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Practical Challenges of Mask-to-Mask Encounters with Patients with Head and Neck Cancers Amid the COVID-19 Pandemic

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Title

Practical Challenges of *Mask-to-Mask* Encounters with Patients with Head and Neck Cancers Amid the COVID-19 Pandemic

Short Title

Treatment of Head and Neck Cancer patients during COVID-19

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1 **Introduction**

2 The SARS-COVID-2 (aka COVID-19) pandemic is straining health care systems and
3 placing a disproportionate risk of morbidity and mortality on patients with active cancer.¹ The
4 safety of healthcare workers is of paramount importance during this time both to preserve their
5 well-being and ensure uninterrupted delivery of vital services to patients. Of the myriad of
6 challenges unique to radiation oncology practices at this time, the management of patients with
7 head and neck cancer (HNC) patients requires special attention. The care of patients with HNC
8 involves an in-depth examination of the upper aerodigestive tract (where aerosolization of
9 COVID-19 is possible), immobilization devices that require hands-on manipulation of the head
10 and neck (sometimes with intraoral treatment devices) on a daily basis, and a long treatment
11 course during which an initially COVID-negative patient may become exposed and even infected
12 with COVID-19. These factors and more must be considered in a patient population where
13 cough, shortness of breath, sore throat, and fatigue are common symptoms, where radiation is
14 typically given with immunosuppressive systemic agents, and where treatment typically may not
15 be delayed while waiting for pandemic-related constraints to subside.²

16 It has been very challenging to re-design care (almost overnight) for our patients with
17 HNC. Though we have done our best to be proactive, we have been unable to predict and
18 prepare for all the potential failure modes of our standard workflows. Most healthcare systems
19 have implemented surgical mask policies for patients and healthcare workers: i.e. that surgical
20 masks are to be worn at all times by both parties when in the hospital. Incorporation of the
21 surgical mask policy into our standard workflows and interactions with patients with HNC has
22 been difficult. In our early experience with the pandemic, a small group of staff were exposed to
23 a patient who unexpectedly later tested positive for COVID-19. Briefly, this patient required an

24 aquaplast mask be made at simulation. Prior to this event, we allowed the surgical mask to be
25 removed during an in-office physical examination, simulation, and treatment. This patient tested
26 positive for COVID-19 within 24 hours of the simulation, resulting in the quarantine of several
27 of our radiation oncology staff. The quarantine recommendation was primarily made on the fact
28 that the patient’s surgical mask was removed during simulation, and despite our staff wearing a
29 surgical mask at the time of simulation.

30 This experience prompted us to modify our risk-reduction policies in a way that could be
31 immediately deployed across a large health system that delivers radiation therapy at sites across
32 the state, which range from a large academic center to small and medium regional hospitals. The
33 guiding principal of these new policies is that *all* face-to-face encounters between providers and
34 patients are performed with both parties wearing masks (“mask-to-mask” encounters). The
35 Mask-to-Mask policy poses unique challenges in the care of patients with HNC for which we
36 have devised several solutions. Here, we present a formulation of practical changes we have
37 made in our clinical practices for the management of HNC patients during the COVID-19
38 pandemic.

39

40 **Physical Examination**

41 Physical examination is a key diagnostic study in the management of patients with HNC.
42 We administer a questionnaire screening for fever, or new/worsening symptoms of cough, sore
43 throat, shortness of breath, loss of taste or smell, or vomiting/diarrhea in anyone entering the
44 facility. Patients with a positive screen may require formal testing for COVID-19, but those with
45 a negative screen, further evaluation, including physical examination, is conducted with physical
46 distancing. However, physical distancing is not possible when conducting a proper head and

47 neck examination, and the transoral examination and in-office nasopharyngolaryngoscopy place
48 the examiner and others in the room at substantial risk of exposure/infection. If a patient coughs
49 or sneezes during the examination, COVID-19 can become aerosolized. Nasal decongestion and
50 anesthetization prior to fiberoptic examination is also an aerosolization procedure. The
51 American Academy Otolaryngology has recommended that all upper airway procedures should
52 be done with personal protective equipment (PPE, N95 mask, gown, eye shield, gloves).³ We
53 have avoided the use of fiberoptic nasopharyngolaryngoscopy in most cases (except where it is
54 essential for management) because this is an aerosol-generating procedure that requires the use
55 of valuable fitted respirator masks and other personal protective gear.⁴ Similarly, we have
56 eliminated the use of manual examination of the oral cavity and tongue depressors in the vast
57 majority of cases as this does not comply with the Mask-to-Mask policy (i.e. the patient has to
58 remove their surgical mask). Our ENT colleagues don a N95 mask and eye shield when
59 conducting transoral examinations and full PPE when scoping patients. We rely on their
60 documentation of the physical exam, including a discussion about endoscopic findings and,
61 ideally, with a review of its video recording. The value of additional information gained by a
62 clinical exam over that which is obtained by cross-sectional imaging alone must be weighed
63 against the risks of a clinical exam. For example, determining the extent of soft palate invasion
64 from a primary tonsil cancer is an important determinate of radiotherapy fields and might only be
65 fully assessed by a comprehensive physical and radiographic examination. Should we deem it
66 necessary to do a transoral examination and or fiberoptic examination we also don the
67 appropriate PPE (following our ENT colleagues). But in general, we defer these parts of the
68 head and neck examination. Finally, it is important to ensure that the safety measures described
69 above do not hamper the delivery of cancer care and there are many factors to consider when

