ranged between 20 days and 6 months. All patients had an esophagogram which reported that 61% (n=11) presented irregular narrowness and half contrast filiform passage up to the third middle. These and other clinical findings are exposed in ***Table 1.***

Table 1. Preoperatory characteristics of patients and esophageal tumor. n=18

Clinical characteristics	n	%
Sex		
Male	14	78%
Female	4	22%
Average age (years)	62,6	45 - 74
Average BMI (Kg/m2)	19	17 - 24
Comorbidities		
Arterial hypertension	14	78%
Type II diabetes mellitus	6	33%
COPD	5	28%
Cardiopathy	3	17%
GERD	1	6%
BPH	1	6%
ASA score		
I	1	6%
II	7	39%
III	10	56%
Smoker	12	67%
Alcohol drinker	15	83%
Tumor's location		
Half third	11	61%
Lower third	7	39%

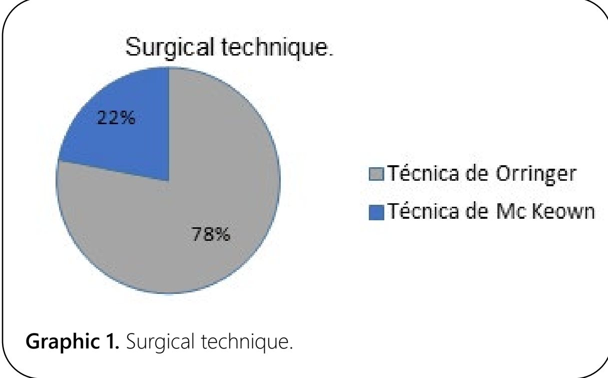
*BMI: Body mass index. COPD: Chronic obstructive pulmonary disease. GERD: Gastroesophageal reflux disease. BPH: Benign prostatic hyperplasia. ASA: American Society of Anesthesiologists' classification.

Presurgical staging is a great reference for the situation analysis of cases and reconsideration of therapeutic options, which was performed in patients through an axial computed tomography (CT scan) with contrasts where T3N0M0 was the most frequent with 56% (n=10). ***(see Table 2)***

Table 2. TNM staging by CT scan.

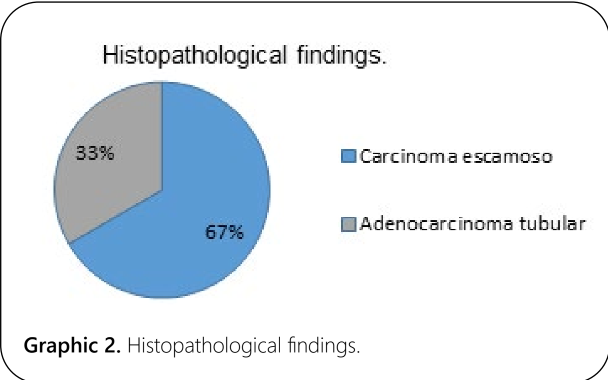
Staging	n	%
Primary tumor		
T0	0	-
T1	0	-
T2	1	5%
T3	14	78%
T4	3	17%
Nodes		
N0	10	56%
N1	8	44%
N2	0	-
Distant metastasis		
M0	18	100%
M1	0	-
M2	0	-

In 78% (n=14) of patients a total transhiatal esophagectomy was performed though Orringer's technique, with anastomosis at a laterolateral esophagogastric cervical level, plus multilumen drainage placement in the esophageal hiatus, plus laminar drainage placement at cervical level; and in 22% (n=4) a total transthoracic esophagectomy through McKeown's technique was performed with anastomosis at a laterolateral esophagogastric cervical level plus multilumen drainage placement in the esophageal hiatus plus laminar drainage placement at cervical level ***(see Graph 1).***



Graphic 1. Surgical technique.

The most frequent histology in operated patients was squamous carcinoma in 67% (n=12) ***(see Graph 2).***



Graphic 2. Histopathological findings.

The average postoperatory in-patient stay was of 27 days, where 61% (n=11) went to the Intensive Care Unit (ICU) with an average of 5 days of in-patient stay. The shortest stay was of a single day which corresponded to the patient who suffered from a sepsis at abdominal start due to anastomosis' suture undoing. ***(see Table 3).***

Table 3. Postoperatory complications. n=18.

Postoperatory complications	n	%
Healthcare-associated pneumonia	4	22%
Esophagogastric anastomosis' fistula	3	17%
Esophagogastric anastomosis' stenosis	2	11%
Grade 3 evisceration	2	11%
Sepsis	2	11%
Esophagogastric anastomosis' undoing	1	6%
Cardiovascular failure	1	6%
Atelectasis	1	6%
None	2	11%

Lastly, 3 patients (17%) passed away during perioperative; one from a sepsis at abdominal start due to anastomosis' suture undoing, another from sepsis at pulmonary start, healthcare-associated pneumonia, and the third from cardiovascular failure.

DISCUSSION

Esophageal squamous carcinoma (epidermoid) was the most prevalent histological type affecting the esophagus' third half. It presented itself mostly in older-aged males. In most cases, patients presented alcoholic and smoking habits, and the mainly presented disease upon diagnosis was arterial hypertension. Esophagectomies performed as treatment were by transhiatal way through Orringer's technique and transthoracic through McKeown's technique. The most common complication was intrahospital pneumonia followed by esophagogastric anastomosis' fistula. The perioperatory mortality index was 17%.

