

Colonoscopy in Mexico, 18 Years of Experience

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Abstract

Introduction: Colonoscopy is a medical procedure that allows visualizing the interior of the entire colon and rectum through an instrument, this instrument is the Colonoscope. Colonoscopy is a weapon to combat many diseases in the medicine of our era. Mexico is a field of opportunity for harvesting the vast endoscopic knowledge and its leading role, expressed in the experience presented in this article.

Objective: To describe the experience of the results obtained in the Colon and Rectal Surgery service, of the colonoscopies performed in three hospitals, analyzing the data obtained in a deductive and critical way.

Method: It is a study with a retrospective, longitudinal, observational and descriptive design. Where a Colonoscopy was performed in the third-level colon surgery services of health care in three hospitals in Mexico City, in a period from April 2002 to April 2020.

Results: A total of 21,743 records and colonoscopy files were reviewed; where 17,023 patients were included who underwent a colonoscopy; of which 8,426 were female (49%) and 8,570 male (51%). The age range was from 10 to 96 years with an average of 54 years.

Conclusion: Colonoscopy is the study par excellence (Gold Standard) with high certainty in the prevention, diagnosis, treatment and surveillance of the vast majority of colorectal diseases. Colonoscopy is vital as a priority instrument to implement any health strategy.

Keywords: Colonoscopy; Colon; Straight; Diseases; Colorectal

Introduction

Colonoscopy (CA) is a medical procedure that allows to visualize through an instrument the interior of the entire colon and rectum of the human being, this instrument is the Colonoscope (CO). Colonoscopy is a weapon to combat many diseases in the medicine of our era. Mexico is a field of opportunity for harvesting the vast endoscopic knowledge and its leading role, expressed in the experience presented. In ancient times, Hippocrates 400 BC is the one who first describes the term endoscopy and tries to see the rectum through a tube and a candle. On the other hand, at the end of the first millennium of the Christian era, the Arab doctor Albuskasim (936-1013), used the reflection of light for the first time to examine the cervix. In the 19th century, the German physician Philip Bozzini (1773-1809) introduced the lichtleiter or light conductor with which he visualized the urethra. Adolph Kussmaul from Freiburg in Germany in 1868, tries to perform the first esophagogastroduodenoscopy. Von Mikulicz in Vienna in that same year succeeded. The history is divided into segments: the rigid endoscope (1868-1932), the semi-flexible endoscope (1932-1957), the fiberscope (1957-present) and the video endoscope (1983-present) [1,2]. In 1969 Wolf and Shinya performed the first complete flexible fiber optic CO colonoscopy [3]. In Mexico, the first time that a CA was documented was carried out in 1973, with the first 23 CAs carried out [4].

CA is an invasive procedure, which requires certain conditions and very precise specifications; which covers prevention or screening, diagnostic, monitoring or control and therapeutic functions in colon and rectal pathologies or diseases. Absolute contraindications to performing CA involve the following conditions: an acute cardiovascular event, an acute abdomen, fulminant colitis, intestinal perforation, and a toxic colon.

Objective of the Study

To describe the experience of the results obtained in the Colon and Rectum Surgery service, of the Colonoscopies performed in the various hospitals, deductively and critically analyzing the data obtained.

Methods

It is a study with a retrospective, longitudinal, observational and descriptive design. The records and files of all patients who underwent CA in colon surgery services at the third level of health care in three hospitals in Mexico City were reviewed:

1. High Specialty Medical Unit Hospital, National Medical Center for Infectious Diseases. "Dr. Daniel Méndez Hernández" from the Mexican Institute of Social Security. Mexico City. Country: Mexico. 3rd Level.
2. Hospital of Specialties of Mexico City "Dr. Belisario Domínguez" of the Ministry of Health. Mexico City. Country: Mexico. 3rd Level.
3. Metropolitan Hospital of Mexico City. Angeles Group. Mexico City. Country: Mexico. 3rd Level.

In a study period that includes the month of April 2002 to April 2020. The variables to be evaluated included: age, sex, clinical diagnosis or indication for the procedure, duration of the procedure, complications, endoscopic diagnoses, cause of suspension of the procedure and colonic segment most frequently reached. An analysis of the study and presentation of the results was carried out using descriptive biostatistics procedures.

Results

A total of 21,743 records and colonoscopy files were reviewed; where 17,023 patients who underwent CA were included; of which 8,426 were female (49%) and 8,570 male (51%). The age range was from 10 to 96 years with an average of 54 years. The average time to perform CA in complete studies until reaching the cecum was 29 minutes, with a range of 13 to 126 minutes. The anatomical segment of

the colon most frequently reached was the cecum in 71% of which there were 11,916 patients and of them the terminal ileum was cannulated in 92%, representing 10,963 studies.

