

# How COVID-19 pandemic has changed elective surgery: the experience in a general surgery unit at a COVID-hospital

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**Abstract.** *Objective:* Evaluate the impact of Covid-19 in a critical area and analyze the changes in the daily activities in a General Surgery Unit of a tertiary Covid-Hospital. *Methods:* We report and compared all the surgical procedures performed between two periods (March and April 2019 and March and April 2020) at General Surgery Department of Parma University Hospital, a tertiary Covid-Hospital. *Results:* Between March and April 2019, a total of 232 surgical procedures were performed. Between March and April 2020 only 61 surgical procedures were performed. In 2019 84 patients underwent surgery for cancer and 171 underwent surgery for benign diseases. In 2020 only 37 patients underwent surgery for oncological reasons and 24 underwent surgery for benign diseases. *Conclusions:* During pandemic Covid-19 the access to health services was limited and poor. Limited access to health services and the fear of Covid-19 infection can explain the lower number of elective surgical procedures for cancer in 2020 compared to the same period in the 2019. ([www.actabiomedica.it](http://www.actabiomedica.it))

**Keywords:** Covid-19, pandemic, general surgery, oncology, colon cancer, liver cancer, gastric cancer

## Background

By mid-March 2020, the WHO European Region had become the epicentre of the Covid-19 pandemic caused by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), reporting over 40% of globally confirmed cases. As of 28 April 2020, 63% of global mortality from the virus was from the European Region. On 9 March 2020, Italian government imposed a national quarantine, restricting the movement of the population except for necessity, work, and health circumstances, in response to the growing pandemic of COVID-19 in the country. The hospitals daily activities were modified to ensure greater access to care for every patient affected by Covid-19. Surgery was reorganized and several hospitals stopped elective surgery ensuring only emergency and elective oncological surgery. (1-3)

Parma University Hospital is a tertiary hospital and has become a Covid-Hospital in March 2020 after Italian lockdown and almost all the hospital activities were converted into Covid-unit focusing to patients affected by Covid-19. Almost all surgical unit was converted into Covid-unit, only emergency surgery and oncological elective surgery were guarantee.

We reported our experience with Covid-19 pandemic and the changes on the daily activities.

## Methods

This single-center study describes the experience and the impact of pandemic Covid-19 on the daily activity at General Surgery Department of Parma University Hospital. We report and compared the surgical procedures performed between two periods (from 9

March to 30 April 2019 and from 9 March to 30 April 2020).

This paper aims to evaluate the impact of COVID-19 in a critical area and analyze the changes in the daily surgical activities in a tertiary Covid-Hospital. Every patient who underwent elective surgery in 2020 were screened for Covid-19. In patients affected by Covid-19 surgery was always delayed until Covid-19 resolution.

We analyzed the following characteristics: numbers of procedures, type of surgical treatment. No data about patients were reported.

Data analysis was performed using IBM SPSS Statistics.

Statistical analysis was obtained for the main descriptive indexes.

Quantitative data are expressed as mean or median  $\pm$  standard deviation (SD). The qualitative data were elaborated as absolute frequencies, relative frequencies, cumulated frequencies and percentages.

## Results

Between March and April 2019, a total of 232 surgical procedures were performed. Between March and April 2020 only 61 surgical procedures were performed. In 2019 84 patients underwent surgery for cancer and 171 underwent surgery for benign diseases. In 2020 only 37 patients underwent surgery for oncological reasons and 24 underwent surgery for benign diseases. In March 2019 surgery for cancer was performed 54 times and in April 2019 32 times.

On March 2020 only 16 patients underwent surgery and on April 2020 a total 21 patients underwent surgery for cancer.

Colorectal cancer surgery was the most common surgical procedure performed both in 2019 (25) and 2020 (13). Thyroidectomy for cancer was performed 17 times on March 2019 and 10 times on April 2019.

Right colon cancer, liver cancer and metastases and thyroid cancer were the most common cancer treated in our Surgical Unit in 2020 (Tab. 1)

**Table 1.** Cancer distribution between March-April 2019 and March-April 2020

Type of cancer	March-April 2019	March-April 2020
Colon cancer	19 (22.6%)	9 (24.3%)
Rectal cancer	6 (7.1%)	4 (10.8%)
Thyroid cancer	27 (32.1%)	10 (27.0%)
Gastric cancer	12 (14.2%)	4 (10.8%)
Liver cancer	12 (14.2%)	7 (18.9%)
Pancreatic cancer	8 (9.5%)	3 (8.1%)
Total	84	37

## Discussion

Our findings suggest the catastrophic impact of Covid-19 on the daily healthcare system activity. In our unit elective surgery especially for benign disease showed a dramatic reduction but also the number of elective oncological surgical procedures was poor compared to the previous year. Comparing 2019 and 2020 data about the number of surgical procedures we have noted the devastating impact of Covid-19 on benign disease (171 procedures for benign disease in 2019 versus 24 procedures in 2020). Also, the number of patients with cancer was different between 2019 and 2020. Despite the important effort during the critical moments in the pandemic Covid-19 less than a half of patients of 2019 were treated surgically in 2020, 84 times in 2019 versus 37 times in 2020. Parma University hospital was in a critical area during pandemic Covid-19 and it was converted into a Covid-Hospital. Parma district accounted for more than 3.500 cases of Covid-19 with more than 700 deaths. During March and April 2020 to fight Covid-19 emergency Parma University Hospital have boosted up the number of beds with more than 1000 hospital beds and more than 70 intensive care unit beds. Several surgical daily activities were stopped, and only emergency surgery and elective oncological surgery were performed. The inevitably stop to the daily activities including outpatient activities and diagnostic exams brought to several difficulties in the management of patients with cancer. During the emergency period the treatment of several patients were delayed. Many people with cancer or other urgent medical conditions like heart attacks, strokes or acute appendicitis was avoiding going to the

hospital, even when instructed by their doctors, because they feared infection with the coronavirus or because they believed the hospitals was so overwhelmed by Covid-19 patients that they didn't have the capacity to treat people with other conditions. This fear was translated into delays in diagnosis (surgical consult, diagnostic tests, multidisciplinary discussion).

Before elective surgery a chest x-ray and a buffer for Covid-19 was always performed 24-48 hours before hospital admission. Few patients with cancer were tested positive for Covid-19 and inevitably surgery was delayed until new negative buffer for Covid-19. Patients positive for Covid-19 were transferred into Covid-unit for monitoring. Despite several difficulties in the management of critical cancer patients our unit have always maintained an elective activity for patients with cancer.

Our findings are stackable to literature. Several studies have reported the inevitably changes on the daily activities during Covid-19 pandemic. Over 80% of surgical departments changed their practices and 70% shifted work plans. (3-5)

Although elective surgery for benign disease was stopped during pandemic Covid-19, surgery for cancer was reduced probably for the delayed diagnosis of these patients due to the limited access to specialistic examinations and the difficulties to perform diagnostic tests with the right timing.

## Conclusions

Our brief report on Covid-19 experience in the general surgery department in a tertiary hospital show the dramatic impact of Covid-19 in the treatment of patients with cancer and other benign diseases. During pandemic Covid-19 the access to health services was limited and poor. Limited access to health services and the fear of Covid-19 infection can explain the lower number of elective surgical procedures for cancer in 2020 compared to the same period in the 2019. The

delays in diagnosis and treatment during Covid-19 breakdown showed several limit of healthcare systems. Although many efforts have been made to treat patients with cancer, in general considerable efforts are still necessary here to regain lost ground. A forward-looking planning is mandatory to improve access to care.

**Conflicts of interest:** Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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