

# International Journal of Orthopedics

## Research Article

### Consideration of HIV PEP Prophylaxis Following Hand Human Bite

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Received: 16 March 2020; Accepted: 30 July 2020; Published: 31 July 2020

Citation of this article: Tladi, MJ., Tladi, SM., Tladi, LP. (2020) Consideration of HIV PEP Prophylaxis Following Hand Human Bite, Int J Orth, 3(1): 18-20.

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#### Abstract

Human immunodeficiency virus (HIV) can be found in body fluids. Human bite can occur accidentally or intentionally, and the ramifications of poor treatment can lead to significant morbidity. Human immunodeficiency virus can be transmitted following a human bite and the health care worker should be aware of the possibility of viral transmission. In areas where the virus is endemic, one should consider giving HIV post exposure prophylaxis to the victims of human bite.

**Keywords:** HIV, Human bite, PEP, Hand infections.

#### Introduction

Human bite to the hand is often not seen as dangerous by the patient and treating health care worker. Failure to recognise hand human bite can lead to loss of the digits or hand function due to sequelae of the infection caused by organisms that are found in the mouth. The mouth has enormous amounts of deadly micro-organisms that can be transmitted to the victim. Human immunodeficiency virus can also be found in the mouth and it can be transmitted following human bite. There are reports of transmitting HIV following human bite to the lip in the literature [1]. The risk of transmission is epidemiologically insignificant but biologically possible and the presence of blood in the mouth increases the risk of transmitting the virus. These injuries should be treated as an emergency to prevent unwanted outcomes. This short manuscript

will try to outline the importance of giving victims of human bite a HIV post-exposure prophylaxis (PEP).

#### How does human bite occur?

Human bite can occur during love making, during fights, sports or when a patient has a seizure. Mennen, et al. [2] described two mechanisms of human bites. The first mechanism occurs when there is a direct bite to the finger. Fist fight or knuckle tooth wound is the second mechanism where the attacker is bitten by the opponent. The teeth can penetrate the skin, the extensor tendons and the joint capsule ending in the metacarpophalangeal joint [3].

#### Microbiology

More than 600 bacterial species can be found in the human mouth

[4]. Following a human bite, polymicrobial bacteria can be found in the victims wound [5-7]. Viral transmission includes hepatitis and HIV. Hepatitis C is easily transmitted following a bite. About 50% of blood particles are present in humans with no visible oral lesions. The amount of HIV in the mouth is depended to the viral load, and people with a CD 4 of less than 200/mm<sup>3</sup> are associated with high virus content in the mouth [8]. However salivary inhibitors render the virus non-infective in a majority of the cases [9,10].

### Cases of HIV transmission following human bite

There are few reported cases of direct HIV infection following human bite to the hand [11-13]. These resulted from direct bite to the hand either accidental or intentionally. One case was microbiologically confirmed to have similar HIV properties [13].

### Prophylaxis

As with open wound, prophylactic anti-tetanus is mostly given to the victims of human bite [14]. In addition, broad spectrum antibiotics are given as a prophylaxis to prevent bacterial infections. However not all victims are given HIV prophylaxis. Post exposure prophylaxis guidelines do allow for health care workers to issue this treatment (PEP) to the victims of human bite [15]. The challenge in giving HIV prophylaxis is that most victims usually present late as they mostly never perceive the bite as a serious injury and HIV PEP works better if it is given early. The recommended hours that is normally allowed for PEP is within 72 hours. Prophylaxis regimen that can be given is depended on the institutional protocols on post exposure prophylaxis [16].

Microbiologically there are reports of conforming the virus that was transmitted to the victim using RNA sequencing following sero conversion [17]. The problem is that one cannot always confirm if the virus was from the biter, because in most cases the perpetrator is not available to do HIV RNA sequence. Although PEP can reduce transmission of HIV infection, Vidar, et al. [11] reported a case where a victim seroconverted despite getting HIV PEP after human bite to the hand. The victim was given monotherapy and currently, the prophylaxis consist of two or more drugs (fixed combination). However, not all victims of hand human bite by the HIV person can seroconvert following human bite by a person who is infected [18]. Human bites are potentially dangerous wounds and constitute as significant cause of morbidity [19].

### Conclusion

HIV transmission occurs following bridging of the protective layers. Human bite to the hand can transmit the HIV and the victim should get HIV PEP if the status of the perpetrator is not known. Limitation of this review is few numbers of cases have been reported. In countries where there is high HIV prevalence, the health care worker should consider giving PEP if the patient presents early.

### Conflict-of-interest statement

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

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