

## Short Communication

**Emerging challenges and possible strategies in maxillo-facial and oral surgery during the COVID-19 pandemic**Mattia Di Bartolomeo<sup>1)</sup>, Arrigo Pellacani<sup>1)</sup>, Sara Negrello<sup>2)</sup>, Luigi Chiarini<sup>3)</sup>, and Alexandre Anesi<sup>3)</sup><sup>1)</sup> Unit of Dentistry and Maxillo-Facial Surgery, University of Verona, Verona, Italy<sup>2)</sup> Cranio-Maxillo-Facial Surgery Unit, University Hospital of Modena, Modena, Italy<sup>3)</sup> Cranio-Maxillo-Facial Unit and Biomaterials Laboratory, Department of Medical and Surgical Sciences for Children & Adults, University of Modena and Reggio Emilia, Modena, Italy

(Received May 6, 2020; Accepted July 13, 2020)

**Abstract:** The Coronavirus disease 2019 (COVID-19) pandemic suddenly took the world by storm and Italy was one of the hardest hit countries. Maxillo-facial surgery and dentistry procedures had to be significantly reorganized, since they are considered high-risk procedures. Protocols had to be changed and interdepartmental cooperation was put in place to plan surgical interventions and maintain high standards. Various improvements have been made to prevent and reduce the risks of spreading the infection. Even if the situation seems to have improved, being unprepared is not an option. In this paper the experience gained during these months has been shared and possible future challenges has been highlighted, suggesting practical adjustments based also on new guidelines and recommendations.

Keywords: COVID-19, dentistry, maxillofacial, oral surgery, telemedicine

**Introduction**

To date, Italy is the fourth European country and the seventh country worldwide with the highest number of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection cases. The whole country has been in lockdown for months. Together with Lombardy, Emilia Romagna is among those regions most affected by the Coronavirus disease 2019 (COVID-19) emergency. In this scenario, the present paper contributes to the literature by sharing the experience of the management of this situation, highlighting some of the critical points in the immediate and long-term future, and providing some insights on future strategies that could be applied.

**Challenges and strategies**

Due to the nature of this paper, it was granted an exemption by the Institutional Review Board of the University Hospital of Modena, Italy. All procedures performed involving human participants were in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

In terms of optimizing resources, the first hospital measures are as follows:

- One of the two operating rooms (OR) areas was used as a supplementary intensive care unit (ICU).
- Elective surgical activities of all specialties were suspended indefinitely. The OR schedule was collegially discussed weekly with all the surgical departments involved. All of them had to carefully evaluate which patients were a priority. Any extra request had to be decided in cooperation with the head anesthesiologist and with the OR head nurse, after checking the availability of the OR and of the staff required.
- Outpatient clinic activity was limited to the necessary postoperative controls. Any other visit or surgery that was not considered urgent

was postponed.

- Healthcare professionals were equipped with adequate personal protection equipment (PPE). The outpatient and inpatient environments were sanitized after each visit and procedure.
  - People's journeys were limited to necessary ones only. Therefore, all of the activities had to be organized in order to limit the trips of those who come to Modena from all over the country. Moreover, the regional telehealth project SOLE (SanitàOnLinE, "Health-care online system") of Emilia Romagna has helped the cooperation between general practitioners (GPs) and hospital doctors to discuss and triage patients' conditions. Some new patients have contacted the Cranio-Maxillo-Facial Surgery Department in Modena because they had a diagnosis of oral cancer, documented by a histological report. Clinical staging and imaging were performed in the patient's district or within 2 weeks in Modena without hospitalization. Once patients and family members entered the region's boundaries, they returned home only after hospital discharge, and after complying with quarantine requirements.
  - People's movements have been reduced to a minimum. Therefore, all the health checks and activities have been organized in such a way as to limit the necessary number of trips from distant districts to the hospital.
  - Rules for visiting patients have been implemented. Friends/family members must wear a mask and visitation hours were restricted to 2-hour periods. Postoperative protocols have been adjusted.
  - With the epidemic ongoing, a preoperative protocol has been established for all patients, including a mandatory nasopharyngeal swab to be performed a couple of days before surgery to detect SARS-CoV-2. The serological exam to identify antibodies against SARS-CoV2 was not mandatory, but it was also performed. In the postoperative period, there was a specific follow up for the patients, which required isolation and further investigation if they showed COVID symptoms or if they came in contact with someone who was infected with COVID. Otherwise, no further PCR swabs were scheduled. Patients were also informed in detail about the risks of undergoing surgical procedures in a non-COVID free hospital.
  - The hospital provided a psychological consultation service, in order to help healthcare professionals in managing this stressful situation.
- The use of telehealth strategies has been a key point to manage the patients in a number of ways:
- The regional project SOLE allowed a direct contact-line with GPs, both for triaging and at hospital discharge.
  - Radiological exams performed in the hospitals of the whole province were accessible from the Modena hospital and all emergency departments of the province had the possibility of teleconsultation, which proved especially useful in treatment of traumatology cases.
  - Those who had an outpatient appointment were individually contacted by a member of the medical team, who by telephone inquired about the urgency of the visit and rescheduled it.
  - For follow-up of head and neck cancer patients, reports or zipped CT/MRI images were sent to the Cranio-Maxillo-Facial Surgery Department by e-mail. A telephone consultation was made: if a patient had a significant problem, a clinic visit was scheduled.

