

Reorganization of the endoscopic activity of Cancer Institutes during phase II of the Covid-19 emergency[☆]

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A B S T R A C T

After the lockdown during the emergency phase of the Covid-19 pandemic, we have to deal with phase 2, a period of uncertain duration, with a controlled and progressive return to normalization, in which we need to reconcile our work and our movements with the presence of the virus on our territory. Digestive endoscopic activity is a high-risk transmission procedure for Covid-19. The measures put in place to protect healthcare personnel and patients are stressful and “time-consuming” and lead to a reduction in the number of endoscopic procedures that can be performed. In this scenario, the Oncological Institutes are forced to make a rigorous selection of patients to undergo endoscopic examinations and treatments, according to lists of exceptional priorities, in order to guarantee cancer patients and subjects at high risk of developing digestive tumors, a preferential diagnostic and therapeutic process, protected from contagion risks. For this purpose, cuts and postponing times of endoscopic performances are here proposed, which go beyond the guidelines of scientific societies and have little evidences in the literature. These changes should be applied limited to this exceptional period and in proportion to the capacity of each operating unit in order to meet the demands of the patients.

1. Introduction

The Coronavirus pandemic has led to the declaration of a national state of emergency for the months of March and April 2020, to contain the transmission of the infection. Consequently, the Italian and European Gastroenterology and Endoscopy Units have been forced to reduce the diagnostic and therapeutic activity by 80–100%, ensuring only urgent and not deferrable exams [1–3]. With variable modalities, medical and nursing staff have been re-

cruited to assist the Covid-19 patients. In the early phase, 2–17% of endoscopic personnel were infected, but the contagion seems to have significantly decreased after the adoption of protection measures [4,5].

With the end of the emergency in May 2020 a new phase called phase 2 has started, with the gradual and progressive resumption of all work activities. Consequently, gastroenterological, and endoscopic activities also need a restart. However, the modalities of restart of the activities will have to be different from the pre-Covid-19 period, and subject to variability according to the trend of the pandemic during the next months [6,7].

Strict organizational criteria are even more necessary in the gastroenterological and endoscopic services of Cancer Institutes, due to the higher frailty of oncological patients compared to other

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patients treated in general hospitals. Cancer patients more often have multiple comorbidities, are older, debilitated by aggressive therapies and thus more predisposed to developing a serious and deadly infectious disease [8]. Particularly in this period, Cancer Institutes have a duty to guarantee to cancer patients priority access to diagnosis and therapy, with the maximum guarantee not to be infected and not to transmit the infection [9].

In accordance with the directives given by the Federazione Italiana Società Malattie Apparato Digerente (Italian Federation of Societies of Digestive Diseases -FISMAD) [10] the reopening phase of digestive endoscopic services throughout the nation, in particular for cancer centers, should consider these fundamental points:

- A. Containment of the infection
- B. Selection of requests according to appropriateness criteria, guidelines, and priority level
- C. Rescheduling of the exams postponed during the pandemic

2. Containment of the infection

The prevention of contagion in endoscopy should consider the risks in relation to the type of patient, the type of procedure and to the risk related to the virus.

During phase 2, this evaluation is also subject to change. Considering the assumption, not realistic at the moment, to have an adequate number of swabs and antibody tests making it possible to classify patients into the two categories of “infected” and “healed”, the vast majority of subjects are in the category “dubious”, which includes suspicious, not defined and at risk of contagion [11]. In particular in the northern Italian regions, where the virus had a large diffusion, all citizens are considered at risk of contagion, not depending on how much they travelled or how many contacts they had. Potentially, all patients could be virus carriers, asymptomatic, with minimal symptoms or with a falsely negative swab. Moreover, it is not known how many “healed” patients are immune to reinfection. In this moment, the safer solution is to consider all people as potentially infected, at least until a safe and rapid test for the identification of infected patients becomes available, or until the end of the pandemic. Accepting this assumption implies the maintenance of the protection procedures applied during Phase 1:

1. Performing anamnestic triage and keeping a safe distance between patients (timed access to the hospital based on the capacity of the waiting rooms and recovery rooms), forbidding entrance of the accompanying persons
2. Mandatory use of the facemask and hand sanitizing for all people in the hospital
3. Adoption of correct wearing and removing procedures of personal protective equipment (PPE) by the endoscopy personnel
4. Sanitation of endoscopic rooms and medical clinics by surface disinfection and adequate air change for every patient's change
5. Performing procedures on known infected patients in dedicated rooms or as the last of the daily list
6. Use of the minimum number of health personnel necessary for the correct execution of investigations.

