

# ORAL MANIFESTATION OF MONKEYPOX VIRUS : MANAGEMENT IN DENTAL PRACTICE

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## ABSTRACT

Infectious diseases are a huge burden to the public health which not only deteriorates the general health of the population but also at the same time hinders dental professionals from rendering safe and effective dental treatment. In the meantime, when the whole world is still fighting against SARS-COVID-19 virus infection, Monkeypox virus outbreak made a new headline as stated by World Health Organisation (WHO) as “emerging threat of moderate health concern.” And the scenario gets worsened when the number of cases increased to 22000 cases in 88 countries including North America, Europe and Australia which prompted WHO to declare Monkeypox as a “global health emergency and to raise the alert for this infection to highest level” on 22<sup>nd</sup> July, 2022.

Although 23 cases are recorded in India till date which is quite insignificant in comparison to number of dental patients we encountered everyday and thus the risk of getting infected in the dental setting is quite low. But what needs more attention is the fact that these Monkeypox lesions may first appear on oral and perioral sites and thus dentist should consider this in differential diagnosis and should take proper preventive measure in the dental clinic.

## KEY WORDS

**Monkeypox, Oral manifestation, Transmission risk, Prevention, Management**

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## INTRODUCTION

Monkeypox is a zoonotic disease that is caused by double stranded DNA virus belonging to genus Orthopox virus of Poxviridae family<sup>1-7</sup>. There are two genetic clades of Monkeypox virus namely clade I also called Congo basin clade which is predominate in Central Africa and clade II which is West African clade<sup>3</sup>. Although, it was first reported in 1970 in Democratic Republic of Congo in 9 month male patient<sup>1,3</sup>. Previously, it was limited to Western and Central Africa but recently it was reported in London on 6th May 2022 in a patient with travel history from Nigeria and from then on there had been total 83943 total cases in over 111 countries as of 3<sup>rd</sup> Jan, 2023 with India accounts for 23 cases only<sup>3,5</sup>. The case was detected on 14<sup>th</sup> July 2022 when Kerala state health minister Veena George was being suspected as an imported case after a travel history from Nigeria and the first locally transmitted case was reported at Delhi in a middle aged male with no recent history of travelling abroad<sup>5</sup>. Although, it is mainly transmitted from contact from infected animal via bites, scratches and close contact<sup>2,3</sup>. It is also postulated that consumption of inadequately cooked meat can also serve as an additional risk factor<sup>3</sup>. But in 2022 outbreak, in 91.7% cases, there are human to human transmission and sexual contact although it is not yet clear whether the spread occurs by sexual contact or via rash and respiratory secretions from the infected person<sup>1,3</sup>. Moreover, vertical transmission is also documented in many cases<sup>1,3</sup>. Most of the cases in non endemic countries are seen in males who are gay, bisexual or who had intercourse with other men<sup>2,3</sup>. The main sites entry of MonkeyPox virus is via mucous membrane, non intact skin, open wounds or by inhalation<sup>2</sup>.

## CLINICAL FEATURES

Monkeypox has a relatively long incubation period of about 5-21 days and is characterised by two distinct phases with initial prodromal symptoms like fever, malaise, headache and profound lymphadenopathy<sup>2</sup>. In the acute phase, the initial presentation is mucocutaneous involvement which

accounts for 95% cases involving single or multiple lesion with polymorphic appearance in anogenital area, trunk or limbs or face<sup>2,3</sup>. Mucocutaneous lesion of oral cavity shows a maculopapular pattern with lesion ranging from 2-5mm in greatest diameter and have centrifugal distribution pattern along with oral ulceration of tongue, tonsil and buccal mucosa are most common<sup>2,3</sup>. As Monkeypox presents with wide range of clinical symptoms certain differential diagnosis must be considered for oral lesion mainly caused by varicella zoster virus including chickenpox in children and herpes zoster virus (shingles) in adults<sup>1,2</sup>. Although, umbilicated lesion is very uncommon in chickenpox as well as herpes zoster presents with dermatomal pattern of vesicles that coalesce and forms crusting which is not a typical presentation of Monkeypox virus<sup>1,2</sup>. Another disease i.e. Molluscum Contagiosum caused by molluscum contagiosum virus can present with similar lesion i.e. raised pink lesion with central dimple<sup>1,2</sup>. Syphilis and herpeticiform drug eruption should be considered<sup>1</sup>. In cases, where oral ulceration is the initial presentation traumatic ulceration should be considered as a probable differential diagnosis<sup>1,2</sup>. As profound cervical lymphadenopathy is the unique feature of this disease along with other systemic symptoms like fever, malaise etc, other infectious disease must also be considered as differential diagnosis<sup>2</sup>.

Cutaneous involvement shows single or multiple lesion with centrifugal distribution evolving from macule to papule to vesicle to pustule which finally becomes umbilicated and forms erosions<sup>2,3</sup>. Moreover black crusting may also occur. Patient are no longer infective when the crusts have fallen off and new skin or mucosa is developed which can take upto four weeks<sup>2,3</sup>. Apart from that anogenital lesion and rectal pain are more common in the recent outbreak<sup>2</sup>. Besides that most cases are self limiting and can heal within four to six weeks but some may leads to certain complications such as pneumonitis, encephalitis and secondary bacterial infections<sup>2</sup>.