From an operative point of view, the time on the surgical table did not

Correspondence to Dr. Alexandre Anesi, Cranio-Maxillo-Facial Unit and Biomaterials Laboratory, Department of Medical and Surgical Sciences for Children & Adults, University of Modena and Reggio Emilia, 41124 Modena, via del Pozzo 71, Modena (MO), Italy  
Fax: +39-059-422-2454 E-mail: alexandre.anesi@unimore.it

doi.org/10.2334/josnusd.20-0235

DN/JST.JSTAGE/josnusd/20-0235

change. On the contrary, the overall surgical times were prolonged, due to numerous precautions being applied, such as:

- The dressing of appropriate PPE before entering the OR and the careful removal of these devices at the end of the surgery increased the change-over time.
- The thorough sanitization of ORs between one intervention and the next.

Therefore, the total change-over time increased by 40 minutes on average. Furthermore, in major oncological interventions the discomfort caused by the PPE required more frequent changes among the members of the surgical team.

The Cranio-Maxillo-Facial Surgery Department focused its attentions on oncologic and trauma care.

In fact, while the whole of Italy has been in lockdown since March 11, 2020, the management of head and neck cancer patients has become a considerable challenge. The biggest difficulties lie in:

- The organization of the necessary pre-operative exams. Efforts were made to schedule multiple exams within a few days. In this way, the time that these frail patients have to spend in the hospital has been limited.
- In terms of immediate postoperative care, in a normal scenario, many of our patients with major resective-reconstructive intervention would have spent the first post-operative night in the ICU. Right now, this is not possible. Close collaboration between the surgical and anesthetic providers ensured patients a safe and protected recovery from anesthesia. Patients remained under observation in the OR for longer than normal, before coming back to the ward.

On the trauma care side, while many people stay at home and the hashtag #restoacasa (#I'mstayingathome) is trending, maxillo-facial fractures still occur in the domestic environment. Luckily, it was still possible to provide patients with surgical intervention within a short time, with the possibility to request an OR for urgent trauma cases. Therefore, trauma patients and malignant tumors are nowadays the top priority. A flexible approach to new cases was taken into consideration at the same time. For example, in the same week two young children had to be admitted to the OR: a 3-year old girl due to a wide ameloblastoma (histologically benign but locally aggressive), and a 1-year old girl with a suspected peri-orbital infection who had to undergo an incisional biopsy to exclude a malignancy. A 37-year-old woman with a large, bleeding vascular lesion (solitary fibrous tumor) in the paranasal sinuses had to be treated within a week.

## Discussion

To manage maxillo-facial and oral surgery during the COVID-19 pandemic many clinical management issues need to be further addressed.

A clear and continuously updated classification of the surgery risk must be provided to all the healthcare personnel who manage the oral and maxillo-facial areas. It has to be remembered that the first doctor who died from COVID-19 was an otorhinolaryngologist and that one of the doctors who first gave the alarm, and then died from COVID-19, was an ophthalmologist. A possibility might be the modification of preoperative and pre-visit protocols, with the introduction of a self-made obligatory intraoral and intranasal disinfection for patients. For example, it has been proved that povidone-iodine disinfectant was extremely effective in vitro against other coronaviruses and this option has to be considered [1].

Recommendations about surgical procedures in every area are necessary, such as the ones that have been released by the Japan Surgical Society (<https://www.jssoc.or.jp/aboutus/coronavirus/info20200402.html>) that were similar in some respects to those here described [2]. Dentistry and oral surgery are also high-risk categories and clear guidelines are mandatory as well. A step toward this goal has been made by the American Dental Association, which published some helpful recommendations and decision-making tools on the management of dental emergencies (<https://www.coronavirus.kdheks.gov/DocumentCenter/View/853/ADA-Interim-Guidance-for-Management-of-Emergency-and-Urgent-Dental-Care-PDF-4-15-20>).

While it is clear that droplets and aerosols originating from the oral and nasal mucosa are definitely a risk factor, at the same time it has been shown that while a nasopharyngeal swab test might give a negative result, SARS-CoV-2 can still persist in tears [3]. Indeed, some attempts in creat-

ing guidelines and recommendations have been made but the situation is constantly changing and what today seems the correct practice, might the following day already be considered old [4,5].

Guidelines for the use of certain surgical instruments also need to be updated. In minimizing aerosolization of droplets, the scalpel has been shown to be more effective than monopolar cautery; bipolar cautery is most effective on the lowest possible power; piezosurgical devices are preferable over rotatory instruments; powerful suction is useful when irrigation is needed [4,6]. All of these suggestions are useful but need more solid scientific foundations. A good solution would be an ongoing information exchange with manufacturers, in order to provide some practical adjustments that can be readily applied in the daily clinical practice.

