Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Editorial

Provision of continuous dental care for oral oncology patients during & after COVID-19 pandemic

With the dawn of 2020, an abstruse virus, SARS-CoV-2 challenged the health profession, and created havoc all over the world. According to recent published data, due to the unforeseen conditions of the pandemic, COVID-19 patients have been prioritized over other patients, unfortunately including cancer patients [1]. Oral cancer therapy at its various stages is intertwined with dental care which aims to improve and maintain oral hygiene in order to reduce the oral complications and enhance the patient's quality of life [2]. Dental care for these patients deals with eradication of foci of oral infection and prevention of potentially life threatening systemic infections of dental origin. A dentist's role also involves prevention and alleviation of pain in the oral cavity, advising and aiding in maintaining adequate nutrition and providing reconstruction or rehabilitation after surgical procedures [3].

Prior to oncotherapy, the dental team must assess the risk of oral disease, plan prosthetic treatments needed such as implants or obturators, extract teeth with questionable prognosis that may act as a focus of infection or are in areas prone to osteoradionecrosis, apart from counselling and motivating the patient for oral hygiene [4]. During oncotherapy, elective dental procedures should be avoided. Management is limited to treatment of acute dental problems and mollification of symptoms such as management of oral mucositis, xerostomia, trismus and opportunistic infections [5]. After cancer treatment, the dentist aims to help the patient manage the adverse effects, prevent or reduce the incidence of osteoradionecrosis secondary to radiation of jawbones, and ensure maintenance or enhancement of oral status [6]. Hence, a dentist plays multiple roles in palliative as well as therapeutic care, while also motivating the patient for improved oral hygiene.

However, due to the unprecedented circumstances, dental treatments have been suspended in various countries owing to the implication of saliva and aerosols in the spread of COVID-19 [7,8]. This has led to disruption of dental care provision to all patients, including those receiving oncotherapy, for whom it is indispensable.

Although face-to-face consultations are reduced during the pandemic, tele-dentistry can act as a means to avoid interruption in care. Dentists can provide support to patients undergoing radio and/or chemotherapy via telephone and where possible video calls [9]. Dentists must motivate and re-emphasize oral hygiene measures. (Table 1) Patients who are going to undergo oncotherapy should be informed about what to anticipate during oncology treatment (such as mucositis, xerostomia and possible dysgeusia), and actions that can be taken to extenuate these effects [10]. Patients should be counselled about the need to improve teeth mineralization before oral hygiene maneuvers become difficult to maintain owing to discomfort and the need to thwart the risk of caries that arises due to dry mouth. The importance of long-term follow-up also needs to be italicized, especially with respect to caries and osteoradionecrosis [5]. In case of any symptoms, dental practitioners can request photographs or radiographs, if needed to help in diagnosis and advise home care measures, where feasible [9]. Constant check-ups, counselling and support via tele-dentistry consultations can be provided, to maintain and improve overall well being of the patients and consequently, quality of life.

Moreover, in case the patient requires urgent treatment, the dentist can provide the same with a contingency plan (Table 2), while following all the necessary infection prevention and control procedures.

Table 1
Oral Hygiene Instructions for oral cancer patients.

MODE	EXAMPLES	CONSIDERATIONS/ADVICE
FLUORIDE TOOTHPASTE	Duraphat® 5000 toothpaste (for patients over 16 years), Duraphat® 2800 toothpaste (for patients over 10 years) BioXtra® Toothpaste, Biotene® Toothpaste The use of SLS free toothpastes may reduce the incidence of oral ulcers.	Prescription toothpaste Pea-sized amount for brushing
TOPICAL FLUORIDE	Fluoride gel using custom applicator trays or by brushing	Application for 5 min, after the usual tooth brushing. To ensure the teeth are well coated with fluoride, the excess gel/ toothpaste needs to be spat out and the mouth not rinsed.
TOOTHBRUSH	Curaprox® toothbrush Electric toothbrush	Soft headed toothbrush, with small head and soft filaments
MOUTH RINSE	Fluoride containing mouth rinse. (0.05%) Non-alcohol Chlorhexidine rinse 0.12%	Mouth Rinsing should be advised at a different time to brushing as rinsing straight after brushing minimizes the benefits of the toothpaste.
INTERDENTAL CLEANING AIDS	TePe® interdental brushes, Wisdom® Clean Between brushes and OralB® Glide Floss picks. A Waterpik® Ultra Water Flosser or Philips® Sonicare Airfloss or Airfloss Pro may be an easier option to consider.	These can be used with warm water. They are ideally to be used before tooth brushing to not reduce the beneficial effects of the fluoride toothpaste.

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Table 2
Advised modification & suggested dental treatments for oral oncology patients during and after COVID-19 pandemic.

