Mask mouth: an Emerging Concern for Dental Professionals

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ABSTRACT
As The World is affected by on-going pandemic of COVID-19 caused by severe acute respiratory syndrome coronavirus (SARS-CoV-2), use of face masks have become necessary and ubiquitous as preventive measure not only in hospitals, but also at public places, malls, etc. Even though face mask is used to protect the users from SARS-CoV-2 infection, it has certain side effects. Dentists are seeing an increased trend of dental problems like caries, gingivitis, halitosis, candidiasis, angular cheilitis due to the usage of face masks. This article describes new and recently noticed side effect on oral health of wearer of face mask known as “Mask Mouth”.

Keywords: Mask mouth, oral cavity, COVID-19.

INTRODUCTION
The 2019 novel coronavirus is officially called SARS-CoV 2 and the disease is named as COVID-19. It has originated from wild animals at Huanan seafood market in Wuhan, a city in Hubei province of China. This viral infection expanded internationally and WHO announced it as Public Health Emergency of International Concern. [1] This viral pandemic has led to the deaths of lakhs of people especially those in older age groups with underlying chronic systemic conditions like cardiovascular disease, diabetes, chronic respiratory disease, and cancer or immune-compromised state. This is the 3rd serious corona virus outbreak in less than 20 years following SARS in 2002-2003 and MERS in 2012. [2]

Majority of people who get infected with the COVID-19 virus will observe mild to moderate respiratory illness and will show recovery without requiring any special treatment. Older people, and those with underlying systemic problems are more likely to develop serious illness. [3]

The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it’s necessary that you exercise respiratory etiquette (for example, by coughing into a flexed elbow) and by donning a face mask. [3]

The best way to protect yourself and others from transmission of infection is by washing your hands frequently or using an alcohol based hand rub and not touching your face. [4]

The use of face masks is considered as part of a comprehensive package of prevention and control measures to limit the spread of SARS-CoV-2, the virus that causes COVID-19. Even though the use of the face mask protects the user from SARS-Cov-2 infection, it has certain adverse effects. Dentists have debunked a number of other conspiracy theories about mask wearing.

Dentists all around the globe have began to notice a rise in number of patients with complaints of
halitosis, gingivitis, ulcers and caries. All these symptoms are associated to the excessive and improper use of a face mask.[5]

This article describes a new and recently observed side effect on the oral health of the mask wearer known as “Mask Mouth”. [5] As the name suggests; “Mask Mouth: It relates to oral hygiene affected by donning a mask.”

Caries, gingivitis, halitosis, candidiasis and angular cheilitis are common symptoms included in this. But a positive aspect of the mask-mouth is that it can be certainly prevented and treated. In this article, we will see this new phenomenon, its aetiology, symptoms and ways to prevent it.[5]

**SIDE EFFECTS:**

**Oral Cavity:**

Implications of ‘Mask Mouth’: Our saliva is the mouth’s immune system. When face masks are used dryness in our mouth is increased which helps bacteria and viruses propagate. Our saliva has antimicrobial components and serves as a protective barrier thus help fight bacteria. It also forms the part of our body mucosal immune system that prevents viruses from entering directly onto the surface of our body.

The decreased salivary flow in our mouth not only breeds stinky breath but also put our overall health in danger. [6]

Dental Caries-Use of face masks for prolonged period of time is leading to development of mouth breathing habit and frequent consumption of fermentable carbohydrates, is resulting in the formation of plaque which is mostly composed of acid-forming and acid-tolerable species of bacteria, such as Streptococcus mutans (S. mutans) and Lactobacilli. Thus we can say prolonged use of face mask can be a predisposing factor for dental caries. [5]

Plaque Index and Gingivitis- Mouth breathing habit developed due to prolonged use of face mask causes diminution of buffering capacity of saliva and also reduced salivary flow rate. Mummoalo, et al (2018) conducted a study and observed that the subjects with mouth breathing seemed to be predisposed to develop a higher plaque index when compared with healthy subjects. Studies also demonstrated increased susceptibility of gingival inflammation in subjects with mouth breathing.[5]

Halitosis- Most of the patients having mask mouth also complains about halitosis, also referred as ‘mask breath’. Factor necessary for halitosis is the layer of debris on the tongue and coating over tongue. This causes an increase in concentration of volatile sulphur compounds in mouth. Also decreased salivary flow rate and decreased water intake further increases its severity. [5]

Candidal Infection- Covering mouth for longer periods of time increases the dryness of the mouth which triggers Mask Mouth. Also, there is an increased incidence of mouth breathing when using a mask which causes surface dehydration and reduced salivary flow rate (SFR). This may alter the oral microflora and increase the risk for various opportunistic infections, such as candidiasis.[7]

Angular Cheilitis and Ulcers- Prolonged use of a mask creates a warm moist environment on surrounding skin of mouth which is a perfect condition for bacteria to flourish and grow. This overgrowth of bacteria can produce angular cheilitis, cracking and ulcers at the corner of the mouth. [5] ‘COVID-tongue’ – The latest symptom of novel coronavirus disease.

