yngectomy cases in the pre-COVID-19 and peri-COVID-19 groups was similar (127 [27.3%] vs 28 [25.2%]), implying that borderline advanced cases were not more likely to be offered primary chemoradiation during the pandemic.

Discussion | The current study did not show an increase in laryngectomy surgical volume during the COVID-19 pandemic. This study provides early, real-world evidence suggesting that Ontario's head and neck oncology response may have mitigated adverse health outcomes stemming from broader diagnostic and treatment delays. Care has been equitable during the pandemic compared with the prepandemic period, with no group disproportionately affected. This work should be followed with more granular staging data and repeated in other jurisdictions because the present study results are limited in that they may not be directly transferrable.

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Symptoms Reported With New Onset of Loss of Taste or Smell in Individuals With and Without SARS-CoV-2 Infection

There have been reports of loss of taste or smell associated with viral infections, including SARS-CoV-2. However, it is not clear whether these symptoms are more frequent in SARS-CoV-2 infection compared with other viral infections.1,2 Prior studies among individuals with SARS-CoV-2 infection suggest loss of taste or smell occurs early in the disease course and is associated with younger age, female sex, and milder disease.1,3,5 Those studies largely have not examined which symptoms occur with new loss of taste or smell. Identifying concomitant symptoms may guide future studies to identify a pattern of symptoms that form a unique clinical presentation. We therefore described which symptoms were reported with new loss of taste or smell among individuals with and without SARS-CoV-2 infection.

Methods | Data for this cross-sectional study were collected from the Centers for Disease Control and Prevention’s Coronavirus Self-checker (online since March 2020), an online tool designed to assist users in deciding whether to seek testing or medical care per guidelines from possible SARS-CoV-2 exposure.6 Users selected hard-coded responses that included demographics (age, sex, race, ethnicity), any COVID-19 test results within the past 10 days (positive, negative), and symptoms (new loss of taste or smell, muscle aches or body aches, cough, mild or moderate difficulty breathing, fever, vomiting or diarrhea, headache, congestion or runny nose, sore throat, other). Vaccination status was not recorded. The sample included 59 153 completed uses of the tool occurring between February 2 and May 3, 2021, by US adults 18 years or older who reported test results. This study was reviewed by the Centers for Disease Control and Prevention (CDC), and its conduct was consistent with applicable federal law and CDC policy.
This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline. To evaluate the association between each symptom and new loss of taste or smell, multivariate logistic models estimated odds ratios (ORs) stratified by test positivity and adjusted for each demographic variable and symptom. For all statistical analyses, SAS, version 9.4 software (SAS Institute Inc) was used.

**Results** | The Table shows respondent characteristics from 59,153 completed uses of the tool. The largest age group was 18 to 29 years (15,792 [26.7%]), 38,798 (65.6%) were female, and 37,025 (62.6%) were non-Hispanic White respondents. Symptoms associated with new loss of taste or smell varied by SARS-CoV-2 test positivity (Figure). Among individuals with negative test results, congestion or runny nose was more strongly associated with loss of taste and smell (OR, 2.26 [95% CI, 2.08-2.45]) compared with those with positive test results (OR, 1.66 [95% CI, 1.54-1.79]). Among individuals with negative test results, cough and fever were significantly associated with new loss of taste or smell (cough: OR, 1.57 [95% CI, 1.45-1.69]; fever: OR, 1.16 [95% CI, 1.07-1.25]) but not among those with positive test results (cough: OR, 1.01 [95% CI, 0.94-1.09]; fever: OR, 0.95 [95% CI, 0.88-1.02]). Vomiting or diarrhea was more strongly associated with new loss of taste or smell among those with positive test results (OR, 1.52 [95% CI, 1.40-1.65]) compared with those with negative test results (OR, 1.23 [95% CI, 1.13-1.35]).

**Discussion** | The findings of this cross-sectional study suggest that differences in symptoms occurring with new loss of taste or smell were seen between groups based on SARS-CoV-2 test positivity. In both groups, muscle aches or body aches, mild or moderate difficulty breathing, vomiting or diarrhea, and congestion or runny nose were associated with a new loss of taste or smell. However, in both groups with positive and negative test results, congestion or runny nose had strong associations with new loss of taste or smell, suggesting the latter may not be a valid marker of test positivity in this sample.

One particular strength of this study is the large sample of recent data. Limitations include possible residual confounding due to the cross-sectional study design.
founding inherent in observational data and potential for data to partially reflect individuals who used the tool multiple times and/or had been vaccinated. There may also be selection bias from analyzing online data, as respondents were, on average, younger and more likely to be female compared with the general population. Users may also have been aware of loss of taste or smell as a symptom of COVID-19, which may have resulted in bias and/or loss of power. Further studies in other populations may elucidate whether symptoms accompanying a new loss of taste or smell may form part of a unique clinical presentation associated with a milder course of disease.