STAGE OF ORAL ONCOTHERAPY	POSSIBLE SYMPTOMS/PROBLEMS/CONSIDERATIONS	TREATMENT CONSIDERATIONS/ADVICE*,**,***
BEFORE TREATMENT	Mild periodontal disease	– Hand scaling. Avoid ultrasonic scalers/cavitron
	Caries (Restorable)	– Chemo-mechanical caries removal, SDF application, ART, GIC restorations. Avoid AGP
	Non-restorable teeth, moderate to severe periodontal disease, with missing antagonist, compromised oral hygiene, partial impaction, teeth with extensive periapical lesion	– Atraumatic extraction, avoid AGP – Use resorbable sutures (to reduce patient's visits)
	Prosthodontic/prosthetic problem	– Acrylic dentures insertion and adjustment, Implants, Obturator (ensure smooth surface)
DURING TREATMENT	Mucositis & Ulceration	– Rinsing: 2 hourly with salt/baking soda/sodium bicarbonate/hydrogen peroxide in water – Barrier forming mouthwash: Gelclair®, MugGard® – Topical Coating Agents: Sucralfate, magnesium hydroxide, and hydroxypropyl cellulose – Topical Anesthetics: lidocaine, benzocaine, and capsaicin – Lip care products: Creams with lanolin – Benzydamine hydrochloride (Benadryl® elixir), doxepin suspension 0.5% or an antihistamine such as diphenhydramine – Analgesics: NSAIDs
	Xerostomia	– Advise nasal breathing, use humidifiers, lip moisturisers – Maintain hydration: Sip water or sugar-free drinks or suck ice chips – Avoid products that cause irritation. Eg. Caffeine, alcohol – Xerotin®, Moi-Stir, Salivart, Xero-Lube, Saliva Orthana – Mouth moisturising gel/spray: eg. Biotene OralBalance® – Sugarless lemon drops e.g. Saliva Stimulating Tablets (SST®) – Sorbitol- or xylitol-based chewing gum (e.g. BioXtra chewing gum) – Medication like pilocarpine (Salagen®) – Topical fluoride treatments, Home fluoride (to reduce caries risk)
	Trismus/Fibrosis	– Active or passive exercises using Therabite or a series of wooden sticks – Soft diet, Heat therapy (moist hot towels) – Analgesics: Acetaminophen/NSAIDs – Muscle relaxants eg. Chlorzoxazone, Tizanidine, Benzodiazepines-diazepam – Physiotherapy and avoid parafunctional habits eg fingernail biting, tooth clenching etc. – If treatment in a dental clinic consider mouth prop & short appointments.
	Taste Alteration/Dysgeusia	– Commonly not well tolerated food: high protein, hot foods but may be tolerated in morning – Commonly well-tolerated food are white meats, eggs, and cheese or cold foods – Flavouring agents may help, Zinc supplements may help.
	Burning/Swelling/Peeling of Tongue	– Saliva replacement products, salivary stimulants, oral rinses or lidocaine ointment, Capsaicin, Local application of steroids like 0.1% Triamcinolone paste, Antidepressant medication eg. Alprazolam/clonazepam, – Gabapentin in severe cases
	Infections	– Fungal: Systemic: Fluconazole (Diflucan), Amphotericin B; – Topical: Nystatin suspension/cream/ointment, Clotrimazole cream/Clotrimazole troches – Bacterial: Antibacterial agents eg. Amoxycillin – Viral: Antiviral agents eg. Valacyclovir
AFTER TREATMENT	Caries	– Chemo-mechanical caries removal: Carisolv, Papain, SDF to arrest the progression of caries. ART technique preferred followed by GIC restoration. Professional Topical fluoride application: Fluoride varnish, APF gel application , Avoid AGP – In case of pulpal involvement: Partial pulpotomy, pulpectomy under rubber- dam in permanent teeth (to be followed with root canal treatment later) – Anti-retraction handpiece, single sitting treatment, Stainless steel/hall technique
	Periodontal problem	– Hand scaling. Avoid ultrasonic scalers/cavitron.
	Removal of teeth if required, in sites at risk of osteoradionecrosis	– Atraumatic extractions, avoid AGP & bone drilling – Use resorbable sutures to minimize visit – Reduce the risk of Osteoradionecrosis (in liaison with OMFS/oral surgery)
	Prosthodontic Care	– Denture Care: Brush and rinse everyday use a soft bristle toothbrush. – Keep dentures moist, putting them in water when not being worn. – If any impressions need to be taken in the clinic, they must be disinfected properly.

* Patient should be advised good oral hygiene as per Table 1.

** Aerosol generating procedures (AGP) such as use of high speed headpieces & 3-way syringes to be avoided. High volume suction must be used with all procedures.

*** A customized approach needs to be taken by the dentist for each patient and in liaison with the oral oncologist. Table-2 adapted and drafted by referring [4,5,10].

The dentist and staff should wear appropriate Personal Protective Equipment (PPE) for the particular procedure to be performed, make use of alcohol based hand rubs and wash hands when visibly soiled, minimize aerosol generating procedures, use advised disinfectants such as 62–71% ethanol, 0.5% hydrogen peroxide, and 0.1% (1 g/L) sodium hypochlorite, and dispose off waste appropriately, all while being updated with the latest federal, national and international guidelines to safeguard the patients as well as the team [7,8].

It is imperative to provide continuous dental care to oral cancer patients, and dentists must ensure that there is no hindrance to the same, while reconsidering traditional treatments in light of the prodigious situation presented by the COVID-19 pandemic, in liaison with the oncologist.

Declaration of Competing Interest

No conflict of interest reported by any of the authors.

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