

## Effect of COVID-19 On Italian ENT Training: One Year Without Surgery

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## 1. Abstract

**1.1. Purpose:** The COVID-19 pandemic has produced an unprecedented global crisis. The need to cope with the emergency has led to a radical reorganization of the health system and resulted in changes in both medical and surgical activities, which in turn reduced the learning opportunities for Ear, Nose and Throat (ENT) residents. During this year various strategies have been proposed to maintain residents' learning curve and to ensure the continuity of training. However, the sharp reduction in the number of surgical activities has led to an unbridgeable deficit in learning practical part of our discipline. This document aims to report the impact of the COVID-19 outbreak on ENT surgical learning activity, in Lombardy (Italy), during COVID-19 pandemic.

**1.2. Methods:** The number and type of surgical interventions, performed by three third-year trainees, between March 9ths 2020, and March 9ths 2021, was collected retrospectively. Data were stratified over one-month time intervals in order to assess the evolving trends during the outbreak epidemic. A comparison was made with data from the previous year.

**1.3. Results:** A significant reduction in the number of surgical interventions performed during the pandemic was observed, up to

- 42,7% compared to the previous year. The negative trend coincides with the phase of greatest spread of the virus in our Country.

**1.4. Discussion:** Despite the adoption of alternative training methods, the reduction in surgical interventions severely penalized the trainees. The pandemic prevented them from receiving full practical and surgical preparation.

**1.5. Conclusion:** The loss of a full year of surgery represents a major handicap in the training of an ENT resident. Alternative ways must be encouraged to outweigh this loss.

## 2. Introduction

The World Health Organization declared the outbreak Coronavirus disease 2019 (COVID-19) as a public health emergency of international significance on January 30, 2020 and a pandemic on March 11, 2020. Italy was one of the first countries affected, with over 103.855 confirmed deaths [1]. Given that, until September 2020, no specific treatment nor vaccines for SARS-CoV-2 were available and social distancing measures (SDM) were the most evidence-based method to prevent the spread of the disease [2]. This decision had important consequences in the planning of daily clinical and surgical activities. To cope with the need for beds and staff, hospital admission was granted only for urgent and emergent

cases, which led to a 50-90% decrease in elective surgery [3, 4]. This dramatically reduced the learning opportunities for residents and young surgeons.

This article analyzes the surgical experience acquired during the last year of Ear, Nose and Throat (ENT) residency by three trainees, comparing surgical activity during the outbreak with the one from the previous year. The aim is to assess the effect that the pandemic had on the training curve of residents in a surgical specialty.

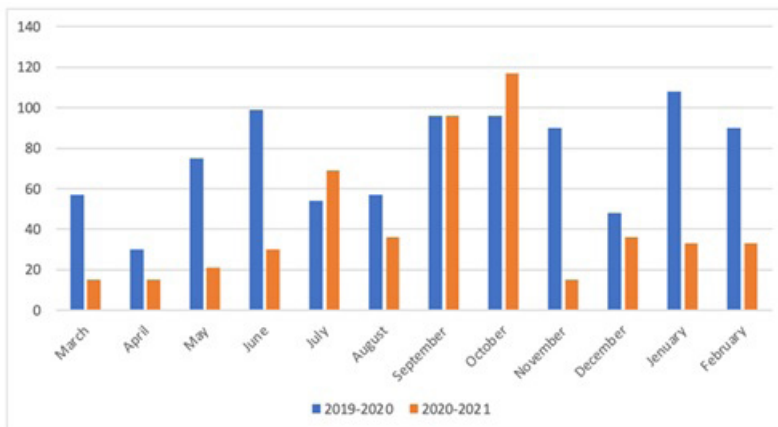
### 3. Materials and Methods

A retrospective review of the number and type of surgical activities performed by three senior residents in an ENT department of a tertiary care referral center in northern Italy was carried out. Data were retrieved from a dedicated electronic database, considering all the surgical interventions in which they participated, between March 2020 and March 2021. March 2020 was the starting point of the analysis because it corresponded to the first lockdown imposed by the Italian government, and the time span of one year was considered adequate to perform the analysis, even though the pandemic cannot be considered over yet. The number of operations performed, the role of the trainee and the type of surgery were recorded. Number of surgeries were stratified into one-month time intervals in order to assess the evolving trend during the ongoing epidemic. A comparison was carried out with the number of surgeries performed in the same period of the previous year by the former three senior trainees.

