

History of the Department of Gastroenterology of University of São Paulo School of Medicine

José Eduardo Monteiro da Cunha¹, Ivan Cecconello²,
Luiz Augusto Carneiro D’Albuquerque², Flair José Carrilho³

Early history

The history of the Department of Gastroenterology of the University of São Paulo School of Medicine (FMUSP) goes back many years prior to its official establishment in 1986. The origin of Clinical Gastroenterology at the *Hospital das Clínicas* of FMUSP was the Nutrition Service of Prof. Antônio Barros Ulhôa Cintra that instituted the famous First Medical Clinic *Hospital das Clínicas* and by the Gastroenterology Department headed by Prof. José Fernandes Pontes, who firstly established Gastroenterology at the *Hospital das Clínicas* and in Brazil. Prof. Agostinho Bettarello subsequently headed this service of Gastroenterology, and became Full Professor of Gastroenterology in 1981.

After taking over Gastroenterology Clinic in 1981, Professor Bettarello organized the Service into groups, whose leadership was carried by professors, with an outstanding experience in Gastroenterology: Esophageal Group (Agostinho Bettarello, Joaquim Prado Moraes Pinto Filho, Tomás Navarro Rodrigues); Group of Stomach and duodenum (Schilioma Zaterka, Jaime Natan Eisig); Group of Liver (Luiz Caetano da Silva, Flair José Carrilho, Eduardo Luiz Rachid Cançado); Biliary Group (Vinicius Paride Conte) subsequently, group of Pancreas and Bile Ducts (Carlos de Barros Mott, Dulce Reis Guarita); Group of Small and Large Bowels (Antonio Atilio Laudanna, Aytan Miranda Sipahi); Diseases of Peritoneum (Mitja

Polak, Airton Torres da Costa, Bernardo Bitelman) and, more recently, Group of Liver transplants (Alberto Queiroz Farias).

In the surgical area, chairs initially located at Santa Casa de Misericórdia de São Paulo, were gradually transferred to *Hospital das Clínicas* at FMUSP (HC-FMUSP), where they were organized in three surgical services: the First, Second and Third Surgical Clinics, respectively directed by Professors Alípio Correa Netto, Edmundo Vasconcellos and Benedicto Montenegro. The general surgeons of the three clinics performed, besides digestive system procedures, general procedures such as abdominal wall hernias repairs and thyroidectomies.

In 1952, on the initiative of Prof. Alípio Correa Netto, specialized sector groups were created: Cardiac and Thoracic Surgery; Burns and Plastic Surgery; Peripheral Vascular Surgery; and Digestive Surgery where eminent surgeons specialists acted in their specific areas.

In 1953 Professors Alípio Correa Netto and Benedicto Montenegro merged the two chairs under their command, bringing together the various surgical disciplines. Was thus unofficially created, the Department of Surgery of the University of São Paulo School of Medicine. This unification allowed surgeons acting in different disciplines focus their attention and work on their areas of interest and expertise, thus contributing to the greater progress of surgical specialization. Particularly, in the setting of digestive surgery, until then, performed and taught in three

1 Associate Professor Senior Department of Gastroenterology FMUSP.

2 Full Professor Department of Gastroenterology FMUSP.

3 Full Professor and Head of Department of Gastroenterology FMUSP.

Mailing address: Departamento de Gastroenterologia, HCFMUSP. Av. Dr. Enéas de Carvalho Aguiar, 255. Salara 9074- 9º andar do ICHC. São Paulo, Sp, Brasil. Email: deptogastro.ichc@hc.fm.usp.br

different services, two Disciplines were created in this still embryonic Department of Surgery: one dedicated to the esophagus, stomach and small intestine, headed by Prof. Mario Ramos de Oliveira and the other dealing with the diseases of the liver, bile ducts, pancreas, colons, rectum and anus headed by Prof. Arrigo Antonio Raia.

With the retirement of Prof. Benedicto Montenegro, in 1956, the previously achieved chair unification was undone, returning to three services of digestive surgery: First Surgical Clinic, under the direction of Prof. Alípio Correa Netto, Diseases of the Digestive System, in the Second Surgical Clinic, under Prof. Edmundo Vasconcelos and Third Surgical Clinic, headed by Prof. Eurico da Silva Bastos.

