

The History of Esophageal Surgery in Romania

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I would begin this history with a brief but eloquent statement made by professor Teodor Horvat, PhD (one, if not the most important, of the “rescuers” of modern thoracic surgery in our country) in the successful preface of the “Treaty of Pathology and Esophageal Surgery” (Romanian Academy Publishing House, Bucharest, 2017): “The esophagus passes through our territory – the thorax!” It is an undeniable truth, but so is the extremely small number of thoracic surgeons with expertise in esophageal surgery. Unfortunately, they are very scarce. They are thoracic surgeons who have specialized in thoracic surgery starting from general surgery.

But we should not think that in general surgery the number of esophageal daredevils is much higher. They can be counted on the fingers of the members of an esophageal surgical team, to which we can add the anesthesiologist’s fingers too!

But why this situation? You may be wondering. It is so because esophageal surgery is a very difficult one, it has a pathology with many peculiarities, it requires a series of complex procedures (it does not have simple ones), both for resection and the reconstruction of the esophagus. And besides all that, the esophagus is an organ which, although not the longest, is still the only digestive segment that passes through three regions: the cervical, thoracic, and the abdominal one.

The surgeon who dares to perform this type of surgery must have notions of neighboring surgery, whether he is a general surgeon or a thoracic one (1).

The esophagus is not a mere inert tube, it is under complex neuroendocrine control with adrenergic, cholinergic, and purinergic receptors. The surgeon who approaches this organ with a particularly profound situation (in the cervical region it

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is located on the prevertebral fascia, in the thoracic region it is in the posterior mediastinum, and in the upper abdominal region, only the aorta that becomes abdominal from thoracic, it is located posteriorly) must possess solid knowledge of general surgery, ENT and oromaxillofacial surgery, thoracic and vascular surgery and have abilities not only for the resection of the esophagus but also for its reconstruction (2).

The history of medicine is related to the evolution of human society, from the earliest times to the present, as well as to the evolution of the understanding of anatomy and physiology of the human body and technological progress in general (3). Of course, the history of surgery (and, in particular, of esophageal surgery) cannot be an exception.

Some authors divide the periods of evolution of medicine having great discoveries as milestones, such as: methods of asepsis and antisepsis, anesthesia, discovery of antibiotics and chemotherapy, etc (4). In particular, for the development of esophageal surgery, a decisive role was played by the introduction of general anesthesia with tracheal intubation and intermittent positive pressure, as well as selective bronchial intubation.

The major surgical problems of the esophageal approach were related to the fact that it is the only organ in the human body that crosses three anatomical regions (cervical, thoracic, and upper abdominal) as well as its very deep topographic situation, especially in the posterior mediastinum, being related to multiple vital anatomical formations.

A quote from R. G. Emslie (1988) is enlightening for the seemingly insurmountable difficulties with which the pioneers of esophageal surgery struggled: "The history of esophageal surgery is the story of people always defeated in the battle with a stronger opponent but still persisting in fighting this war step by step, until they manage to win the battle" (5). In fact, we cannot date a specific event that would mark the birth of thoracic surgery and, in particular, esophageal surgery (1).

The main problem of thoracic esophageal

resection was respiratory control during thoracotomy. In 1904, von Mikulicz initiated a differential pressure system for controlling breathing during surgery (6).

His disciple, Ferdinand Sauerbruch, was directly responsible for creating a differential negative pressure chamber, made up of a complicated system, in which the patient, as well as the surgical team, was locked in a hermetic space, only the patient's head was located outside the room, for controlling breathing and administering the anesthetic agent. In fact, the most important concept, that of positive pressure ventilation by endotracheal tube (Fell-O'Dweyer - 1893), had not been fully explored in terms of its potential in respiratory assistance (7).

Chevalier Jackson described the technique of direct laryngoscopy, whereas Meltzer and Auer that of tracheal insufflation, at the beginning of the 20th century, but only in 1930 did Gale and Waters, as well as Magill introduce and popularize the method by direct visualization (7). With the development of the selective bronchial intubation technique, surgeons would benefit from appropriate intraoperative conditions (1).

However, esophageal surgery entered through the "back door" of both thoracic and general surgery.