## DIAGNOSTIC PROCEDURES

WHO recommends Polymerase chain reaction or PCR is the gold standard way to detect Monkeypox from skin, genital, oral mucosal lesion<sup>3,7</sup>. Recently there is a study that shows Monkeypox saliva based testing would provide early identification of cases even before appearance of exact lesions and thus it opens new opportunities for saliva based testing<sup>3</sup>.

## Case definition and risk to dental professionals

As far UK Health Security Agency(UKSHA) guidelines updated 23 January, 2023 is as follows<sup>6</sup>:-

### Possible case

A possible case is defined as anyone who fits one or more of the following criteria:

- a febrile prodrome compatible with mpox infection, where there is known prior contact with a confirmed case in the 21 days before symptom onset
- an illness where the clinician has a suspicion of mpox, such as unexplained lesions, including but not limited to:
  - genital, ano-genital or oral lesion(s) - for example, ulcers, nodules
  - proctitis – for example anorectal pain, bleeding
- Febrile prodrome consists of fever  $\geq 38^{\circ}\text{C}$ , chills, headache, exhaustion, muscle aches (myalgia), joint pain (arthralgia), backache, and swollen lymph nodes (lymphadenopathy).

### Probable case

A probable case is defined as anyone with an unexplained rash or lesion(s) on any part of their body (including genital/perianal, oral), or proctitis (for example anorectal pain, bleeding) and who:

- has an epidemiological link to a confirmed, probable or highly probable case of mpox in the 21 days before symptom onset
- or
- identifies as a gay, bisexual or other man who has sex with men (GBMSM)
- or
- has had one or more new sexual partners in the 21 days before symptom onset

### Highly Probable

A highly probable case is defined as a person with orthopox virus PCR positive result where mpox remains the most likely diagnosis.

### Confirmed case

A confirmed case is defined as a person with a laboratory – confirmed mpox infections (MPXV PCR positive).

Although it is quite rare to encounter patient with Monkeypox infection in dental settings as the number of cases are quite low in our surroundings. But we can transmit the infection either by knowingly or unknowingly i.e. from direct contact with lesion or clothing that are in contact with the infected lesion<sup>2</sup>. Moreover airborne route although may not be the primary route of transmission but it has been shown that Monkeypox virus can be spread via aerosol and

can remain infective for several hours in aerosol in animal models<sup>2</sup>. And thus dentist are at great risk of transmission during aerosol generating procedures which further depends on duration of exposure, dose, protective equipments and environmental parameters<sup>2</sup>. Besides that as far as UKSHA guidelines is concerned one should provide the suspected patient with fluid resistant surgical mask and asked them to return home and isolate themselves or to seek admission in nearby hospital if the condition deteriorates<sup>2,6</sup>.

## Prevention and Management

As aerosol transmission of Monkeypox virus proves to be a major hazard for dentist performing aerosol generating procedures such as use of high speed handpiece and ultrasonic instruments. That's why dentist should follow proper IPC precautions for suspected cases such as use of Filtering face piece 3(FFP3) mask, fluid resistant gown, visor gloves and proper eye shield before undertaking AGP procedures<sup>2</sup>. Moreover dentist should also isolate the suspected patient in the waiting room and must provide them with surgical mask and asked them to isolate or seek medical consultation if required<sup>2,6</sup>. Dentists should make sure that they isolate pregnant women and immunocompromised people from getting infected in their dental settings<sup>2</sup>. Moreover for pre-exposure prophylaxis in high risk groups including healthcare workers a third generation small pox vaccine (Modified Vaccinia Ankara- Bavarian Nordic ) which is an attenuated vaccine, is marketed under JYNNEOS in USA confers some protection against monkeypox as small pox and monkeypox virus are closely related but due to cessation of small pox vaccination since 1980 due to small pox eradication adds to decline immunity in population against Orthropox viruses including Monkeypox<sup>1,3</sup>. Although there are no studies to prove the efficacy of Tecovirimat in Monkeypox management but it is used as an off label drug for prophylaxis in immunocompromised, 8 years below, pregnant and breast feeding women and in atopic dermatitis patient<sup>9</sup>.

## CONCLUSION

As WHO had already declared Monkeypox as “global health of emergency and to raise the alert for this infection to highest level” on 22<sup>nd</sup> July 2022<sup>8</sup> and so, it is a growing public concern because it can become a potential hurdle for dental professional to provide safe and effective treatment to the public

because its routes of transmission, complications, coinfection rates are not well established and needs further research on that for better understanding of Monkeypox virus infection. Although, the Monkeypox cases are small in comparison to patients we encountered in our dental settings but dentist should follow standard infection control procedures as well as must be aware of this disease as “prevention is better than cure.”

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