For the most frequent indications for CA, the most frequent were the clinical picture accompanied by a filling defect in the barium enema, secondly, lower gastrointestinal bleeding, and thirdly, the surveillance and control of ulcerative colitis (UC) (See table 1).

Indication	No.	%
Clinical picture and filling defect in the barium enema	5,107	30
Lower gastrointestinal bleeding	3,065	18
Surveillance, control of Ulcerative Colitis (UC)	1,532	9
Surveillance and control of colorectal cancer	1,362	8
Rule out colorectal cancer	1,192	7
Polypectomy surveillance and control	1,191	7
Colorectal polyp discard	1,021	6
Inflammatory Bowel Disease Rule Out	851	5
Chronic diarrhea	341	2
Various	1,361	8
Total	17,023	100

Table 1: Indication for colonoscopy in number and percentage.

Regarding the results diagnosed after CA, they are described by frequency in a normal study in the first place, secondly the diagnosis of polyps and thirdly, colon and rectal cancer were diagnosed. See the rest of the diagnoses in table 2.

Diagnostic	Quantity	%
Normal Study	8,341	49
UC	1,532	9
Polyps	1,873	11
New diagnosis of colon and rectal cancer	1,703	10
Colon and rectal cancer	1,362	8
Other colitis	512	3
Diverticular disease due to lower digestive hemorrhage	510	3
Actinic proctitis	169	1
Angiodysplasia due to lower gastrointestinal bleeding	170	1
Various	171	1
	680	4
Total	17,023	100

Table 2: Endoscopic diagnostics.

A total of 2,899 cold snare polypectomies were performed: 27,457 biopsies. A total of thirteen attempts to devolvulate sigmoid colon were made, in which nine were successful and four unsuccessful. There was performed hemostasis in 129 patients with argon laser and 19 with electro-fulguration.

The main cause of suspension or incomplete studies was intolerance to pain, in 680 cases (4%) and of them, 77% were women (524 patients), and 33% were men (156 patients). The patient's intolerance to pain is due to the lack of support from the anesthesia service due to a fatuous institutional logistics; which forces the colon and rectal surgery service to implement a hypnotic and anxiolytic sedative (midazolam). The second cause of suspension in 510 patients was poor preparation of the colon, which is 3%, and the third cause was equipment failure (broken apparatus) in 340 patients, which is 2%.

There were four complications that represent 0.02% of morbidity, two of them were post-polypectomy due to persistent bleeding that resolved later with electro-fulguration; as well as two perforations of the sigmoid colon due to previous complicated diverticular disease, which required surgery with intestinal resection and colorectal anastomosis; solving the complications. There was no mortality.

Discussion

The CA is an invasive endoscopic study that has a higher degree of complexity compared to upper endoscopy; since the colon and rectum are organs with anatomical variations, fixations, positions, peristalsis of three types, various torsions and calibers in all their extension; Not to mention that it always contains fecal matter. The experience of the operating physician is crucial, which combined with the type of CO equipment, makes the procedure successful or not. All of the above makes it necessary to point out the importance of the preparation of the colon, which must be adequate and fundamental to be able to do the CA [5,6]. This is the second cause of suspension of the study, as referred to in this manuscript. The chain of value or importance of the CA is essential in four scenarios, which are:

1. Diagnostic.
2. Therapeutic.
3. Preventive.
4. Surveillance or monitoring.

CA is considered a gold standard in the diagnosis of any colon and rectal pathology, with a very high sensitivity and specificity. We analyze that, unlike other researchers, hemorrhoidal pathology is not a diagnostic competence of CA [7]. On the other hand, colonoscopy may be normal due to suspicion of malignant colorectal pathology in patients with clinical symptoms and a filling defect due to barium enema, as reported in the medical literature [7,8]. The results presented in this study, with regard to endoscopic diagnoses in decreasing order of incidence, are the following:

- Colorectal polyp.
- Colon and rectal cancer as a new diagnosis.
- Inflammatory Bowel Disease: UC.
- Low digestive bleeding.