It is symptomatic that after Franz Tórek's communication to the American Medical Association in 1913, regarding the first successful subtotal esophagectomy, the work was received with indifference without giving rise to any discussions. Although the first society (Society of Thoracic Surgeons) was founded in the USA in 1964, the concern for esophageal surgery was minor, Donald Paulson deploring the poor experience of residents in this matter (only 6 to 9 cases operated annually in total reported by the American Board of Thoracic Surgeons) (6).

If in the developed West, but also in the Far East (Japan, China) it was the thoracic surgeons who were in charge of this type of surgery, in our country the situation was, from this point of view, different.

In Romania, thoracic surgery was devel-

oped in tuberculosis sanatoriums (Moroieni, Dobrița, etc.), thoracic surgeons approached especially pleuro-pulmonary tuberculosis surgery. If there were thoracic surgeons who performed esophageal surgery, they were basically general surgeons (gen. professor Traian Oancea, gen. (r) prof. Teodor Horvat, PhD, col. (r) prof. Ioan Cordoș, PhD).

After this brief but necessary insight into the history of world esophageal surgery, let us see how this surgery began and developed in our country. One of the promoters of esophageal surgery in our country was *general dr. Iacob Potârcă* (1866-1942).

After campaigning in Bulgaria, in 1913, during the Balkan War and then in 1916-1918 during the First World War, in 1924 he was the head of the Army Health Service, developing real scientific centers in the country made up of military doctors and perfecting the "Military Health Journal" which he raised to the level of those in the country and abroad.

He described and practiced the approach of the esophagus on the posterior, extrapleural route, and professor Dan Setlacec, in his excellent monograph "Romanian Medicine – European Medicine" (8), recalls general Iacob Potârcă, who, in 1895, had published the results of experiments with metal prostheses for fractures, introduced periosteally, osteosynthesis of clavicle fractures, and

the results of using the Murphy button for intestinal sutures.

In fact, the intestinal sutures had been the subject of concerns of several surgeons of the time: George Assaki, Thoma Ionescu, Ernest Juvara, etc. (button suture or manual suture in continuity or with separate wires, lateral or terminal sutures) (9).

Another pioneer of esophageal surgery was *Iancu (Ion) Jianu* (1880-1972).

He was an ingenious experimenter and skillful surgeon who created new surgical instruments, devices, and developed techniques (he performed experimental mesenteric-cave anastomosis and imagined the procedure of esophagoplasty with cutaneous tube (perfected by Bircher) (10).

Amza Jianu (1881-1962), virtuoso of surgery and founder of a school, is among the founders of esophageal surgery (11).

After describing the gastrostomy procedure with an anisoperistaltic tube prepared from the great curvature of the stomach with Beck, Amza Jianu practiced and published esophagoplasty with anisoperistaltic gastric tube prepared from the great curvature of the stomach passed the presternally. Since the gastric tube did not reach the cervical region, it interposed a cutaneous tube prepared according to the Bircher procedure (see Amza Jianu biography).