It is not the aim of this article to describe the path of triage and protective measures, for which the reader is invited to refer to the protocols issued by scientific societies [12–14]. However, we are interested in highlighting some organizational criticalities. The path of the patient in the endoscopic rooms, should be reviewed not only with < reference to the patient- healthcare worker distance, but also to the handling of the clinical documentation that patients bring with them from home and to the collection of the informed consent.

To obtain a quicker and more effective sanitation of the endoscopic rooms, non-essential furnishings should be removed. To better establish a safe room ventilation time, the clinical engineers of

each hospital should provide information on the flow rate of the air conditioning system, if any, in square meters / min and the duration of a complete air change in the rooms. In the absence of air conditioning and of precise indications, each room should be ventilated as per guidelines: one hour between each patient if the room is under positive pressure, 30 min if it is under negative pressure [12–14].

All measures adopted lead to an extension of patient treatment times, which must be correctly quantified by each service, in order to organize the working day and avoid overcrowding in the waiting room.

Moreover, it is also necessary to consider the increased fatigue and stress that working with PPE entails on health personnel with the prolongation of the length of phase 2.

3. Selection of requests on the basis of appropriateness, guidelines, priorities

Triage, protective measures, sanitization, and fatigue determine a reduction in the number of endoscopic procedures that can be performed daily, which can be estimated approximately to be by 40–50% compared to the pre-Covid-19 period. The longer the phase 2 lasts, the more the endoscopy services will be unable to fulfill all the requests received, with the risk of being saturated by a progressively increasing number of requests for procedures of intermediate urgency.

In this phase, a rigorous selection of procedures is necessary, which should be based on:

- diagnostic appropriateness for first access requests,
- timing given by the guidelines of the scientific societies especially for follow up
- definition, possibly shared, of lists of priority pathologies and time lists for postponing exams within “safety margins”, divided by type of pathology.

Primary diagnostic and therapeutic targets of the endoscopy services of the Oncological Institutes are and remain:

- diagnosis in the presence of clinical signs or tests results highly suspicious for malignancy,
- staging and re-staging of malignant tumors before and after chemotherapy, radiotherapy, surgery,
- performing endoscopic exams necessary to continue the therapeutic process once it has started (e.g. control of recanalization of rectal anastomosis, etc.),
- diagnosis and management of complications of oncological treatments (e.g. treatment of fistulas, postoperative complications, etc.),
- endoscopic palliation of advanced malignancies for nutritional or recanalization purposes,
- endoscopic treatment of early-stage or high risk precancerous malignant lesions.

Another highly qualifying task is added to the previous target: periodic endoscopic follow up of subjects at high risk of developing gastrointestinal neoplasms. These patients are suffering from:

- rare diseases or predisposing genetic alterations (Lynch syndrome, Li-Fraumeni, familial adenomatous polyposis, familial hereditary gastric cancer, etc.),
- precancerous conditions (Barrett's esophagus; chronic gastritis with atrophy, intestinal metaplasia, dysplasia, long-lasting chronic inflammatory bowel disease).

After that, it is necessary to consider endoscopic surveillance in these groups:

- patients screened for colorectal cancer in age groups at risk for cancer and with positive fecal occult blood test,

Table 1
Proposed delays for endoscopic follow-up procedures compared to the expected intervals prescribed by the guidelines.