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### Figure. Adjusted Odds Ratios (ORs) for Symptoms Associated With New Loss of Taste or Smell Among 59,153 US Adults

<table>
<thead>
<tr>
<th>Symptom</th>
<th>New loss of taste or smell unlikely</th>
<th>New loss of taste or smell likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle aches or body aches</td>
<td>1.50 (1.39-1.62)</td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td>1.57 (1.45-1.69)</td>
<td></td>
</tr>
<tr>
<td>Mild or moderate difficulty breathing</td>
<td>1.67 (1.53-1.83)</td>
<td></td>
</tr>
<tr>
<td>Fever or feeling feverish</td>
<td>1.16 (1.07-1.25)</td>
<td></td>
</tr>
<tr>
<td>Vomiting or diarrhea</td>
<td>1.23 (1.13-1.35)</td>
<td></td>
</tr>
<tr>
<td>Headache</td>
<td>1.04 (0.96-1.12)</td>
<td></td>
</tr>
<tr>
<td>Congestion or runny nose</td>
<td>2.26 (2.08-2.45)</td>
<td></td>
</tr>
<tr>
<td>Sore throat</td>
<td>0.88 (0.81-0.95)</td>
<td></td>
</tr>
<tr>
<td>Other symptoms</td>
<td>0.94 (0.85-1.05)</td>
<td></td>
</tr>
</tbody>
</table>

**Symptom**                          | **OR (95% CI)** |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscle aches or body aches</td>
<td>1.29 (1.20-1.40)</td>
</tr>
<tr>
<td>Cough</td>
<td>1.01 (0.94-1.09)</td>
</tr>
<tr>
<td>Mild or moderate difficulty breathing</td>
<td>1.53 (1.42-1.65)</td>
</tr>
<tr>
<td>Fever or feeling feverish</td>
<td>0.95 (0.88-1.02)</td>
</tr>
<tr>
<td>Vomiting or diarrhea</td>
<td>1.52 (1.40-1.65)</td>
</tr>
<tr>
<td>Headache</td>
<td>0.95 (0.88-1.02)</td>
</tr>
<tr>
<td>Congestion or runny nose</td>
<td>1.66 (1.54-1.79)</td>
</tr>
<tr>
<td>Sore throat</td>
<td>0.86 (0.79-0.92)</td>
</tr>
<tr>
<td>Other symptoms</td>
<td>0.94 (0.85-1.03)</td>
</tr>
</tbody>
</table>

Odds ratios and corresponding 95% CIs are shown from multivariate logistic regression models adjusted for age, sex, race, ethnicity, and each of the displayed symptoms.

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**Author Contributions:** Dr Koyama had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. **Concept and design:** Koyama, Oyegun, Maddox, Koumans. **Acquisition, analysis, or interpretation of data:** Siegel, Oyegun, Hampton, Koumans. **Drafting of the manuscript:** Koyama, Hampton, Maddox. **Critical revision of the manuscript for important intellectual content:** Koyama, Siegel, Oyegun, Koumans. **Statistical analysis:** Koyama. **Administrative, technical, or material support:** Koyama, Oyegun, Hampton, Maddox, Koumans. **Supervision:** Koyama, Siegel, Oyegun, Koumans. **Other:** Oyegun.

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Acute Vision Loss From IgG4-Related and Bacterial Rhinosinusitis After COVID-19

Immunoglobulin G4-related disease (IgG4-RD) is an autoimmune fibroinflammatory disease that can affect nearly every organ, with otolaryngological diseases such as Mikulicz disease and Küttner tumor recently recognized as manifestations of IgG4-RD.1,2 The first case of IgG4-related rhinosinusitis was described in 2009, with complete resolution after treatment with corticosteroids.2 To our knowledge, no case of IgG4-RD with coinciding bacterial rhinosinusitis has been found, highlighting an uncertainty in diagnosis and treatment of such cases. Herein, we present a patient with acute vision loss following SARS-CoV-2 infection who was diagnosed with IgG4-related and Streptococcus constellatus rhinosinusitis, with complete resolution after treatment with surgery, antibiotics, and corticosteroids.

Report of a Case | The patient was a man in his 70s with no history of chronic or allergic rhinosinusitis who presented to the emergency department with a headache for 2 weeks and vision loss in the right eye for 2 days. Three weeks prior, he had rhinorrhea and was diagnosed with COVID-19. He recovered from COVID-19 but developed a worsening right-sided headache 1 week later and right vision loss 2 days prior to presentation. On physical examination, right eye visual acuity was limited to hand-motion detection, with severe pain on ocular motion. Maxillofacial computed tomographic scan revealed opacification of all sinuses on the right with diffuse inflammation. Notably, there was bony erosion of the medial orbital apex bone, with extension of inflammation into the apex (Figure 1). Emergency endoscopic right total ethmoidectomy, frontal sinusotomy, maxillary antrostomy, and sphenoidotomy were performed, with diffuse purulence noted in all sinuses. Sinus specimens were collected, and ampicillin-sulbactam with vancomycin was initiated for presumed acute bacterial rhinosinusitis with orbital apex cellulitis.

Although there was initial improvement after surgery, the patient’s headache and vision progressively worsened on treatment with antibiotics, despite sinus cultures confirming the presence of S. constellatus. Histopathologic analysis later revealed a dense infiltrate of IgG-containing plasma cells, with most being IgG4 positive (Figure 2). Likewise, serum IgG4 was elevated at 277 mg/dL (normal, <123 mg/dL). Consequently, IgG4-related rhinosinusitis was diagnosed based on comprehensive diagnostic criteria.3 Oral prednisone was added to the patient’s regimen, which was followed by remarkable improvement in his headache and vision, and he was thus discharged with prednisone and amoxicillin-clavulanate. Follow-up 3 weeks later revealed that his vision returned to baseline, and his headache completely resolved.

Discussion | To our knowledge, this is the first case describing simultaneous IgG4-related and acute bacterial rhinosinusitis after an earlier SARS-CoV-2 infection. Although rare, rheumatological workup for IgG4-RD in patients with severe rhinosinusitis and acute vision loss is critical because treatment of IgG4-RD differs from that of bacterial rhinosinusitis. In this patient, more than 40% IgG4-positive plasma cells on histopathologic analysis and elevated IgG4 serum levels fulfilled the diagnostic criteria for IgG4-RD.