General Dr. Iacob Potârcă



Iancu (Ion) Jianu

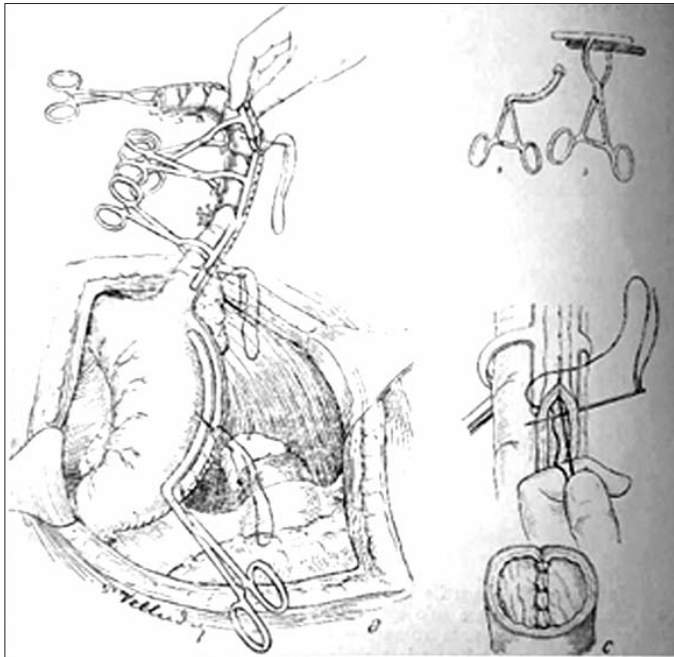


Figure 1. Reconstruction by the Gavrilu process

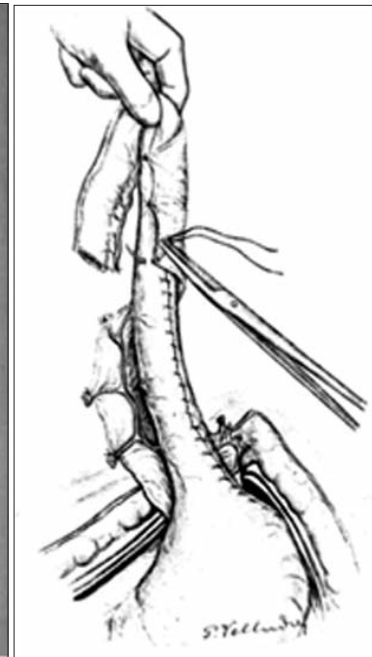


Figure 2. Gavrilu I technique of esophagoplasty with gastric anisoperistaltic tube of the great gastric curvature (nourishing artery: left gastro-epiploic artery).

The one who perfected Amza Jianu's procedure was his disciple from the period spent at the Filantropia Hospital where he was secondary in the war years, prof. Dan Gavrilu (*Figs. 1, 2*).

He also had other priorities in the field of esophageal and gastric surgery: gastrostomy with Gavrilu peritoneal collar (*Fig. 3*), the triple operation in achalasia cardia (Heller prolonged esocardiomyotomy, Dor anterior hemifundoplicature, and anterior extramucosal pyloric myomectomy), the quadruple operation in the hiatal slip hernia with reflux and gastroesophageal reflux disease (the so-called peptic esophagitis: reduction of hernia with restoration of the esophageal hiatus of the diaphragm, bilateral subdiaphragmatic truncal vagotomy, Nissen fundoplication, and anterior extramucosal pyloric myomectomy).

At Floreasca Emergency Hospital in Bucharest, prof. Emilian Papahagi practices esophageal reconstruction with colon for post-caustic esophageal stenosis, but the one that is nationally (and especially internationally) acknowledged is Dr. Zeno Popovici who moved

to Sibiu, to Victor Papilian Faculty of Medicine Lucian Blaga University, becoming in 1986 the chief of the First Surgery Clinic in the County Hospital, and professor since 1995. We will return with a presentation of his accomplishments.

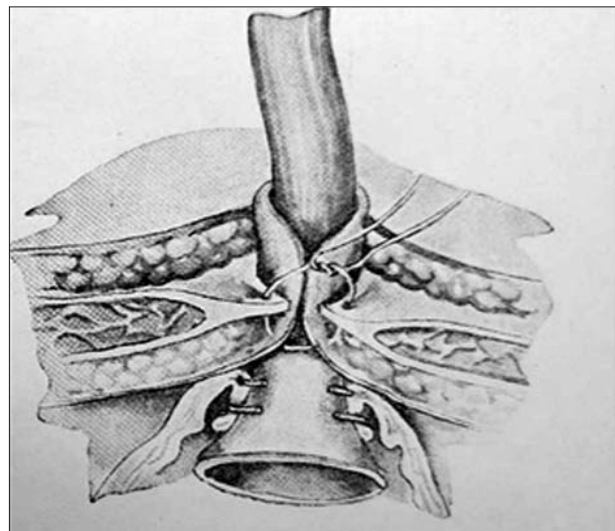


Figure 3. Gastrostomy with Gavrilu peritoneal collar

Dr. Dan Sabău (secondary to prof. Juvara and prof. Dan Rădulescu, PhD) moved to Sibiu from Brăila, the head of the First Surgery Clinic in the County Hospital, one of the promoters of advanced laparoscopic surgery in our country and with interest in the field of esophageal surgery. A tremendous endoscopist and talented draftsman, he presented an esophageal stenting procedure entitled "Laparoscopy and esophageal stenting in benign and malignant diseases" (see *Fig. 4*), a work that received the grand prize for ingenuity at the Yokohama Congress in Japan (May 4-7 2005) (11).

