Journal of Dental Reports

Bollen C, 2021-J Dent Rep
Editorial

The impact of COVID-19 on Implant Dentistry

Curd Bollen*

Keywords: COVID-19; SARS-CoV-2; Implant dentistry.

College of Medicine & Dentistry, University of Ulster, Birmingham, UK

***Corresponding Author:** Bollen C, College of Medicine & Dentistry, University of Ulster, Birmingham, UK.

Accepted Date: 09-16-2021
Published Date: 10-15-2021

Editorial

The actual pandemic caused by the highly virulent SARS-CoV-2 virus has an enormous impact on daily dental services and therefore changed the future approach towards dentistry. The corona virus became a game changer in the environmental, clinical, psychological and economical field [1]. Several new recommendations were introduced to create a safer workplace for both, patients and clinicians.

Environmental impact

Pre selection and triaging will remain mandatory in the future. Patients with symptoms of a COVID-19 infection should be refused from entering an implant clinic. This can be assessed by a strict door policy: a simple questionnaire in combination with an infrared temperature check [2]. Surgical procedures should always be performed under maximal aseptic conditions. Preparation of the surgical room before and after the treatment, along with the handling of all instruments, should be carried out up to the highest standards.

The general advice here is to treat all your patients the same way you prefer to be treated yourself. The surgical theatre should be disinfected by using commercial UV-C (ultraviolet-C) beams. UV-C beams with a wavelength of 254nm have a germicidal effect on bacteria and viruses [3]. The equipment cans these germs in ambient air up to 90%. Both the US Food and Drug Administration (FDA) and the World Health Organization (WHO) advise this approach to be carried out for the sterilization of the ambient air in treatment rooms.

Clinical impact

Here, the focus should be on reducing the number of appointments, avoiding specific treatment options, applying extra tools and implementing new techniques.

Citation: Bollen C. The impact of COVID-19 on Implant Dentistry: 13–36 months follow-up -A case series. J Dent Rep. 2021;2(1):1-4.
DOI: https://doi.org/10.37191/Mapsci-JDR-2(1)-013

1. Reduce the number of appointments.
   The more contact moments, the higher the risk of disease transmission. Reducing the number of appointments is not always possible, but with a different approach, a large reduction in the overall contact time can be obtained.
   A. Non-submerged techniques: when a 1-stage technique is used to place the implant, there is no need for the second surgical appointment to uncover the implant. The use of tissue-level implants offers this advantage. Eposito and co-workers proved that there is no difference in the final outcome between a 1-stage versus a 2-stage implant procedure [4].
   B. Avoiding compromised patients: severely immune-compromised patients as well as those patients taking (several) anticoagulants can present more complications and require more attention and postoperative care. In pandemic times, this means extra and unnecessary appointments [5]. It is therefore advised to reschedule such patients until after a pandemic or refer them to a hospital setting.
   C. Full digital workflow: using an intraoral scanner has several advantages. Not only are fewer visits scheduled, but the chance of cross-infection is strongly reduced. During impression taking, blood remnants are often left around the impression copings, especially if the implants were uncovered right before the final impression. Using a scanner avoids contact with blood and any remnants [6].
2. Avoid specific treatment options.
   Just like ultrasonic scalers are not recommended to be used in periodontal treatments, alternative approaches have been advised in implant dentistry [7].
   A. Radiology: Extra-oral radiographs have a lower risk of infection in comparison to intraoral techniques. Therefore, OPG and CBCT are the preferred imaging techniques during a viral pandemic, since there is no contact with saliva [8]. This idea is of course not in accordance to the ALARA principle [9]. A good balance between infection risk and X-ray overexposure should be taken into consideration.
   B. Piezosurgery: It involves in the generation of aerosols. Therefore, the use of this equipment is not advised. The same is applicable to water-cooled Nd-YAG lasers.
   C. Sinus lift: When local bone augmentation is indicated in the posterior maxilla, a closed technique is preferred, because for the lateral window technique, high speed water coolant or piezosurgical equipment has to be applied, again creating the to avoid aerosols [10].
3. Apply extra tools.
   A. Magnification: The use of loops or microscopes ensures a distance is maintained between the practitioner and the patient. Although this distance is below the advised six feet of social distancing, it still offers more distance, which contributes to a safer workplace [11].

