



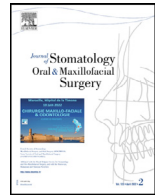
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Covid

COVID-19 contamination among maxillofacial surgeons and impact in Brazilian public center



Dear Editor,

In Brazil, maxillofacial traumas are among the main causes of hospitalization in public service [1]. Commonly, maxillofacial surgeons are responsible for meeting this demand. In general, these professionals are in direct contact with the patient's fluids, such as saliva, which is a potential virus transmission vehicle with the positivity of 91.8% to SARS-CoV-2 [2]. Besides, ACE2 receptors present a wide organic distribution and are highly expressed in the oral cavity [3]. Therefore, not only have new items of personal protective equipment (PPE) been added to dentists' routine but alternative preprocedural mouthwashes, reduction of surgical time, and minimization of aerosol production also have been recommended [4]. Despite that, a high rate of contamination has been reported among professionals that healthcare workers at hospitals [5]. In this letter, we share our experience at a Northeast Brazilian center of Maxillofacial Surgery.

The present sector is linked to HUSE (*Hospital de Urgência de Sergipe*). This great health center is in the state of Sergipe, being the biggest and the main public hospital of local reference, providing quality service to the population for 40 years even for demands from surrounding states. Currently, the hospital covers all areas of health and comprises a specialized service in maxillofacial surgery composed of 23 maxillofacial surgeons. According to data collected from 2019, the team performs an average number of 1728 procedures annually, including highly complex interventions such as plastic surgeries, fractures, orofacial and deep skin tissues of the head and neck infections, odontogenic cysts, tumors, and other neoplasms of the stomatognathic system, as well as urgency and emergency care. With the pandemic advance, patients with stable clinical conditions were discharged, new ICU beds were created and workers either within risk groups or with medical history of comorbidities were removed. As result, the team of surgeons decreased by 13% (3/23) in (Table 1).

Though initially the demand for the service significantly reduced compared to data from previous periods due to social distancing measures, the rates of maxillofacial traumas by accidents increased compared to the first period of 2020 along with the relaxation of them, resulting in work overload for the remaining professionals. Furthermore, with the suspension of elective treatment, multiple postponed procedures evolved into severe odontogenic infections. Consequently, surgeons also felt the overwhelming impact of the restrained demand that was accumulated over time.

The arduous working hours have predisposed the team to greater chances of viral exposure. Although the compliance with biosafety standards described in the literature [4], an

increasing number of COVID-19 cases was reported over the period (Table 1). In this work, the mean age of the participants, considering only the team that remained in activity from the beginning of the outbreak until now (20/23) was $46,05 \pm 5,9$ years (ranging from 38 to 60 years), and the male/female ratio was 9:1. Curiously, other services of diagnostic relevance have faced a significant decrease in their daily demand, directly impacting the patient follow-up, especially malignant lesions, as exposed by some colleagues [6].

All contaminated professionals (15/20; 75%) were released from duties temporarily, which led to a great lag in patient care and a heavy workload for colleagues. In general, the oral and maxillofacial surgeons showed mild to moderate symptoms. Unlike other studies that found low COVID-19 occupational risk [7], the high rate of contamination by healthcare professionals observed in ours, including 04 cases of reinfection by COVID-19 listed until the moment (Table 1), may be attributed to the series of misunderstandings and negligence by hospital management, along with government sectors which initially underestimated the seriousness of the current health crisis and politicized the pandemic before the potential risk of collapse of the health system. Likewise, other key points deserve to be highlighted such as long work shifts, absence of professional training (except for those working in the direct care of COVID-19 patients), shortfall of PPE, delays in testing and analysis procedures, underreporting of cases, unhealthy environment, inadequate facilities for separation and decontamination, as well as sharing of the emergency room with other healthcare professionals and their patients, thus favoring local agglomeration. Finally, some maxillofacial traumas required prompt surgical intervention to avoid the death of patients and, as a result, the diagnosis of COVID-19 only could be ascertained in the postoperative period. Therefore, the experience of our service serves as a warning to the competent authorities regarding the impact caused by the collapse of the health system and the need for community awareness.