The analysis of the endoscopic diagnostic results in our study implies:

1. Colorectal polyp is one of the most complex pathologies due to the variety and combination of its characteristics, such as size, shape (pedunculated or sessile), number, histological characteristics, degrees of dysplasia or polyposis syndromes. The polyposis syndromes of the colon and rectum are familial adenomatous polyposis, attenuated familial adenomatous polyposis, MYN-associated polyposis, Gardner syndrome, Turcot syndrome, Peutz-Jeghers syndrome, juvenile polyposis, neurofibromatosis, Cowden syndrome, Bannayan-Ruvalcaba-Riley, Cronkhite-Canada syndrome, and serrated polyposis [9-11]. It is in this pathology that the opportunity that one has with CA is applied as a diagnostic, therapeutic and surveillance or follow-up study. Being one of the most frequent colorectal pathologies (the first in our study), the main activist precursor of colorectal cancer and which is essential to improve the prognosis by substantially reducing the incidence of cancer [6,9,12]. It is essential to note that the specialty of pathology plays a fundamental role in the definitive diagnosis, using classifications such as Haggitt's, Kikuchi's or Kudo's, suitable for detecting carcinoma in situ in the same anatomy of the polyp [13,14]. In our country they are unknown by many specialists in pathology and it has fallen into disuse; That is why, added to other factors, in Mexico the importance that polyposis disease requires is not given.
2. Colorectal cancer is the second disease detected in this study, which if we add it to the previous point, becomes the first diagnosis found in our study. An intentional search was carried out for the causes of deaths that occur in our country on official pages or websites, with results that show imprecise, lagged and inconclusive statistics; since they only mention that malignant neoplasms of the colon and rectum occupy the second place as a cause of death [15]. On the other hand, the International Cancer Research Center reports that colorectal cancer ranks second as a cause of death in the world, also states that in Mexico it ranks second in men and in women it is fifth; and more than 60% are detected in advanced stages or only for palliative management [16-18]. It is implausible to refer to the CA as the only mechanized capable or suitable to be able to make a difference in our country. Our scientific team considers that in Mexico:
 - a. There is no knowledge of the experts in performing intraoperative CA in search of synchronism or in the mediate postoperative period.
 - b. There are no screening studies or secondary prevention screening studies aimed at risk groups, much less the general population.
 - c. There is no consensual interdisciplinary management regarding responsibilities, protocols in prevention, diagnosis, treatment, or patient surveillance among the specialties of gastroenterology, surgery, gastrointestinal endoscopy, emergencies, colon and rectal surgery, medical oncology, surgical oncology, and pathology.
 - d. There are no accurate or up-to-date statistics on colonoscopies performed in the Mexican population that describe specific morbidity and mortality and that are in coordination with government institutions.
 - e. There is no concern or need to be visualized, to create a health policy for this pathology.
3. Inflammatory bowel disease has taken a leading role in the range of diseases of the colon and rectum; where its diagnostic simplicity is based on clinical and endoscopic procedures, it sets aside the expertise of a pathologist in the certainty of the diagnosis. In Mexico, it is common to carry out endoscopic diagnoses exclusively, self-attributing functions that the operator or endoscopist does not have, making a series of erroneous diagnostic conjectures, which, together with technological advances that in a country like ours do not have, where endoscopic equipment, when available, has an approximate delay of 20 to 25 years, which puts us at a disadvantage compared to other more advanced countries; but contrary to what is dictated in the so-called international

guidelines for inflammatory bowel diseases, where the American Society of Gastrointestinal Endoscopy (ASGE), in 2006, gave the guidelines for the endoscopic diagnosis and treatment of inflammatory bowel disease [19-22].

4. Lower gastrointestinal bleeding is another pathological entity that to date requires great diagnostic expertise, since its erroneous approach leads to procedures and treatments that the patient does not require and that are not always safe. As a first step, upper gastrointestinal bleeding etiology must be ruled out, which is responsible for 80% of cases, with a mortality of 20%, unlike lower gastrointestinal bleeding, which is 10%, whose origin is from the colon and rectum, the other 10% is from midgut [23,24]. 90% of gastrointestinal bleeding corresponding to the colon and rectum is of anorectal etiology that can be diverse (hemorrhoids, fissure, fistula, etc.) Only 1 to 2% of lower gastrointestinal bleeding is of colonic origin [25].

From the above, the following reflections are made:

1. It is to be stated that upper gastrointestinal hemorrhage with continuous and massive bleeding can be confused with rectal bleeding. This is due to the fact that upper gastrointestinal bleeding can reach the colon without undergoing modifications and, when simulating a rectal bleeding, a colonoscopy is erroneously indicated, which requires colon preparation. This implies an error in decision-making that affects the patient and prolongs the time of active hemorrhage, hospitalization and expenses due to a poorly requested study. If it is decided to perform a panendoscopy when no apparent active bleeding is found in the colon, a period of 72 hours is perceived after the onset of signs and symptoms where the upper gastrointestinal bleeding might have subsided.
2. Most colon pathologies cause bleeding; its mere presence is not a diagnosis but a sign.
3. The absence of lower gastrointestinal bleeding does not rule out a neoplastic etiology [26].
4. More than 98% of lower gastrointestinal bleeds are self-limiting.
5. There are only two pathologies that cause massive or important hemorrhages that warrant aggressive treatment, angiodysplasias and midgut tumors [27].