Citation: Bollen C. The impact of COVID-19 on Implant Dentistry: 13–36 months follow-up -A case series. J Dent Rep. 2021;2(1):1-4.
DOI: https://doi.org/10.37191/Mapsci-JDR-2(1)-013

B. Rinsing: Before intraoral dental procedures the patient has to rinse thoroughly with a disinfectant. Literature has demonstrated that H_2O_2 (0.5%) and povidone-iodine/idopovidone (0.2%) are both effective against corona-virus particles. Chlorhexidine however, has no effect on this virus [12].
C. Coatings: Recent research reported that copper-alloy coatings reduce the survival of corona-virus to less than four hours. This technique can be applied in the future to coat instruments and surfaces for medical practices [13].

4. Implement new techniques.
   Most implant systems use high speed drilling (850-2000rpm), in combination with external water cooling. It was believed that low-speed drilling without cooling overheated the bone and lead to osteoblast degeneration. However, research has proven otherwise [14].
   A. Bicon®: the Bicon® implant system has been on the market for more than 30 years and is used with a slow speed drilling hand piece (50rpm) in the absence of coolant. Due to this approach a lot of extra bone can be harvested from the osteotomy [15].
   B. NobelBiocare® N1: similarly, this implant also requires slow speed drilling with the absence of a cooling mechanism. Unfortunately, there are no scientific studies yet to show the clinical outcomes of this approach.

Psychological impact

The psychological impact of COVID-19 is double sided: it plays a role for the patient as well as for the practitioner. Due to this pandemic and resulting lockdowns, the population was placed under extreme stress leading to general fear and anxiety. This overall insecurity often results in mental instability [16].

Nevertheless, patients are not the only ones in this situation. Surgeons are confronted with similar problems and additional challenges. To contend with these issues, they must try to maintain a healthy state of mind: survival stress, quality stress and organizational stress can all impact a dental practitioner's mental health. Furthermore, dental clinicians face the daily risk of infection due to their job [17]. At the moment it is the authors' opinion that not enough importance is being given to the psychological consequences of this pandemic and the resulting repeated lockdowns [18].

Economic impact

The economic impact of the pandemic also has two components: impact on the patients and impact on the clinicians. Both groups face financial insecurities, due to reduced income and rising expenses. For patients, this often leads to choosing personal care expenses over more expensive treatments (like implant supported rehabilitations), which are consequently postponed [19]. Dental practitioners on the other hand, are confronted with additional expenses that do not increase their income. Only rarely is the government willing to support those extra costs. This leads to a lack in return on investment and can cause huge financial problems for new or recently opened practices, or clinics with an unstable financial basis.

Citation: Bollen C. The impact of COVID-19 on Implant Dentistry: 13–36 months follow-up -A case series. J Dent Rep. 2021;2(1):1-4.
DOI: https://doi.org/10.37191/Mapsci-JDR-2(1)-013