Although history of reinfection by COVID-19 is still controversial, some authors have defended such a possibility. Tillett et al. (2020)[8] demonstrated through genomic analysis that the same individual may be exposed to new infection by SARS-CoV-2 suggesting that the reinfection process is generated by a genetic strain different than the first, as observed in a 25-year-old man two months following primary infection. Additionally, psychological conditions deserve careful consideration since anxiety and fear of developing severe symptoms of the disease as well as transmitting the virus to family members have been a major concern of professionals [9].

Currently, Sergipe is among the states of Brazil with the highest rates of contamination by COVID-19 accounting for 202,000

Table 1
General characteristics of oral and maxillofacial surgeons affected or not by COVID-19 in a reference center in the northeast of Brazil until the data collection.

Case	Age/Sex	COVID-19 Test Results	Onset of Symptoms	Main Clinical Manifestations	Diagnostic Methods	History of Reinfection
#1	47 y/M	Positive	3–5 days	Fever, cough, dyspnea, headache, myalgia, anosmia, ageusia, intestinal complications	PCR/ nasopharyngeal Swab, Anti COVID-19 IgG/IgM Rapid Test	Yes (Two months after first record)
#2	45 y/M	Positive	–	asymptomatic	IgM and IgG (chemiluminescence)	No
#3	51 y/F	Positive	3–5 days	Fever, cough, dyspnea, headache, myalgia, intestinal complications, coryza.	PCR/ nasopharyngeal Swab	No
#4	52 y/M	Positive	3–5 days	Cough, anosmia, hypogeusia, headache, myalgia	PCR/ nasopharyngeal Swab	No
#5	45 y/M	Positive	3–5 days	Fever, cough, anosmia, ageusia, myalgia	PCR/ nasopharyngeal Swab	Yes (Five months after first record)
#6	45 y/M	Negative	–	–	PCR/ nasopharyngeal Swab	–
#7	46 y/M	Positive	5–7 days	Cough, anosmia, ageusia	PCR/ nasopharyngeal Swab	No
#8	47 y/M	Positive	3–5 days	Fever, cough, headache, muscle weakness	PCR/ nasopharyngeal Swab	Yes (Four months after first record)
#9	38 y/M	Positive	3–5 days	Myalgia, sore throat, intestinal complications	PCR/ nasopharyngeal Swab	No
#10	46 y/M	Positive	3–5 days	Fever, cough, coryza, dyspnea, anosmia, myalgia, ageusia, headache, muscle weakness, myalgia, intestinal complications	PCR/ nasopharyngeal Swab	No
#11	41 y/M	Positive	–	asymptomatic	PCR/ nasopharyngeal Swab	No
#12	61 y/M ^(a)	–	–	–	–	–
#13	67 y/M ^(a)	–	–	–	–	–
#14	53 y/M	Positive	5–7 days	Fever, cough, headache, myalgia, anosmia, ageusia, intestinal complications	Anti-COVID-19 IgG/IgM Rapid Test	No
#15	47 y/M ^(a)	–	–	–	–	–
#16	46 y/M	Positive	3–5 days	Fever, cough, dyspnea, headache, myalgia, anosmia, ageusia	PCR/ nasopharyngeal Swab	No
#17	56 y/M	Negative	–	–	PCR/ nasopharyngeal Swab	–
#18	42 y/M	Positive	5–7 days	Fever, cough, myalgia, anosmia, ageusia	PCR/ nasopharyngeal Swab	Yes (Two months after first record)
#19	40 y/M	Negative	–	–	PCR/ nasopharyngeal Swab	–
#20	38 y/M	Negative	–	–	PCR/ nasopharyngeal Swab	–
#21	39 y/M	Positive	5–7 days	anosmia, ageusia	PCR/ nasopharyngeal Swab	No
#22	44 y/F	Negative	–	–	PCR/ nasopharyngeal Swab	–
#23	60 y/M	Positive	5–7 days	anosmia, ageusia	PCR/ nasopharyngeal Swab	No