In our casuistry, the first etiology of lower gastrointestinal bleeding is colorectal polyps.

Complications from performing CA are extremely rare or can be even anecdotal, as documented in this study and mentioned before, there were no reports of mortality. This will depend on the experience, the biological variability of the patient, the personnel assisting and the technological conditions or the maintenance of the equipment [28-30].

The evidence of the newest endoscopic diagnostic techniques are unknown in most cases, inoperable or even not reproducible in Mexican endoscopy, not to mention the lack of training of both endoscopists and colon and rectal surgeons. Modern colonoscopy equipment and current techniques that are not available in Mexico are listed below [31,32]:

1. The cap-assisted colonoscopy.
2. Retro-viewing technique.
3. The Full Spectrum Endoscopy or FUSE.
4. The Third Eye Retroscope. (Third Eye Panoramic).

5. The NaviAid G-EYE Balloon Colonoscopy.
6. EndoRings.
7. Endocuff.
8. Chromium endoscopy.
9. Virtual endoscopy chromium, also known as filter-assisted colonoscopy.
10. Narrowband Imaging Technology (NBI)
11. Professional image enhancement systems i-SCAN, FICE and STORZ.
12. Auto fluorescence images.
13. Focal laser endomicroscopy.
14. Endocytoscopy.
15. Optical coherence tomography.
16. Spectroscopy.
17. Auto fluorescence spectroscopy.
18. Endoscopy with second generation colon capsule.

Specific diagnosis is essential; in such a way that without diagnosis, the treatment runs the risk of being nonspecific and symptomatic. Without diagnosis, the patient endangered of being exposed to procedures and treatments that are not always safe [33].

All this is involved in a scenario of diagnostic and therefore therapeutic error, in which the directors or leaders of the country's health policies are largely unaware of the reality of the situation in terms of the presentation, incidence and correct diagnosis, due to a lack of criteria and exquisite knowledge, since what happens in developed countries and their standards of criteria in diseases of the colon and rectum, obviously is not applicable in all the current macro scenario that exists in Mexico.



Figure 1: Polyp in descending colon.



Figure 2: Tumor in transverse colon.



Figure 3: Angiodysplasia in terminal ileum.

Conclusion

CA is the study par excellence with high certainty in the prevention, diagnosis, treatment and surveillance of the vast majority of colorectal diseases.

Mexico presents such a severe backwardness in the aspects of infrastructure, technology, personnel, training, cognitive, and in health strategies or policies regarding the amalgamation of CA and colorectal pathology.

It is essential to organize the management of colon and rectal diseases in Mexico; with the use of CO, but not only at the physician level, but at the inter-institutional and governmental level.

The CA is vital as a priority instrument to implement any health strategy and its use optimized correctly is the spearhead to make a difference in diseases of the colon and rectum.

Conflict of Interests

There is no conflict of interest.