Pathology	Timing by guidelines	Variance
Hiatal hernia, esophagitis, gastritis		procedure cancelled; no booking allowed
Diffuse intestinal metaplasia, atrophy, previous dysplasia	Every 3 years	1 year
Dysplasia without visible lesions in the upper digestive tract	-low grade: 12 months, then 3 years -high grade: 6 months, 1 year, 3 years	-6 months -2-3 months
Visible lesion of the upper digestive tract, removed endoscopically	every 1-3 years	6 months
ECL cell hyperplasia or multiple small neuroendocrine tumors (NET)	every 2 years until the age of 70	1 year
Gastroduodenal neuroendocrine tumors (NET) endoscopically removed	every 1-2 years	6 months
Uncomplicated Barrett's Esophagus	every 3-5 years	6-12 months
Barrett's Esophagus with dysplasia	-low grade: 6 months for 1 year, then every 2 years -high grade: 3 months for 1 year, then annually	2-3 months
Diverticular disease		procedure cancelled; no booking allowed
Constipation or chronic diarrhea		procedure cancelled; no booking allowed
First grade relative with colorectal cancer	every 5 years	1 year
Simple colorectal polypectomy, low risk lesions, < 5mm	every 5-10 years	1 year
Complex colorectal polypectomy, high risk lesions, >5 mm	every 3-5 years	6-12 months
First follow up after complex endoscopic resection	6 months	2-3 months
First follow up after colonic resection, preoperative colonoscopy incomplete	within 3-6 months	1 month
Follow up after colonic resection, preoperative colonoscopy complete	after 1 year, then after 3 years, then every 3-5 years based on risk	6-12 months
Anastomosis evaluation within 2 years from resection or recanalization	every 6 months (only rectosigmoidoscopy)	1-3 months
Ulcerative colitis - Crohn's disease in remission	every 1-3 years after 10 years of disease	6-12 months
Ulcerative colitis - Crohn's disease relapse		medical evaluation
Non-neoplastic anal pathology (hemorrhoids, fistulas)		procedure cancelled; no booking allowed
Treated anal condylomas / anal low grade anal dysplasia	6-12 months	1-3 years
High grade anal dysplasia	4-6 months	3-6 months
Pancreatic cysts	EUS* every 3-12 months	1 month
Response to radio-chemo therapy		perform the exam
Suspicion of neoplastic disease relapse		perform the exam

* EUS: Endoscopic ultrasound.

- patients with colonic resection for colorectal cancer or with previous endoscopic removal of adenomatous lesions,
- patients with first-degree family members with colorectal and gastric cancer.

All other requests for endoscopic exams for diagnosis or follow up of inflammatory or functional pathologies, during phase 2, should be referred elsewhere for clinical or endoscopic re-evaluation.

However, it is predictable that the capability of the National Oncological Institutes to provide endoscopic exams, which was already stressed in normal conditions, will be insufficient to satisfy all the requests for the appropriate pathologies listed above. An open reservation system as used so far, with unrestricted prescriptions by the general practitioner and reservation through a hospital secretarial service, does not guarantee the selection of the examinations based on appropriateness nor in compliance with the timing of follow-up indicated by the guidelines [15]. The creation of differentiated booking agendas (first accesses, follow up, deferred emergencies, screening, etc.) could be useful but would not solve completely the problem.

For the entire phase 2, the selection of new requests and exams that have already been booked, should be made by a doctor with expert secretarial staff, in order to identify those that are not appropriate and to correct the timing of inappropriate requests for follow up examinations.

In addition, for each pathology that does not have an urgent nature, doctors should agree upon a postponement time in relative safety, which allows to procrastinate a diagnostic or therapeutic procedure compared to what is necessary, with the minimum

risk for patients. The tables that are proposed in this article have been drawn up with "clinical common sense" and shared between our Institutes (Tables 1-3) and are intended to help our services to build the weekly agenda of endoscopic procedures on the basis of the number of requests, the service's capability to satisfy them and the trend of the pandemic. Inevitably, these tables are flawed by empiricism, given the few data reported in the literature [16], and they absolutely do not pretend to substitute the guidelines of our scientific societies [17-34], but they act as a temporary work tool that helps us to make a difficult, but necessary, selection of the exams, in an exceptional phase such as the one we are experiencing today for the first time in our work experience.

Particular attention should be paid to hereditary-family syndromes, whose management requires, according to the guidelines, a dedicated organization [27-32]. Taking care of these patients implies an assumption of responsibility by the hospital, in particular regarding the quality of the examinations and compliance, which in this special period, is conditioned not only by the behavior of the patient but also by the availability of booking and execution of the exams on scheduled time. The weight of these aspects must be reconsidered as the pandemic continues, in terms of limitations, allocation of resources and psychological status of the population.

