

**LETTER**

# LASER safety measures for the treatment of genital warts in HIV+ patients during the COVID-19 pandemic

Dear Editor,

The Human Papilloma Virus (HPV) is the most common sexually transmitted infection worldwide. More than 200 different genotypes have been identified to date.<sup>1</sup> About 40 mucosal genotypes have been associated with the development of ano-genital lesions (AGW). These span from benign warts, mainly caused by the low-risk HPV 6 to 11, to cancerous lesions, caused by high-risk types (eg, HPV16-18). HIV infected patients have an increased risk of HPV acquisition<sup>2</sup> and a more rapid progression to malignancies.<sup>3</sup> Treatment of AGW must be personalized and the final goal is to improve the patient's quality of life providing therapeutic continuity. In these patients the response after first-line treatments for AGW (cryotherapy, imiquimod, green tea leaf extracts) can be poor and delayed. Laser therapy (LT) is considered after first-line treatments have failed.

At the HIV Unit of San Gallicano Hospital in Rome, an average of 200 patients are treated for AGW every year. During the COVID-19 pandemic (March-April 2020), 15 patients have continued to be treated for AGW with LT through an ablative laser. CO<sub>2</sub> laser, with its 10 600 nm wavelength, has a lower water absorption pick than Erbium-YAG laser,<sup>4</sup> so it allows the treatment of deeper and larger genital warts with shorter session of treatments. The vaporization of tissue produces inhalable fumes. Laser smoke contains airborne contaminants such as toxic particles and gases together with bacterial and viral pathogens. Viral particles can be released by vaporized tissue and found in surgical plume.<sup>5</sup>

During the COVID-19 pandemic, particular consideration regarding biological-hazard prevention is required.

A safety check-list and cleaning protocol have been created, and all personnel working in the LT center have been properly trained in order to improve safety measures and reduce the stay of patients in the hospital.

To prevent susceptibility to infectious hazards, safety procedures for LT include different factors related to machines, the environment and operators.

Smoke evacuator maintenance with regular checking of the filters and filtration efficiency is performed according to the specific protocols. The proper filters remove ultra-low particulates to 0.1 μm.<sup>5</sup> Smoke evacuators are placed near the surgical field of operation.

The laser handpiece is sanitized before and after every procedure with glutaraldehyde hydro-alcohol solution using a disposable non-abrasive paper veil.

The LT room meet the following requirements: dimensions of 30 m<sup>2</sup>, temperature of 20°C to 24°C. Air changes with external air are made 4 to 6 times per hour without recirculation.

Nurses' and physicians' safety is provided by individual protection measures including disposable fireproof gown, high-filtration masks, protective glasses, and gloves.

Surgical masks are not eligible as they filter particles greater than 5 μm while most of surgical particulate is less 1 μm.<sup>6</sup> High efficiency particulate-air filtration masks are necessary, such as N95 respirators to protect against biological hazards because it can filter submicrometer-size particles (filtration efficiency of 99.93%).<sup>7</sup> The proper fitting of the mask is regularly checked as the fumes are not filtered and enter the empty spaces. Protective masks are combined with the use of smoke evacuators. Masks are changed every 8 hours of use or if they become humid from breathing. Staff wear face shields and protective eyewear, effective against laser beams, smoke particulate, and viral airborne particles. They are cleaned with a sanitizer before and after the treatments.

Nitrile gloves are preferred because of their higher resistance to permeation. Hand-washing instructions are followed before and after individuals have worn protective gloves. All the disposable materials used are placed in biohazards bags.

Retention in care for HIV patients with AGW is crucial to avoid disease progression of high-HPV risk lesions. The treatments of genital warts in HIV+ patients cannot be postponed, so improvements in quality and compliance with safety standards are needed to reduce potential infectious hazards during the COVID-19 pandemic.

## CONFLICT OF INTEREST

The authors declare that they have no competing financial interests or other potential conflict of interests.

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