Although FMUSP Governing Board had officially created the Department of Surgery in 1956, it was only approved in 1969 by the then-Rector Professor Miguel Reale, after Chairs abolition and creation of Departments at the University of São Paulo, in 1968. At this moment Disciplines were created, characterized as specific educational programs, with Departments being formed by the aggregation of related Disciplines. A few years later, in 1974, the Digestive Surgery Discipline was created at FMUSP and the Division of Digestive Surgery at HC-FMUSP, which brought together surgeons trained in different surgical schools in a single unit, headed now by one Professor and Chief of the Division of Digestive Surgery: Prof. Arrigo Antonio Raia. With Prof. Raia's retirement, the leadership of Digestive Surgery Discipline went to Prof. Henrique Walter Pinotti, as interim Chief until 1984 and, thereafter, as Full Professor.

Considering the vast scope of knowledge in digestive surgery, in 1972, the Digestive Surgery Discipline activities were separated into five clinical services for the care of patients and for the study of esophagus; stomach and small intestine; bile ducts and pancreas; liver and portal hypertension and colon and rectum. Skilled surgeons, whose main area of interest relates to the service under their responsibility, have occupied the direction of these services, as follows: Surgery of the Esophagus: Henrique Walter Pinotti, Ivan Ceconello and Rubens Sallum; Surgery of the Stomach and Small Intestine: Paul Branco, Joaquim José Gama Rodrigues and Bruno Zilberstein; Bile Duct and Pancreatic Surgery: Plínio Bove, Marcel Machado, José Eduardo Monteiro da Cunha and Telesforo Bacchella; Surgery of the Liver and Portal Hypertension: Silvano

Raia, William A Saad and Paulo Herman; Surgery of the Colon, Rectum and Anus: Daher Elias Cutait, Angelita Habr-Gama, Desiderio Kiss; and Sergio Carlos Nahas.

Creation and development of the Department of Gastroenterology at FMUSP (DG-FMUSP)

The DG-FMUSP was created, in 1986, on the initiative of Professors Agostinho Bettarello and Henrique Walter Pinotti. This event was an important milestone in the history of national and international Gastroenterology and was responsible for the integration of undergraduate and postgraduate teaching activities, in scientific research and medical actions of Department gastroenterologists and surgeons.

The close collaboration between DG-FMUSP surgeons and clinicians has been widely encouraged over the years by the professors responsible for the direction of the two Disciplines: Henrique Pinotti, Agostinho Bettarello, Antonio Laudanna, Angelita Habr-Gama, Joaquim Gama Rodrigues, Flair José Carrilho, Ivan Ceconello and Luiz Augusto Carneiro D'Albuquerque.

Currently, the Department is composed by three Disciplines: Clinical Gastroenterology and Hepatology (Prof. Flair José Carrilho), Digestive and Colorectal Surgery (Prof. Ivan Ceconello) and Transplantation of Digestive System Organs (Prof. Luiz Augusto Carneiro D'Albuquerque). This continuous evolution of gastroenterology at FMUSP allowed important contributions to the advancement of specialization.

Medical assistance and research activities carried out in DG-FMUSP allowed the projection of the institution name to other continents, with regular participation of its members in international events and on the editorial boards of international medical journals. Furthermore, the high level of expertise of the Department determines its constant search by doctors for clinical or surgical training or for updating of knowledge

Many years before the Department establishment, Prof. Henrique Walter Pinotti created, in 1973, an Update Course in Digestive Surgery, later called "Gastrão". Initially coordinated by Prof. Pinotti himself, the course has been directed by Professors who succeeded him in the leadership of the Digestive Surgery Discipline, being currently directed by Profs. Ivan Ceconello and Luiz Augusto Carneiro D'Albuquerque. The whole Department Faculty and

assistants of digestive surgery participate in “Gastrão” over the years up to the present time. Profs Agostinho Bettarello, Antonio Laudanna and Flair José Carrilho, presently Head of the Discipline of Clinical Gastroenterology of FMUSP, were and are frequently invited to lecture at “Gastrão”. This broad support and participation of the Department teaching staff is responsible for the “Gastrão” outstanding scientific level, since its initiation until the present days.

