THE MEDICAL SIDE OF DENTISTRY

Dear Colleagues,

the ongoing SARS-CoV-2 pandemic led to a public discussion about the necessity or expendability of dental procedures. As we already stated in our summary https://www.dr-troeltzsch.de/fileadmin/user_upload/dokumente/2020/2020_Troeltzschbrothers_Covid-19_Eng.pdf there will never be a time without SARS- CoV- 2. Therefore, it is of crucial importance to define the role of dentistry in public health and which dental procedures should be considered to be inevitable for the common good.

Dentistry consists of various specialties, including general dentistry, periodontology, prosthodontics, endodontics, pedodontics, orthodontics, oral medicine, oral radiology and oral and maxillofacial surgery. Combined, all specialties are meant to treat the entire stamtognathic sytem comprehensively. There is huge overlap between the various specialties and all of them are vital to provide comprehensive oral treatment. Those treatments include small cariological interventions, dental rehabilitation and even complete oral/dental rehabilitation.

A) Dental interventions

We would like to give some examples of the impact dental treatment or the lack thereof on the general health of the patient. This enumeration is only exemplary and does not claim to be complete. That is also true for the presented evidence. Many treatment modalities that are not particularly listed here can be allocated into one or more of the dressed fields.

1. Caries control, endodontics and oral surgery

Caries as such is defined as an infectious and contagious disease (https://www.ncbi.nlm.nih.gov/pubmed/17036539). Uncontrolled dental infections may lead to pain, acute exacerbation (i. e. abscesses) to potentially life threatening situations. Abscesses of dental origin are usually polymicrobial and thus combine the virulence factors of the pathogens (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3858730/).

Without adequate therapy further spread can be lethal (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1890536/; https://www.ncbi.nlm.nih.gov/pubmed/31240032; https://www.ncbi.nlm.nih.gov/pubmed/29980234; https://www.ncbi.nlm.nih.gov/books/NBK493149/), and even with therapy the morbidity is high.

The causal therapy of diseases based on tooth decay lies within the initial caries control and restorative dentistry, combined with endodontics if needed. In cases where tooth preservation is not possible the surgical removal is needed to prevent escalation.

Thus the medical necessity of these interventions is obvious.

2. Periodontology

Periodontal disease is defined as an inflammatory disease and thus its treatment is a medical intervention per se. Its prevalence is estimated as high as 45 percent of the adults in the United States (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4499526/). Without treatment the disease may lead to the loss of periodontal tissues and may induce inflammation as described under A1. Additionally, there is quite some evidence that an untreated periodontitis may aggravate other pathologic states, such as Diabetes and cardiovascular disease. Diabetes and periodontitis have a special negative interrelationship (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3228943/ ;https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3114608/), e. g. untreated periodontal disease may complicate the adjustment of the blood sugar levels and may lead to more diabetes related complications (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4499526/).

There is sufficient evidence to claim that an untreated periodontitis has negative effects on cardiovascular diseases and coronary heart disease (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6261003/; https://www.ncbi.nlm.nih.gov/pubmed/21405935). The association between periodontitis and cardiovascular diseases is discussed in a recent consensus report which was published in march 2020: Periodontitis and cardiovascular diseases (https://www.ncbi.nlm.nih.gov/pubmed/32011025). The report highlights the connection and aggravation of cardiovascular disease by uncontrolled periodontitis. Furthermore there seem to be connections to chronic kidney disease (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3084591/).

Hence, the multiple negative consequences of an interruption of periodontitis treatment protocols to the general health of the patients are obvious.

3. Restorative dentistry, implantology and conjugated surgical procedures

Knowledge about malnutrition caused by insufficient dentition is not new as this paper from 1984 demonstrates (https://www.ncbi.nlm.nih.gov/pubmed/6364777). Depending on the study the various negative effects of an impaired dentition on the different aspects of a healthy diet are clearly demonstrated although the data is quite heterogenous (https://www.ncbi.nlm.nih.gov/pubmed/25174947; https://www.ncbi.nlm.nih.gov/pubmed/11332523; https://www.ncbi.nlm.nih.gov/pubmed/12806483; https://www.ncbi.nlm.nih.gov/pubmed/29097121), an effect that should not happen especially in a pandemic situation where the health of the population should be kept at the highest possible level.

Interventional studies support these findings (https://www.ncbi.nlm.nih.gov/pubmed/25179444), and it is important to mention that dietary counselling plays an important role as well (https://www.ncbi.nlm.nih.gov/pubmed/30413041).

Additionally there is accumulating evidence that there are neurologic interactions between occlusal factors of the patients and e.g. the development and course of dementia (https://www.ncbi.nlm.nih.gov/pubmed/17908844) or related to the sense of balance (https://www.ncbi.nlm.nih.gov/pubmed/22855628).

As Prof. Dr. Dr. Grötz, the president of the DGI (german academy of implantology), stated in his interview at the 2nd of April 2020 (https://www.quintessenz-news.de/implantieren-in-zeiten-von-corona/), implantology and associated procedures are contribute to the oral rehabilitation of the patients and thus enables the health supporting dental restorative work.

The presented correlations clearly show the importance of restorative dental interventions for the wellbeing and nutritional health maintenance of the patient.

4. Routine checkups and pathologies of the oral mucosa

Oral medicine specialists contribute to the monitoring and prevention of oral mucosal pathologies. The point of these frequent and regular checkups is to detect any changes (benign and malignant) of the tissues and to biopsy the respective area at the best before oral cancer becomes invasive. To prevent the courses of the diseases mentioned and others that are not listed dental routine checkups have to be regarded as necessary.

The medical necessity of the maintenance of these checkups is so obvious that any further explanation seems redundant.

B) Consequences for dental treatments during the SARS-CoV-2 pandemic

From the information presented above it is obvious that the interruption of dental care is harmful to the general health of the population and should be avoided. However dental offices have to operate under special conditions during the pandemic as we demonstrated in our summary (https://www.dr-troeltzsch.de/fileadmin/user_upload/dokumente/2020/2020_Troeltzschbrothers_Covid-19_Eng.pdf), our hygiene rules (https://www.dr-troeltzsch.de/fileadmin/user_upload/dokumente/2020/2020_Hygiene_protocol_SARS-CoV-2.pdf) and our surgical mask guide (https://www.dr-troeltzsch.de/fileadmin/user_upload/dokumente/2020/2020_Removal_Reapplication_Surgical_Mask.pdf).

Furthermore, it is important to review instruments and techniques that are used for various procedures critically and to detect health hazards in treatment options which might be altered without the loss of process quality during the ongoing pandemic. As an example, hand instruments could be preferred to ultrasound operated devices in periodontal treatments and recalls.

The decision to perform or omit dental treatment should be made with respect to health hazards to the patient and the treatment team, the need for the treatment itself and after informed consent of the patient. There is no way to give general recommendations as each patient case is unique and both physical and psychological implications must be considered.

We compiled this summary to demonstrate the medical impact of dental interventions and the negative consequences the omission thereof may have on the general health of our patients. Stay safe!

Ansbach, 15th of April 2020
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