70 weighing the risks and benefits of an abbreviated physical examination. Specifically for HPV-
71 associated oropharyngeal cancers, there are data to suggest that the clinical exam is of limited
72 utility and that patient-reported symptoms may be a more valuable measure.⁵

73

74 **Telehealth for the In-office Visit**

75 On March 17, 2020, nationwide coverage for visits performed via telephone- or video-
76 based medical encounters (i.e. telehealth or telemedicine) was expanded by the Centers for
77 Medicare and Medicaid Services (CMS).⁶ Telehealth is not a new method of healthcare delivery,
78 but the expansion of Medicare coverage should hopefully accelerate adoption of it to improve
79 healthcare access for Americans while promoting physical distancing. With the recent CMS
80 regulatory changes, we have pivoted to conducting the majority of consults and follow-up visits
81 in the telehealth setting with the patient in their home. We have also developed a process for the
82 telehealth assessment of patients who are seen in-office for their follow-up, consult, or weekly
83 on-treatment visits. A mask-to-mask discussion is performed in the clinic room when evaluating
84 the patient and this allows the provider to perform a directed physical examination, including
85 neck palpation and evaluation of most cranial nerves, without removal of the mask. When
86 examination requires removal of the patient's mask, typically to allow a transoral examination,
87 the encounter can proceed with the provider(s) outside the room with a video connection (Figure
88 1). It is worth emphasizing that only a cursory physical examination is possible with telehealth
89 and while a video visit may permit an assessment of oral candidiasis, a patient's dental health, or
90 tumor response, it cannot replace the mask-to-mask interaction.

91 In our early experience, we have found several additional benefits on utilizing telehealth
92 for in-office visits. First, this practice may allow medical students to continue participating in

93 patient care at a time when there are several COVID-related educational restrictions. Second,
94 many patients appreciate the additional effort being placed on minimizing their direct contact
95 with healthcare workers and are satisfied knowing a provider can enter the room for a mask-to-
96 mask interaction at the patient's discretion. Third, most telehealth platforms allow additional
97 providers to seamlessly join the interaction, which has lowered some barriers to multidisciplinary
98 encounters (e.g. a joint discussion with the patient's medical oncologist). And finally, on-
99 treatment visits are well-suited for telehealth because an audio-visual connection can be
100 maintained throughout the clinic day in one or more examination rooms, through which multiple
101 providers can interact with the patient semi-remotely.

102

103 **CT Simulation**

104 *Mask-to-Mask Policy During Simulation*

105 In accord with the Mask-to-Mask policy described for patient office visits, we devised
106 our CT simulation procedures such that no staff member is in the room with an unmasked
107 patient. Patients and providers enter the CT simulation suite with both parties wearing a personal
108 protective mask. The patient is prepared for immobilization with a thermoplastic mask (TM) and
109 any special immobilization devices (addressed in more detail below) are created. The heated TM
110 is placed over the patient's head and neck while a provider holds a single point on the TM in the
111 region of the patient's mouth. Holding this point at approximately six inches above the patient
112 while mask is lowered will create a circular retraction in the TM as it hardens, which allows the
113 patient to be comfortably immobilized without their personal protective mask becoming wet as it
114 tightens around their nose and mouth (Figure 2). For patient's wearing an ear-loop surgical mask,
115 placing tape over the strings reduces sticking between the TM and the personal protective mask.

116 Following CT simulation, the retracted portion of the TM can be cut away (a small modification
117 that is not expected to affect immobilization). When the simulation is complete and the TM is
118 being removed, either a provider or the patient can hold the personal protective mask in place
119 such that it not removed along with the TM. An alternative method used by some of our other
120 centers is to use an open-faced TM and place a non-stick barrier between the TM and surgical
121 mask during the TM making process.

122

123 **Treatment Procedures**

124 *Patient Setup and Special Immobilization Devices*

125 The Mask-to-Mask policy during CT simulation applies similarly for daily radiation
126 treatments of HNC patients. Meaning, every effort is made to maintain the patient and providers'
127 personal protective masks are in place when sharing the same airspace. The treatment of HNC
128 patients often requires the use of customized dental guards, bite blocks, or tongue depressors
129 where a patient's protective mask must be removed for insertion and this challenges the Mask-to-
130 Mask policy. However, patients may be reliably trained to insert their own intraoral device and
131 replace their protective mask while RTTs are outside the treatment area, which maintains the
132 Mask-to-Mask policy and minimizes patient-provider interaction during a potentially aerosol-
133 generating procedure (Figure 3). Still, if the creation or daily use of intraoral immobilization
134 devices requires a hands-on interaction with a provider, we recommend use of full personal
135 protective equipment for that provider, including fitted respirator mask, gown, eye protection,
136 and gloves that are disposed of after each use.