As far as pediatric surgery is concerned, some beginnings in the field of esophageal surgery (for diaphragmatic hernias) are attributed to I. Bălăcescu and Al. Cosăcescu, D. Vereanu, and especially his disciple, professor Alexandru Pesamosca who developed the technique of esophageal reconstruction in children with corrosive esophageal stenosis, during the time spent at Grigore Alexandrescu Central Children's Hospital and, especially, at the Marie Sklodowska Curie (Budimex) Hospital in Bucharest.

A good experience, especially in the field of esophageal atresia in the newborn (which also presents an insufficient pulmonary development, requiring a complex therapy and intensive care) had his successor, prof. Sebastian Ionescu.



Figure 4. The technique of laparogastroscopy (drawing by D. Sabău)

In addition to those presented, in the post-war period there were concerns, though not permanent, in some universities and even counties for this difficult surgery. I would like to mention dr. Z. Kriszar from Oradea (who moved to Timișoara) in colon esophagoplasty.

At Grigore T. Popa University of Medicine and Pharmacy of Iași would be worth mentioning Prof. Vladimir Buțureanu, who, in 1953, published a procedure of retrosternal esophagoplasty with right ileocolon in the high scarring stenosis of the esophagus, and introduced Heller esocardiomyotomy in achalasia cardia, prof. Gh. Chipail who performed numerous thoracic surgeries, and, more recently, prof. Cristian Dragomir, prof. Costel Pleșa, prof. Șt. Mihalache, prof. V. Scripcariu (co-author of the Treatise of Pathology and Esophageal Surgery), associate professor N. Dănilă of the Tănăsescu-Buțureanu First Surgery Clinic of Sfântul Spiridon University Hospital practicing esophageal resections and reconstructions, both classically and thoracoscopically (preferring prone position). Also from Clinic I we mention the contribution of prof. E. Târcoveanu in laparoscopic surgery of the esogastric junction.

At Iuliu Hațieganu University of Cluj Napoca, Prof. Aurel Nana practiced colon reconstruction for postcaustic esophageal stenosis, as well as dr. I. Mureșan (professor in Timișoara). Prof. I. Muresan, published 60 papers on esophageal reconstructions with the jejunum, the Lexer procedure.

More recently, Prof. Constantin Ciuce (co-author of the Treatise of Pathology and Esophageal Surgery), in cancers with cervical localization, practices cervical exenteration with reconstruction of the cervical esophagus and pharynx with free jejunum graft with microvascular anastomosis in the neck vessels (also being a specialist in vascular surgery) (*Figs. 5, 6*) (13).

The same surgery, with an ileal graft, practiced by dr. Radu Dop at Floreasca Emergency Hospital together with prof. Ioan Lascăr, specialist in plastic surgery and repair.

Also in Cluj, distinguishing himself in laparoscopic surgery and esogastric junction,

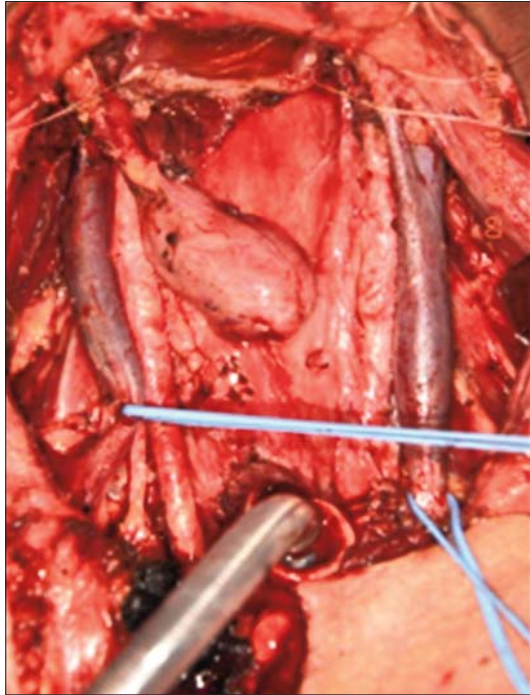


Figure 5. Cervical pharyngolaryngo-esophagectomy and lymphadenectomy. The proximal section of the hypopharynx is observed, carotid arteries and internal jugular veins. The right thyroid lobe was preserved (i.o. images Prof. C. Ciuce)