With the same vision to provide joint activities of clinicians and surgeons, the Discipline of Clinical Gastroenterology and Hepatology created the course of Update in Gastroenterology, currently expanded to Brazil-Barcelona Meetings, held annually joining USP and the University of Barcelona coordinated by Profs. Flair José Carrilho and Vicente Arroyo. All professors and physicians of Clinical Gastroenterology participate as lecturers or presenting their work in the Research Forum, which gives visibility to research developed in the Department.

Since 2010, on the initiative of Professor Luiz Augusto Carneiro D’Albuquerque, the International Forum of Digestive System Organs Transplants has been held, with several foreign guests and participation of the Faculty and the medical staff of the Discipline of Transplantation of Digestive System Organs.

At the initiative of Profs. Arrigo Raia and Henrique Pinotti, the Brazilian Ministry of Education and Culture - MEC approved, in 1982, the residency program in the Digestive Surgery, which provided the development of the specialization in Brazil. Nowadays, after a two-year period of residency training in general surgery, the Digestive and Colorectal Surgery Discipline offers a further two-year program of advanced training in digestive surgery. The Discipline of Clinical Gastroenterology Division also offers a two-year residency core program in Clinical Gastroenterology, after two years of residency training in internal medicine. After the second year, residents can apply for an additional one-year training in a sub area of their choice, Endoscopy or Hepatology. In addition, residents have the opportunity to intern at the Hospital Clínic of the University of Barcelona or at other universities of Europe and the United States.

The role of the DG-FMUSP in postgraduate *sensu stricto* is of great value to the progress of national scientific production. Its postgraduate program in Digestive Surgery was created in 1970 to provide academic education for professionals graduated in the area of health seeking for

master and PhD titles. In 1977 the Discipline of Clinical Gastroenterology also started its postgraduate program, *sensu stricto*, still keeping for several years a undergraduate *sensu lato* program for specialization in Gastroenterology and Hepatology.

A large number of professionals from different health areas were graduated from both programs, including many Faculty Department members, as well as other professionals currently working in universities and services in Brazil and abroad.

Since its origin, several pioneering proposals characterized DG-FMUSP activities. In 1955, it acquired the first equipment for motility studies of the digestive tract. The Unit for Studies of Motor Activity of the Digestive Tract was created in 1960, installed at FMUSP Department of Anatomy. The establishment of the Laboratories of Digestive System Motility and Functional Tests, in 1973, made possible the realization of Masters and PhD theses of many physicians and professors of FMUSP and HC-FMUSP, and publication of several scientific papers. These labs constituted the cornerstone of the Brazilian Society of Gastrointestinal Motility, founded in June 1995, with the participation of numerous members of the Department in its first administration.

The experimental sector for the study of pancreatic transplants was created, in September 1967, at the Discipline of Experimental Surgery and Surgical Technique headed by Prof. Americo Nasser. The activities carried out at this lab allowed, experimental pancreatic studies in dogs, which resulted in several national publications and obtaining the Oswaldo Cruz Prize, in 1973, by a group of FMUSP medical students working under the guidance of Prof. Pinotti. The knowledge gained in this experimental work resulted in the performance, by Professors Henrique Pinotti and Arrigo Raia, the second clinical transplant of pancreas in Brazil, in 1968.

The DG-FMUSP, through the Discipline of Transplantation of Digestive System Organs, integrates the program of double pancreas/kidney transplant in collaboration with FMUSP Discipline of Urology, being the clinical pancreas transplantation program installed at our institution by Prof. Telesforo Bacchella, in 1997. The pancreas transplantation group is currently led by Dr. Vinicius Rocha-Santos

The pioneering nature of the DG-FMUSP in liver transplant dates back for more than a half century and is

represented by the first experimental liver transplants in dogs carried out successfully by the Surgical Metabolism Group, headed by Prof. Ernesto Lima-Gonçalves, in 1965, just two years after the first liver transplant in humans performed by Prof. Thomas. Starzl at the University of Colorado in Denver. HC-FMUSP liver transplant group, involving surgeons of the 1st and 3rd Surgical Clinics under the leadership of Prof. Marcel Machado, successfully performed the first two clinical transplants of liver of Brazil and Latin America in August 1968 and May 1969. Several Congress reports and many national and international publications represented the end result of these procedures.