References

1. Bollen C, Najmi Y, Almasri M (2021). Covid-19 and dental implants: impact and perspectives. Imp Dent Today 15 (1): 7-11.
2. Li LQ, Huang T, Wang YQ, Wang ZP, Liang Y, Huang TB, et al. COVID-19 patients' clinical characteristics, discharge rate, and fatality rate of meta-analysis. J Med Virol. 2020;92(6):577-83. PubMed | CrossRef
3. Hadi J, Dunowska M, Wu S, Brightwell G. Control measures for sars-cov-2: A review on light-based inactivation of single-stranded rna viruses. Pathogens. 2020;9(9):737. PubMed | CrossRef
4. Esposito M, Grusovin MG, Chew YS, Coulthard P, Worthington HV. Interventions for replacing missing teeth: 1-versus 2-stage implant placement. Cochrane Database Syst Rev. 2009(3). PubMed | CrossRef
5. Kumar D, Dey T. Treatment delays in oncology patients during COVID-19 pandemic: a perspective. J Glob Health. 2020;10(1). PubMed | CrossRef
6. Papi P, Di Murro B, Penna D, Pompa G. Digital prosthetic workflow during COVID-19 pandemic to limit infection risk in dental practice. Oral Dis. 2020. PubMed | CrossRef
7. Checchi V, Bellini P, Bencivenni D, Consolo U. COVID-19 dentistry-related aspects: a literature overview. Int Dent J. 2021. PubMed | CrossRef
8. KARACA B, BAYRAKDAR İ, ORHAN K. Dental radiographic procedures during COVID-19 outbreak and normalization period: recommendations on infection control. Epub 2020. PubMed | CrossRef
9. Bollen C, Najmi Y, Almasri M. COVID-19 and dental implants: impact and perspectives. Implant Dent. 2021.
10. Summers RB. A new concept in maxillary implant surgery: the osteotome technique. Compendium (Newtown, Pa.). 1994;15(2):152-4. PubMed
11. Friedman M, Mora AF, Schmidt R. Microscope-assisted precision dentistry. Compend Contin Educ Dent. (Jamesburg, NJ: 1995). 1999;20(8):723-8. PubMed |
12. Tarakji B. Reactivation of COVID-19–14 days from the onset of symptoms may not be enough to. J Infect.80(5):e14-7. PubMed | CrossRef
13. Poggio C, Colombo M, Arciola CR, Greggi T, Scribante A, Dagna A. Copper-alloy surfaces and cleaning regimens against the spread of SARS-CoV-2 in dentistry and orthopedics. From fomites to anti-infective nanocoatings. Materials. 2020;13(15):3244. PubMed | CrossRef
14. Kim SJ, Yoo J, Kim YS, Shin SW. Temperature change in pig rib bone during implant site preparation by low-speed drilling. J Appl Oral Sci. 2010;18:522-7. PubMed | CrossRef
15. Li WT, Li P, Piao MZ, Zhang F. Study on bone volume harvested from the implant sites with different methods. Beijing da xue xue bao. Yi xue ban= Beijing Da Xue Xue Bao Yi Xue Ban. 2020;52(1):103-6. PubMed | CrossRef
16. Skoda EM, Bäuerle A, Schweda A, Dörrie N, Musche V, Hetkamp M, et al. Severely increased generalized anxiety, but not COVID-19-related fear in individuals with mental illnesses: A population based cross-sectional study in Germany. Soc Psychiatry Psychiatr Epidemiol. 2020:0020764020960773. PubMed | CrossRef
17. Mijiritsky E, Hamama-Raz Y, Liu F, Datarkar AN, Mangani L, Caplan J, et al. Subjective overload and psychological distress among dentists during COVID-19. Int J Environ Res Public Health. 2020;17(14):5074. PubMed | CrossRef
18. Vergara-Buenaventura A, Chavez-Tuñon M, Castro-Ruiz C. The mental health consequences of coronavirus disease 2019 pandemic in dentistry. Disaster medicine and public health preparedness. 2020;14(6):e31-4. PubMed | CrossRef
19. Dahab M, Van Zandvoort K, Flasche S, Warsame A, Ratnayake R, Favas C, et al. COVID-19 control in low-income settings and displaced populations: what can realistically be done? Confl Health. 2020;14(1):1-6. PubMed | CrossRef

Citation: Bollen C. The impact of COVID-19 on Implant Dentistry: 13–36 months follow-up -A case series. J Dent Rep. 2021;2(1):1-4.
DOI: https://doi.org/10.37191/Mapsci-JDR-2(1)-013