4. Rescheduling of deferred procedures

The endoscopic procedures that have been deferred in the two months of emergency and all those that will be postponed during phase 2, should be listed in a specific agenda and distinguished by type of exam, first access or follow up, with an assigned deadline. While the exams booked on the basis of appropriateness and

Table 2

Proposed procedure delays for first access endoscopic examinations compared to the expected times prescribed by the guidelines.

Pathology	Timing by guidelines	Variance
Not suspicious for neoplastic disease or not severe symptoms		Up to 6 months
Suspicious for neoplastic disease		Perform the exam
Tumor staging		Perform the exam
Asymptomatic with positive fecal occult blood test		Up to 6 months
Regional screening with positive fecal occult blood test (14)		Perform the exam or reschedule within 6 months
First grade relative with colorectal cancer	From the age of 40 or 10 years before the earliest case, then every 5 years	6–12 months
First grade relative with gastric cancer	From the age of 50 or 10 years before the earliest case, then every 3 years	1 year

Table 3

Proposed procedure delays, for endoscopic examinations in patients with hereditary-family syndromes compared to the expected times prescribed by the guidelines.

Pathology	Timing by guidelines	Variance
Lynch syndrome	Starting surveillance with colonoscopy: - from 25 years old (<i>MLH1</i> e <i>MSH2</i> +) - from 35 years old (<i>MSH6</i> e <i>PMS2</i> +) - from 25 years old or 5 years before the earliest case (<i>genetic test in progress or unknown</i>)	1 month
	Follow up: - every 2 years (<i>even if previous adenomas</i>) - every year (<i>if adenomas -multiple or with high grade dysplasia- previously resected</i>) - every 2 years (<i>in patients with resection or with total colectomy</i>) - reschedule all unsatisfactory exams at 3 months	3 months
	Upper digestive tract or small bowel: no routine surveillance (from 35 years old in patients with family history of gastric cancer)	6 months
FAP, MAP (*)	Starting surveillance with colonoscopy: at 12–14 years (18 years for MAP)	1 month
	Follow up (not operated colon, operated rectum-pouch): - every 1–2 years, with the resection of all polyps ≥ 5 mm - reschedule all unsatisfactory exams at 3 months	6 months, 3 months if high grade dysplasia adenomas
	Starting surveillance with EGDS: 25 years (35 years if MAP)	3 months
	Follow up EGDS: 1–3 years according to Spiegelman	6 months
Other genetic syndromes	Starting surveillance and follow up with EGDS and colonoscopy according to specific guideline (<i>for Hereditary diffuse gastric cancer, Li Fraumeni, Peutz-Jeghers syndrome, juvenile polyposis syndrome, etc.</i>)	3 months

* FAP: familial adenomatous polyposis. MAP: MUTYH associated polyposis. EGDS: Esophagogastroduodenoscopies.

priorities continue to be postponed, the postponed exams that are approaching the deadline must be gradually reintroduced [6].

5. Conclusions

The duration of Phase 2 of the Covid-19 pandemic is not precisely quantifiable, but it will probably last several months. A long duration of exposure to the infection increases the absolute risk of individual infection, especially for professions at risk such as healthcare. Digestive endoscopy must be considered an activity at high risk for Covid-19 transmission.

In this sense, it is a right and a duty of health personnel working in an endoscopy service, not to get infected and not to infect, while continuing to perform qualified and qualifying work. The situation is even more critical in Oncological Institutes, where patients are on average more fragile and at higher risk of death if infected. In exceptional conditions like this one we are living in, exceptional measures are needed to continue working well. Since it is not possible to satisfy all requests for endoscopic procedures, doctors of the Oncological Institutes should make an accurate selection of patients who must undergo endoscopy, in compliance with their “mission” and on the basis of a list of priority more restrictive than that indicated by the international guidelines. The proposed tables are the result of our selection. In this situation, refusing or procrastinating a medical service may not be a risk for the patient, but a winning choice.

Declaration of Competing Interest

The authors declare no conflict of interest.

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