The Discipline of Liver Transplant, originally belonging to FMUSP Department of Surgery and coordinated by Professor Silvano Raia when, in the first era, 523 liver transplants were performed in adults between 1985 and 2001. In 1988, Prof. Raia and cols performed the first liver-related liver transplant in the world bringing enormous respect to our institution in this field. In the second era, 294 transplantations were carried out between 2002 and 2008. During this period, Prof. Marcel Machado transferred the liver transplant program from the Department of Surgery to the DG-FMUSP in 2007. In the third era, from 2009 to the present, under the leadership of Professor Luiz Augusto Carneiro D'Albuquerque over 800 liver transplants were performed to date. Additionally many improvements were made that resulted in an increasing number of donors, living liver donors, transplantations; auxiliary liver and pancreatic transplantation, pancreatic and the first multivisceral transplantation to be carried out in a public hospital in Brazil in 2013. These improvements were made in the context of new groups under the surgical supervision of Prof. Wellington Andraus and transplant hepatology by Dr. Alberto Farias. Transplant coordination is overseen by Dr. Rodrigo Bronze; pancreas by Dr. Vinicius Rocha-Santos and intestine and multivisceral by Prof. Carneiro and Dr. Rafael Pecora. Today the Discipline is named Transplantation of Digestive System Organs.

Nowadays, there is an enormous effort to internationalize the unit, and several cooperation agreements were signed with universities all over the world, with an increased mobility of researchers and students. Our institution represented by DG-FMUSP is today the largest unit of liver transplantation in Latin America, with more than 2000 liver-transplant patients, when combining the adults and Children Program, held in another unit of our

complex.

In the field of organ transplantation, it must be mentioned the first Brazilian and world small bowel transplant performed at the HC-FMUSP in 1968, by Prof. Masayuki Okumura, which was internationally recognized.

Over the years the structuring of the Clinical Gastroenterology groups was adjusted due to a significant increase in the number of patients attended to by the Service. The Clinical Hepatology group was reorganized and integrated with the Liver Transplant service. In 2012 it reached the position of the country's largest referral center in this area.

It is widely accepted that nutritional status maintenance is crucial in the treatment of patients with disorders of the digestive system. In this particular area, the DG-FMUSP has provided significant contributions over the years. Since 1967, the Surgery of the Esophagus Service undertakes studies related to enteral nutrition to treat patients with obstructive esophageal disorders. These studies resulted in the recommendation of a soy milk-based diet.

The Digestive System Assistance and Research in Nutrology Center, established, in 1982, at the initiative of Prof. Dan Waitzberg, with the participation of Prof. Joel Faintuch, cares for outpatients with nutritional disorders, particularly those with short bowel syndrome. Total parenteral nutrition was adopted in the Discipline in 1971, featuring the Department national pioneering in this area. The Outpatient Nutrition Clinic was created in the nineties at the Outpatient Surgical Clinic Division II of DG-FMUSP.

The provision of the two-year residency program in Nutrology and the clinical research activities in Nutrology gave great impulse to the establishment of the Center for the Study of Energy Expenditure and Body Composition. The numerous publications of this group on good practice in enteral and parenteral nutrition therapy contributed greatly to knowledge diffusion in the area. The activities of DG-FMUSP Nutritional Therapy Nutrition Service expanded to the Cancer Institute of the State of São Paulo-ICESP, where a multidisciplinary group carries out research and assistance in Oncology nutrition.

The DG-FMUSP also has significant contributions in the field of morbid obesity. The department's activity in this area began in the seventies with the jejunum-ileal bypass procedure practiced by Prof. Salomão Chaib. In 1982, Prof. Arthur B. Garrido Jr introduced a surgical

procedure based on the reduction of the gastric reservoir capacity for treatment of morbid obesity. Since 1992, a multidisciplinary team including, in addition to surgeons, professionals from other areas especially acquainted with the treatment of extremely obese patients cares for these patients. With the introduction of surgical laparoscopy, treatment of morbid obesity is done by this modality by the Bariatric and Metabolic Surgical Service, currently under the direction of Prof. Marco Aurélio Santo.