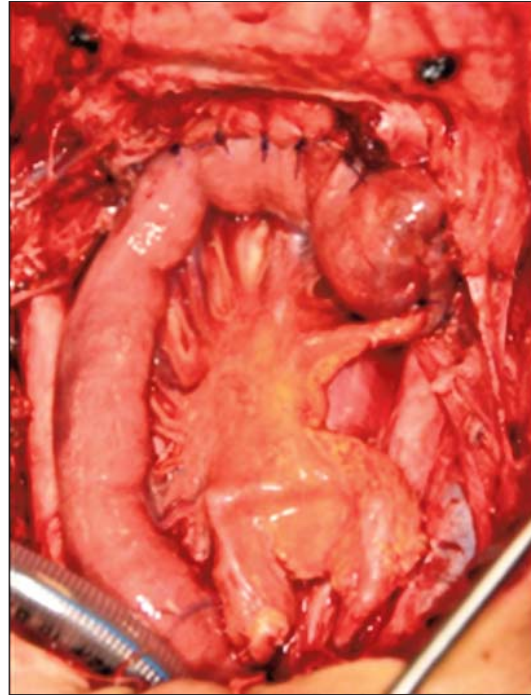


Figure 6. Pharyngojejunal terminolateral anastomosis (i.o. picture Prof. C. Ciuce)

prof. Sergiu Duca and his disciple, prof. Cosmin Puia (thoracic diverticula, hiatal hernia, achalasia cardia).

In Bucharest, there are laparoscopic surgery centers that address esophageal conditions: at Sfântul Ioan hospital, prof. Corneliu Dragomirescu together with his colleagues (prof. Nicolae Iordache, associate Cătălin Copăescu, dr. Rubin Munteanu, dr. M. Lițescu, dr. Florin Turcu, dr. Iorgulescu), also writing a monograph (14).

In Craiova, with the establishment of the Faculty of Medicine and the Department of Surgery, in 1973, Professor Ion Bușu was involved in esogastric junction surgery, writing a monograph, well-received and awarded by the Romanian Academy (Hiatal hernias in adults, Romanian Academy, 1984).

Also, associate professor I. Gugilă, prof. Ion Georgescu, and prof. Ion Vasile had activities in this regard, the latter publishing many papers on esophageal surgery in the journal "Chirurgia".

In Constanța, publishing several papers on esophageal surgery, after the establishment of the Faculty of Medicine of Ovidius University we mention prof. Vasile Sârbu, graduate of Târgu Mureș, intern at Craiova, founding member of the faculty, and prof. V. Botnarciuc.

In Târgu Mureș, prof. Șerban Bancu and dr. Dorin Zamfir (thoracic surgeon), practiced esophageal surgery successfully, also writing a monograph "Surgery of esophageal cancer", Sedcom Librării Mureș Publishing House, Târgu Mureș, 1996, and "The medical and surgical emergencies in conditions of the esophagus", Veritas Publishing House, Târgu Mureș, 2000.

At Fundeni Clinical Institute, at the Center of General Surgery and Hepatic Transplantation (headed by prof. Irinel Popescu) successful practitioners of classical esophageal surgery were prof. Dan Setlacec (performed thoracic upper polar esophagectomies and gastrectomies), prof. Andrei Popovici, associate professor Mihnea Ionescu, but also laparo-thoracoscopy

(prof. Irinel Popescu, Dr. Victor Tomulescu, Dr. Codruț Stănescu, thoracic surgeon).