### 4. Results

Between March 2020 and March 2021, a total of 516 surgical procedures were performed by the senior trainees, while in the period between March 2019 and March 2020, 900 operations were carried out, reaching a decrease of -42.7% (-384 surgeries). The most significant reduction rate was observed between 1 November and 30 November 2020 (-83% compared to 2019), which corresponded to the epidemic peak in positive cases for COVID-19 in Lombardy during the second wave. Analyzing the period included between June and October 2020, the number of surgeries was stable compared to 2019 (348 vs 402) (Figure 1).

As regards the pathologies treated, the most significant reduction concerned pediatric cases (e.g. effusive otitis media, chronic tonsillitis, brevity of the lingual frenulum...) (- 69,9%), followed by inflammatory and functional sinonasal diseases (e.g. hypertrophy of the inferior turbinate, septal deviation, chronic rhinosinusitis...) (- 59,9%) and finally pathologies with malignant potential (e.g. thyroid nodules, pleomorphic adenoma of the parotid...) (- 54%) (Table 1). As regard the role of the trainee during the surgical intervention, surgeries performed by the senior residents as first operators were 283 in the year 2019-2020 and 168 in the year 2020-2021, with a reduction of - 40,6 %. Surgeries performed as first assistant were 617 in the year 2019-2020 and 348 in the year 2020-2021, with a reduction of - 43,6 % (Table 2).



**Figure 1:** Comparison between the number of surgeries performed by trainees in the period between March 2019 and March 2020 and in the period of the COVID-19 pandemic (01 March 2020 - 01 March 2021)

**Table 1:** Comparison between March 2019 – 2020 and March 2020 – 2021 regarding the number of surgeries performed according to the pathology treated

	March 2019 -2020	March 2020 -2021	Percentage
Pediatric pathologies	233	70	-69,90%
Benign pathologies	224	90	-59,90%
Potential malignant pathologies	166	76	-54%

**Table 2:** Comparison between March 2019 – 2020 and March 2020 – 2021 regarding the number of surgeries performed according to the role of the senior resident (first operator vs first assistant)

	March 2020 -2021	March 2019 -2020	Percentage
First operator	168	283	- 40,60%
First assistant	348	617	- 43,60%

## 5. Discussion

Italy was the first European country affected by the COVID-19 outbreak at the end of February 2020. Since then, hospital provisions progressively suspended elective and deferrable surgical activities, in order to properly manage healthcare resources to face the pandemic.

It soon became clear how the profound reorganization of the hospital activity would have impacted on the training of residents in all specialties. A drastic reduction in the number of surgeries performed was noticed, up to 50-90% considering elective procedures. Comparing the last year's surgery data with those of the previous year, there was a 43.6% reduction in operations with trainees as secondary operative surgeon and a 40.6% reduction as primary operative surgeon. The present study confirms the considerable decrease in surgeries performed as first operator and first assistant by three senior residents in a ENT referral center. This loss of practical experience creates, in a future perspective, important problems in achieving adequate surgical experience at the end of the residency training, with potential risk for future patients. Moreover, at the end of the pandemic, a high number of non-performed surgeries for elective conditions will come to attention, with less skilled surgeon able to carry them out.

To make up for the lack of surgical training, various initiatives have been adopted during the pandemic: webinars, the use of the dissection theaters [5] and the spread of simulators to learn practical skills [6]. The traditional training can therefore find an aid in new forms of learning which help to maintain the adequacy of acquiring surgical expertise. Pending the spread of the Covid-19 vaccine to the entire population and the achievement of herd immunity, a prospective approach to recover the losses in surgical training could be to increase the number of surgeries in parallel with the decrease in the numbers of contagions during the following months. A useful initiative for the trainees would also be to perform a greater number of operations as the first operator under the guidance of the more experienced surgeons, in order to ease and speed up the training process.

## 6. Conclusion

The pandemic has imposed dramatic changes regarding both the society and the healthcare system. The training of young doctors has been disrupted and residents might have suffered the greatest damage concerning the acquisition of surgical expertise. Consider-

ing that the pandemic cannot be considered over yet, it is necessary to put effort in maintaining an adequate level of practical training based on the concept that "if there is no training today, there will be no surgeon's tomorrow" [7]. Therefore, the implementation of the dissection courses and the use of simulators have to be encouraged as much as possible.

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