Bibliography

1. Rodríguez-Martínez y cols. "Desarrollo Histórico de la Endoscopia Gastrointestinal". *Revista 16 de Abril* 6 (2012): 1804.
2. Gualdrini UA. "Capítulo 1: Breve historia de la pesquisa colorectal". *Revista Argentina de Coloproctología* 1 (2016): 4-8.
3. Wolf W and Shynya H. "Colonofiberscopy". *The Journal of the American Medical Association* 217 (1971): 1509-1512.
4. Gallegos GL. "Endoscopia en Coloproctología". 1st Edition. Trillas. México (1991): 28-35.
5. Kastemberg D, et al. "Bowel preparation quality scales for colonoscopy". *World Journal of Gastroenterology* 24.26 (2018): 2833-2843.
6. Prateek S, et al. "The importance of colonoscopy bowel preparation for the detection of colorectal lesions and colorectal cancer prevention". *Endoscopy International Open* 08 (2020): 373-683.
7. Mohammad S, et al. "Colonoscopy Findings: Single institution study from Pakistan". *Cureaus* 11 (2019): 2-5.
8. Yanliu C, et al. "Will purposely seeking detect more colorectal polyps than routine performing during colonoscopy?" *Medicine* 99 (2020): 22.
9. Moreira L. "Polipos y polyposis colorectales". Ponce J, ed. Tratamiento de las enfermedades gastroenterológicas. Barcelona, Doyma (2011): 345-358.
10. García-Sánchez MA, et al. "Intestinal intussusception by syndrome attenuated familial adenomatous polyposis". *Mathew's Journal of Gastroenterology and Hepatology* 1.1 (2016): 1-3.
11. García-Morell N, et al. "Comportamiento de los pólipos de colon y recto en pacientes sometidos a colonoscopia terapéutica". *Revista Archivo Médico de Camagüey* 23.2 (2019): 198-208.
12. Feagins LA. "Colonoscopy, polypectomy, and de risk of bleeding". *Medical Clinics of North America* (2019): 125-135.
13. Ruíz-Tovar J, et al. "Resección endoscópica de cáncer colorrectal temprano como único tratamiento". *Revista Espanola de Enfermedades Digestivas* 102.7 (2010): 435-441.
14. Calderón-Reza JC, et al. "Cáncer de colon, secuencia adenoma carcinoma y pólipo aserrado". *Conrado* 14.62 (2018): 52-55.
15. www.gob.mx y el Sistema Nacional de Información en Salud (2018).
16. International Agency for Research on Cancer. Latest global cancer data: Cancer burden rises to 18.1 million new cases and 9.6 million cancer deaths in 263 (2018): 1-3.
17. Aldaco-Servide F, et al. "Mortalidad por Cáncer en México". *Gaceta Mexicana de Oncología* 17 (2018): 28-34.
18. Zhang J, et al. "Colonoscopic screening is associated with reduced colorectal cancer incidence and mortality: a systematic review and met analysis 11.20 (2020): 5953-5970.
19. Yamamoto-Furusho JK, et al. "Diagnóstico y tratamiento de la enfermedad inflamatoria intestinal: Primer Consenso Latinoamericano de la Pan American Crohn's and Colitis Organisation". *Revista de Gastroenterología de México* 82.1 (2017): 46-84.
20. Baistrocchi H. "La videocolonoscopía en las enfermedades inflamatorias del recto y colon". *The Coloproctology Argentine Journal* 26.3 (2015): 100-147.
21. Adler SN, et al. "Comparison of small -bowel colon capsule endoscopy system to conventional colonoscopy for the evaluation of ulcerative colitis activity". *Endoscopy International Open* 07 (2019): 1253-1261.

22. Nambu R, *et al.* "Current role of colonoscopy in infants and young children. A multicenter study". *BMC Gastroenterology* 19.149 (2019): 1-7.
23. Chuecas J, *et al.* "Hemorragia digestiva alta. ARS MEDICA". *Revista de Ciencias Médicas* 44.3 (2019): 24-34.
24. Pinto C, *et al.* "Hemorragia digestiva alta variceal y no variceal: mortalidad intrahospitalaria y características clínicas en un hospital universitario (2015-2017)". *Revista Médica de Chile* 148 (2020): 288-294.
25. Tavío E, *et al.* "Hemorragia digestiva baja y hemorragia digestiva de origen oscuro". *Medicine* 12.6 (2016): 308-315.
26. Takuji K, *et al.* "Significance of fecal hemoglobin concentration for predicting risk of colorectal cancer after colonoscopy". *Gastroenterology and Hepatology* 4 (2020): 898-902.
27. Miyakuni Y, *et al.* "Angiography versus colonoscopy in patients with severe lower gastrointestinal bleeding: wide observational study". *Acute Medicine and Surgery* 7.1 (2020): 1-8.
28. De Angelis N, *et al.* "2017 WSES guidelines for the management of iatrogenic colonoscopy perforation". *World Journal of Emergency Surgery* 13.5 (2018): 1-20.
29. Kim SY, *et al.* "Adverse events related to colonoscopy: Global trends and future challenges". *World Journal of Gastroenterology* 25.2 (2019): 190-204.
30. Alsowaina KN, *et al.* "Management of colonoscopic perforation: a systematic review and treatment algorithm". *Surgical Endoscopy* 33 (2019): 3889-3898.
31. Vijeta P, *et al.* "Advances in endoscopy for colorectal polyp detection and classification". *Proceedings (Baylor University Medical Center)* 33.1 (2020): 28-35.
32. Lee JY, *et al.* "Real time detection of colon polyps during colonoscopy using deep learning: systematic validation with four independent datasets". *Scientific Reports* 10 (2020): 1-8.
33. Mézquita OJF. "El arte del diagnóstico". *Medicina Interna de México* 22 (2006): 246-252.

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