The first academic service of colonoscopy was established at the DG-FMUSP in 1974 and has served as a model for the diffusion of this propaedeutic method in Brazil. Similarly, studies of rectal and anal physiology were developed with the introduction of new investigative and testing tools in this area, providing numerous research studies. From these studies resulted several contributions as the use of the artificial sphincter, being this procedure carried out for the first time in the country.

The initial phase of the Endoscopy Service at HC-FMUSP dates back to the early 30's when, in 1938, when Dr. Plinio de Mattos Barreto started its activities at the Instituto Arnaldo Vieira de Carvalho, transferred, in 1944, to the HC-FMUSP. Despite the intense activity of the Endoscopy Service at HC-FMUSP for several years, when it was headed by renowned doctors of the institution, the Discipline of Peroral Endoscopy was only incorporated into the Department of Surgery in 1970. The importance of integration of digestive endoscopy with clinical and surgical gastroenterology has long been recognized. Considering this need, the Gastrointestinal Endoscopy Service joined the DG-FMUSP in 2002, being directed since then by Dr. Shinichi Ishioka, Prof. Paulo Sakai and, currently, by Dr. Eduardo Guimarães Horneaux de Moura at HC-FMUSP and by Prof. Fauze Maluf Filho at the ICESP. The World Organization of Digestive Endoscopy granted the Gastrointestinal Endoscopy Service of HC-FMUSP the title of Endoscopy Center of Excellence.

In addition to the hospital Gastrointestinal Endoscopy Service, the Division of Clinical Gastroenterology and Hepatology has a Diagnostic Center in Gastroenterology, which performs digestive endoscopy ultrasonography, endoscopic ultrasound, liver elastography and esophageal motility studies.

The DG-FMUSP translational and experimental basic research activities are developed in three Medical Research laboratories located in the building of the

Medical School: Laboratory of Clinical and Experimental Gastroenterology - LIM 07, (Dr. Aytan Miranda Sipahi); Laboratory of Nutrition and Metabolic Surgery of the Digestive System – LIM 35 (Profs. Dan L. Waitzberg and Ivan Ceconello); Laboratory of Transplantation and Liver Surgery - LIM 37 (Profs. Eleazar Chaib and Luiz Augusto Carneiro D'Albuquerque); and one Laboratory of Tropical Gastroenterology and Hepatology - Biology and Molecular Genetics of Hepatitis (João Renato Rebelo Pinho), at the USP Institute of Tropical Medicine. Since 2007, on the initiative of Prof. Ivan Ceconello, the DG-FMUSP counts with the assistance of an epidemiologist and a statistician, contributing to the better quality of the ongoing studies. They both attend weekly meetings where postgraduate students present their research.

Recent past and present-day

The merging of the Disciplines of Clinical Gastroenterology, Digestive and Colorectal Surgery and Transplantation of Digestive System Organs into the DG-FMUSP, and its intense institutional commitment, gave to the Department a distinct evolution in teaching, research and assistance. The three Full-Professors and many other Department members, participate in Councils and Commissions of the Medical School and the HC-FMUSP complex.

Since 2005, on the initiative of Prof. Ivan Ceconello the DG-FMUSP improved its administrative management, hiring hospital administrators whose efficiency has been translated into improved patient care, infrastructure and systematization of fundraising from official government agencies, with the important assistance of Prof. Sergio Nahas. This outstanding administrative activity permitted the renovation of its main amphitheater and restoration of surgical units at HC-FMUSP, with acquisition of modern surgical equipment for advanced laparoscopic surgery performance. Currently, incentivized by Prof. Ceconello, all assistant doctors of Surgical Disciplines perform laparoscopic procedures, significantly contributing to improve the quality of resident training. The renovation of the Surgical Intensive Care Unit at HC-FMUSP, performed at this same time period, made it possible to improve postoperative care of patients undergoing high complexity surgical procedures. Following the same line, improvements were made at the surgical outpatient clinic,

with the acquisition of modern diagnostic equipment for motricity recording and measurement of gastric-oesophageal pH that increased the assistance quality of outpatient patients. With the boost of Metabolic and Bariatric Surgery, with Prof. Ceconello's support, an entire wing was installed on the 9th floor of HC-FMUSP for the treatment of patients with morbid obesity and diabetes. Outpatient Clinical Gastroenterology was widely expanded, allowing greater integration of services of Clinical Hepatology and Liver Transplant, now called Division of Clinical Gastroenterology and Hepatology.