M: male; F: female; y: years; ^(a) – Professional on leave due to the risk of contamination by COVID-19 (systemic impairment - **diabetes mellitus and hypertension**); (–) – Not evaluated. Note: All data presented in the table were obtained retrospectively through a review of the medical records in the archives of the State Health Department.

confirmed cases and 4274 deaths until April 30th, 2021 [10]. Alongside, a gradual increase in the number of hospital admissions with respiratory failure has been observed and an eventual collapse of the healthcare system should not be ruled out yet.

The continuity of the HUSE activities is crucial to ensure the quality of the oral medicine and oral surgery services provided to the population. While the results of the initial vaccination are expected, preserving the physical integrity of healthcare workers is of utmost importance, mainly during the current growth phase of COVID-19 cases registered throughout the Brazilian territory.

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References

- Leles JL, dos Santos EJ, Jorge FD, da Silva ET, Leles CR. Risk factors for maxillofacial injuries in a Brazilian emergency hospital sample. *J Appl Oral Sci: revista FOB* 2010;18(1):23–9. doi: [10.1590/s1678-77572010000100006](https://doi.org/10.1590/s1678-77572010000100006).
- To KK, Tsang OT, Yip CC, et al. Consistent detection of 2019 novel coronavirus in saliva. *Clin Infect Dis* 2020;71(15):841–3. doi: [10.1093/cid/ciaa149](https://doi.org/10.1093/cid/ciaa149).
- Wu J, Deng W, Li S, Yang X. Advances in research on ACE2 as a receptor for 2019-nCoV. *Cell Mol Life Sci* 2020;1–14. doi: [10.1007/s00018-020-03611-x](https://doi.org/10.1007/s00018-020-03611-x).
- Riva FMG, Kerawala C. Maxillofacial services in the COVID-19 (SARS-CoV-2) pandemic - early lessons from the Italian experience. *Br J Oral Maxillofac Surg* 2020;58(7):744–5. doi: [10.1016/j.bjoms.2020.04.049](https://doi.org/10.1016/j.bjoms.2020.04.049).
- Cotrin P, Moura W, Gambardela-Tkacz CM, et al. Healthcare workers in Brazil during the COVID-19 pandemic: a cross-sectional online survey. *Inquiry: J Med Care Org Provision Financ* 2020;57:46958020963711. doi: [10.1177/0046958020963711](https://doi.org/10.1177/0046958020963711).
- Gomes APN, Schuch LF, Tarquinio SBC, Etges A, Vasconcelos ACU. Reduced demand for oral diagnosis during COVID-19: a Brazilian center experience. *Oral Dis* 2020;1210.1111/odi.13547. doi: [10.1111/odi.13547](https://doi.org/10.1111/odi.13547).
- Estrich CG, Mikkelsen M, Morrissey R, et al. Estimating COVID-19 prevalence and infection control practices among US dentists. *J Am Dent Assoc* 2020;151(11):815–24. doi: [10.1016/j.adaj.2020.09.005](https://doi.org/10.1016/j.adaj.2020.09.005).
- Tillett RL, Sevinsky JR, Hartley PD. Genomic evidence for reinfection with SARS-CoV-2: a case study. *Lancet Infect Dis* 2020. doi: [10.1016/S1473-3099\(20\)30764-7](https://doi.org/10.1016/S1473-3099(20)30764-7).
- Suryakumari VBP, Pallavi Reddy Y, Yadav SS, Doshi D, Surekha Reddy V. Assessing fear and anxiety of corona virus among dental practitioners. *Disaster Med Public Health Prep* 2020;1–6. doi: [10.1017/dmp.2020.350](https://doi.org/10.1017/dmp.2020.350).
- Epidemiological bulletin for update on COVID-19. Public Health Emergency Operations Center [accessed on May 1, 2021]. available in: <https://todoscontraocoronavirus.net.br/>

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