To lower the risk of infection and to rationalize the resources such as the PPE, it has been suggested to limit the number of staff in the OR and during outpatient procedures to the minimum required, thus creating some difficulties in training residents [7]. Therefore, the use of cameras and teleteaching should be encouraged and implemented to maintain high standards [8].

While teleteaching can improve the residents' learning curve, telemedicine could be a tool to take care of patients more safely. The fields of application of telemedicine are multiple: in the first management of maxillofacial traumas, in teleradiology, in follow-up visits and numerous others [8-13]. Another useful application might be the administration of a survey before the visit, in order to better focus the attention on the points considered critical by the patient during the visit [14,15]. There is considerable room for improvement and action should be taken in this direction.

The development of telemedicine systems must be done hand in hand with the reorganization and modernization of territorial medicine networks. The goal has to be an integrated organization, with close collaboration between hospital doctors and general practitioners. A first test will be the probable increase in patients with trauma due to the imminent arrival of the summer and the easing of restrictive measures. A good information exchange network would speed up and improve the first consultation, create a safer environment for healthcare professionals, and help general practitioners in managing postoperative care.

## Acknowledgments

The authors thank Dr. Debora Bortolotti for English language editing.

## Conflict of Interest

The authors declare no conflict of interest.

## References

1. Kirk-Bayley J, Combes J, Sunkaraneni S, Challacombe S (2020) The use of povidone iodine nasal spray and mouthwash during the current COVID-19 pandemic may reduce cross infection and protect healthcare workers. SSRN Electron J, doi.org/10.2139/ssrn.3563092.
2. Watanabe M (2020) The COVID-19 pandemic in Japan. *Surgery Today*, May 12, doi.org/10.1007/s00595-020-02033-3.
3. Colavita F, Lapa D, Carletti F, Lalle E, Bordini L, Marsella P et al. (2020) SARS-CoV-2 isolation from ocular secretions of a patient with COVID-19 in Italy with prolonged viral RNA detection. *Ann Intern Med*, Apr 17, doi.org/10.7326/M20-1176.
4. Zimmermann M, Nkenke E (2020) Approaches to the management of patients in oral and maxillofacial surgery during COVID-19 pandemic. *J Cranio-Maxillofacial Surg*, Apr 4, doi.org/10.1016/j.jcms.2020.03.011.
5. The French Society of Stomatology, Maxillo-Facial Surgery and Oral Surgery (SFSC-MFCO) (2020) Practitioners specialized in oral health and coronavirus disease 2019: professional guidelines from the French society of stomatology, maxillofacial surgery and oral surgery, to form a common front against the infectious risk. *J Stomatol Oral Maxillofac Surg* 121, 155-158.
6. Zeng L, Su T, Huang L (2020) Strategic plan for management in oral and maxillofacial surgery during COVID-19 epidemic. *Oral Oncol*, Apr 11, doi.org/10.1016/j.oraloncology.2020.104715.
7. Edwards SP, Kasten S, Nelson C, Elner V, McKean E (2020) Maxillofacial trauma management during COVID-19: multidisciplinary recommendations. *Facial Plast Surg Aesthetic Med*, Apr 7, doi.org/10.1089/fpsam.2020.0158.
8. Roccia F, Spada MC, Milani B, Berrone S (2005) Telemedicine in maxillofacial trauma: a 2-year clinical experience. *J Oral Maxillofac Surg* 63, 1101-1105, Aug.
9. Aziz SR, Ziccardi VB (2009) Telemedicine using smartphones for oral and maxillofacial surgery consultation, communication, and treatment planning. *J Oral Maxillofac Surg* 67, 2505-2509.
10. Salazar-Fernandez CI, Herce J, Garcia-Palma A, Delgado J, Martín JF, Soto T (2012) Telemedicine as an effective tool for the management of temporomandibular joint disorders. *J Oral Maxillofac Surg* 70, 295-301.
11. Bruccoli M, Boffano P, Franchi S, Pezzana A, Baragiotta N, Beneci A (2019) The use of teleradiology for triaging of maxillofacial trauma. *J Cranio-Maxillofacial Surg* 47, 1535-1541.

12. Ambroise B, Benateau H, Garmi R, Hauchard K, Prevost R, Veyssi re A (2019) The role of telemedicine in the management of maxillofacial trauma in emergency departments - preliminary results. *J Stomatol Oral Maxillofac Surg* 120, 95-98.
13. Tel A, Bortuzzo F, Pascolo P, Costa F, Baldi D, Sembronio S et al. (2020) Maxillofacial Surgery 5.0: a new paradigm in telemedicine for distance surgery, remote assistance and webinar. *Minerva Stomatol*, Mar 20, doi.org/10.23736/S0026-4970.20.04274-0.
14. Rogers SN, Alvear A, Anesi A, Babin E, Balik A, Batstone M et al. (2019) Variations in concerns reported on the patient concerns inventory in patients with head and neck cancer from different health settings across the world. *Head Neck* 42, 498-512.
15. Kanas A, Rogers SN (2020) The role of the Head and Neck cancer-specific Patient Concerns Inventory (PCI-HN) in telephone consultations during the COVID-19 pandemic. *Br J Oral Maxillofac Surg* 58, 497-499.