At the University Emergency Hospital of Bucharest, prof. Radu Palade, head of the First Surgery Clinic, successfully approached the laparoscopic surgery of the esogastric junction (achalasia cardia and hiatal hernia), as well as Dr. Alexandru E. Nicolau from Floreasca Emergency Hospital, one of the promoters of laparoscopic surgery in the university of Bucharest.

Basically, the laparoscopic approach of the esogastric junction was practiced at almost any clinic in Bucharest and in the country that was equipped with a laparoscopic kit (except for the minimally invasive approach of the thoracic esophageal cancer, which involves special technical and postoperative care means and matching experience).

Romanian thoracic surgeons approached this field more cautiously (which in the West practically belongs to them – see the case of Toni Lerut from the Catholic University of Leuven, Belgium).

It would also be worth mentioning some of the military surgeons prof. Traian Oancea, PhD, from the Central Military Hospital in Bucharest who successfully approached thoraco-abdominal border surgery, writing a monograph, entitled “Aspects of thoraco-abdominal border surgery” (Military Publishing House, Bucharest, 1983).

Of his students, we mention general (r) prof. Teodor Horvat (general and thoracic surgery), chief of the Thoracic Surgery Clinic at Carol Davila Central Military Clinical Emergency Hospital (currently chief of the Bucharest Oncological Institute, Thoracic Surgery Clinic), who has successfully practiced esophageal cancer surgery, thoracic esophageal diverticula, achalasia cardia and esophageal spasm, post caustic esophageal stenosis. Horvat had the kindness and patience to read and correct over 1500 handwritten pages of our treatise on esophageal pathology and surgery and to write an extensive and valuable preface (so that, jokingly, I told him that the one who would read the preface would be “exempt” from going through

the entire text of over 800 pages of the treatise).

One of his most valuable disciples (who successfully practices esophageal surgery) is Colonel (r) prof. Ioan Cordoș, PhD, Head of Thoracic Surgery Clinic at Marius Nasta National Institute of Pulmonology and Phthysiology (known as Filaret).

Among the students of Professor Dan Gavriliu from the Dr. Carol Davila Surgery Clinic, then from the Upper Digestive Surgery Clinic at University Emergency Hospital, we mention dr. Ion Albu, associate professor Alexandru Grigorescu (transferred as Head of Surgery Clinic at Sf. Ioan Hospital), and, especially, associate professor Ion Anghel, transferred as chief of the Surgery Clinic of Sf. Maria Hospital (former “Grivița”, former “Vasile Roaită”) in Bucharest where the first Gastroenterology Center in the country operated led by prof. T. Spârchez. The first endoscopies with flexible endoscope in the country and the first liver scintigraphies were performed here.

With associate professor Ion Anghel, dr. Dumitru Peța in 1978 and dr. Silviu Constantinoiu in 1979 (in the department previously headed by Dr. Covali, dr. Titel Georgescu, dr. Dan Gerota, doctor Ion Niculescu), also started classical esophageal surgery (hiatal hernias, achalasia cardia, esophagoplasty for post caustic stenosis, both the Gavriliu procedure with stomach and colon, thoracic esophagus resections with reconstructions, esogastric junction adenocarcinomas, etc.). Between 1984-1992 the clinic was run by associate professor dr. Mihai Soare, PhD, (who practiced esophageal surgery sporadically), subsequently from 1992 to the present led by Dr. Silviu Constantinoiu, lecturer since 1996, professor since 2000, doctoral supervisor since 2002.

During this time, the cases of esophageal pathology have multiplied, the operating procedures have diversified, and we proposed that the paraclinical, imaging investigations (esophageal manometry, 24 hour pH-metry – Tom de Meester telemetry test –, biopsy endoscopies, etc.), to be performed in the