In May 2008, under the leadership of Prof. Ivan Ceconello, the DG-FMUSP expanded its activities to ICESP, becoming responsible for the surgical and endoscopic treatments of patients with digestive cancer admitted at this Institute. This strong insertion in ICESP represented a great progress for DG-FMUSP, with a significant increase in number of surgical procedures performed in all services of the Discipline of Digestive Surgery. Institutionally, the activities of the Department members in ICESP strengthened the departmental integration with other areas, such as Radiology, Medical Oncology, Experimental Oncology, Pathology, Radiation Therapy, Clinical Epidemiology, Anesthesiology and Intensive Care. Members of DG-FMUSP created the São Paulo Clinics Liver Cancer Group for the study of patients with liver tumors as a multidisciplinary approach, with five clinical gastroenterologists-Hepatologists working in the ICESP.

Since the beginning of 2015, on the initiative of Prof. Ivan Ceconello, the Discipline of Digestive Surgery participates in the of robotic project of surgical treatment of cancer developed in ICESP to analyze the cost-effectiveness and safety of this minimally invasive procedure in the Brazilian context.

In undergraduate education, the Department has actively contributed to the establishment of the new guidelines of FMUSP medical course, through the participation of the Department Faculty in meetings held for this purpose in the institution. Furthermore, integration with basic disciplines, improvement of teaching material and involvement of medical students in Department activities has been widely incentivized. The postgraduate surgical and medical disciplines of the DG-FMUSP were merged into a single program, now called Science in Gastroenterology. This unification process was approved by FMUSP Governing Board and by the University of

Sao Paulo Postgraduate Evaluation Chamber, in 2009. On this occasion, 21 supervision professors were accredited and make up the central core at this early stage of the new program, which was approved by CAPES, in 2011, with an initial score of 5.

The department has internationalized its research output by forming international partnerships with universities in Europe, Japan and the United States. More than 90% of the research is PubMed indexed and, as the fruit of international collaboration, in the last five years, the DG-FMUSP presented a striking increase in the number of publications, with 582 articles published and an exponential growth of quotations, reaching 11930. From 2006 to 2015 we observed an increase in the mean h-factor of department researchers from 28 to 55, as the result of this administrative direction.

This brief history of DG-FMUSP clearly demonstrates successfully its mission to "generate, transmit and disseminate knowledge applying it in the training of professionals in this health area and in the provision of health services to the community, with the goal of preventing and treating diseases of the digestive tract, based on clinical and research evidences.

BIBLIOGRAPHY

1. Carrilho FJ, Ceconello I, D'Albuquerque, LAC, Cunha JEM, Bacchella T, Guarita DR, Jukemura J, Farias AQ. Departamento de Gastroenterologia. In: Mota A, Marinho MGS. Departamentos da Faculdade de Medicina da Universidade de São Paulo: memórias e histórias. São Paulo: CD. G Casa de Soluções e Editora, São Paulo; 2012. v.2, p.88-106.
2. Habr-Gama A, Laudanna AA, Gama-Rodrigues JG, Zilberstein B, Monteiro da Cunha JE, Ceconello I, Saad WA, Faintuch J, Kiss DR, Garrido AB Jr, Waitzberg DL, Bresciani CJC. Histórico do Departamento de Gastroenterologia da FMUSP. Rev Med (São Paulo). 2002;81(esp.):14-18. Disponível em: <http://www.revistas.usp.br/revistadc/article/view/86892/89855>.
3. Kós JAC, Barreto PM. Primórdios da otorrinolaringologia e broncoesofagologia no Brasil. Nossa participação. Rio de Janeiro: Lis Gráfica; 1988.
4. Laudanna AA. 50 anos de Gastroenterologia no Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo (1945 a 1995). In: Cordeiro F. Histórico da gastroenterologia no Brasil. São Paulo: Federação Brasileira de Gastroenterologia; 2001.
5. Pinotti HW. Contribuição do Hospital das Clínicas à cirurgia do aparelho digestivo no seu jubileu de ouro. São Paulo: Monografia; 1994.
6. Raia A. Origens do Departamento de Gastroenterologia da FMUSP. Bol Inf CBC (Col Bras Cir). 2003; abr./dez.:22-6.