137

138 **Conclusions**

139 The effect of the COVID-19 pandemic on radiation oncology practices is without
140 precedent and it is difficult to predict what the near- and long-term will mean for cancer care.
141 Patients with HNC pose unique challenges even among cancer patients in the COVID-19 era due
142 to the prolonged treatment duration, inability to delay radiation for an extended period of time,
143 and the heightened risks posed to healthcare workers. Many unanswered questions remain, such
144 as how long to wait between a patient removing their mask and staff entering the room, how best
145 to sterilize a telehealth console being used by a patient, what is the optimal way to clean and
146 store intraoral devices, when to test or re-test patients prior to or during treatment, and how an
147 increased availability of rapid testing for COVID-19 infection and immunity might augment
148 these policies. The Mask-to-Mask policy and several simple procedural modifications represent
149 early steps to reduce the risk of viral transmission and as more is learned regarding COVID-19,
150 additional guidance can be given to inform best practices.

151

152

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174



Figure 1

A woman with SCC of the left tonsil treated with chemoradiation over 10-years prior presented with a new primary HPV-positive SCC of the right tonsil with soft palate invasion. The left image was taken in the office during a face-to-face encounter prior to the arrival of the COVID-19 pandemic in our state. The patient began induction chemotherapy and after two cycles had an excellent treatment response. During this time, the mask-to-mask policy was developed and the patient returned for a combined in-person and video-based visit where the image on the right was obtained with the patient in an isolated exam room.



Figure 2

CT simulation where a TM is fitted to a patient wearing a personal protective mask. A point of the TM in the region of the nose and mouth is held prior to the TM being lowered onto the patient's face. By retracting the TM while it hardens, the patient's protective mask stays dry and comfortable around the nose and mouth. The region extending anteriorly can then be cut away after simulation. *Abbreviation:* TM = Thermoplastic mask.

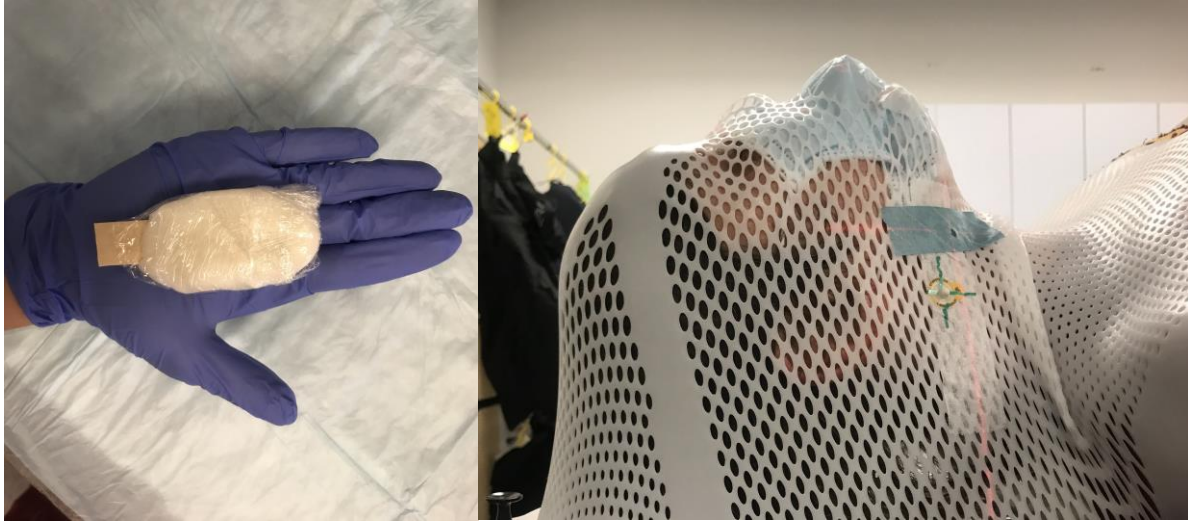


Figure 3

A tongue depressor with a custom thermoplastic-bead mouthpiece (“popsicle stick”) was created for a patient with HNSCC of the soft palate. The patient’s personal mask required removal during CT simulation, but the distal end of the tongue depressor was removed such that all future uses could be done according to the Mask-On policy. The patient was trained to insert the device and then replace the personal protective mask prior to RTTs entering the room and immobilizing the patient with the TM. The mouthpiece may then be removed by the patient following treatment, cleaned, wrapped in cellophane and stored in a sealed biohazard bag until the next fraction’s use. *Abbreviations:* HNSCC = Head and neck squamous cell carcinoma; RTT = Radiation therapist; TM = Thermoplastic mask.