Esophageal cancer is indistinctly applied to EEC and to esophageal adenocarcinoma (EAC), which are its most common anatomopathological forms[1,8]. Both present a prevalence for the male sex matching the result of this work, equally, the remaining epidemiologic-clinical characteristics behave similar to statistics in other studies[8,10,14]. EEC was the most frequent 40 years ago[15], since then an increase in EAC cases has been reported, becoming the most frequent and relating it to the elevated incidence of Barrett's esophagus which complicates a GERD's development[2,16]. However, it was found that the squamous type histological variety was predominant and its most frequent location was in the esophagus' half third, data which matches other studies from the region[8,17]. Alcoholic and smoking habits are known factors for the development of esophageal cancer, presenting dysphagia and weight loss as main symptoms like the referred literature[1-3,8] and as was evidenced by this study. The perioperatory morality's number found was slightly superior to that of other published articles[18], being explained as per the tumor's advancement, patient's performance status and their comorbidities.

At the moment of diagnosis, patients presented a locally advanced disease, T3-T4 in 95% and this relates to improper prognostic of the disease due to the esophagus' distention capacity delays the symptoms' arrival[2]. Dr. Braghetto et al[13], evaluated image methods for diagnosis and saw that the Computed Tomography (CT scan) of the thorax, abdomen and pelvis can detect metastasis in a 60-90%[8]. Endoscopic ultrasound (EU) is the utilized technique to predict locoregional affectation[2] with a 90% diagnostic accuracy for the T and 70-80% for the N. Positron emission tomography (PET scan) has a 51% sensibility in locoregional tumor detection, however, it surpasses CT and EU in lymph node detection past 5 cm of the primary tumor. It's primary used for unsuspected metastasis detection[13,19]. The Latin American Society of Oncologic Gastroenterology SLAGO proposes to start with a CT scan to discard T4 and M1, then the endoscopic ultrasound to evaluate the T and N with further accurateness and then the PET scan to prove undetected metastasis on T 2-3, N 0-1[13].

Surgical treatment in the total or subtotal esophagectomy's modality is the choice for patients with tumors in starting stages, being able to add a gastroplasty or coloplasty as an option for transit restitution[19,20]. It's associated with an 8-11% mortality and 50% major complications, with an incidence that ranges between 17-74%[8]. The perioperative mortality rate during our service ranges between 3 to 12% compared to the number of esophagectomies performed (around four a year). This pathology's complications exceed benign esophageal diseases due to cardiovascular perioperative or age complications[21]. Postoperative complications present themselves in 67% of patients, highlighting pulmonary

(atelectasia, pneumonia), cardiac (AMI, cardiac insufficiency) affections, infections and anastomotic undoing, matching similar studies[22-25] and relating them with applied surgical techniques[12,25]. Pulmonary complications and anastomotic leaks are the main causes of death[8].

According to the tumor's location and the surgeon's preference, the esophagus can be extracted through a thoracotomy (transthoracic esophagectomy) or through transhiatal way or without a thoracotomy[20]. The transhiatal way presents the advantage of being able to decrease the risk of a mediastinitis and the immediate respiratory complications, instead, anastomotic problems are frequent due to blind dissection which implies the absence of a thoracotomy[20,21], yielding 34% of complications being only anastomotic. The opinion that prevails about the transhiatal way is that it's only indicated in superficial tumors, without ganglionary compromise or metastasis[20]. The found tumor's location was prevalently on the half third in 61% and, Braghetto[13] points that thoracic handling is ideal for this zone, but it's debated whether to perform a thoracoscopy or thoracotomy given that both present the same morbimortality rate after five years. Collet[26] mentions that the thoracoscopy is mostly performed nowadays, nevertheless still in evaluation phase; Velasco[27], however, sees it as a feasible and safe procedure. These authors agree that with the minimally invasive way yields greater benefits and prognostic, and is the chosen one at high-level centers. As for lower third esophageal cancer, Braghetto[13] mentions that the discussion is between the transhiatal or transthoracic way given that both present similar complications and life expectancy after five years, however surgeons prefer transhiatal way due to the use of video assistance as support[13]. This study proves a 78% transhiatal preference by Orringer's technique, and the resulting 22% appertains to the transthoracic way with a thoracotomy performed by McKeown's technique. Less invasive techniques have yet to be reported due to their complexity and the surgeons' lack of training.

In both techniques the transit is repaired at a cervical level through esophagogastric anastomosis, being able to raise the stomach over the esophageal floor or through retrosternal way[20]. If the stomach cannot be employed, a colonic segment is employed as this doesn't present reflux nor ulcers, preserves gastric function and the esophagocolonic fistula has a better peristaltic function[13,20]. During our service, risen stomach through the posterior mediastinum is used given that it possess proper irrigation and, despite the loss of motor function, it only requires performing a single anastomosis, simplifying the surgery, decreasing surgical time and complication risks[13].

The main limitation of this study consisted in the lack patient follow-up after their discharge, preventing the evaluation of performed surgeries' long-term effects; nevertheless, the high morbimortality percentage which this procedure entails is proven, and in order to alleviate these records, a betterment of preoperatory attention is considered necessary through overall state as well as patient's concomitant diseases' rating scales, and perfecting vigilance during postoperative. For future investigations its recommended to increase variables for a more ample and detailed study. We expect that this study can contribute relevant information and serve as a base to refine statistics and objectify involved risk factors to be able to intervene early and multidisciplinarily.

Conflict of interest
Authors declare no conflict of interests.

Funding
Self-funded.

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