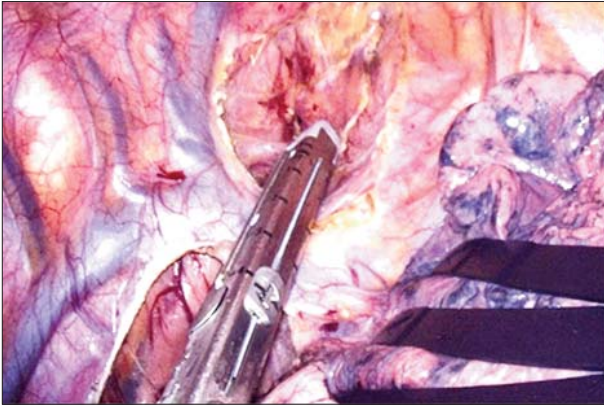


Figure 7. Thoracoscopic time. Section of the azygos vein with a vascular endostapler

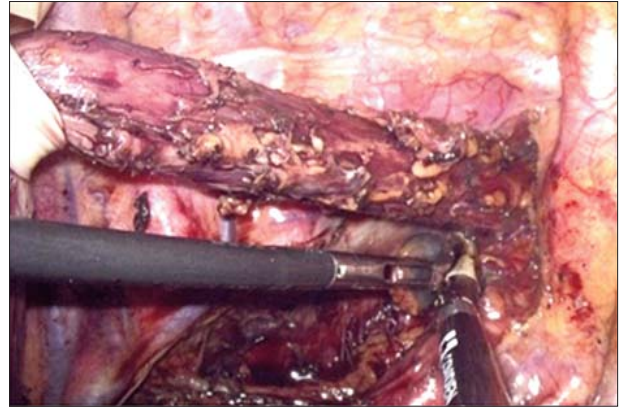


Figure 8. Thoracoscopic mediastinal dissection of the thoracic esophagus

clinic (probably the only surgery clinic in the country where these investigations are performed directly). In time, the addressability of patients to the clinic has greatly increased, probably due to the participation in over 20 national and international congresses and the publication of numerous articles on esophageal topics. In the national treatises of surgery of the last 25 years under the editorial board of prof. N. Angelescu, prof. Irinel Popescu, and the latest (under the editorship of I. Popescu, C. Ciuce), many of the chapters on esophageal conditions were written by the members of the team of Sf. Maria.

In this way, the clinic received the name of General and Esophageal Surgery Clinic, subsequently becoming the Center of Excellence in Esophageal Surgery in 2013, in which the share of minimally invasive esophageal surgeries reaches a percentage of 70% of all interventions (laparoscopic surgery of hiatal hernia, achalasia cardia, with superior digestive endoscopy and intraoperative manometry, thoracoscopic surgery of the thoracic esophagus diverticula, thoracoscopic thoracic surgery of esophageal cancer, laparoscopic gastric pull-up, etc.) (Figs. 7-9). This allowed us to write a Treaties of Pathology and Esophageal Surgery (coordinator Silviu Constantinoiu, main authors: I. Cordoș, Constantin Ciuce, V. Scripcariu, with a team of Romanian and foreign authors with experience in this condition (Romanian Academy Publishing House, Bucharest 2017) (Fig. 10).

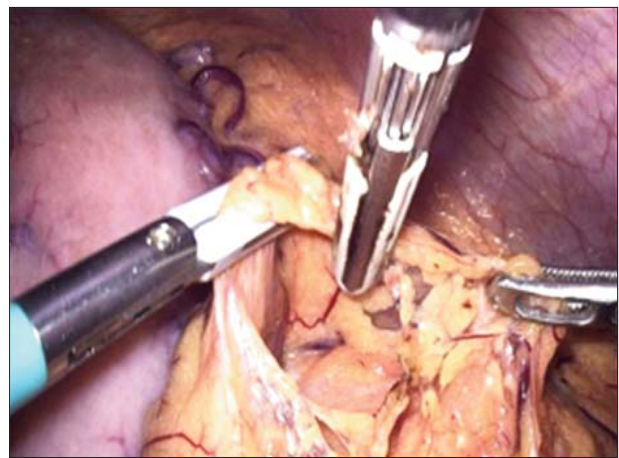


Figure 9. Laparoscopic time of esophagectomy with reconstruction preserving the straight gastroepiploic artery as the nourishing pedicle



Figure 10. Treaties of Pathology and Esophageal Surgery

The authors wrote a revised and improved edition in English also published by the Academy Publishing House in November 2019.

Conflict of Interest

The author declare no conflicts of interests.

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