King’s College, London, experts says one-fifth of COVID-19 patients experience a few less common symptoms of COVID-19. [8] However many of these symptoms have not made it to the official lists of various global health agencies yet. One such symptom has been termed as ‘COVID tongue’ – which as the name suggests, is about changes or defects that can be observed on the human tongue and apparently caused due to COVID-19 disease. [8] COVID tongue implies to patches and ulcers present on all mucosal surfaces in the mouth, especially on the tongue. [9] This may seem alarming initially, it's a harmless condition, which will resolve itself in a few days or weeks.
Prevention of ‘Mask Mouth’

In today’s scenario, the advantages of wearing masks outweigh the adverse effects. Likewise, the adverse effects can be easily prevented by following certain measures like –

1. Mask etiquette Wear a mask with proper technique, mask should be clean, mouth breathing should be avoided while wearing a mask should. Work shifts should be incorporated with frequent work breaks to allow for a shorter duration of mask use and reduction of PPE exposure. [5]

2. Preventative measures such as drinking more water throughout the day to avoid dryness of mouth. Frequent consumption of water also helps to stimulate saliva production and help in prevention of caries. Similarly, to prevent skin breakdown apply moisturizers, emollients, and barrier creams. To keep your
mouth at the appropriate moisture level and stave off bad breath stay hydrated will. [5]

3. Oral hygiene practices- includes brushing teeth, cleaning tongue and the sides of our cheeks twice daily with fluoridated toothpaste. Flossing once daily is also recommended. [5]

4. Use of mouthwashes - Use chlorhexidine mouthwash at least once a day as it is highly effective against caries and plaque formation. [5]

5. Dental procedures- Scaling and polishing, pit and fissure sealants, application of fluoride, varnish, can help in preventing dental problems associated with mask mouth. [5]

6. Making the patients aware of the ‘Mask Mouth’ is extremely necessary to stop its implications. At present, there’s is insufficient data to quantify all of the adverse effects which may reduce the acceptability, adherence, and effectiveness of face masks. Research regarding various other symptoms and implication of a mask-mouth is also needed. Also we cannot avoid use of face masks in current times. But a positive aspect about the mask-mouth is that it can be easily prevented and treated. So it’s the necessity of the hour to act fast and save the population from the future effects of ‘Mask Mouth’!

Skin

Dermatitis on the skin around the mouth as a result of wearing a mask for long time has seen been reported by California Globe. The moisture that gets trapped in face masks creates a Petri dish or tract for bacteria. Cracks at the corners of your lips and red bumps around your mouth mean you’ve got a mycosis, but that doesn’t mean you ought to stop wearing a mask.[10]

Both the skin and saliva can contain parasitic fungi of the genus Candida, a sort of yeast that's normally present within the body, says Marina Peredo, MD, a board –certified dermatologist at Skinfluence in New York City. Some candida species typically exists without causing a haul, however certain species, called Candida albicans, can cause an infection; if it overgrows inside the mouth. Candidal infection in mouth is named thrush.

Anyone who’s a regular mask wearer knows that it can get hot under there in summertime. And masks offer the right conditions for overgrowth. “Candida thrives in moist environments, very similar to the one created under a mask. [10]

Such candida infection can appear as a raw, red, irritated or chapped area, or a skin rash. The appearance of candida overgrowth are often difficult to differentiate from acne, because symptoms of this sort of candida infection may also look like red bumps or pus pimples. [10]

One telltale sign is that the irritation is within the corner of mouth. “If you've an urge to lick your lips compulsively when they’re dry, you'll be at higher risk of acquiring this sort of infection if saliva gets trapped within the corners of your mouth. This type of infection, which may appear as cracking, irritation, bleeding, and redness within the corners of the mouth, is usually called angular cheilitis, says Chen. One risk is in people wearing mask , but it also occurs to people who wear dentures or younger kids who use pacifiers.[10]

Treatment:

If this kind of candida infection affects your skin a topical antifungal creams can be useful. Dr. Zeichner suggests use of a dandruff shampoo that contains ketoconazole, an antifungal ingredient, as a face wash.

If angular cheilitis is main problem, applying antifungal ointment such as Lotrimin or Clotrimazole on the corners of mouth twice daily is recommended.

Respiratory System

Respiratory issues exacerbates by wearing mask. On social media, one of the main claims is that masks cause a toxic build-up of carbon dioxide in the blood, known as hypercapnia.[11]This happens when someone inhales recycled air – usually in narrowed spaces without ventilation – reducing oxygen and increasing CO2 levels. It results in breathlessness, headache, confusion and, in extreme cases, irregular heartbeat. [11]

One small study found nurses wearing N95s on a 12-hour shift had ‘significantly elevated’ CO2 levels and
reported headaches and feeling in need of breath. But these symptoms weren’t significant enough to be considered hypercapnia.[11] The CDC says any build-up of CO2 would be unlikely in everyday use outside hospital settings, and will be avoided by simply letting some air in.[12] Another claim is that wearing a mask makes catching coronavirus more likely, because the material ‘traps’ infected droplets.

California Globe has evaluated reports of lung infections from prolonged mask wearing, persistent coughing and suggested that there’s significant respiratory compromise in patients with severe obstructive pulmonary disease, secondary to the development of hypercapnia. This is also observed in patients with lung infections, with or without SARS-CoV-2. [13]

Cardiovascular system

‘Gum disease will eventually cause strokes and an increased risk of heart attacks’ One Manhattan Dental’s Dr. Marc Sclafani states.

CONCLUSION:

As fallout of the Covid spread, facemasks have become a part of everyday life. The Centers for Disease Control and Prevention (CDC) recommends wearing a mask in public settings and studies show face masks play a crucial role in slowing the virus’s spread. Discomfort apart, the prolonged use of masks comes with a plethora of problems, ranging from bad breath to dry mouth and headache, so getting rid of this protective measure is not the answer. Instead, learn all about mask mouth — what it is, what causes it, and how you can prevent it. Mask mouth might create an inconvenience, but a little care by the user can go a long way in getting rid of these issues. Plus, the price of paying extra attention to your oral care is worth protecting your neighbors and friends from the Covid-19 virus. So mask up and keep up with your oral hygiene!

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